



## RACK MOUNTING - WIDE ADJUST OUTPUT POWER SUPPLIES with Adjustable Current Limiting

### INSTALLATION

These power supplies are constructed in the form of assemblies that are front mountable in standard 19" wide RETMA cabinet racks. If possible, mount in the rack spaced away from other heat dissipating or air blocking assemblies, by using blank front panels above and below each power supply. This will result in cooler running operation, which in turn will maximize stability and reliability.

Make all connections before applying AC input power.

THE SENSING TERMINALS **MUST BE CONNECTED** to the output terminals, either at the barrier strip on the power supply or at the load. Failure to have the sense terminals connected will affect the output voltage (usually causing it to be higher than the rating of the supply, and unadjustable), and may result in permanent damage to both the power supply and its load. In **CONSTANT VOLTAGE OPERATION**, if the voltage drops in the output voltage leads (which degrade regulation) are not objectionable, local sensing can be used; leave in place the jumpers provided with the power supply on the barrier strip (connecting the +SENS to the +OUT terminal and the -SENS to the -OUT terminal). However, if the best possible regulation at the load is required, then remove the jumpers and use two additional leads to connect the sense terminals to the output leads at the load, as shown in the schematic. This configuration permits the power supply to sense and compensate the voltage actually across the load. Note that remote sensing is capable of compensating only limited wiring drops. The voltage across the load, plus the voltage drops through the wiring, must be within the output voltage range of the supply for the voltage at the load to remain within the load regulation specification. In **CONSTANT CURRENT OPERATION**, there is no advantage in using sense lines to the load, so leave the jumpers on the barrier strip.

If there is any possibility of voltage from another source (another power supply, a battery, transients, etc) being applied to the power supply's output terminals, protect the power supply by using a diode in series with one of the output leads.

Do not attempt to directly parallel the outputs of two power supplies. This would result in current flowing from the higher-set output into the lower-set output, and probable damage to both circuits. Outputs may be connected in series to obtain a higher voltage provided that a reverse-biased diode, having PIV and current ratings exceeding the combined output, is used across each output; however, keep in mind that the output current to be drawn cannot exceed the output current rating of the lowest rated supply used.

If the AC input power contains large voltage spikes ('noise') induced by the switching of high currents, inductive loads, electro-mechanical components, etc., the input power leads to the supply should include some means of transient suppression. Otherwise, a portion of the noise may be coupled through the supply to the load. Also, the supply could be damaged. The means of suppression that is easiest to install is a 1 mfd capacitor or a metal oxide surge suppressor (MOV) across the AC input terminals of the supply. In extremely severe cases, the use of RF chokes in series with each side of the line may also be required.

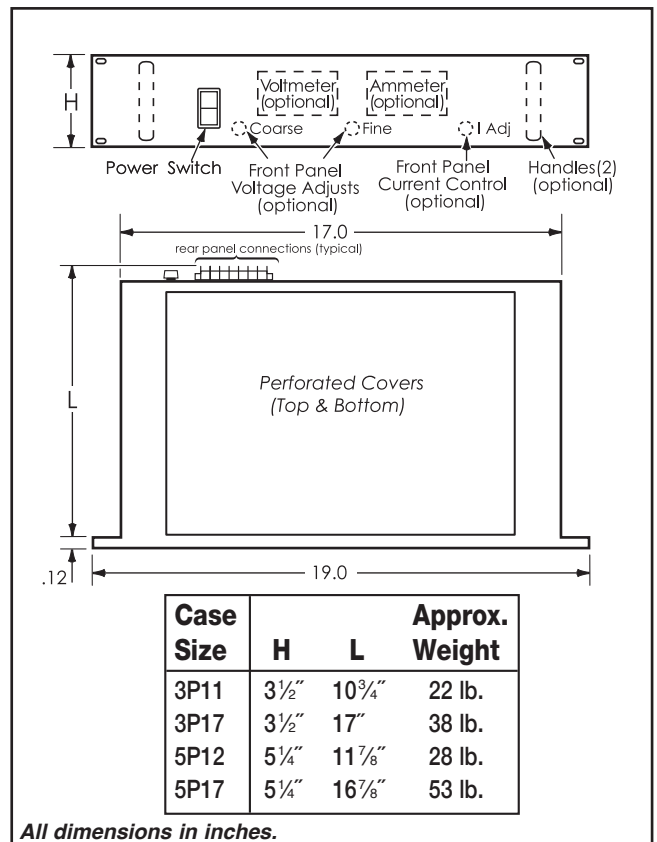
### OPERATION

FOR **CONSTANT VOLTAGE OPERATION**, turn the output voltage controls to their fully CCW positions, apply input power and then adjust the output voltage controls to obtain the desired output voltage. (The current control should be in its fully clockwise position.)

