

**raleigh
audio**

Mark IV

**Standard
Regulator**

**Assembly
Manual**

Kit version

Use this manual with the Standard Regulator Version 1.0, parts level A

Required Tools and Supplies

35 to 50 Watt soldering iron
Diagonal cutting pliers
Long-nose pliers
Solder

Warnings and Cautions

Caution – Use only solder that is intended for electrical circuits. Do not use acid or corrosive flux of any kind.

Support

You may contact us with questions on constructing this kit by sending an e-mail message to support@raleighaudio.com

Power Requirements

The Regulator Module requires an input voltage of between 5VAC and 7VAC at 6VA to 12VA, depending on the load.

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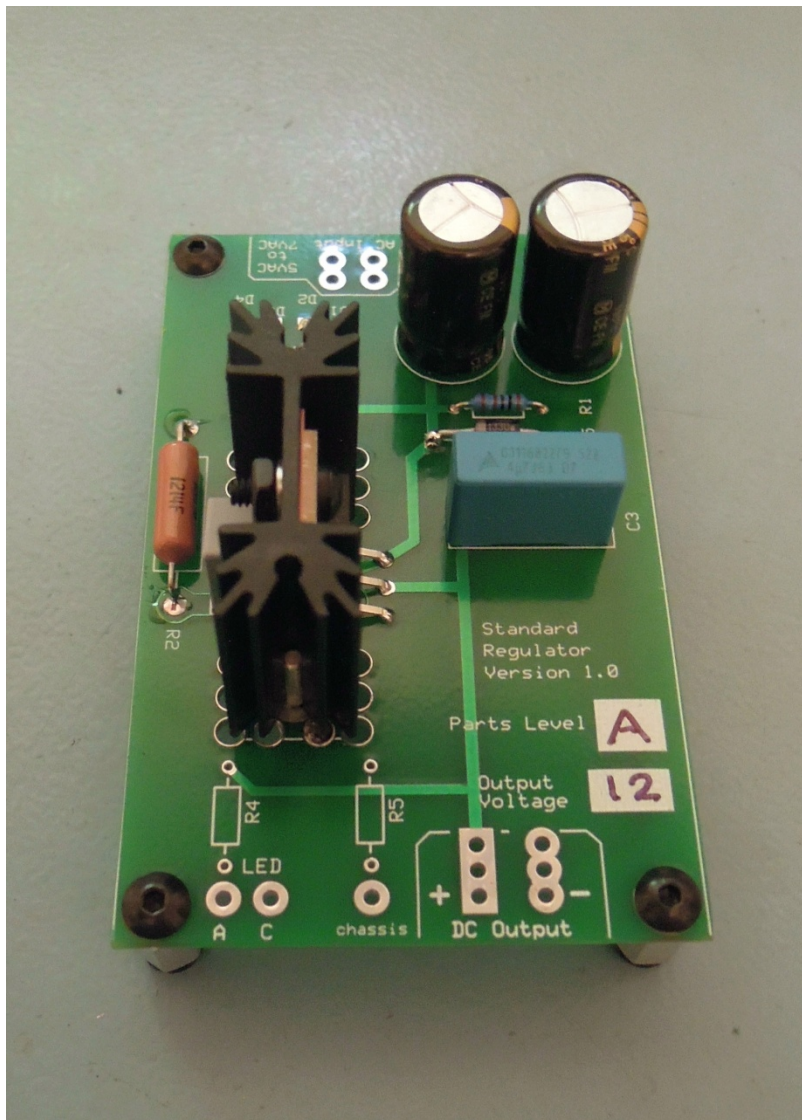
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Assembly Instructions

Before you start, read through the instructions completely to the end. Inventory the kit contents to become familiar with the parts and to make sure you have everything.

In the following steps you will populate the PC boards. All of the components are mounted on the top of the boards, which has the components labeled with white silkscreen.

Steps preceded by a “note” (J) deal with components which must be oriented properly.



TIP: you may find it convenient to solder the components with leads, like resistors and diodes, from the top of the board.

1. Mount four standoffs on the bottom of the Regulator board and secure with 6-32 screws.
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2. Insert a 1K (brown, black, black, brown, brown) resistor in the following two locations: R1 and R3.

Solder and trim the leads.

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3. Insert an MBR150 diode in the following two locations: D2 and D3.
Orient the diodes such that the end with the stripe is closest to the end of the board.

Solder and trim the leads.

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4. Insert an MBR150 diode in the following three locations: D1, D4 and D5.
Orient the diode such that the end with the stripe is closest to the heatsink.

Solder and trim the leads.

The output voltage of the Regulator is determined by the value of resistor R2.

Voltage	R2
3.3V	330K
5V	499.0K
8V	806K
10V	1.00M
12V	1.21M

5. Install the appropriate Dale resistor in location R2.

Solder and trim the leads.

6. There is a white square next to the output pads that may be used to indicate the output voltage. If your board has not been labeled, write the output value in the white square.
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7. Insert a 100nF (marked 100n on body) capacitor in location C4.

Solder and trim the leads.

