

CLUSTER

8 inputs, 4 outputs CV controlled Matrix Mixer **BOM & Build Guide vers 2 (24April2015)**

This module is basically 32 VCAs and 4 summing mixers arranged to perform as a matrix mixer. You can of course just set levels with the pots rather than CVs. It will work quite happily processing audio and CV signals.

IMPORTANT MODS FOR VERSION 1 PCBs (ONLY)

If you have a version 1 PCB, you need to install some alternative resistor values to what is printed on the PCB, install 2 short links, cut a trace and add a jumper wire. Details inside.

IMPORTANT MODS FOR GREEN VERSION 2 PCBs (ONLY)

If you have the version 2 PCB, you need to cut a track and add a jumper wire. Details inside.

If you have a white vers.2 PCB and there is a quote from Tesla on there, you do not have to do any mods, it has been fixed but I forgot to update the version number.

BUILDING

Despite the size, it is a very straightforward build and the components placements are usually in about the same place for each VCA sub-circuit.

1. I suggest, if building a version 1 PCB, install the updated resistor values 1st, then carry on with the rest of the passives.
2. Install the ICs and transistors next, followed by the thru-hole components (all 7 of them)
3. If building a version 1 PCB, turn the PCB over and add the 2 links.
4. Attach the jacks to the panel, orientated so their ground tabs line up with the appropriate holes on the PCB
5. Attach the pots to the PCB. Do NOT solder them yet, just clip them into place.
6. Mate the PCB with the panel; ensure all the jack pins fit into their appropriate holes. Check everything is nicely lined up and solder on the pots and jacks.
7. Remove the PCB from the panel and solder on ground leads for the jacks, then put it all back together.
8. The panel spacing is pretty tight, you may not want to install knobs, I didn't.

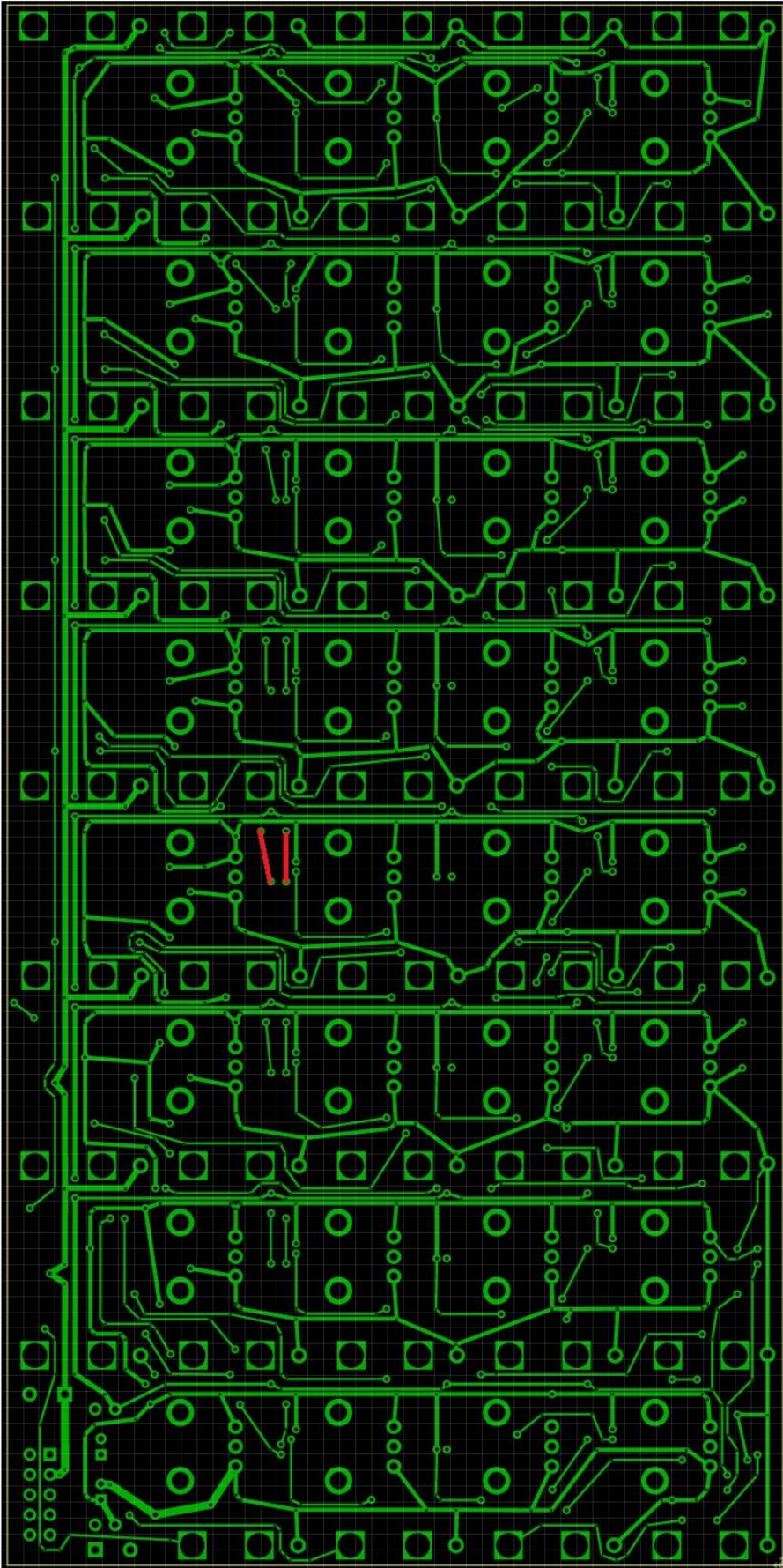
MODS FOR VERSION 1 PCBs – there are 4 mods needed

