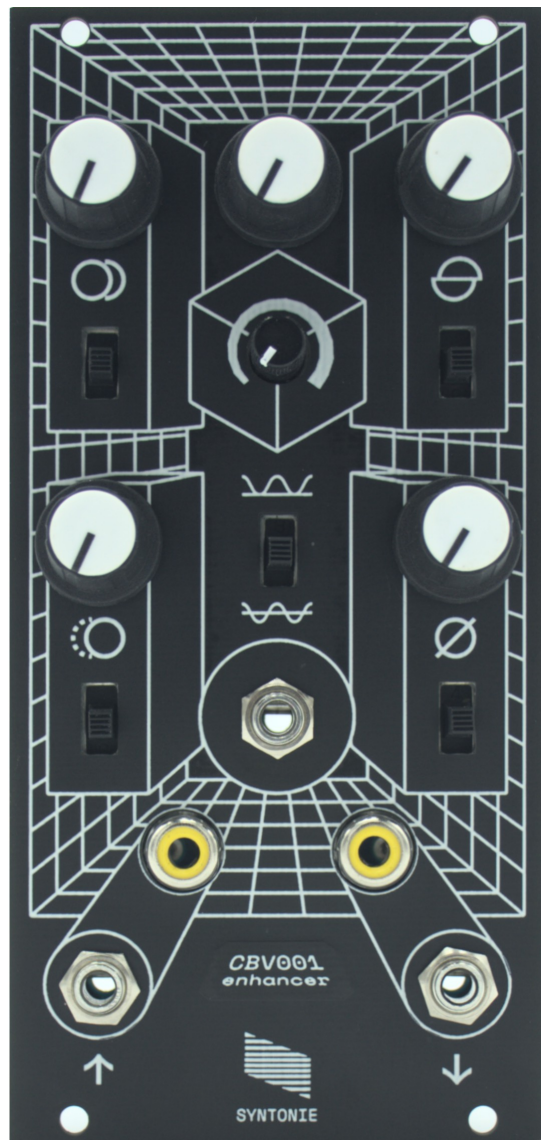


CBV001
Circuit bent enhancer
User/Build Guide



CBV001 is an eurorack adaptation of AVE MOD, circuit bent enhancer. The audio reactive part has been replaced by a CV input, allowing control over brightness/enhance from DC signal up to video rate, while keeping similar glitch effects.

- 12HP
- 30mA +12V
- 0mA -12V
- 0mA +5V
- 25mm deep

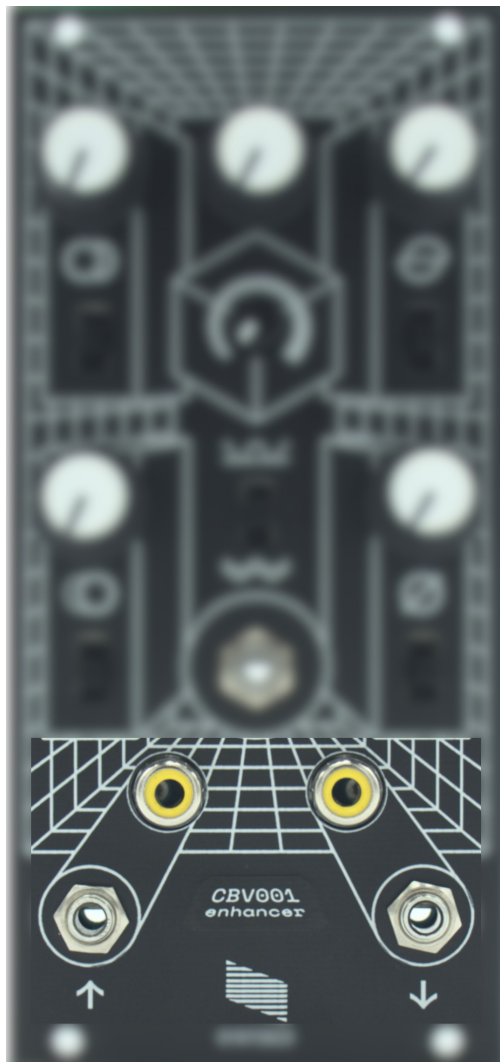
Special thanks to :

- Phil Baljeu for tracing the circuit from his Archer unit and posting it on electro-music forum back in 2012, that I found a few years later while looking for a simple video circuit to modify, and more recently for suggesting using a JFET as VCR.