8. Insert a 4.7uF (marked 4u7J63 on body) capacitor in location C3.

Solder and trim the leads.



9. Insert a 1000 μ F capacitor in the following two locations: C1, C2. Orient the capacitors such that their negative leads (marked on side) are closest to the edge of the board.

Solder and trim the leads.

10. Install the heatsink in its location.

Solder the pins.



11. Insert the LT3080 regulator module in location U1.

- Insert an insulator between the regulator and the heatsink.
 - Secure with a 4-40 x $\frac{3}{8}$ " screw, lock washer and a nut, using an insulating bushing on the screw with the head of the screw on the side with the regulator.
 - Tighten the screw moderately tight.
 - Solder and trim the five pins on the regulator.
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All components should now be installed on the board. Check that all leads are soldered and that there are no "solder bridges" that connect things that should not be connected.

Optional Grounding

The LVPS Regulator may be used either as a positive voltage supply or a negative voltage supply, depending on how it is referenced to ground.

To inhibit ground loops, there is an optional resistor location (R5). When R5 is installed and the chassis pad connected to the ground, then all current should be drawn from the +/- output pads on the supply. An example of where this could be used is for powering a USB adapter with a ground connection from a computer.

The resistor R5 will keep the supply from floating and suppress any ground loop.

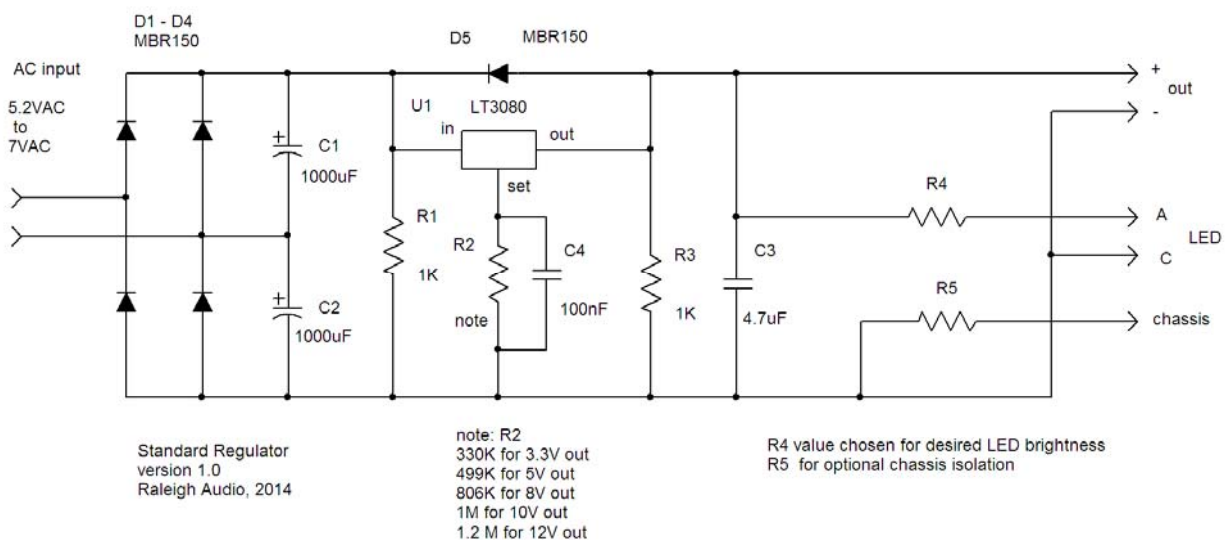
The value of R5 should be large, for example 10K in order to minimize the current.

If R5 isolation is not desired, then place a jumper in the R5 location.

Optional LED

If you choose to power an LED, for example a power-on indicator, R4 is provided to set the brightness of the LED. The value of R4, which depends on the regulator voltage and the type of LED used, may be chosen empirically.

Schematic Diagram



Parts List (Level A)

Designator	Part	Description	Qty
	PC board	version 1.0	1
D1 – D5	Diode, MBR150	cylinder, value marked on body	5
C1, C2	Capacitor, 1000 μ F, 25V	black cylinder	2
C4	Capacitor, 100nF, 63V	grey rectangle, marked 100n	1
C3	Capacitor, 4.7 μ F, 63V	Blue rectangle, value marked on body	1
R1, R3	Resistor, 1K Ω	brown, black, black, brown, brown bands	2
R2	Resistor various values	Dale, brown with value marked on body	1
U1	Regulator	LT3080	1
heatsink		black	1
insulator		grey rectangle	1
insulating bushing		black cylinder	1
screw, 4-40 x $\frac{3}{8}$			1
nut, 4-40			1
washer, 4-40			1
standoff		$\frac{3}{8}$ " if regulator to be mounted on chassis $1\frac{1}{4}$ " if regulator stacked on another regulator	4
screw	6-32 x $\frac{1}{4}$ "	only if $\frac{3}{8}$ " standoffs supplied	8

Document Version History

Version	Description
1.0	Original document to support parts level A
1.1	(this document) document update for clarity

Parts Level History

Version	Description
A	Original production level