MEG v1.1
by neutral labs

Build Guide

Congratulations on your decision to build a MEG module! MEG is a fairly easy build with a low component count, but please go through this guide at least quickly to make sure you're not missing anything.

Caution! Do not separate the resistors from their paper tape just yet. They are grouped into sets that allow you to identify their value by checking how many of them are in each set, see component list below. This way you will not have to use resistor ring codes or a multimeter to determine the values.

Component List

The components are grouped into 2 small bags, one of them (bag 1) is plain white and the other (bag 2) is metal-coated (silver color). Bag 2 has the transistors and IC, all other components are in bag 1.

Part	Count	Bag	Type	Polarity matters?
C1, C2	2	1	electrolytic 0.1µF	yes
C3	1	1	electrolytic 10 µF	yes
D1-D4	4	1	BAT85 Schottky diode	yes
J1-J4	4	1	Thonkiconn mono 3.5 mm switching jack	-
J5	1	1	Eurorack 10-pin power header	no
J6	1	1	3-pin header	no
-	1	1	2-pin jumper for J6	no
Q1, Q2	2	2	transistor J109 N-Channel JFET	yes
Q3	1	2	transistor 2N3904 NPN BJT	yes
R4-R8, R15-R20	11	1	10 kΩ	no
R1, R9	2	1	100 kΩ	no
R10	1	1	22 kΩ	no
R2, R3, R11-R14	6	1	1 kΩ	no
R21, R22, R23	3	1	4.7 kΩ	no
RV1, RV2	2	1	10 kΩ linear potentiometer	-
-	2	1	knobs for RV1, RV2	-
U1	1	2	TL074 quad op-amp	yes
U1	1	1	DIP14 socket for TL074	yes
-	2	1	Eurorack panel screw	-

# Step-by-step instructions
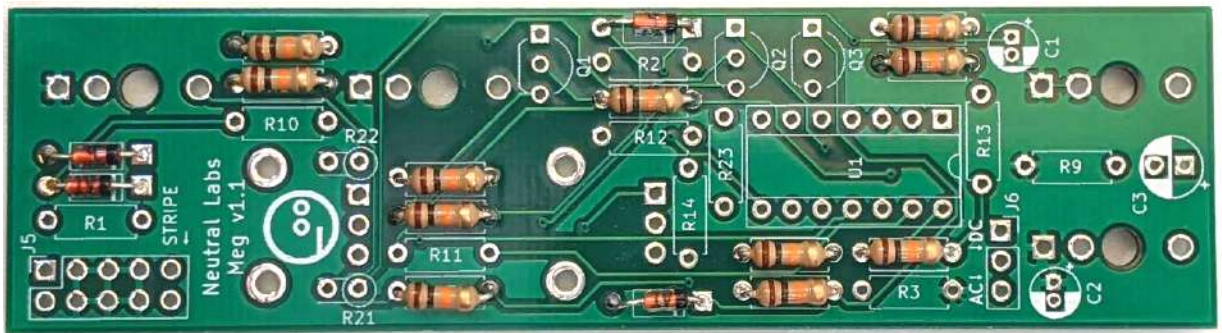
Solder the diodes (D1-D4) and all 10k resistors first (R4-R8, R15-R20).

Caution! Polarity matters for diodes. **The black line on each diode must match the white line on the PCB**. In case of reversed polarity, you may damage your module when plugging it in! It doesn't matter for resistors though, so you can orient those in whichever way looks prettiest.

You do NOT have to read ring codes or use a multimeter to determine the resistor values. There are only unique sets of resistors, so you can just count the ones in each set to find out the value.

Some of the resistors in your kit may be white, green or blue instead of beige as shown here. Don't worry, they all work pretty much the same.
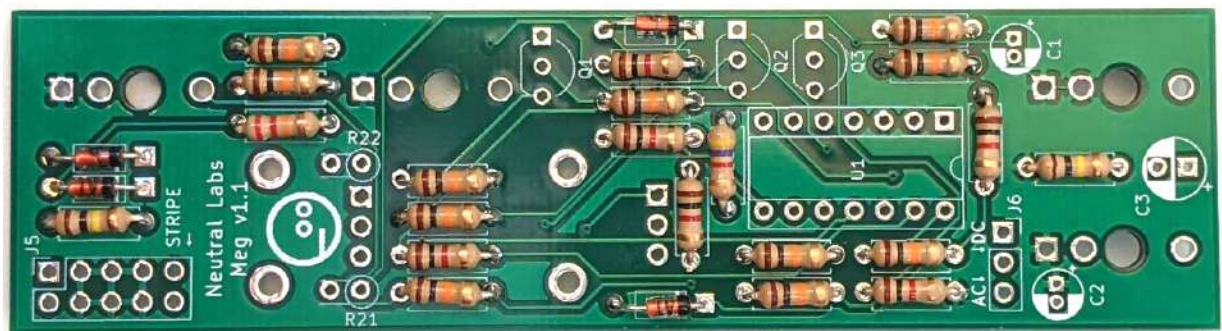

