BLUR Buildguide v1 10-08-2022
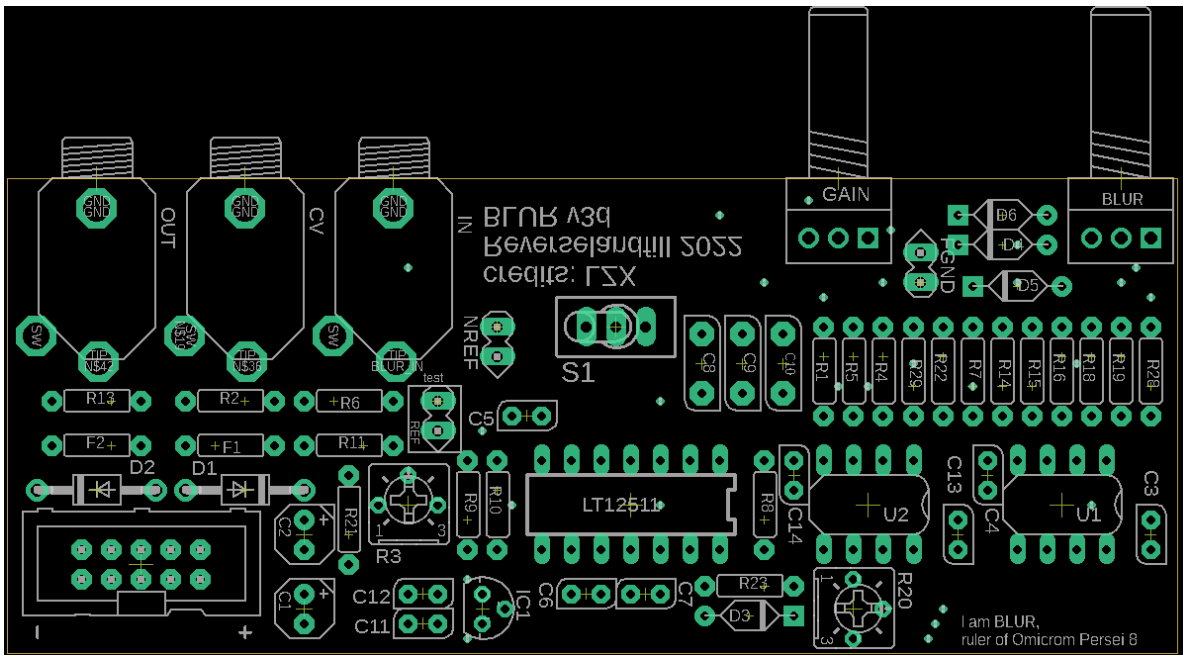

Use this guide together with the BLUR BOM , make sure you have the latest version:
https://www.reverselandfill.org/diy/blur-analog-video-effect/

Resistors
Solder all resistors!

Diodes
These parts have an orientation. the black line on the diode should match the white line on the PCB.
Place the four blue 1N5711 diodes at D3, D4, D5 and D6 first, check the orientation and solder.
Now place the black 1N4001 diodes at D1 and D2 and solder them.

Ferrites
Place the 68r ferrite beads at F1 and F2 and solder them.

IC's
Place all IC's without using sockets.
U1 and U2 are LM6172's. Doublecheck the orientation!
IC1 is the 78L05 voltage regulator.
Solder one pin and check if the IC is flat to the surface of the PCB, reheat if needed.
Then solder all pins.

Ceramic & Film Capacitors (see MODS below)
Place the eight 100nF capacitors first, then continue with the 330nF
and the three "filter value" capacitors: C10: 470pF, C9: 1nF and C8: 10nF

Trimpots (see MODS below)
You can use both side or top adjusted trimpots.
R3 is 100k (104), r20 is 10k (103)
Mount the trimpots.
(the ones in the kit need to be pushed in firmly, until they click a bit deeper into place)
Solder the pins.

MOD header (see MODS below)

Place the 2pin header in the FGND location (between the two potmeters, under the diodes)
Solder one pin and check the alignment (reheat if necessary), then solder the second pin.

Power header

Place the 10pin power header and flip the PCB around. Solder one pin and check if the header is flat to the PCB surface. Reheat the soldered pin if needed, then solder the other pins.

Potmeters

Kit: remove the anti-rotation bit.
Place the two potmeters on the PCB and solder one pin on each of them.
The mountholes are a bit wide. Make sure the Potmeters are in a 90 degree angle and aligned flat to the surface of the PCB. Correct this if needed by reheating the soldered pin.
When you are satisfied solder the rest of the pins.
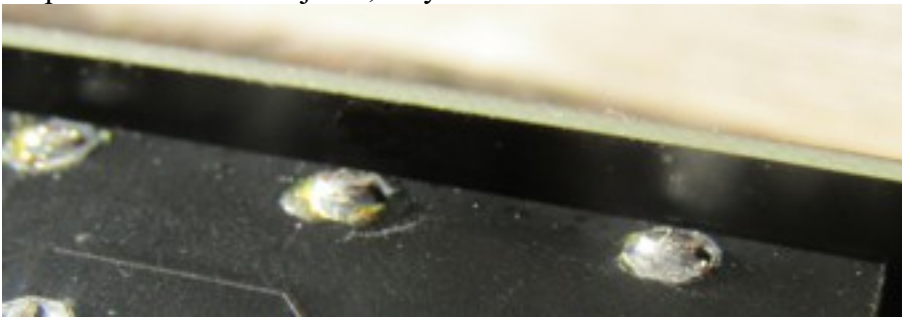
Jacks

Place the jack sockets on the PCB. DO NOT SOLDER YET!
To align the jacks correctly, we now mount the panel first.
Attach the nuts to both the potmeters and the three jacks and securely fasten them.
Check if everything is aligned to the panel, then solder the jacks.
Snip off the tabs of the jacks, they stick out too far.


Switch

For the switch I've used a 3 pin pad on the pcb, so that you can use a cheap SPDT Sub-Miniature switch. Nevermind the marking on the pad, the switch is mounted to the panel!
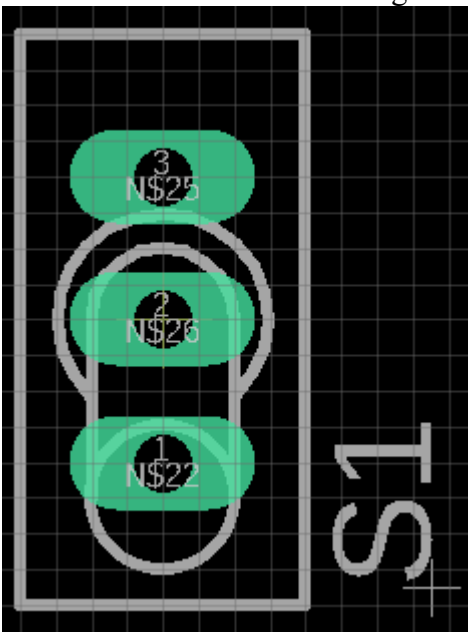
It needs to be wired though. Use snipped off resistor leads!

Take the switch and remove one nut and the rings. Leave on the second nut for spacing.
Mount the switch through the panel and fasten the nut securely, while making sure that the switch is not at an angle / aligned correctly.

Poke the leads through the S1 pads underneath the switch pins.
Solder the leads to the switch pins, then to the pads on the other side of the PCB.
Snip off the leads and check if the connections are still good.
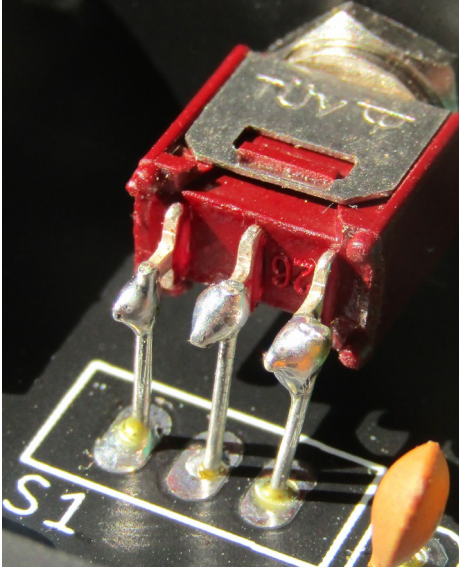
Electrolythic Capacitors
Place the two 10uF Electrolythic Capacitors. The Longer lead is the PLUS side, marked on the PCB with a small + sign and a triangle.
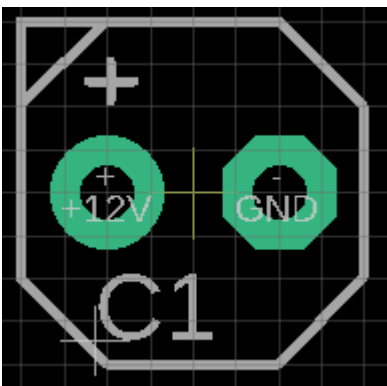
Checking the PCB for faults:
Check the orientation of the IC's , diodes, Electrolythic capacitors.
Look at your solder work for shorts and missed pads.