- Lorenzo Ferronato for the front panel design

- And everyone who has been supporting Syntonie since the AVE MOD

Inputs/Outputs



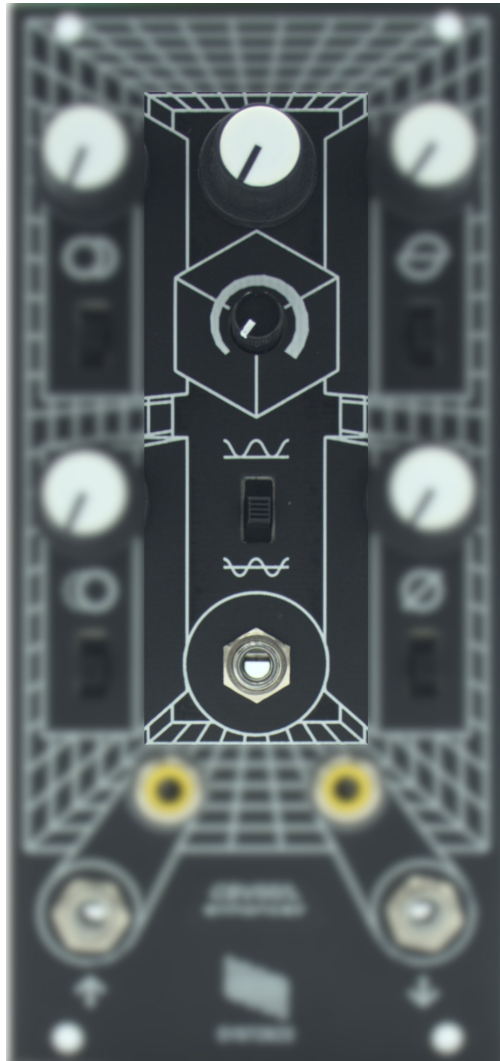
Inputs are located on the left, outputs are on the right.

Composite video can be processed through the RCA inputs. Some effects can alter synchronisation, resulting in unstable video, and may require time base correction depending on the use case.

Video rate signals can also be processed through the jacks, however, it's important to note that the signal path is AC coupled (as the single supply + transistor design adds some offset to the output), so the module will not react to DC offsets (or rather they will be kind of « pulled down »). Also resulting from this, it might take a few seconds at startup for the AC coupling to take fully effect, the module seeming unresponsive for the time it sets up.

Processing modular signals instead of composite video will allow to keep a steady sync even in the most extreme settings, as sync will be generated (by LZX Cadet I for exemple) and encoded (LZX Cadet II), so anything happening after the sync gen and before the RGB encoder will display properly regardless of the monitor/capture card.

Enhance



The enhance section is the core of the circuit, which means that all glitch effects will depend on it.

The top potentiometer is used to set the enhance level.

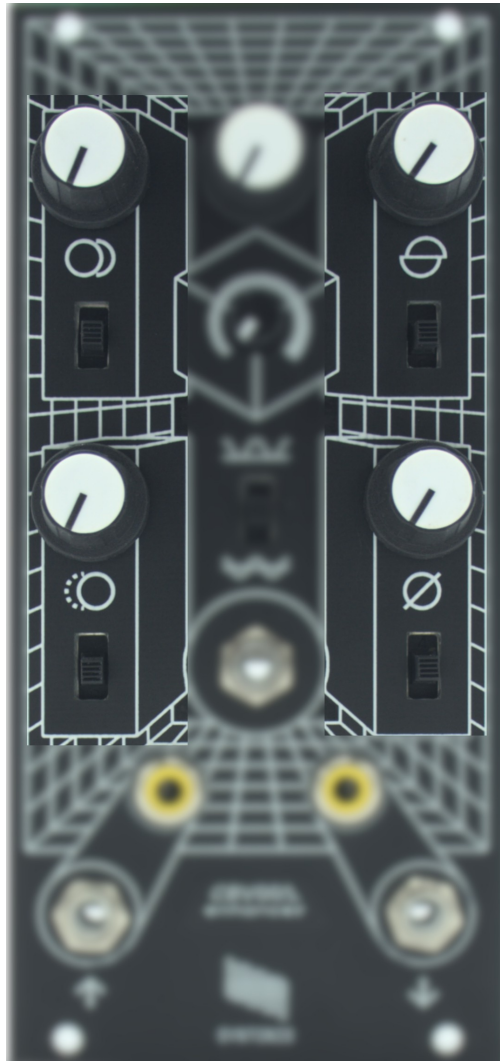
The tall trimmer just under is the CV attenuator.

