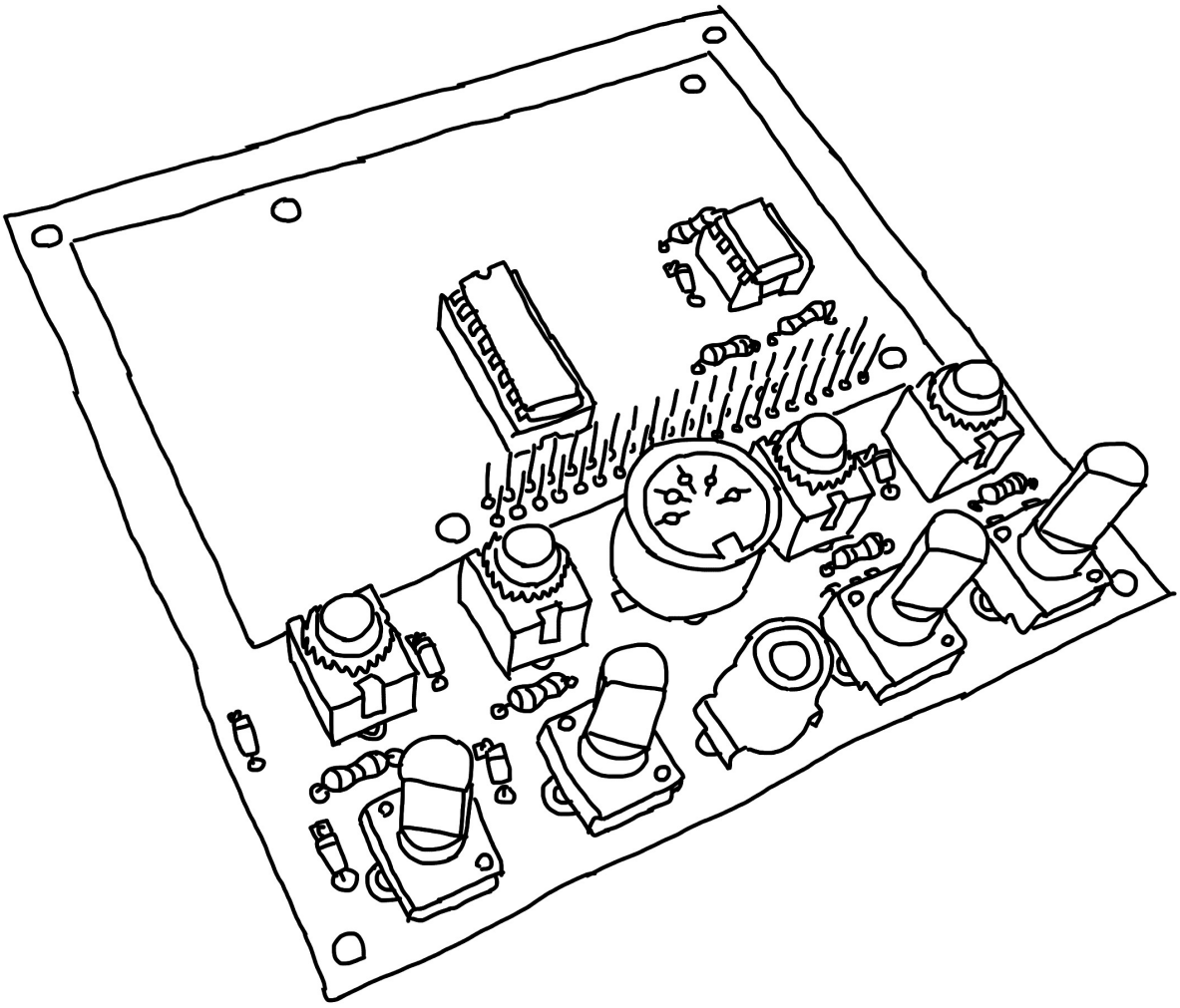
cyberboy666 & underscores.shop present
a r_e_c_u_r video sampler extension circuit