Now power the module. Globally test the functions by patching a camera input or a keyed shape to the INPUT and the OUTPUT directly to a RGB Encoder.
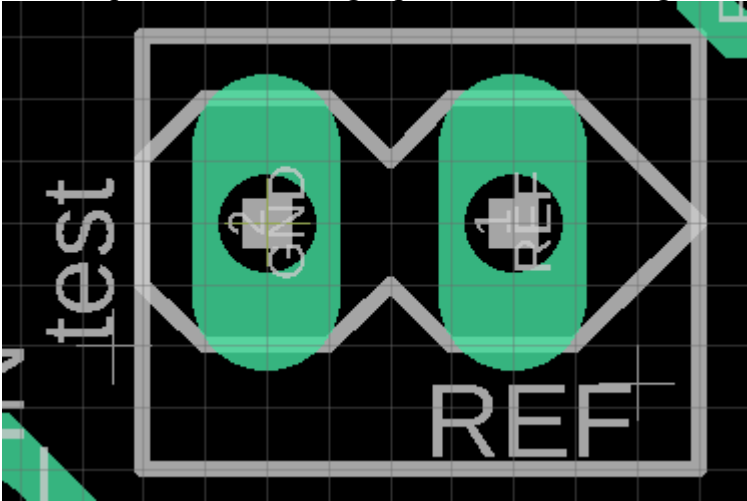The LT1251 can get a bit warm, this is normal.

Now calibrate the module with these steps:

Calibrating the VCA Reference voltage, Timmer R3, 100k (104):

The basic trimmer settings scales the REF voltage to 1 volt. This affects the DRY/WET look.

Use a Multimeter te measure this voltage setting.
The left pad is GND, the right pad is the REF voltage

Adjust the Trimpot until you get as close as possible to 1 volt .
Try to get to a 0,05 range, so 0,95v or 1,05v

Calibrating input gain , Trimmer R20, 10k (103):

The basic trimmer setting matches the input signal to the processed image.

set all knobs CCW and the switch to the middle position
patch a camera input signal to the INPUT
patch a keyed shape (for example a diamond shape) to the CV input
patch the OUTPUT to a RGB encoder

If the trimmer is not set to the correct position, you should see the diamond shape in the OUTPUT
signal.
Turn to trimpot left or right to correct the difference.

MODS:

Filter settings MOD:
You can select different filter ranges by changing the capacitor values at C8, C9 and C10.
Use these (or other) ranges:
C10: 220pF to 470pF
C9: 820pF to 2.2nF
C8: 8.2nF to 12nF

DRY Gain MOD:
Adjust this trimpot to set the input signal gain.
Connect a 10k potmeter to R20 and make a panel for it.
Now you can adjust the DRY signal gain manually.

FGND MOD:
Place a jumper (or wire a switch to your own expansion panel).
This has the effect that the BLUR effect filters to BLACK instead of WHITE.
You can use this as a sort of VCA (a bit like a lowpass gate) and can be used to get certain effects, such as subtle dark blurred shapes.

REF MOD:
Adjust the REF (R3) trimmer to 5v to directly use Eurorack modulation sources.

NREF MOD:
This normalizes the REF voltage to the CV input jack switch.
You can maybe use this to MUTE the BLUR effect when no CV is used.
Solder wires and a switch to these pads and add it to you custom expansion panel.

IC substitutes:
You can use a LT1256 instead of the LT1251. This does not change the CROSSFADE function.

Reverselandfill.org
Design by M.Verhallen
Credits: LZX

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.