The jack at the bottom is the CV input which controls the enhance level.

The switch allows :

- DC coupling when up, any DC offset will be added to the one generated by the enhance level
- AC coupling when down, any DC offset will be removed (signal centered around 0)
- Disabling CV when centered (since the CV input section is rather simple, the CV attenuator might not cut the CV completely, the switch will).

Glitch effects

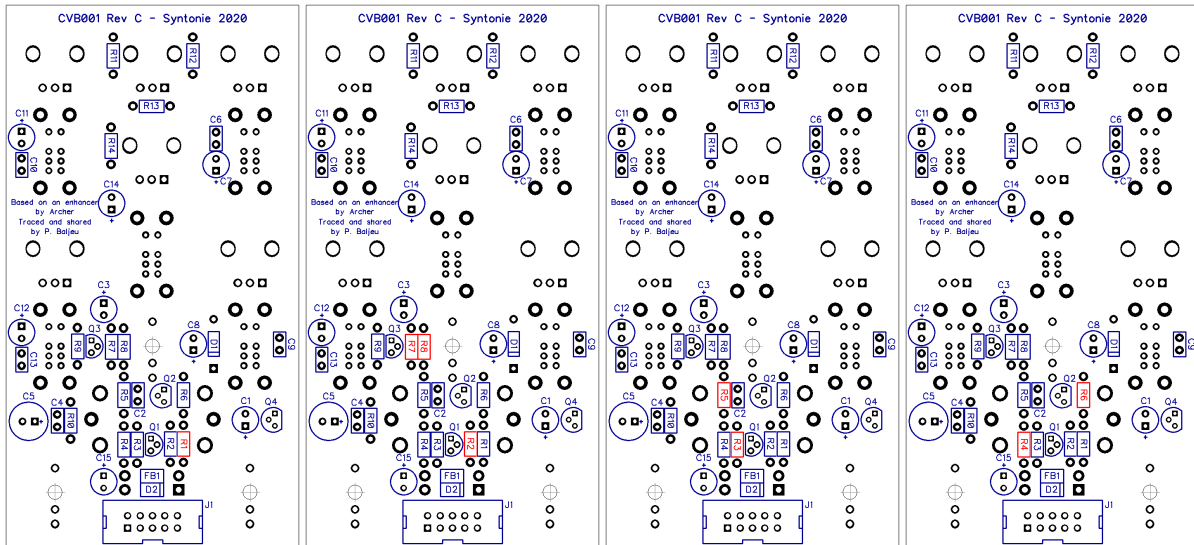


Each 4 effects works in a similar way :

- When the switch is centered, the effect is off, the potentiometer has no effect.
- When the switch is up, the effect is on
- When the switch is down, the effect is on, but in a different variation than when it's up.

Best results are made by a combination of each of the 4 effects and the enhance level.

