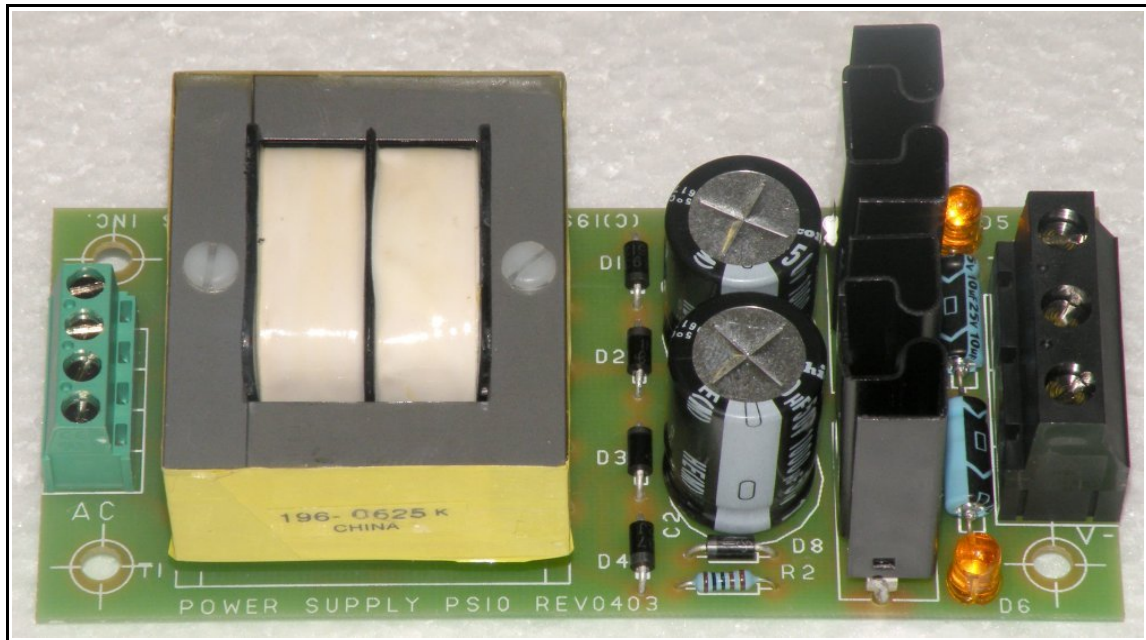


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## Dual 15V Regulated Power Supply Model PS10



Assembly Manual

## PS10 Dual 15 Volt Regulated Power Supply

The PS10 power supply provides +15 Volt and -15 Volt regulated DC power at up to 250 mA of current per output. The two outputs have a common ground connection. The outputs are short circuit proof. A thermal protection turns the outputs off when the circuit is overheated. A low input to output stray capacitance guarantees a low AC leakage current and makes it well suited in applications where low hum is important, such as low level pre-amplifiers and audio applications. A Light Emitting Diode at each output indicates proper output voltage.

### SPECIFICATIONS:

Output voltage:	+/- 15 Volt, +/- 5%
Max continuous output current:	250 mA each channel
Output short circuit current:	1.5A, typ
Nominal input voltage:	115/230VAC, 50/60 Hz
Output voltage ripple:	less than 1mv, @ 60 Hz, 250 mA load
Output voltage regulation:	better than 10 mV
Input to Output capacitance:	50 pF Max.
Dimensions (L X W X H):	4.3" X 2.0" X 1.5"

### DESCRIPTION

The circuit diagram of the power supply is shown in figure 2. The output of transformer T1 is converted from AC to DC with diodes D1,2,3,4 and filter capacitors C1 and C2. This raw DC voltage is then regulated to +15 volt and -15 volt with IC1 and IC2. C3 and C4 provide additional filtering of the output voltage. Diodes D7 and D8 protect against reverse Voltage on the outputs that could be caused by some loads during turn-on transients. Two LED indicators are used to show voltage on the output terminals. LED D5 is connected to the positive output through resistor R1 and LED R8 is connected to the negative output through resistor R2.