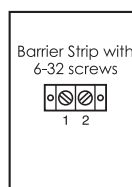
TO **LIMIT THE OUTPUT CURRENT** to a specific value, turn the current control fully counter-clockwise, remove the load (leaving the sense terminals connected) and then short circuit the output terminals with a low impedance ammeter and advance the output current control. (Set the current at least 10% higher than the output current which will be drawn by the load, to avoid operation in the knee area of the current limit characteristic curve. In setting the current limit point, allowance must be made for the highest peak current which the load may attempt to draw in normal operation; otherwise undesired limiting will occur and may result in improper operation of the load.) Turn off the supply, remove the meter and reconnect the load.

FOR **CONSTANT CURRENT OPERATION**, set the voltage controls fully clockwise, short the output terminals with a low impedance ammeter, turn on the power supply (with no load connected), and adjust the current control to the desired output current. (If you desire to limit the compliance voltage to less than the maximum output voltage of the supply, remove the meter and reduce the voltage to the desired level.) Turn off the supply, remove the meter and connect the load.

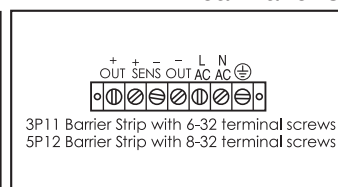
The overvoltage protection circuit of power supplies equipped with this option will trip whenever the output voltage rises to the trip voltage (even if only instantaneously, as can occur if a load transient feeds back into the power supply), and will remain latched until the output voltage is interrupted. It can be reset without changing the control settings simply by switching the power supply off momentarily.



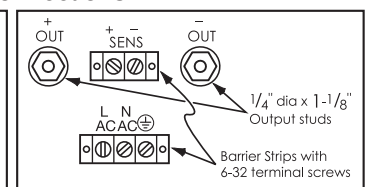
### Rear Panel Connections:



E Option



Case Sizes 3P11 and 5P12



Case Sizes 3P17 and 5P17

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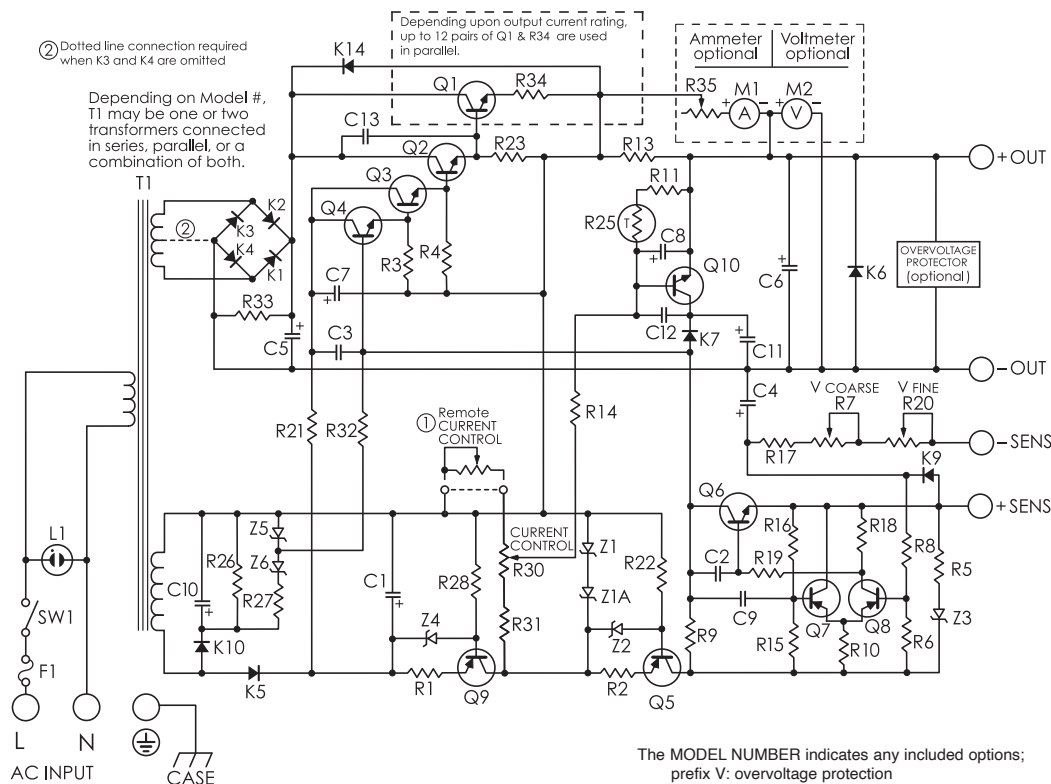