Now solder all the remaining resistors except for R21 and R22, which will get a special treatment later on.
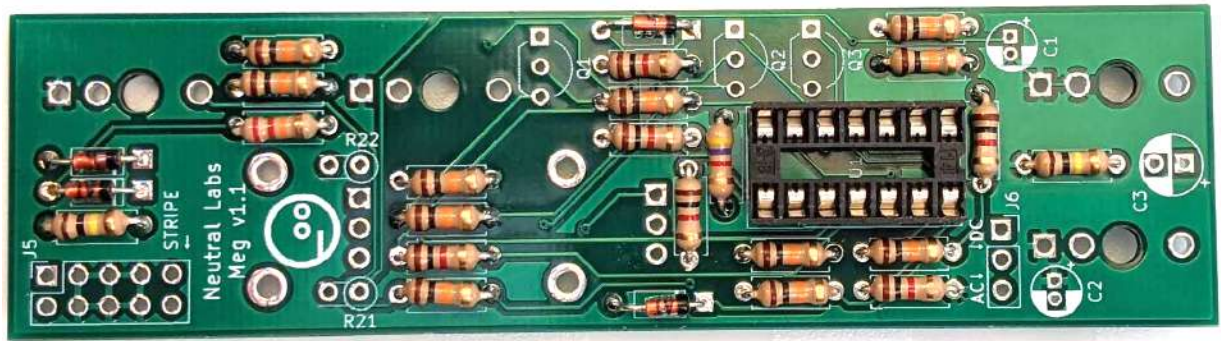
Next, put in the IC socket (U1). It has a little notch on one side which should match the notch of the white outline on the PCB. (It's not harmful if you put one in the other way around by accident, as long as you make sure the IC is facing the right way when you plug it in later.)

An easy way to solder this socket is to set it into the PCB holes, put the front panel or a piece of cardboard flat on top and flip the whole thing over. Alternatively, use some sticky tape to hold it in place. Solder a single corner pin and then the opposite corner pin – now you can remove the tape, front panel or cardboard and freely move the PCB to solder the rest of the pins.
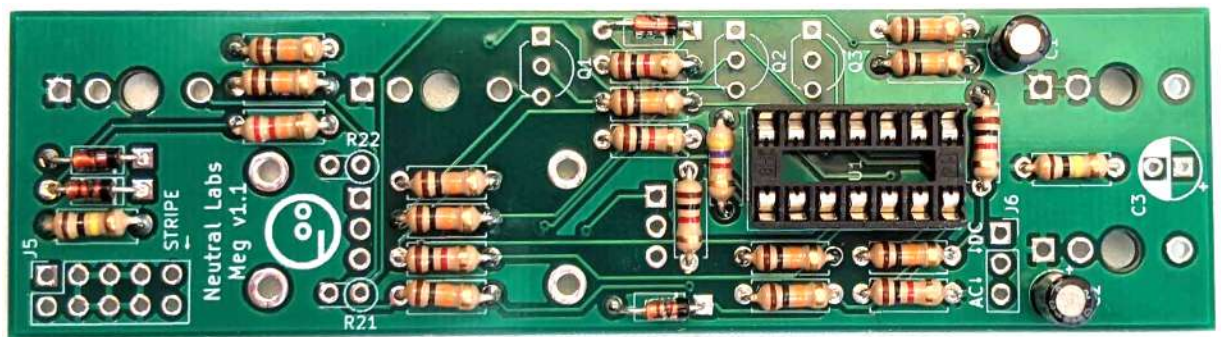

Now add the small 0.1 µF capacitors (C1 and C2).

Caution! Polarity matters for all of the capacitors. Their longer leg goes on the plus side as indicated on the PCB.

