Matrix Mixer BOM – v2 2020

#	Resistors	Value:	Alternatives:	Details:
21	r1, r2, r3, r4, r7, r10, r11, r12, r13, r14, r17, r20. r21, r22, r23, r24, r27, r30, r40, r41, r42	10k		1,00%
6	r34, r35, r36, r37, r38, r39	3k3		1,00%
7	r5, r6, r15, r16, r25, r26, r32	499r		1,00%
4	r8, r18, r28, r31	100k		1,00%
4	r9, r19, r29, r33	1k		1,00%
2	F1, F2	Ferrite beads	10r	Z=68ohm 100MHz

Diodes

2	1n4001	

Capacitors

#		Value		Details
10	c1, c2, c3, c4, c5, c7, c8, c9, c10, c11	100nF		2.5mm
2	c6, c12	10uF		> 16v, electrolythic

IC

#		Value		Details
5	u1, u2, u3, u4, u5	LM6172		
5	ic sockets	8pin socket		optional

Other / hardware

| #		Value	Alternatives	Details
1	24 pin male header	2x12		2.54 raster size
6	jumpers	1x2		
7	Jacks	Thonkiconn		PJ398SM or PJ301M
12	Pots	B10k vertical		9mm Alpha
12	Knobs	GTP6M-13X16-S	or others	TME
1	eurorack powerheader	10pin shrouded		
1	eurorack powercable	10pin to 16pin		
4	M3 mount screws			M3

MODS

You can make a external panel by connecting the 20pin header with a IDC connector.

The features can be 'switchable gain' settings and potmeters for total gain

Matrix Mixer - Buildguide - v2 pcb 2020 – reverselandfill
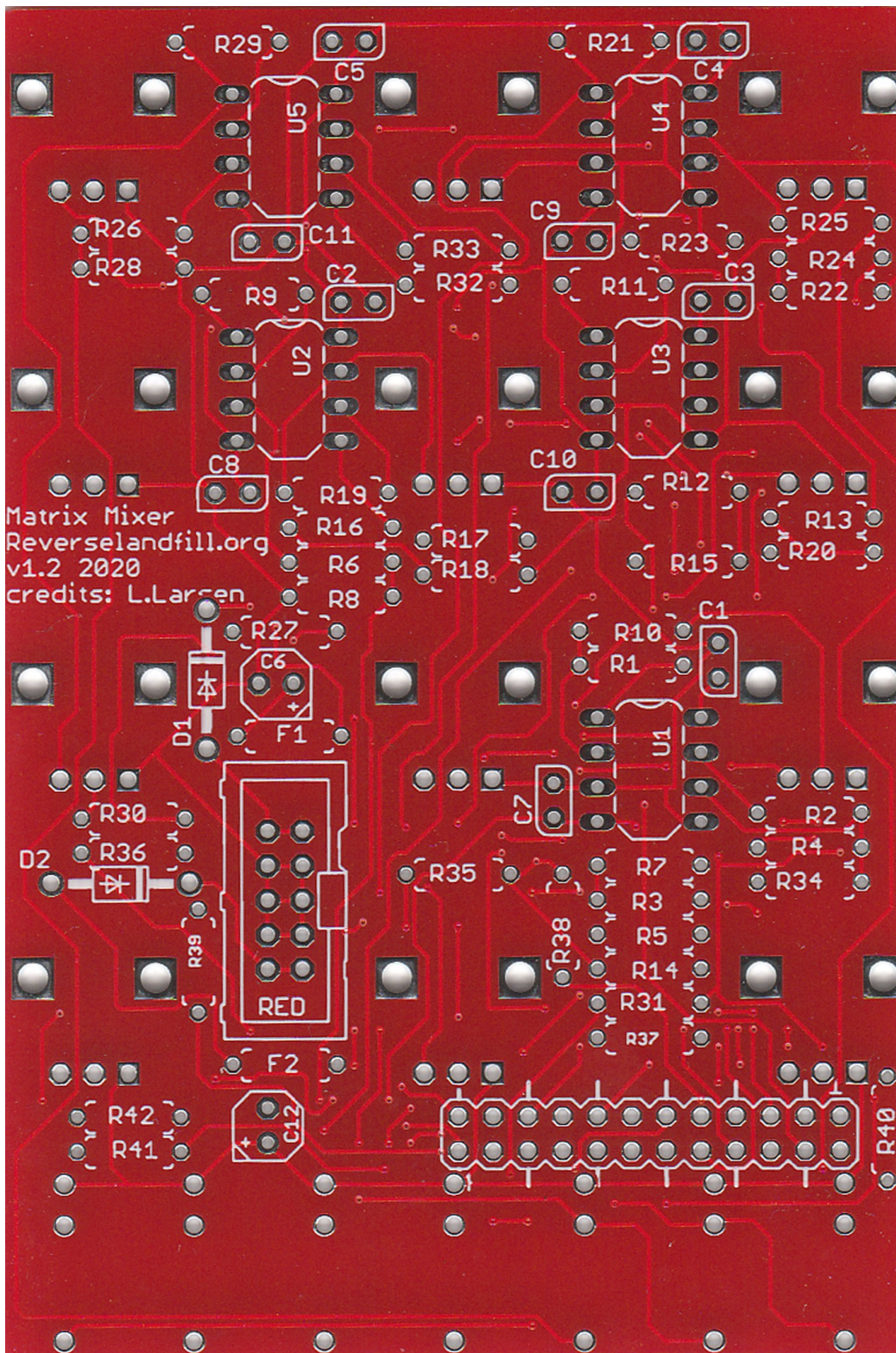
The Matrix mixer is designed for use with a LZX format modular videosynthesizer.
Use it for color routing, mixing and inverting several sources, feedback patching and softkeying.
There are several MOD options, such as gain amplification and external 'overall gain' potmeters.