Mod 1 - replace the circled 100k resistors with 220k resistors. These resistors all sit in pairs at either end of the TL074s. Do not change any other 100k resistors, just the ones circled

[illegible]

Mod 2 - Change **ALL** 39k resistors to 30k.

Mod 3 –add two links on the bottom of the PCB as shown below in red, do this after installing all the components on the top of the PCB –

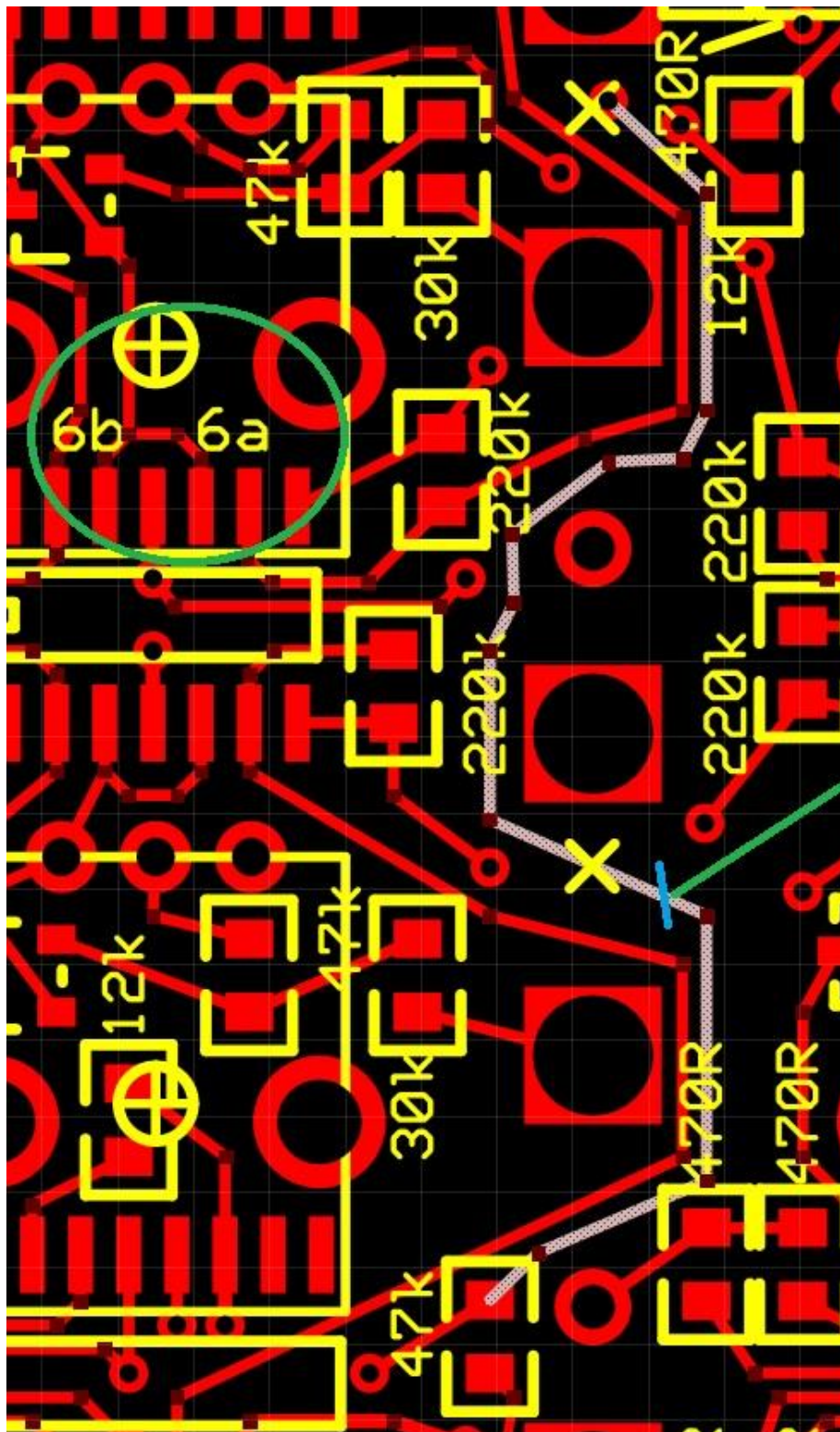


AFTER INSTALLING COMPONENTS ON THE TOP OF THE PCB, TURN IT OVER AND ADD LINKS AS SHOWN IN RED. JUST SOME BARE RESISTOR LEADS WILL DO.

MOD FOR VERSION 1 & 2 PCBs

Basically a track for the 6th input was routed to the wrong end of a resistor, so the track needs to be cut and a jumper wire soldered on to replace it. This error is on both version 1 and version 2 PCBs, not quite sure how it slipped thru testing! Do this after installing components.