### PARTS LIST

The PS10 power supply kit includes the parts listed below. Please check the contents of your kit to make sure no parts are missing.

Parts List		
PS10 power supply		
part	ea	Description
R1,R2	2	1K, 1% Metal Film
C1,C2	2	1000uF, 35 or 50 WVDC, Alum. Electrolytic
C3,C4	2	10uF, 25 WVDC, Alum. Electrolytic
D1-4,7,8	6	1N4937, 1Amp diode
D5,D6	2	LED (light emitting diode)
IC1	1	7815 or LM340T-15 positive regulator
IC2	1	7915 or LM320T-15 negative regulator
T1	1	Transformer 36VCT @ 0.35A
M1	1	Terminal block, 4 way, small
M2	1	Terminal block, 3 way, big
M3	2	Heatsink 5943B
M4	1	Bag of heatsink compound
M5	1	Circuit board, 4.3" X 2.0"

### ASSEMBLY INSTRUCTIONS.

The assembly of the power supply is made easy by the silk screen guide on the circuit board. The schematic diagram of the amplifier is shown in figure-2. Figure-1 shows the silkscreen side of the circuit board. All components should be installed on the side of the board that has the silk screen; this side is called the component side. The parts are then soldered in place on the foil side of the board. Refer also to the title page of this manual for a picture of PS10 after assembly.

Step 1 \_\_\_ Install resistor R1. Use a 1%, 1K metal film resistor. The resistor is marked with a color code to indicate the value. The code is Brown - Black - Black - Brown -- Brown. The orientation of the resistor is not important. Solder and trim leads.

Step 2 \_\_\_ Install R2, 1K, 1% Metal Film resistor. Proceed as with R1. Brown - Black - Black - Brown -- Brown.

Step 3 \_\_\_ D1, 1N4937, 1 Amp diode. The white band at one end of the body of the diode indicates the cathode. Make sure this band is oriented as indicated on the silk screen.

Step 4 \_\_\_ D2, 1N4937, 1 Amp. diode. As step 3. Watch the polarity band!

Step 5 \_\_\_ D3, 1N4937, 1 Amp. diode. As step 3. Watch the polarity band!

Step 6 \_\_\_ D4, 1N4937, 1 Amp. diode. As step 3. Watch the polarity band!

Step 7 \_\_\_ D7, 1N4937, 1 Amp. diode. As step 3. Watch the polarity band!

Step 8 \_\_\_ D8, 1N4937, 1 Amp. diode. As step 3. Watch the polarity band!

Step 9 \_\_\_ Install C3, 10uF, 25WVDC, Aluminum electrolytic capacitor. The electrolytic capacitors are polarized, they have a positive and a negative terminal. The negative terminal is indicated on the body of the component with a minus sign. The silk screen on the PC board also has a minus sign to indicate how the capacitor should be installed. Be SURE to insert the negative lead of the capacitor as indicated on the PC board.

Step 10 \_\_\_ C4, 10 uF, 25V Aluminum Electrolytic capacitor. As in step 9.

Step 11 \_\_\_ M1, 4 position terminal block.

Step 12 \_\_\_ M2, 3 position terminal block.

Step 13 \_\_\_ D5, Light Emitting Diode. The flat side of the body should be oriented as indicated on the silk screen.

Step 14 \_\_\_ D6, LED. As in step 13.

Step 15 \_\_\_ IC1, 7815 (LM340) Positive 15V voltage regulator. This device is mounted in a clip on heat sink. Apply some of the heatsink compound on the metal side of the part and slip the IC into the heat sink so that the metal tab rests against the flat side of the heatsink with the hole. Push in until it snaps in. The holes in the IC and the heatsink will line up. Now insert the 3 leads of the IC and the 2 solder tabs of the heatsink into the PC board and solder. Note that the metal tab of the regulator will face towards the transformer. Wait until after the next step to solder the 5 leads; this will make it easier to line up the heatsinks.

Step 16 \_\_\_ IC2, 7915 (LM320) Negative 15V voltage regulator. As in step 15. Set the two heatsinks nicely perpendicular to the PC board, and make sure they do not touch each other. Solder both IC1 and IC2 and the two heatsinks..

Step 17 \_\_\_ C1, 1000 uF, 35V Aluminum Electrolytic capacitor. Be careful to install with the proper polarity.

Step 18 \_\_\_ C2, 1000 uF, 35V Aluminum Electrolytic capacitor. Be careful to install with the proper polarity.

Step 19 \_\_\_ T1, Transformer. The transformer has two sets of 4 terminal pins. One set is labeled 1-2-3-4 and the other set is 5-6-7-8. These labels appear near the terminal pins on the transformer. The transformer should be oriented on the circuit board so that the pins labeled 1-2-3-4 are near the blue 4 position terminal block.

Please make sure the transformer is inserted correctly; this is **very important!**

Make sure the pins are inserted all the way into the board, so that the transformer rests onto the board.

Step 20 \_\_\_ The assembly of the PC board is now complete. Double check the placement of all parts. Make sure all electrolytic capacitors and diodes are installed with the proper polarity.

## Installation and use.

Figure-1 shows the input and output connections for the power supply. The 117 Volt line voltage is connected to the 4 way terminal block. Use jumpers on the 4-position terminal block to select line voltage, as shown in figure 2.

Make sure that the wires do NOT touch the transformer core. The plus and minus 15 volt power voltages are available at the 3 way terminal block, as indicated on the circuit board. The ground is connected to the center connection. With power connected the Light Emitting Diodes will turn on when voltage

is present on the output terminals. D7, located next to the positive output, indicates the positive voltage. D8, located next to the negative output, indicates the negative voltage.

The power supply should be located so that sufficient airflow is available for cooling. In normal operation the regulators will be warm to the touch, but not burning. If the supply should overheat the output will automatically shut down, and come back up after cooling off.

The supply outputs are short circuit protected. If a short is present the output current will be limited to a safe value (approx 1.5A). Removal of the short will restore the output voltage.

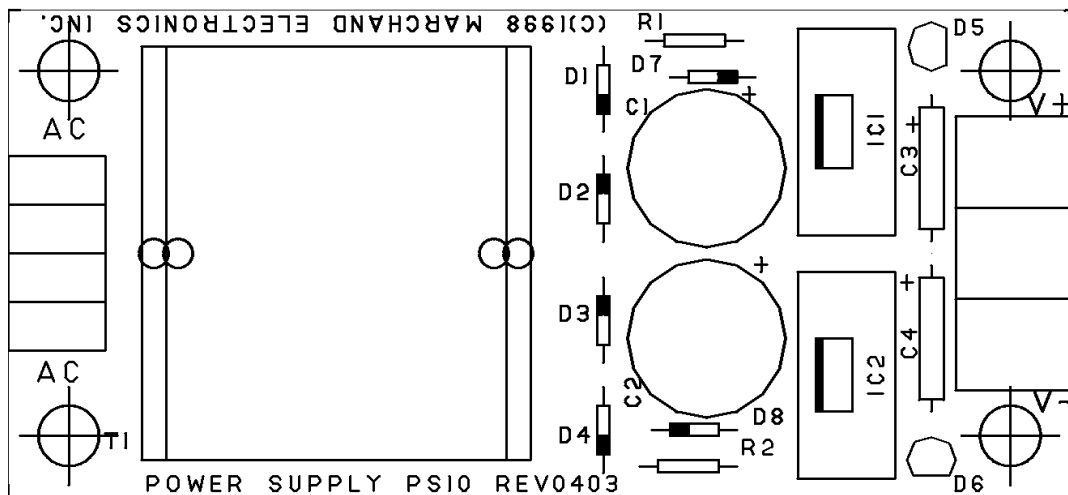


Figure 1. PS10 Silk screen and external connections.

