3x CV Comparators PCB v5 Build Guide
For the Gijs Gieskes 3TrinsRGB-1c
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The CV comparator pcb has 6 inputs and 6 outputs.
There are 3 Comparator inputs and 3 CV inputs.
The CV inputs accept 10v envelope signals and also -5v / +5v LFO and OSC input.
The input signal is rectified and scaled to 3v.
The CV input is added to the bias of the comparator; use the potmeters to scale the effect.
The Comparator has 6 outputs, 2 for each comparator; upper and lower result.
Inputs get compared to the HIGH signal and can be trimmed using the potmeters.
The power comes from the 3TrinsRGB-1c (HIGH and GND)

Resistors:
First solder all 22 resistors. (See the BOM)
You have to bridge R14, R15 and R16.
Solder three pieces of snipped resistor lead to connect the pads.

Diodes:
Then solder the 3 diodes. Check the orientation! Black stripe goes on the white stripe of the pcb

Capacitors:
The C1 100nf capacitor helps stabilising the power to the 74HC14 IC.
The 47uF C2 is also for the power, I use a small 16v electrolytic.
The 47uF long leg is the PLUS, see markings on the pcb.

IC socket:
Take care of the orientation!
The socket has a notch that has to correspond with the PCB marking.
Solder the IC socket. First two opposite pins. Then check if the socket is flat to the pcb.
If not, heat the soldered pins and push the socket to the pcb. It should click flat to the PCB.

Transistors:
Solder the 3 transistors. (T1, T2 and T3). Take care of the orientation markings.
These components are heat sensitive!
First solder one leg of each, let them cool a bit and continue with the rest.

LINK:
These two link connections normalise the CV inputs , so that if you have a CV input in the upper jack, the other CV inputs are connected. Handy if you want to use the same modulation for several patches. Solder a piece of snipped resistor lead to connect the pads.

IC:
Bend the legs of the IC on a flat surface, so that the legs are in a 90 degree angle.
This way the IC will fit into the socket. Beware of the orientation! (The notch)
Push the IC carefully but firmly into its socket.

Potmeters:
The 3 vertical pots go --> **on the 'other' side of the pcb!**

Connectors:

The CV inputs are Thonkiconn jacks --> **on the 'other' side of the pcb!**
in1 (cv1), in2 (cv2) and in3 (cv3)

Pinheaders:

The headers go --> **on the 'other' side of the pcb!**
Take the 1x11 pinheader. The headers are extra long, so that they fit through a 3mm panel.
Mount your panel onto the pots / jacks. Stick the 1x11 header in the holes.
Adjust the height of the header and solder 2 opposite pins of the 1x11 pin header.
Check if the header is aligned to the panel. Straighten the pinheader by reheating the soldered pin.
Then solder the rest.

Eurorack:
fit the panel onto the pcb (to the pots and jacks).
Use the 3 potmeter nuts to fasten the pcb to the panel.
Because the wooden panel is quite thick, here are some tips:
You might have to sandpaper the back of the panel to make the nuts fit.
It also helps to screw the nuts on with the beveled side down.
Another tip is to use a countersink drill on the front of the panel and deepen the potmeterholes a bit.
This way the beveled side of the nuts can get better grip. You don't need to fasten nuts to the jacks.
Fit the 3 knobs onto the potmeters.
Use the four 3mm screws to mount the panel onto your modular rack .

Power:
The compator PCB has to be powered by the 3trinsrgb-1c.
Patch the HIGH to the HIGH, GND to GND

Orientation:
The pcb's are designed to be 'standing up' , so POT1 is on the top, POT3 is on the bottom.
If you use the PCb in another direction, take care of the output order.

Patch examples:
Connect slow envelopes or LFO's to the CV inputs and try these patches:

video 2 shape:
vid to in1, output to RCV or GCV or BCV

color bar displacement:
F01a to in1, output1a to Rsin, output1b to GCV (lfo range switch to the right)

wobbly mirror:
Rout to in1, output1a to GCV.
F01A to RCV Bout to in2, output2a to GCV.
F01B to BCV Oscillator

TYPE switches to the right.
 LFO RANGE switch to the right, LFO TYPE switch in middle position.
Set all pitch knobs to low rate vertical, lfo to slow triangle wave.
For extra fun, patch out1b to G

If you have questions:
ask 'm in the thread on Muffwiggler or PM me: fetideye
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