Resistors

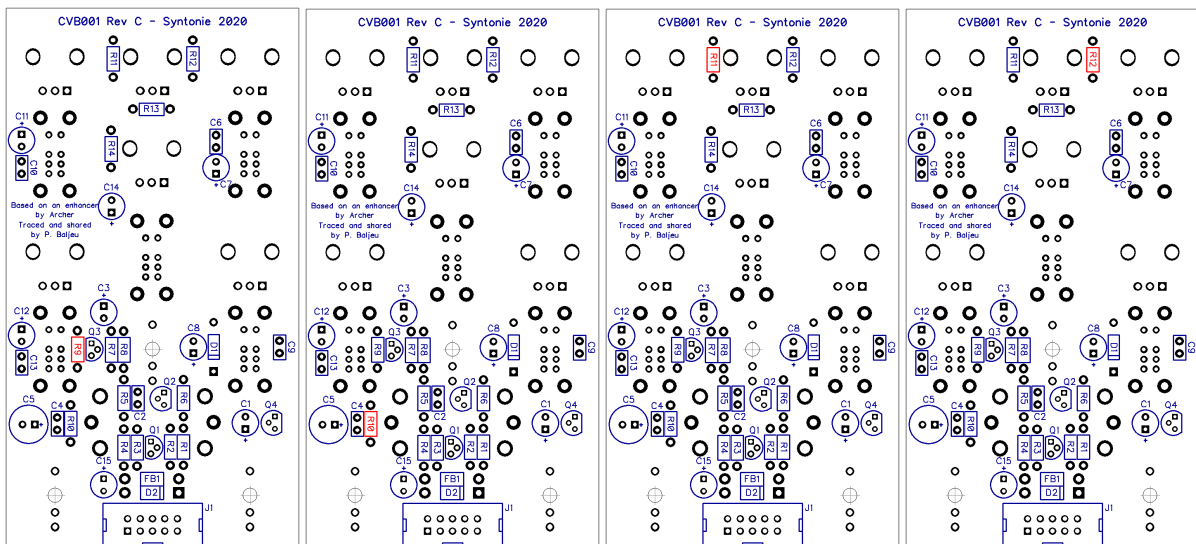


18k

5.6k

330R

680R

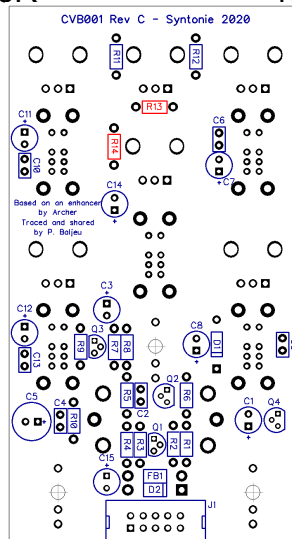


220R

7.5R

1.5k

7.5k

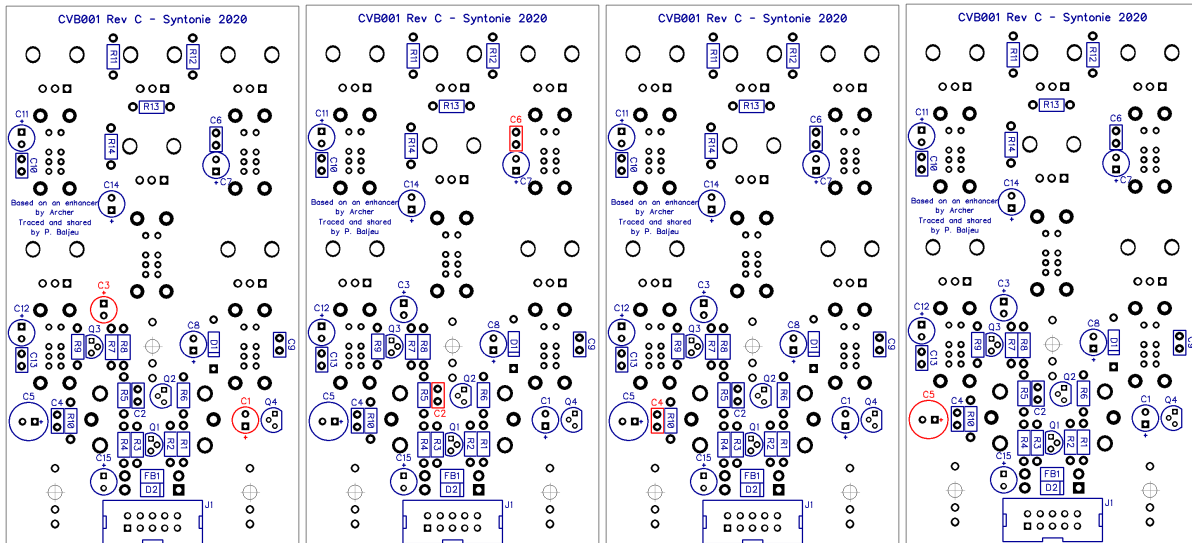


1k

18k : R1
5.6k : R2 ,R7, R8
330R : R3, R5
680R : R4, R6
220R : R9
7.5R : R10
1.5k : R11
7.5k : R12
1k : R13, R14