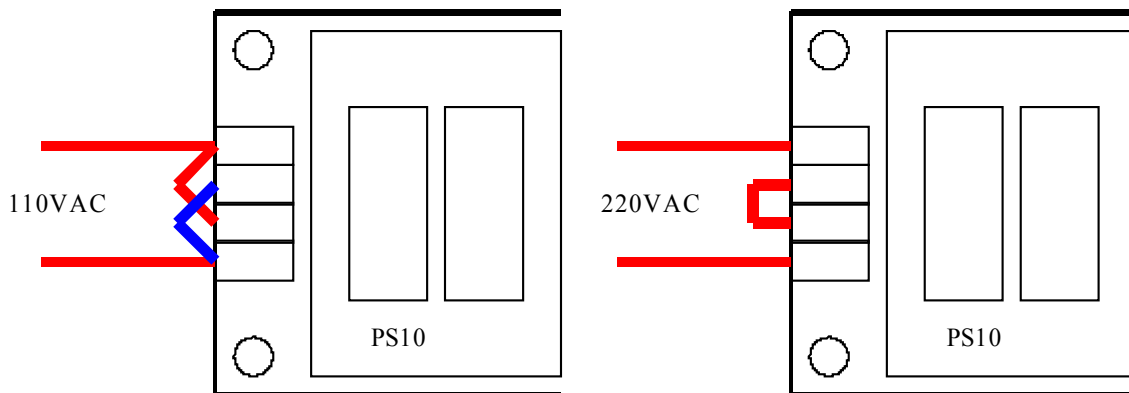


Figure 2. Line voltage selection.

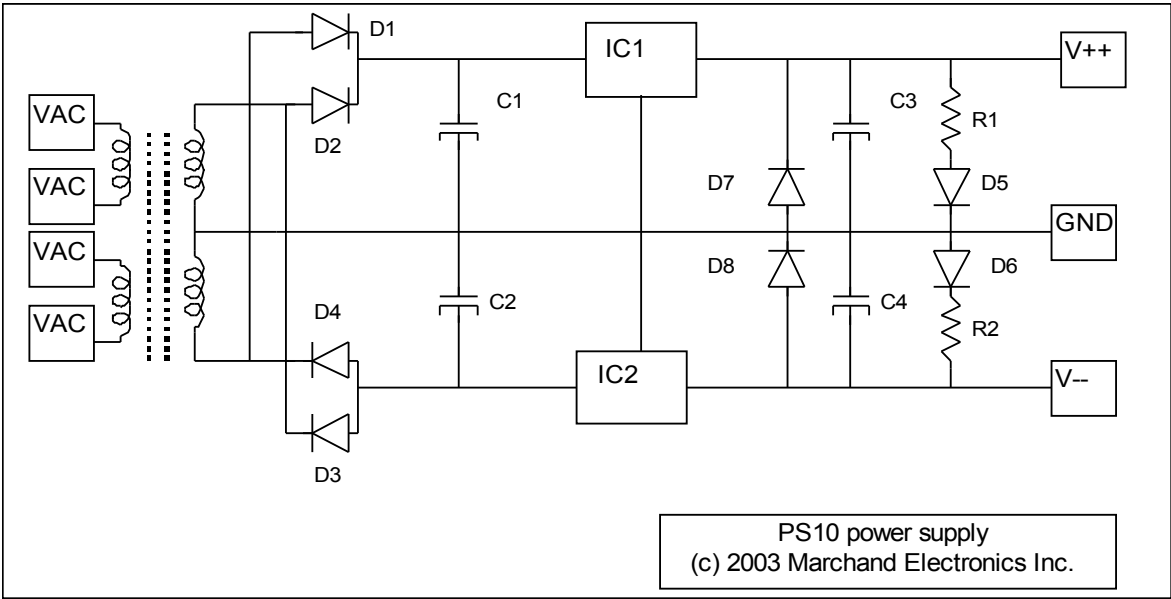


Figure 3. PS10 schematic diagram.