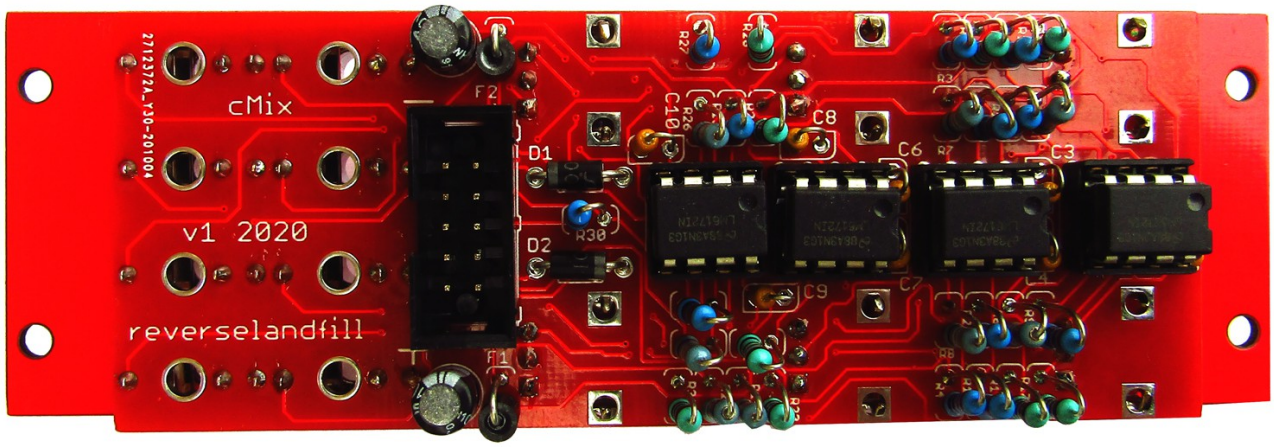
# CMIX Build Document – v1 2020

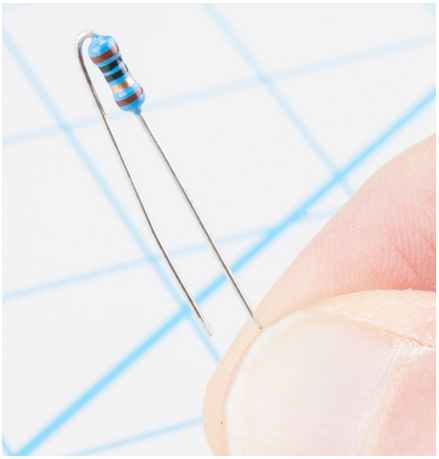


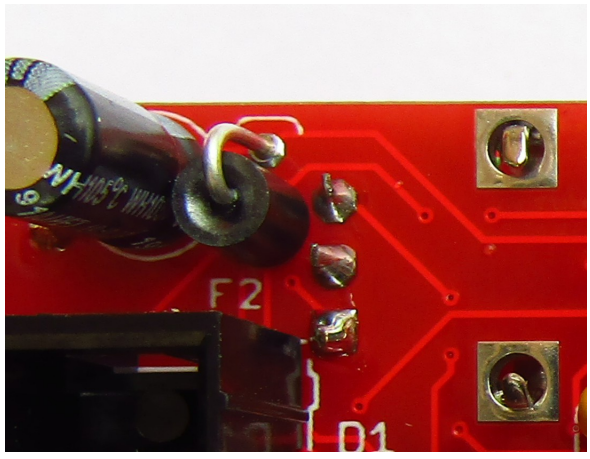

This pcb is quite dense, as most parts are placed 'standing up'.
Because of this, the order of placing parts is important.
Start with the lowest parts!

**Diodes:**
D1 and D2 are 1n4001, these are used for reverse power protection.
The white stripe should match the marking on the PCB.

**IC's:**
There are four LM6172's in this design. IC sockets are optional.
If you use IC sockets, place them and take care that the notch matches the marking on the PCB.
Solder one pin of the socket and then check if the part is aligned flat to the pcb.
If not, push the socket down with your fingers and reheat the solder. You should feel it snap flat to the PCB. Repeat this for all sockets and then solder all pins.
If you don't use sockets, place the LM6172's directly and use the same method as described above.