The solder pads for the small capacitors are quite close to each other, so make sure there's no accidental solder bridge between them, or you might damage the module when plugging it in. It helps to bend the capacitor's legs slightly outward before soldering. Test connectivity with a multimeter if you are unsure.
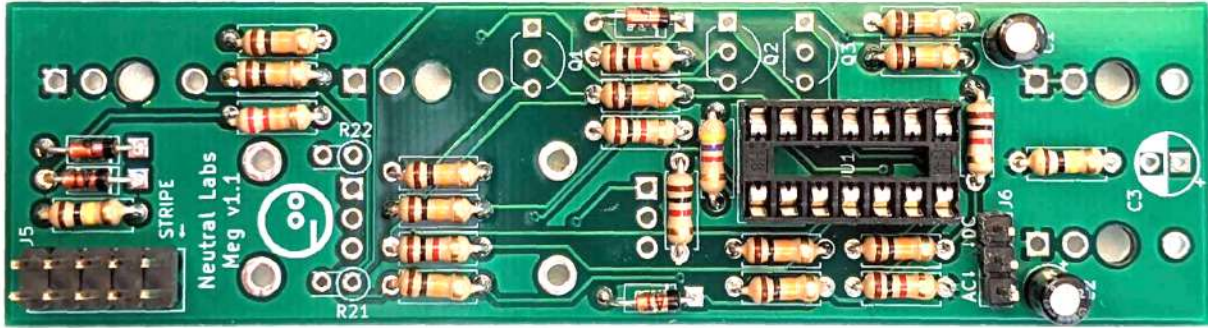
Add the 2x5 pin power header (J5) and the 3-pin header (J6). As with the IC socket, it's best to solder a single pin first. You may want to hold the headers in place with a piece of sticky tape while soldering. Another trick is to plug the Eurorack power cable into the header before and hold it this way.
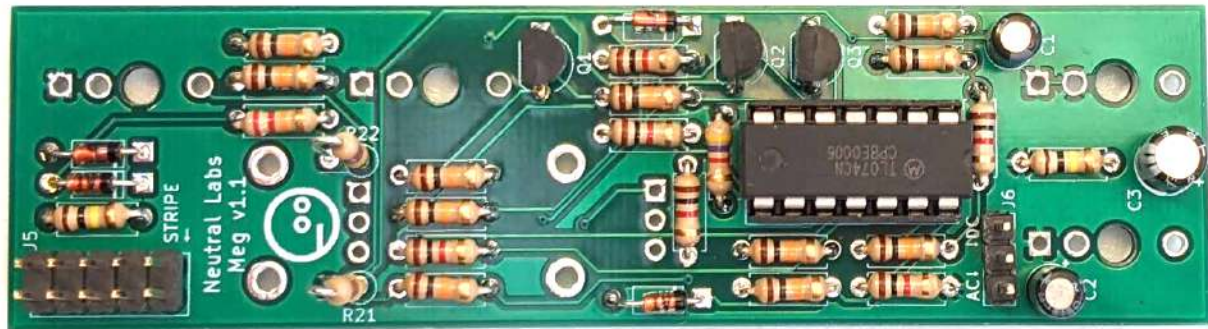
Now on to C3 (pay attention to the polarity) as well as the 3 transistors Q1, Q2 and Q3. Again, polarity matters for the transistors. Insert them facing them as the outline on the PCB indicates. Make sure that the transistors labeled J109 go into Q1 and Q2 and the 2N3904 goes into Q3. They're very different beasts and not interchangeable!

Remember the 2 remaining resistors (R21, R22)? Now's their time to shine: Put them into their places as shown on the picture. They'll stand up instead of lying down, which is totally not because of space limitations on the PCB, but rather in order to better absorb cosmic energy at a specific, um, wavelength. Trust me!

Plug the IC into its socket (U1). It has a little notch on it which should match the little notch on the socket (and the notch in the white outline on the PCB). Bend its legs slightly inward if you have trouble fitting it in. Put the little green jumper on the 3-pin header (in any position, see the manual). Now flip the PCB over.
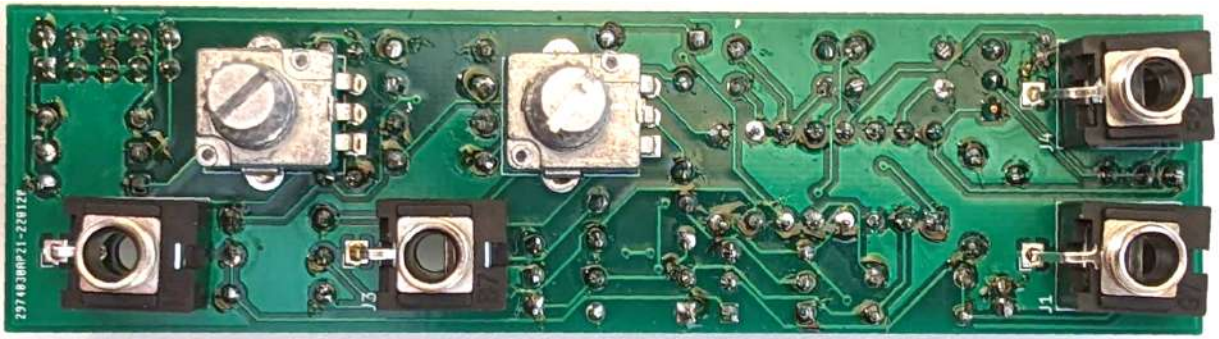
Remove the nuts from the pots (RV1, RV2) and jacks (J1-J4). You may want to clip the little silver anti-rotation tag off the pots with a wirecutter. Fit the pots and jacks onto the PCB without soldering yet. Then put on the front panel. Add and lightly tighten all the nuts to hold the panel in place. Carefully flip everything back over and solder.

Now plug in and test your module. Refer to the manual if needed.

If something's not right, it may be best to unplug the module from Eurorack power immediately so as not to damage it (or the PSU).

Most problems can easily be fixed by reheating all solder joints so the solder can reflow. Also visually inspect joints and see if you can spot accidental solder bridges.

When everything is working correctly, you can now tighten all the nuts. If using a wrench or pliers, be careful not to scratch the front panel surface. As the final step, put the knobs on the pot shafts.

If you need help troubleshooting or want to share photos, audio and/or video of your creations (please do), send a message to admin@neutral-labs.com