Build

Capacitors/Ferrites

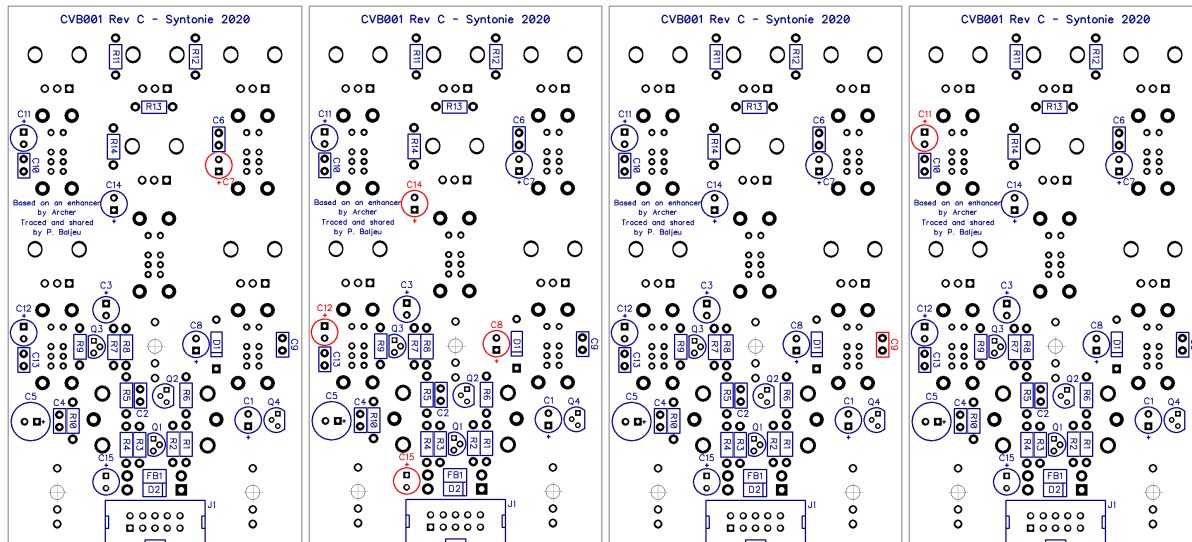


47uF

1nF

47nF

220uF



100uF

10uF

10nF

1uF

47uF : C1, C3

1nF: C2, C6

47nF : C4

220uF : C5

100uF : C7

10uF : C8, C12, C14, C15

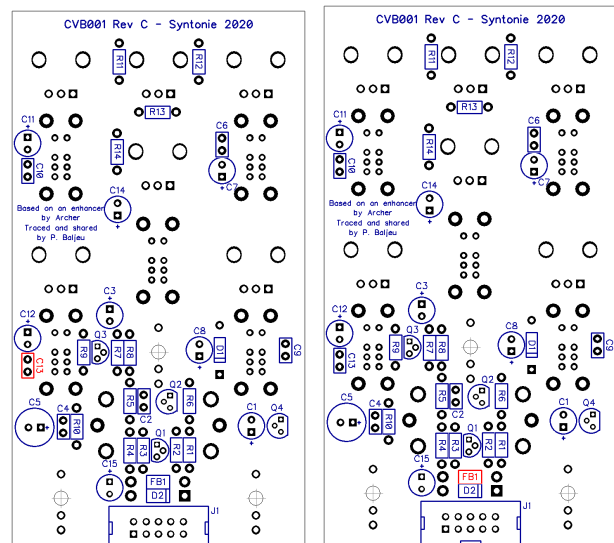
10nF : C9

100nF : C10

1uF : C11

330nF : C13

Ferrite : FB1



330nF

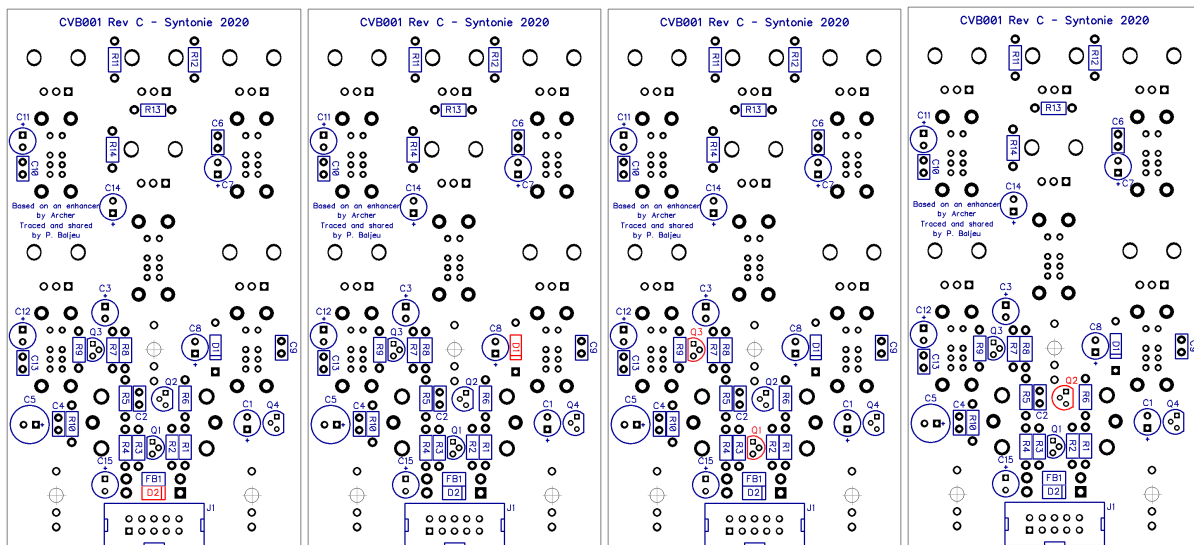
Ferrite

Build

Electrolytic capacitors are polarized, make sur to make the longer leg/positive side of the capacitor match the square pad/+ sign on the board. The tallest capacitors can be mounted parallel to the circuit board (see picture)

Ceramic capacitors and ferrites are not polarized, can fit either way.

Semiconductors



1N4001

1N4148

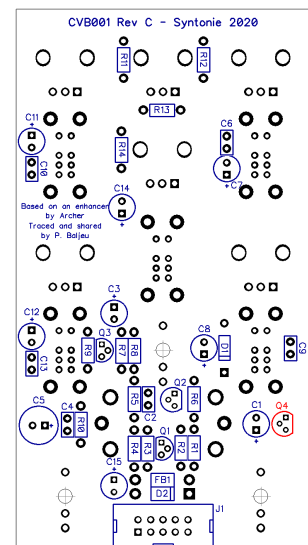
2N3904

2N3906

- 1N4001 : D2