**Ferrites:**
These parts filter unwanted high frequency noise. Place them “standing up”
Bend one leg like shown in this picture, then place the ferrite beads in the F1 and F2 locations.
Solder one leg first, check if the ferrite beads are all the way in, flat to the pcb, like this:



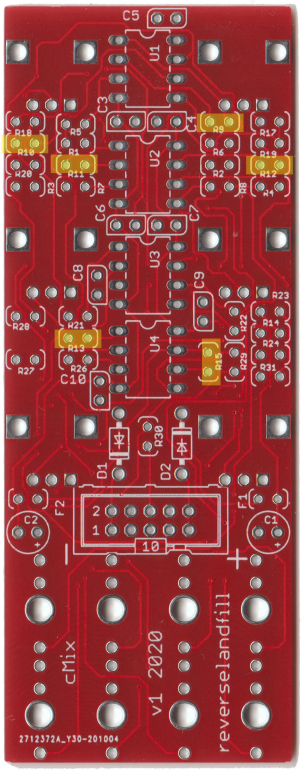



If the ferrite bead sticks out too much, slightly press on them with your finger (or thumb) and reheat the solder. When they are correctly placed, solder the other leg.

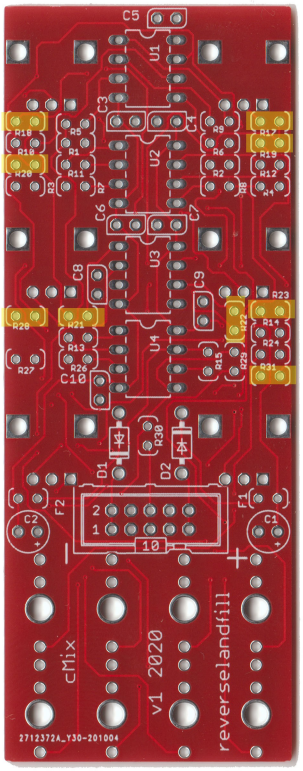
**Ceramic Capacitors:**
There are 8 ceramic 100nF caps. C3, C4, C5, C6, C7, C8, C9, C10
The ones in the kit look like yellow resistors and are also placed standing up.
Bend the legs and solder them, one leg at the time just like with the ferrites.
Correct their alignment when needed, then solder the other legs.

**Resistors:**
The CMIX has a lot of resistors, so I made an easy “where goes what” picture gallery :)
The resistors are also placed 'standing up”. Use the same method as for the ferrites, by soldering one leg first and keep checking if the resistors are placed as good as possible. Correct them if they are sticking out too far or are disaligned with the PCB!
They should look like this:

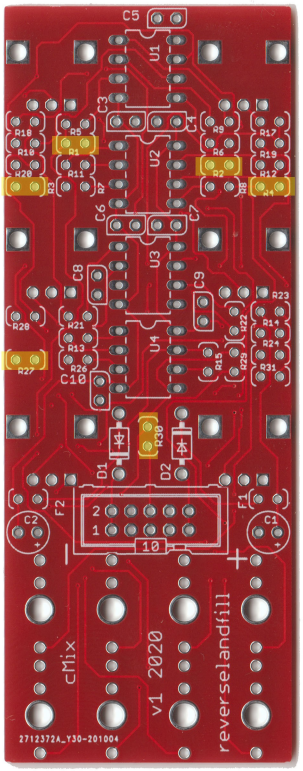

## 1k: (r9, r10, r11, r12, r13, r15) = 6 RESISTORS



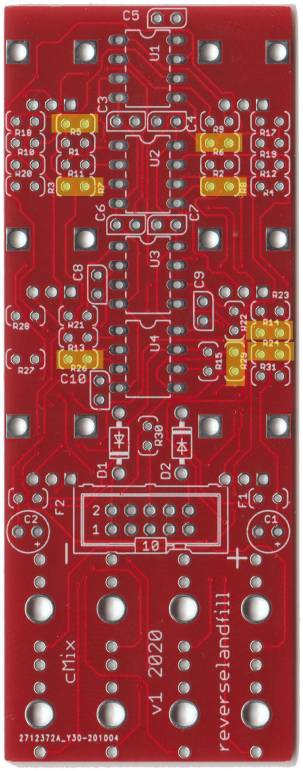
**10k: (r17, r18, r19, r20, r21, r22, r23, r28, r31) = 9 RESISTORS**