Resistors
21x 10k:
r1, r2, r3, r4, r7, r10, r11, r12, r13, r14, r17, r20. r21, r22, r23, r24, r27, r30, r40, r41, r42

6x 3k3:
r34, r35, r36, r37, r38, r39

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

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

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

Ferrite beads
F1, F2

IC sockets: (optional)
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.
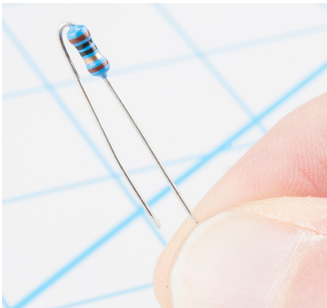
LM6172 IC's
Place the 5x LM6172 IC's. Make sure the notch on the IC matches the socket and the marking on the pcb. Bend the pins so that the ic fits in the socket and push it firmly into place.

Capacitors:
The 10x 100nF capacitors in the kit 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.

Pin header:
The 24pin header (2x 12) is used to set the GAIN amount: 1x or 3x.
Place the 6x jumpers on the header, so that the two headers stay in place.
Now mount this to the pcb and solder one pin on both sides.
Check if the header is mounted flat to the pcb. If not, reheat the soldered pins and push the header to the pcb. It will click flat.
Now solder the rest of the pins.
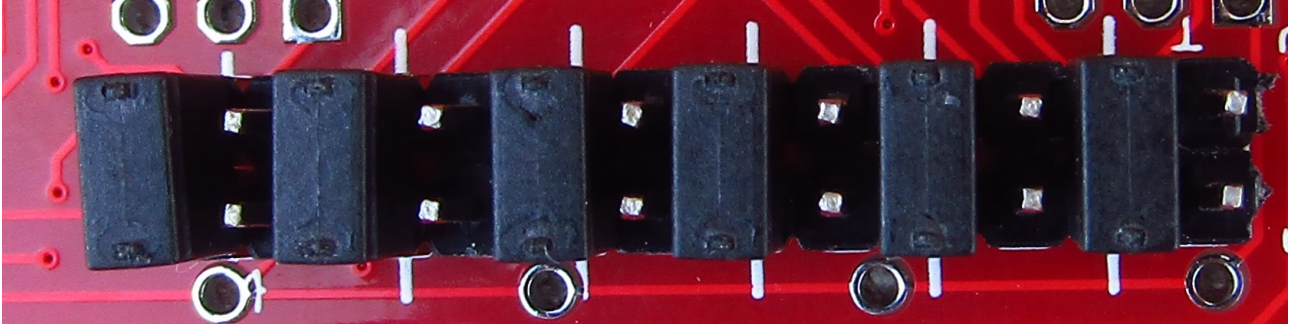
Pots and jacks:
Now flip over the PCB and mount the 12x b10k vertical potmeters and the 7x thonkiconn jacks. Don't solder yet!
Place the panel and secure it with one or two nuts. Carefully flip over the PCB and Panel and solder one leg of each pot and jack. Remove the panel and check if the pots and 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!

Gain Setting:
The white lines at the header indicate the 3x GAIN setting. The in between pins are for 1x GAIN.
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 and mod header.
Are the jumpers installed?
Did you insert the IC's? Check the soldering. reflow pins if needed.

MODS:
You can make a panel for the gain settings and connect a 24pins IDC cable to the header.
By placing a potmeter in the path, you get a global volume control per Colomn

This project is Open Source.
You can use the schematic to make your own boards, but please:
-Mention my name "Reverselandfill" or "M.Verhallen"
-Only do non-commercial runs. Private use only.

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