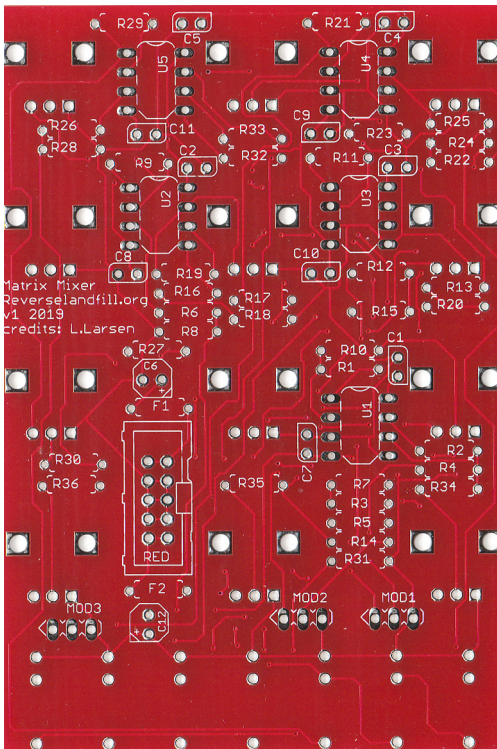# Matrix Mixer - Buildguide - v1 pcb 2020 - reverselandfill


The Matrix mixer is designed for use with a LZX format modular videosynthesizer.
Use it for color routing, mixing and inverting several sources, feedback patching and softkeying.
There are several MOD options, such as gain amplification and external 'overall gain' potmeters.
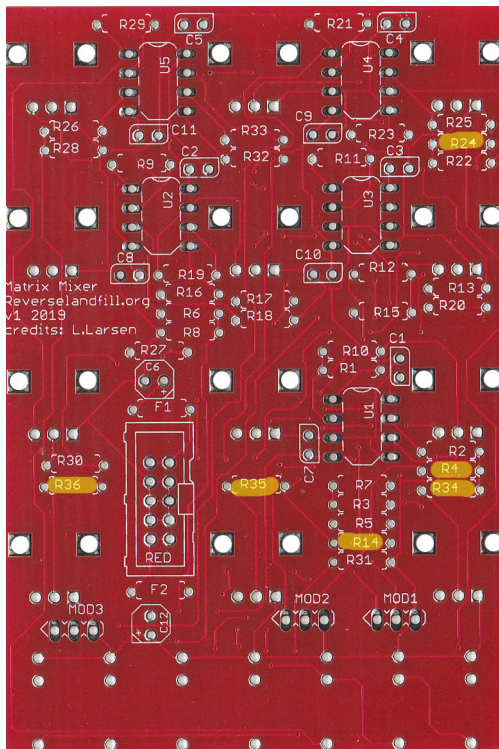
Resistors

Start with the 15x 10k resistors:
r1, r2, r3, r7, r10, r11, r12, r13, r17, r20. r21, r22, r23, r27, r30 (marked in yellow)
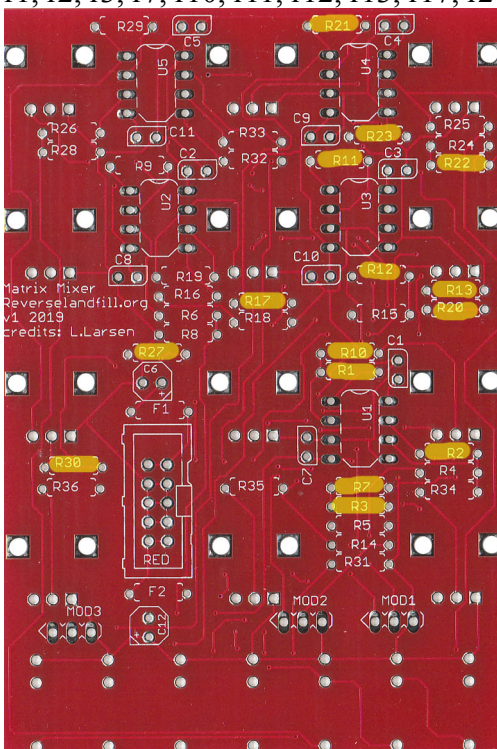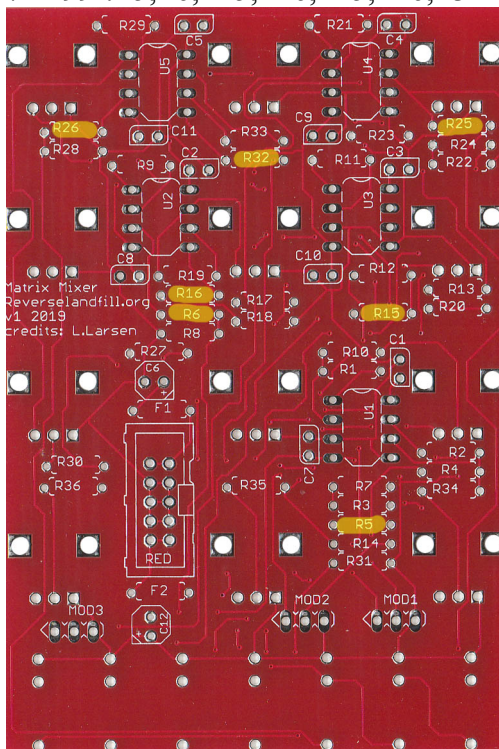
The 6x 3.3k (r4, r14, r24, r34, r35, r36) resistors control the gain of the mixers, the value of 3.3k sets 3x gain.
This is useful for feedback mixing and keying. If you don't want this amplification, look at the MODS section below for more info.
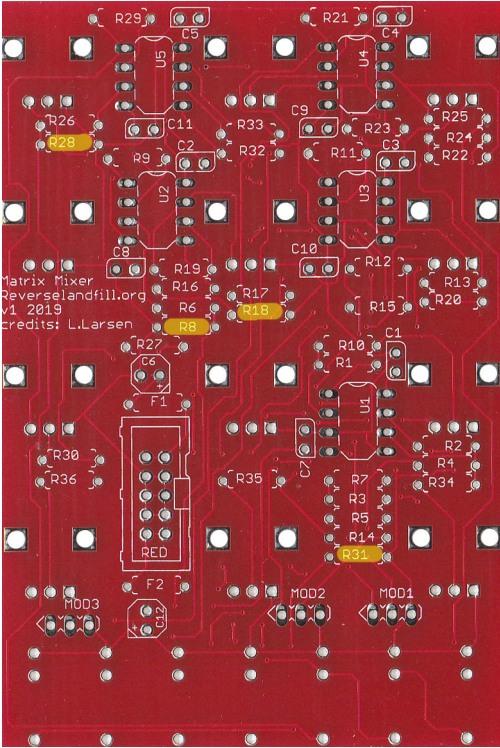