## RACK MOUNTING - WIDE ADJUST OUTPUT POWER SUPPLIES with Adjustable Current Limiting

These power supplies have the broad adjustment capability and versatility required for powering analog instrumentation, for electronic system development and for basic research. All can be adjusted down to 0 volts by means of built-in coarse and fine controls, or a remote potentiometer or switched resistors may be used. All models have a built-in current control; the current limit point of models having prefix letter E as part of the model number may also be controlled with a remote potentiometer.

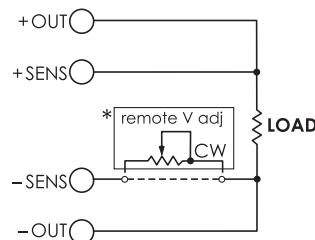
- ① FOR MODELS HAVING THE PREFIX LETTER E, THE DOTTED LINE CONNECTION IS REQUIRED WHEN THE REMOTE CURRENT CONTROL IS NOT USED. The output current limit point of models having prefix letter E as part of the model number may be remotely controlled by connecting a 200 ohm, 1/2 watt potentiometer to the two additional screw terminals provided for that purpose. Connect the potentiometer's wiper to one terminal, and the clockwise end to the other terminal, for clockwise rotation of the control to increase the current limit point. Keep the built-in control set to its maximum clockwise position. If external control is not desired, the terminals must be jumpered together.

- ② Dotted line connection required when K3 and K4 are omitted



The MODEL NUMBER indicates any included options;  
prefix V: overvoltage protection  
prefix E: remote current adjustment  
suffix A: ammeter  
suffix F: voltmeter  
suffix H: handles  
suffix M: terminal strip cover  
suffix P: front panel voltage adjust (coarse & fine)  
suffix Y: front panel current control (I adj)  
suffix -230: 230v input

### Connecting Power Supply to the LOAD:



\* THE DOTTED LINE CONNECTION IS REQUIRED, unless remote voltage adjustment is used. A potentiometer OR switched resistors in the negative sense lead may be used to remotely program (adjust) the output voltage:

If using a potentiometer (as shown above), the built-in adjustments must be turned fully CCW. The remote pot(s) should have these values:

For 0-6v, 0-15v, 0-30v models:  
use a 5K pot (0.5w) for V COARSE adj,  
use a 500 ohm pot (0.5w) for V FINE adj.

For 0-50v, 0-100v models:  
use a 50K pot (0.5w) for V COARSE adj,  
use a 5K pot (0.5w) for V FINE adj.

If using switched resistors, the built-in output voltage controls must be turned counterclockwise at least to a point where the minimum desired voltage can be obtained with the minimum external resistance used. The switch should be of the make-before-break type (damage to the power supply, and to the load, may result from the output voltage surges caused by open-circuiting the sensing circuit while the supply is in operation). Use these values:

P.S. Output Voltage Range	Ohms/Volt
0 to 6v	820
0 to 15v	330
0 to 30v	160
0 to 50v	1000
0 to 100v	500

105-125 VAC, 50-400Hz  
(Standard)

210-250 VAC, 50-400Hz  
(When model number ends in -230)