**100k: (r1, r2, r3, r4, r27, r30) = 6 RESISTORS**

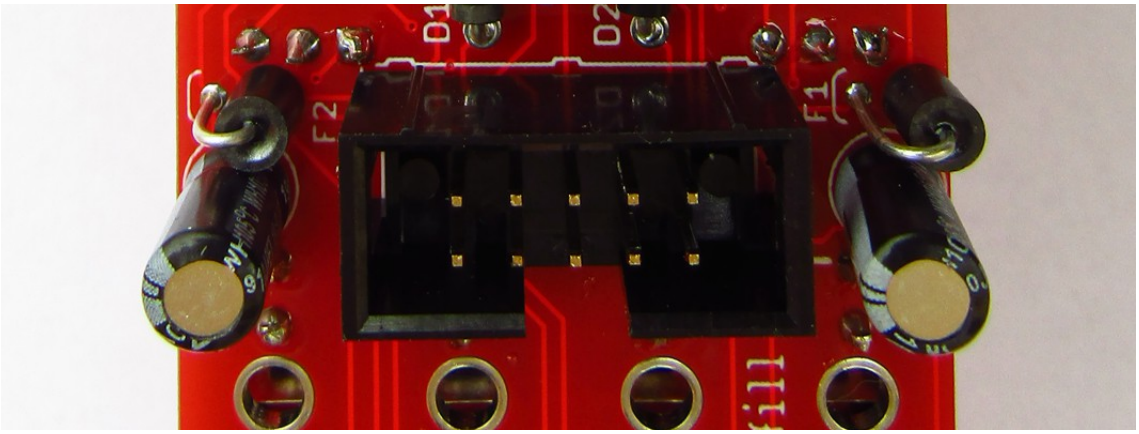


## 499r: (r5, r6, r7, r8, r14, r24, r26, r29) = 8 RESISTORS




**Power header:**
Place the 10 pin IDC header. Make sure that the header matches the markings on the PCB.
The open side should should be facing down, over the “10” marking, as you can see in the pictures above and below.

**Electrolytic Capacitors:**
Place the two 10uF capacitors at C1 and C2. The longer leg (plus) should go in the hole marked with the PLUS sign.
They should be placed like this:




**Cleaning:**
Now would be a good time to clean the PCB. Use isopropyl alcohol and a Q-tip or a toothbrush.
When all flux splatters are gone, let the PCB dry.

**Potmeters and Jacks:**
Flip over the PCB and place the six b10k potmeters.
Push on the sides to make them go in more easy. Also place all eight jack sockets.
Place the panel over the pots and jacks and fasten one of the potmeter nuts to hold it in place.
Check if the panel is correctly aligned to the PCB.
Now solder the jacks and potmeter pins.
Be careful when soldering the potmeter pins, as there is little space around them.
Don't melt the sides of the surrounding parts!

**IC's:**
If you used sockets: Bend the legs of the LM6172's so that they are in a 90 degree angle.
Fit them in the IC sockets and push them firmly in place.

**Panel:**
Fasten all the nuts on the potmeters and jack sockets. Use a Hex key / tool to tighten them.

**Knobs:**
Turn all potmeters fully CCW and place the knobs. Make sure all pointers face the same direction!
Then push them to the panel while holding the backside of the panel with your fingers.

## And you are done!

**Testing:**
Connect the power cable and mount the module in your video rack.
Connect a video source (for example a VCO) to channel 1. Connect one of the outputs to your RGB Encoder and turn the pot CW. You should see your input source fade in.
Connect sources to all inputs and see what happens when you mix them.
The inverted channels subtract and the non-inverted channels add the sources together.

By patching the second output to a processing module and then back into one channel of the CMIX, you can create complex feedback effects. Experiment with these routings to get the most out of the mixer!

**Troubleshooting:**
If the module does not work, check if the orientation of the IC's, electrolythic capacitors, power header and diodes.  Check your soldering. It should be perfect, like in this picture: