Kit 186 Power Amplifier D.C. Supply

This is a DC power supply board designed for our Kit 106 audio power amplifier. It is also suitable for any power amplifier module or circuit requiring a positive and negative rail voltage of up to 45 Volts per side. The output voltage and current will depend on the transformer chosen, and this is not supplied with the kit. Never use a transformer larger than 35V-0-35V, as the capacitors voltage rating will be exceeded.

For use with Kit 106, it is suggested to use a 25-0-25V transformer of 150 to 200 VA, with one K186 power supply board and two K106 amplifier modules providing stereo. Using a separate power supply board for each channel will provide even better levels of performance if you wish. For maximum channel isolation, you can use two transformers of 80 to 100 VA each as well, thus making two mono amplifiers. However the difference is small, and the cost will be higher.

The Kit 186 board can be used in a number of ways. If using only one 50 watt module, you may choose to use only one pair of output capacitors, i.e. C1 and C2 which will provide adequate capacity. Using all four capacitors will be suitable for a pair of 50 to 80 watt modules, or a single 100 to 200 watt module. For a pair of 100+ watt amplifier modules, simply use two kit 186 power supply boards, one for each channel. You could use only one board in this case too, however bass performance will be reduced, especially into 4 ohm loads, where higher current is required.

No fuses are provided on board because they are best mounted in chassis holders where they can be accessed if required. A suitable mains fuse should be the minimum requirement, with further fuses for each DC supply rail if desired. When choosing a mains fuse, make sure it is large enough to allow for surge currents when the amplifier is first switched on, however it should be small enough to provide overload protection in the event of a circuit failure. A mains fuse of 2-3A for 240V and 3-5A for 110V, will be suitable in most cases. 3-5A fuses for each DC supply rail can also be used if desired, but are not really necessary with the Kit 106 amplifier modules if everything is checked properly before powering up.

When dealing with mains transformers, we also need to be careful of safety requirements. This will usually mean providing a suitable earth to any metal case, providing a suitable fuse and switch to the transformer primary windings, and making sure all wires and connections are properly insulated, and adequate in size.

Construction :

Insert the six PCB pins and solder them first. Then add the diode bridge, making sure it is properly oriented as shown on the PCB overlay, the positive terminal must correspond with the positive output terminal. Finish off by adding the four electrolytic capacitors, making sure they are all properly oriented as well.

When wiring up the transformer, do not forget the centre tap (or common between the two secondary windings) must connect to the earth terminal on the PC board next to the “DC Gnd” output terminal. Make sure you test the output voltages are correct before connecting to the amplifier module/s.

The circuit below shows how to connect the K186 DC power supply board to the mains transformer. The DC outputs connect to the power amplifier boards. Make sure you use high current hook up wire for connection.

For further information, see the audio amplifier power supply article on our web site at :

http://www.kitsrus.com

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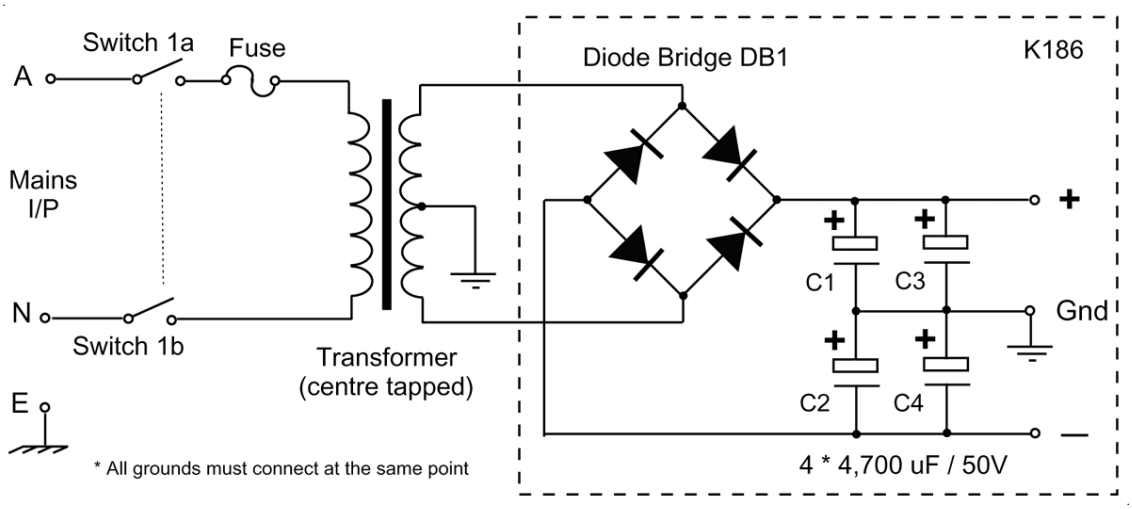
Complete circuit for a mains derived split rail power supply



(Transformer, switch and fuse not supplied)

Photo of completed board.