i_n_c_u_r

adding knobs, cv and serial midi control

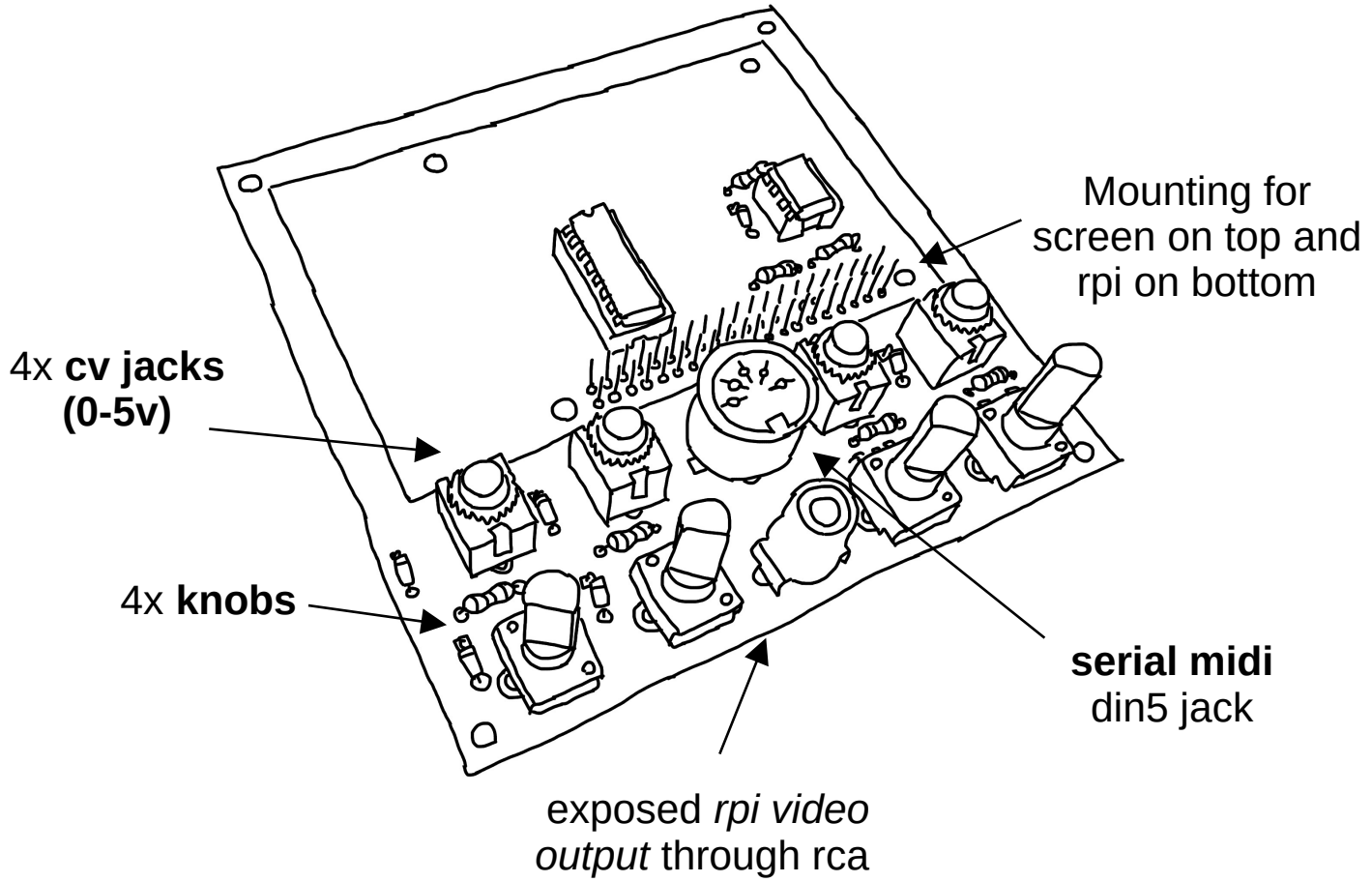


instruction manual and build guide
V5

View this project online at
underscores.shop/i_n_c_u_r

BACKGROUND

using r_e_c_u_r you can run shaders which generate and process video. there are a few different options for controlling the parameters of these shaders – a midi controller connected via usb is the most common. adding i_n_c_u_r to your setup gives you even more options:



