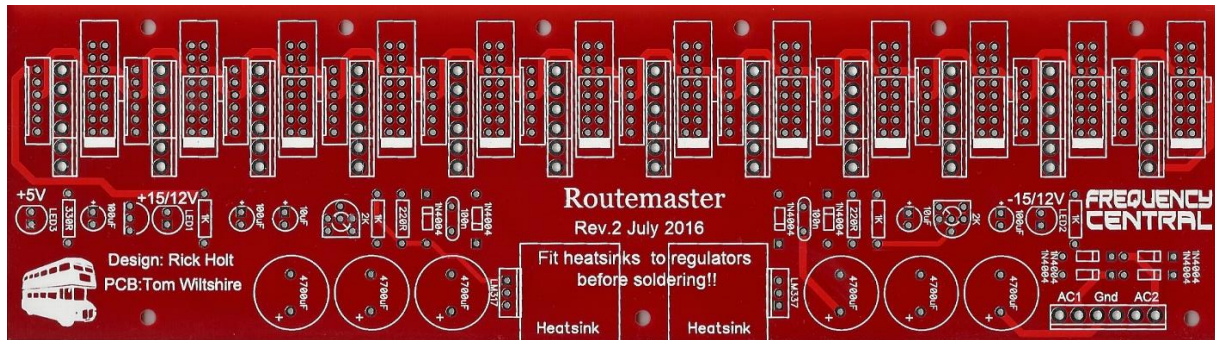


Build document for

# FREQUENCY CENTRAL ROUTEMASTER

Power supply / bus board



- Routemaster is a simple to build combined power supply and busboard.
- It can be powered from a 12VAC wallwart, or alternatively a 12VAC centre-tapped transformer.
- Options are included for Euro. MOTM, or Dotcom power headers.
- The supply is adjustable for +/-12V or +/-15V using multi-turn trimmers
- There is an onboard 5V supply too.

### IMPORTANT

6 pin MTA-156 silk screen is the wrong way around on Rev2 PCBs. If in doubt, use a DMM to check orientation.

**Bill of materials** - Including links to parts stocked by Tayda

<a href="#">2 x 220R</a> <a href="#">1 x 330R</a> <a href="#">4 x 1K</a> All resistors ¼ watt metal film	<a href="#">2 x 100nF 100V</a> poly box <a href="#">2 x 10uF 35V</a> electrolytic <a href="#">3 x 100uF 35V</a> electrolytic <a href="#">6 x 4700uF 25V</a> electrolytic	<a href="#">1 x LM317</a> <a href="#">1 x LM337</a> <a href="#">1 x 78L05</a> <a href="#">8 x 1n4004</a> <a href="#">3 x 5mm LED</a>	<a href="#">2 x 2K trimmer</a> <a href="#">2 x heatsink</a> <a href="#">Power headers</a>
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**Build guide** - It's best to populate the PCB in height order, smallest first.

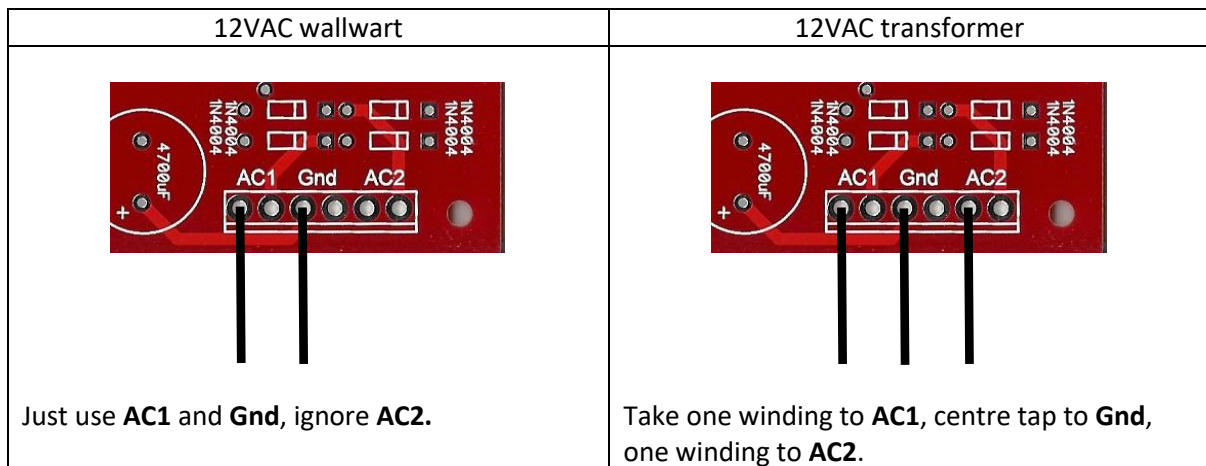
1. Install and solder all resistors.
2. Install and solder all 1n4004 diodes.
3. Install and solder 100nF capacitors.
4. Install and solder all three LEDs. Follow the diagram on the PCB to ensure correct polarity.
5. Install and solder 78L05. This part is not indicated on the PCB, it's right next to the +15/12V LED. Ensure correct polarity.
6. Install and solder 10uF and 100uF capacitors. Ensure correct polarity.
7. Install and solder 2K multi-turn trimmers.
8. Install all power headers.
9. Bolt LM317 and LM337 to their heatsinks, install and solder. I find it best to solder the middle pin first, which ensures against solder bridges.

10. Install and solder all 4700uF capacitors. Ensure correct polarity.

### Hooking it up to 12VAC

Routemaster can be powered from a 12VAC wallwart, or a 12VAC centre-tapped transformer. I would always recommend going the wallwart route unless you are confident with dealing with mains voltages.

Routemaster's AC input section has 6 pads, **AC1** (x2), **Gnd** (x2), **AC2** (x2). If you wish, you can use a 6 way MTA-156 to connect to your chosen AC source. Alternatively, the extra holes can be used for strain reduction of your cables.



### So...what's it capable of?

LM317 and LM337 are rated at 1.5A each. However, to get this much juice you'd of course need a 3A AC source. As well and much bigger heatsinks than those specified (the bigger the heatsinks the higher the current that the regulators can operate at). It's also not great to run the power regulators at or near their maximum rating. I'm recommend assuming that you ask about 500mA of each power rail (+12V 500mA, -12V 500mA) from the supply, assuming a 1A wallwart. The 5V source is rated at 100mA.

So...it's a balancing act between current capacity of AC source, size of heatsinks, and maximum current draw.



RDH 10/08/16