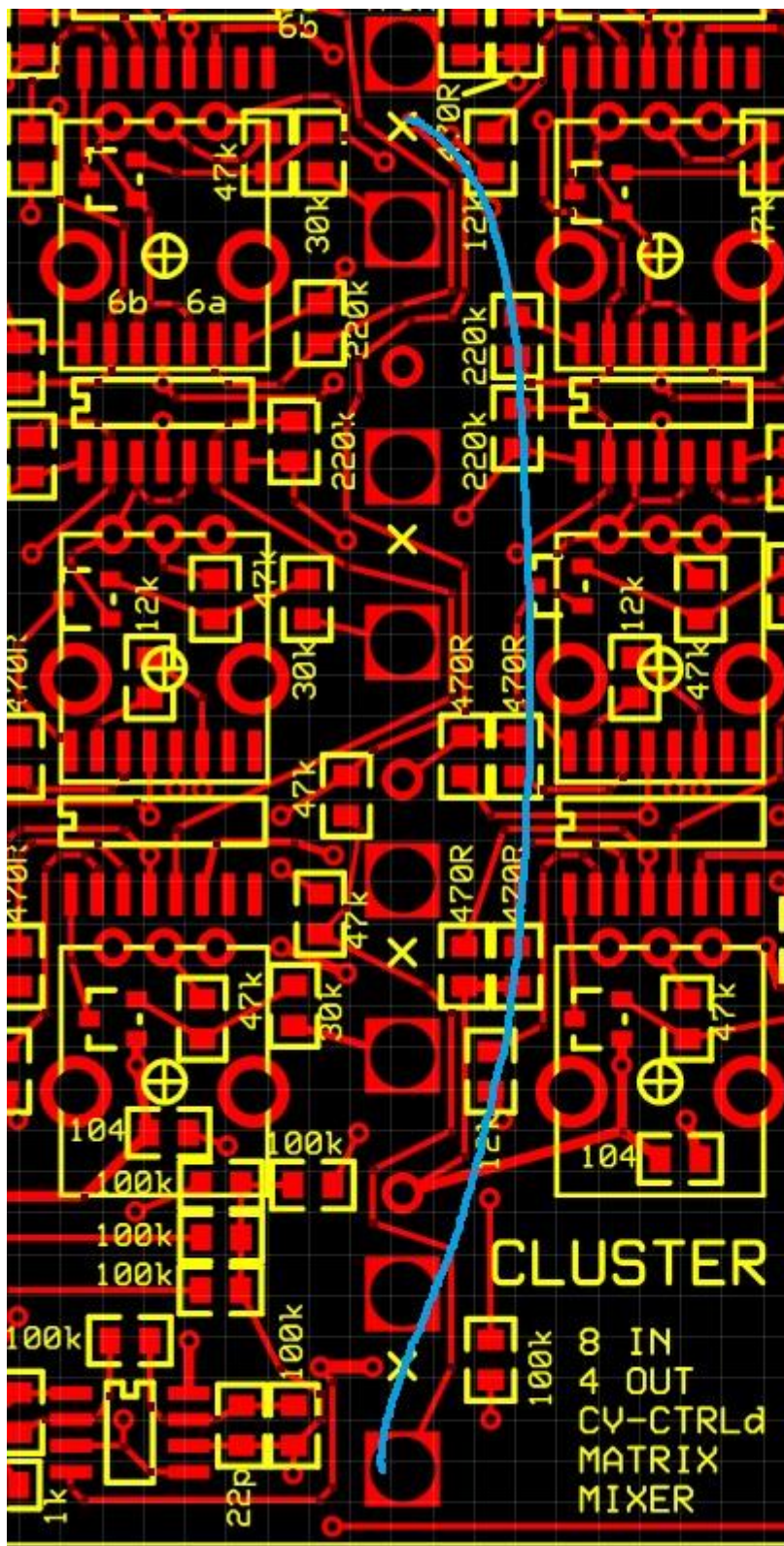
Step 1 – cut the trace



cut this track
shown in white

It is close to the
6b and 6a
stages, running
from a 47k
resistor to a via

Step 2 – add a jumper wire



Solder a wire from the 6 input jack to the via as shown.

This via is the one at the end of the track you just cut.