- 1N4148 : D1
- 2N3904 : Q1, Q3
- 2N3906 : Q2
- 2N7000 : Q4

Diodes are polarized, make sure that the ring on the diode matches with the line on the circuit board.

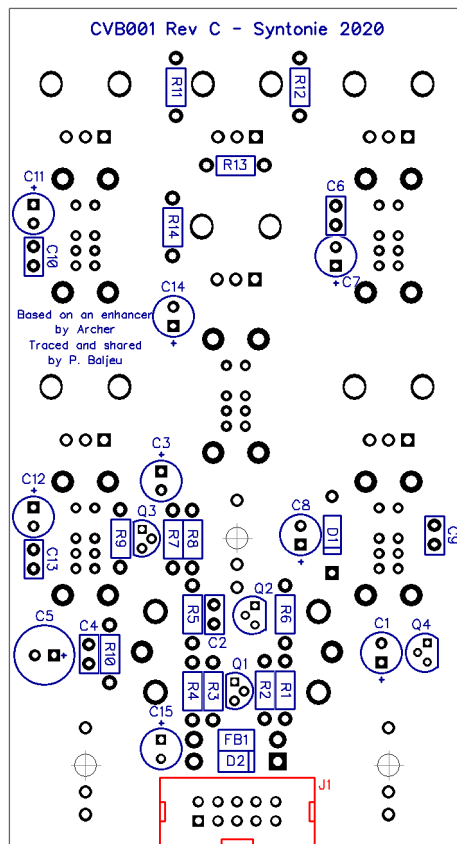
Transistors are polarized, make sure that the flat side of the component matches the straight line on the circuit board.



2N7000

Build

Connectors



10pin IDC

J1 : 10pin power header

Mind the orientation of J9, the notch on the connector should match with the footprint on the circuit board.

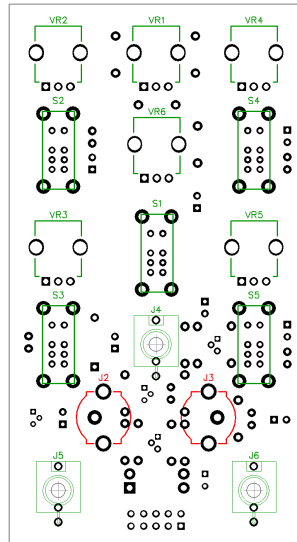
Build



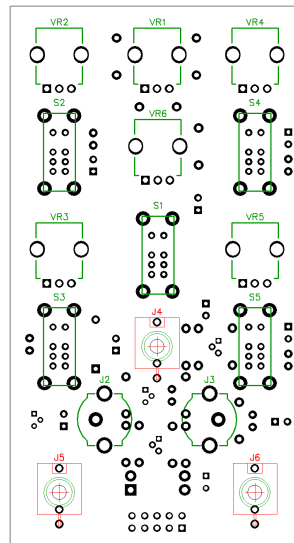
This is how the board should look once all the components on the back side are populated (okay, front side is also populated on this picture). Let's move on to the front/controls