- 4x **knobs** for physical control over shader parameters
- 4x **cv jacks (0-5v)** for sequenced control over shader parameters (from older/analog synths eg eurorack)
- **serial midi** din5 jack for sequenced control over shader parameters (from older midi devices)
- exposes rpi video output through rca jack (rather than the 3.5mm trrs jack on pi)
- mounting holes and front facing interface parts for easier racking / enclosure building
- interfacing with rpi through gpio leaving all usb jacks free

BUILD INSTRUCTIONS

Use the Interactive BOM to help place parts - *kutt.it/QM4fh9*

- remember to heat pad first (2-3seconds), then add solder, then continue to heat (1-2seconds) Checkout the web-comic **soldering is easy** for more soldering advice.

- start with the resistors, taking care place the correct value in the correct footprint - direction does not matter. Place a few resistors in (as many as you are comfortable with) then solder and trim legs

- next place the diodes - take note of the direction - black bar on component matching black bar on footprint
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- now lets do the ic/sockets -> make sure the direction is correct! place in and fold two corner pins to hold in place, then solder all pins. you can place the ic in now too.

- next i would place the two headers since soldering from the top can be awkward with too many components - **NOTE these need to be placed upside down!** J8 needs the pins facing up from top of pcb so the screen can go ontop and raspberry pi can go underneath. J6 also needs to soldered from the top so a jumper from the pi board can be run to bottom of circuit

- finally place the pots and jacks – make sure to use plenty of solder here for structural support

rca video-out

if you want RCA video out from the pi on this pcb a jumper needs to be run from J6 to the composite video out on the raspberry pi board. on pi0 this is a labeled pin, however on pi3 you will need to solder directly to the board. i used a header-cable, cut one side to be soldered. The pin on pi3 is marked as PP24.

OPERATING GUIDE

- to enable the analog inputs (knobs & cv) go to the *user_input* folder in r_e_c_u_r's **SETTINGS** tab and toggle **ANALOG_INPUT** to **on**

- to enable serial midi input go to *user_input* folder in r_e_c_u_r's **SETTINGS** tab and toggle **MIDI_INPUT** to **serial**

for more info on operating r_e_c_u_r see the projects github page

CREDITS AND MORE INFO

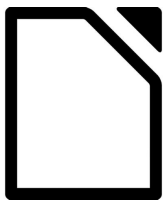
This circuit is distributed through UNDERSCORES – open video hardware label – visit underscores.shop for more info

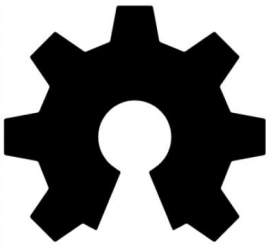
The pcb was designed using KICAD , this booklet was created in LibreOffice Draw

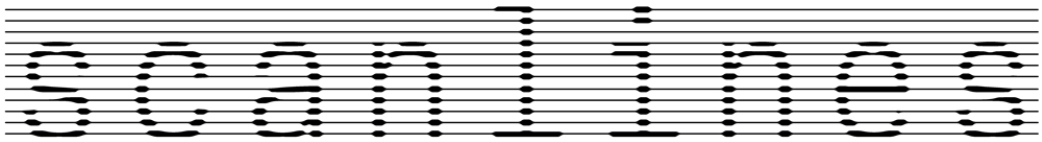
Everything from gerbers, cad files, panels and documentation is freely available online and distributed under CC-BY-SA / open-source licenses – help us contribute to the commons !

Ask any questions or start discussions related to this project on the *scanlines.xyz* forum – an online community space dedicated to diy av / electronic media art

You can contact me directly at *tim (at) cyberboy666 (dot) com*
Please get in touch if you are interested in hosting a workshop !







Thanks to Signal Culture for giving me the time and space to explore this project. to Bastien Lavaud for circuit advice, always. To Ben Caldwell for project advice. To everyone who has or will contribute ♥♥♥