BOM – GET SPARES, you may drop some or maybe I can't count

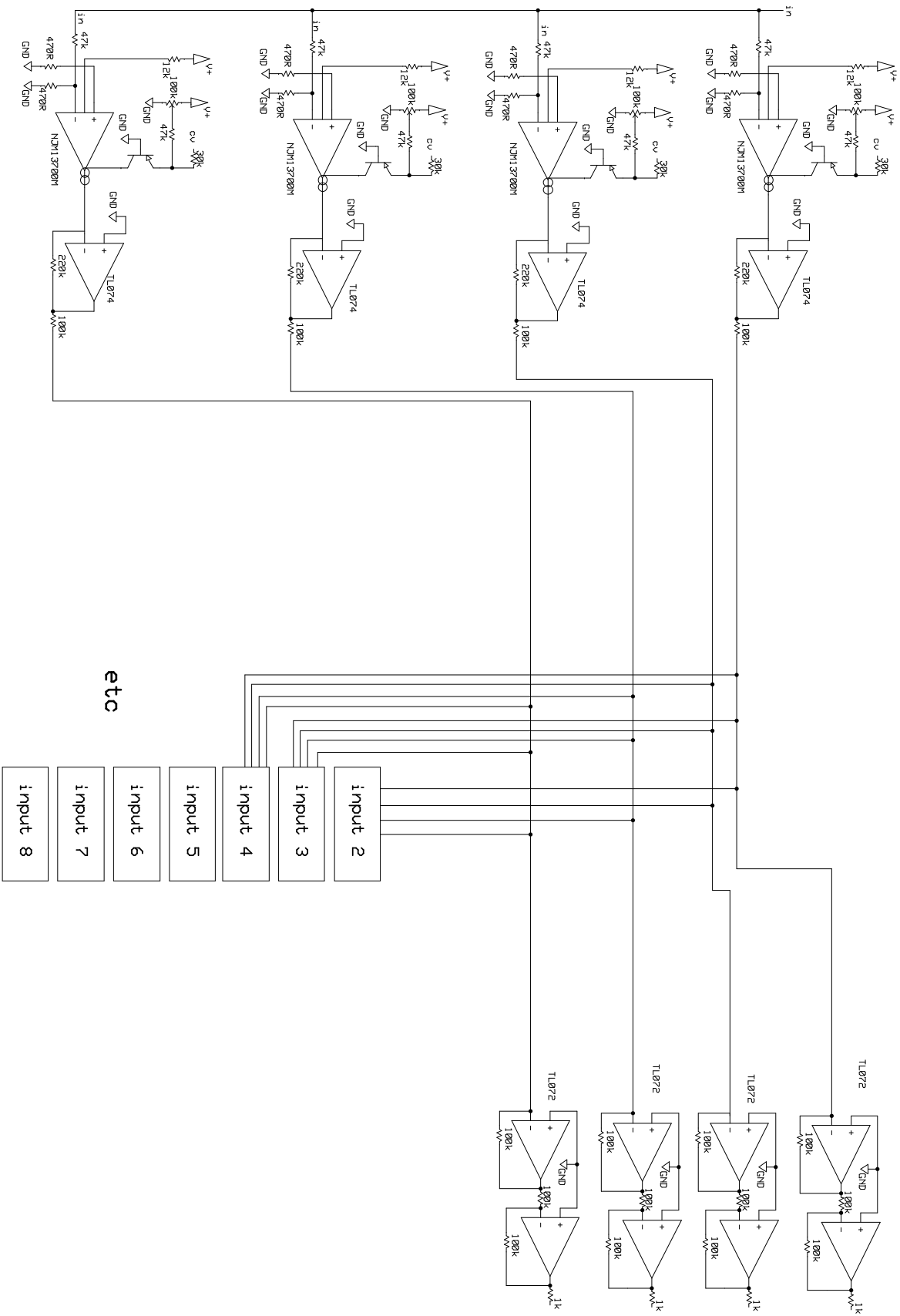
component	qty	notes
100k pot	32	9mm linear upright
jacks	44	Kobiconn types
NJM13700M	16	DMP (size)
TL074	8	soic
TL072	4	soic
BC857	32	SOT-23
10 μ F	2	electro, thru hole, 25V+
1N4004	2	thru-hole
10 Ω	2	thru-hole
10 pin connector	1	Eurorack power connector
All components following are 0805 smd		
470 Ω	64	
1k	4	
12k	32	
30k	32	
47k	64	
100k	44	
220k	32	
22pF	4	
100nF	15	marked '104'



This kind of pot will fit: nuts optional!



and this kind of jack:



input 1 (repeat 7 times)

etc

input 2
input 3
input 4
input 5
input 6
input 7
input 8