Build

Connectors



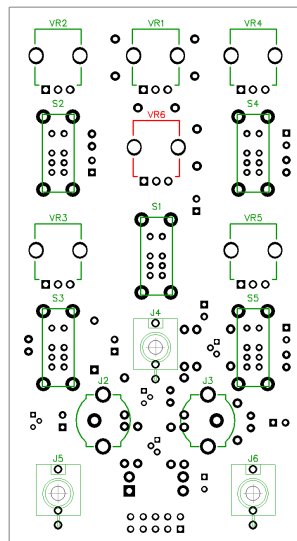
RCA



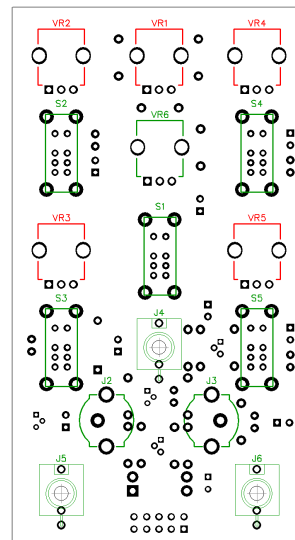
PJ398SM

J2, J3 : RCA
J5, J6 : PJ398SM

Potentiometers



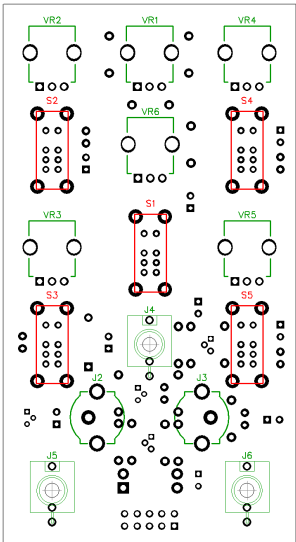
100k



1k

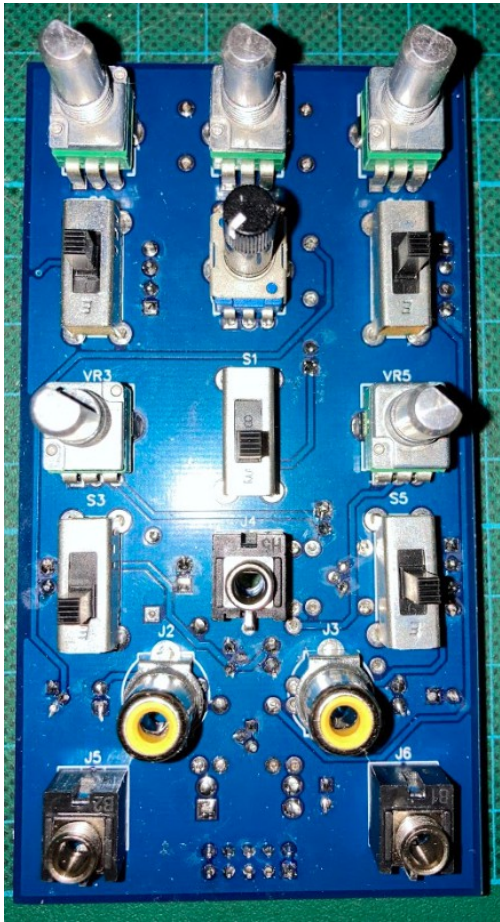
1k : VR1, VR2, VR3, VR4, VR5
100k : VR6

Switches



EG2301B

EG2301B : S1, S2, S3, S4, S5



Revisions log :

- **Rev C** : initial release

References :

- Archer Video Enhancer – Traced by Phil Baljeu
https://electro-music.com/forum/phpbb-files/ave_595.png
- Vishay AN105 – FETs As Voltage-Controlled Resistors
<https://www.vishay.com/docs/70598/70598.pdf>