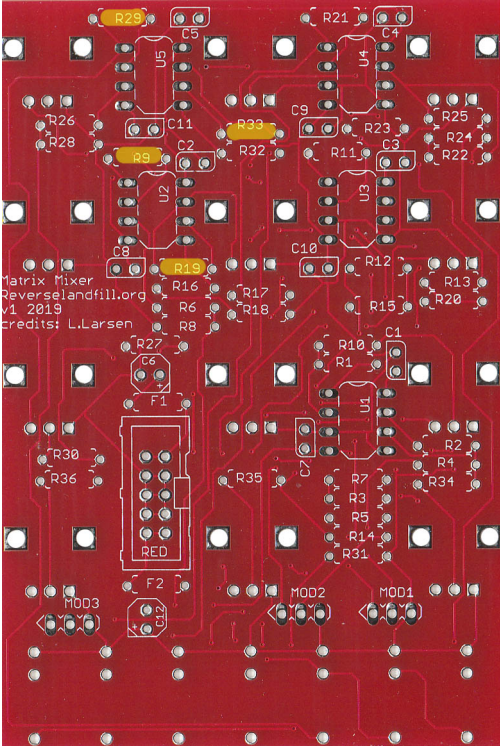7x 499r: r5, r6, r15, r16, r25, r26, r32

4x 100k: r8, r18, r28, r31
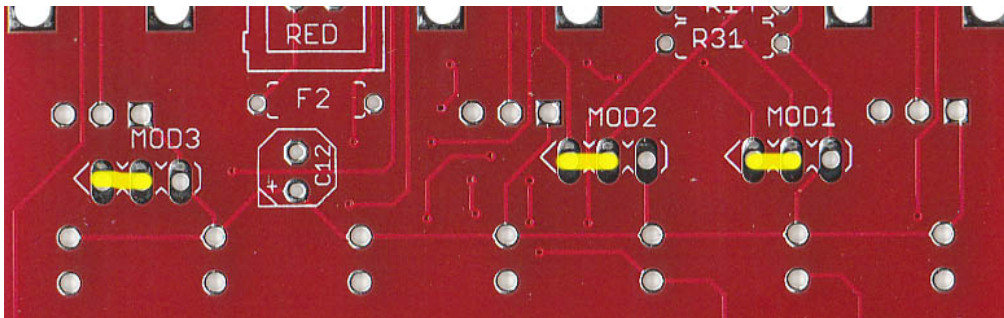

4x 1k: r9, r19, r29, r33

MOD headers:
MOD1, MOD2, MOD3 are header points for the Gain mod.
This MOD can add overall gain control for each section of the Matrix mixer.
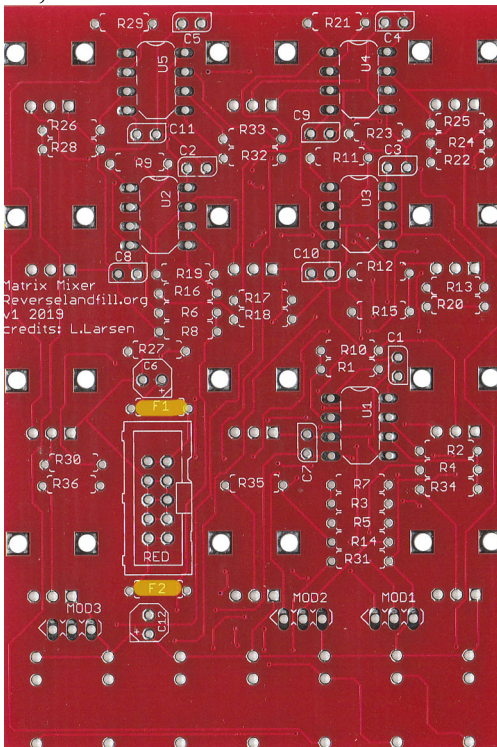Look at the MODS section below for more info.

IMPORTANT!
Link the pointy side (left) and the middle hole of each of the MOD headers with a wire bridge
for basic operation. If you don't do this, the Matrix mixer won't work!

Ferrite beads
F1, F2

IC sockets:
Place the 5x 8pin sockets u1, u2, u3, u4, u5.
The notch on the socket should match the marking on the PCB
First solder 2 pins and see if the sockets are aligned correctly.
If not, re-heat the solderpads while pushing down on the socket.
They will click flat to the pcb. Now solder the remaining pins.
Place the 5x LM6172 IC's. Make sure the notch on the IC matches the socket and the marking on
the pcb. Bend the pins so that the ic fits in the socket and push it firmly into place.

Capacitors:
The 10x 100nF capacitors are mounted 'standing up'. Bend one leg 180 degrees and place them.
c1, c2, c3, c4, c5, c7, c8, c9, c10, c11

The 2x 10uF are polarised capacitors. The longer leg is PLUS. Make sure you orientate them correctly. Place them in c6 and c12.

Power header:
Fit the 10pin shrouded header into place. Take care of the orientation.
First solder one pin and make sure the header is aligned to the PCB. Re-heat if needed.
Then solder the remaining pins.

Pots and jacks:
Now flip over the PCB and mount the 12x b10k vertical potmeters and the 7x thonkiconn jacks.
Don't solder yet!
Place the panel and secure it with one or two nuts. Carefully flip over the PCB and Panel and solder one leg of each pot and jack. Remove the panel and check if the pots and jacks are still aligned. Correct unaligned parts by reheating the solderpad and pushing the pot or jack to the pcb. When all is well, solder the remaining pins and re-attach the panel. Fasten all nuts with the correct tool, so that you don't scratch the panel.

Knobs:
Turn all pots to CCW and mount the knobs. Now you are done!

MOD information:
MOD1, MOD2, MOD3 are header points for the 'overall gain potmeter' mod.
This gives you control over the amount of signal of 3 'colomns' at once.
Solder 3x b10k potmeters here to control the gain for each column.
Mount them on a separate panel.

The 6x 3.3k (r4, r14, r24, r34, r35, r36) resistors set the maximum gain of each channel.
This 300% amplification allows for soft keying and feedback patching with added gain.
If you don't want this, change these resistors to 10k. You could also solder them to a switch for extra functionality. (to be able to switch between 3.3k and 10k)
The 3x amplification has as a side effect that the 100% amplification must be set by the eye.

Troubleshooting:
Check the orientation of all IC's, the polarised capacitors, the power header.
Did you insert the IC's? Check the soldering. reflow pins if needed.

Credits: L.Larsen of LZX
This project has been made possible by the LZX community forum.
Thanks to all contributing members!
https://community.lzxindustries.net/

www.reverselandfill.org - Questions? Mail me at martijn@reverselandfill.org