VCRoy Build Guide

What is this thing?

VCRoy is a custom circuit bent vhs camera. The build has four distinct elements.

1. **Camera Ports:** Where you manipulate the color of the cameras output
2. **Main Board Glitching**: Allows you to glitch the date and time display as well as (tracking??) other parts of the main board.
3. **Cord interrupt:** Splices in another video source (this also has cool glitches)
4. **TV Transmitte**r: sends the camera output to a cathode ray tv within a few feet.

The camera comes with a custom a/v port with an rca adapter, so you can view its output on a monitor. You can also use the tv transmitter to send the video to a nearby crt. Or if you'd like you can use the camera's built in vhs recording system to make a tape.

It will be very easy to build the same thing if you have a small amount of soldering experience. When experimenting with different pin connections the fuse on the camera may blow so it doesn't hurt to have spares on hand or some copper tape to wrap around it for a quick fix.

The Campera Ports and Date Glitching section include interactive glitch elements that you can stimulate with your hand or an external signal. I recommend a plain vga signal generator, a [CHA/V](#) or a similar visual synth, I used a [ec500](#).

What do I need?

Because the build has several distinct components I've broken down the parts list to reflect that. I've tried to include references to where you could buy parts when I can.

- **Sears Roebuck VHS Movie Camera**
    - Model No. 934. 53742850
    - I was able to get my camera on Ebay for about 25 dollars. I've seen other ones going for up to 50. My version has 6x zoom and the lens doesn't extend outside of the plastic case. I'm not sure if other versions will have the same exploitable pins.

- **A VGA Signal Generator/or visual synth**
    - You can find these on ebay for about 10 dollars or less.

- ○ Jonas Bers designed a simple visual vga synth that is easily built. The guide is on his [site](#).
- ○ EC 500 is a vga based visual synth that is harder to build but has more options for customization. The GitHub has all of the schematics, parts lists and build guides [here](#).

- **The TV Transmitter**
  - ○ Created by Tetsuo Kogawa and build guide can be found on his site [here](#)
  - ○ Cracked ray tube also has a build guide [here](#).
  - ○ In order to mount it and connect it to the rest of the camera you will also need
    - ■ 8 small screws fit to the standoffs M3 screw 6m [Amazon link](#)
    - ■ 4 Female brass standoffs M3x10 [Amazon link](#)
    - ■ 1 x 2 male headers, you can just cut these out of a larger row like [here](#)
  - ○ My Gerber pcb file is here () no guarantees on it working.

- **Main Board Glitching**
  - ○ For the simpler version:
    - ■ Thin single stranded wire
    - ■ Electric Drill
    - ■ 4 Female brass standoffs M3x10 [Amazon link](#)
    - ■ 8 small screws fit to the standoffs M3 screw 6m [Amazon link](#)
    - ■ 2 x 4 male headers, you can just cut these out of a larger row like [here](#)
    - ■ 2 x 3 male headers
    - ■ 1 Small perf board, particular size doesn't matter too much just something from a kit like [this](#)
    - ■ Vga signal generator or visual synth if you want, see above.

  - ○ For the more involved version
    - ■ Thin single stranded wire
    - ■ Electric Drill
    - ■ PCB from here()
    - ■ BOM from here()
    - ■ Vga signal generator or visual synth if you want, see above.

- **Camera Ports**
  - ○ Simpler Version
    - ■ 1 x 7 female to male headers, you can just cut these out of a larger row like [here](#)
    - ■ 7 female to male jumper wires, I just used breadboard wires from this [kit](#)
  - ○ More involved version
    - ■ BOM from here()
      PCB from here()

- **Cord Interrupt**
  - 1 small perfboard, particular size doesn't matter too much just something from a kit like [this](#)
  - Rca cable
  - Electric Drill
  - Hot Glue/Hot Glue gun
  - 2 (1x2) male headers, you can just cut these out of a larger row like [here](#)
  - 16 female to male jumper wires from this [kit](#)
  - Female to female rca adaptor, a pack on amazon is cheap [Amazon link](#)
  - 8 female brass standoffs, M3x10 [Amazon link](#)
  - 4 male brass standoffs, M3x8 Mouser Part #144-HTSN-M3-8-6-2
  - 15 screws to fit the standoffs, M3 screw 6m [Amazon link](#)
  - [1 k potentiometer](#)
  - [An on-on switch](#)
  - 30 ohms resistor
  - 750 ohms resistor
  - 2 (1x8) female headers, I cut off one of the spaces from a 1x9 in this [kit](#)
  - 1x8 male headers
  - Hobbyist plastic or plexiglass

How do I build it?

Cord Interrupt

This is meant to expose each port of the video output to you, the artist. The simple interrupt circuit allows you to connect external video sources and experiment with effects on individual output pins. The VCRoy uses this circuit to connect to the optional tv transmitter.

Simple Version

Remove the plate seen below and separate the wires attached to each of the circular pins. Solder the red wire to the signal of a female rca connector and the gray wire to the ground of the same connector.

More Involved Version

Date Glitching

This section is very simple and meant to mostly be a means of connection for an external signal. It does involve internal soldering to the camera board so be careful.

Below circled in red are the circuit sections you will solder to. I've also pointed out an extra chip and two variable resistors that can be utilized to add glitching effects.
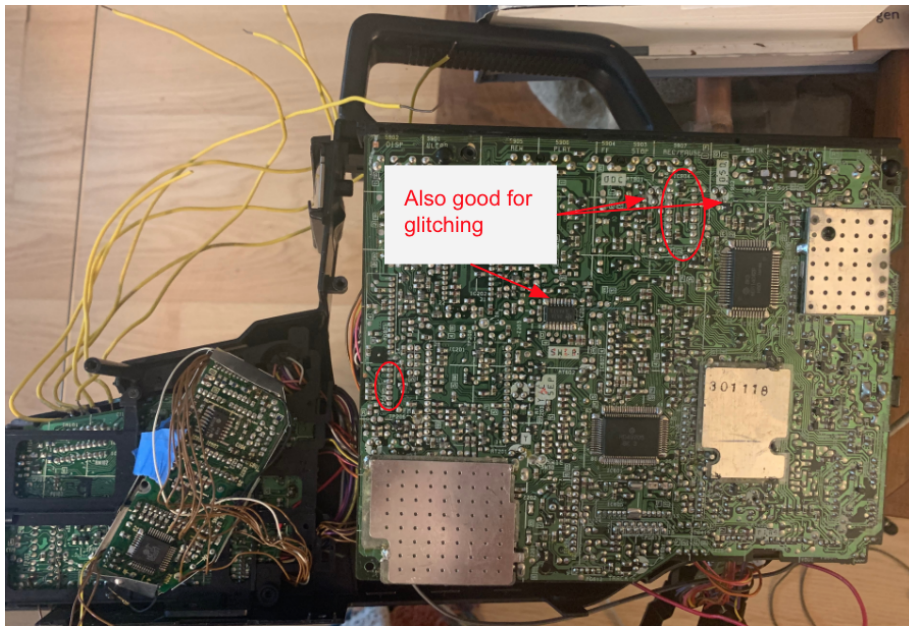

First solder thin gauge wire to the ports nearest the camera lens on the pins shown below to the left. Leave about a foot of loose wire. Then solder about 8 inches of thin wire to the chip below the rec/pause button on the points shown below on the right.
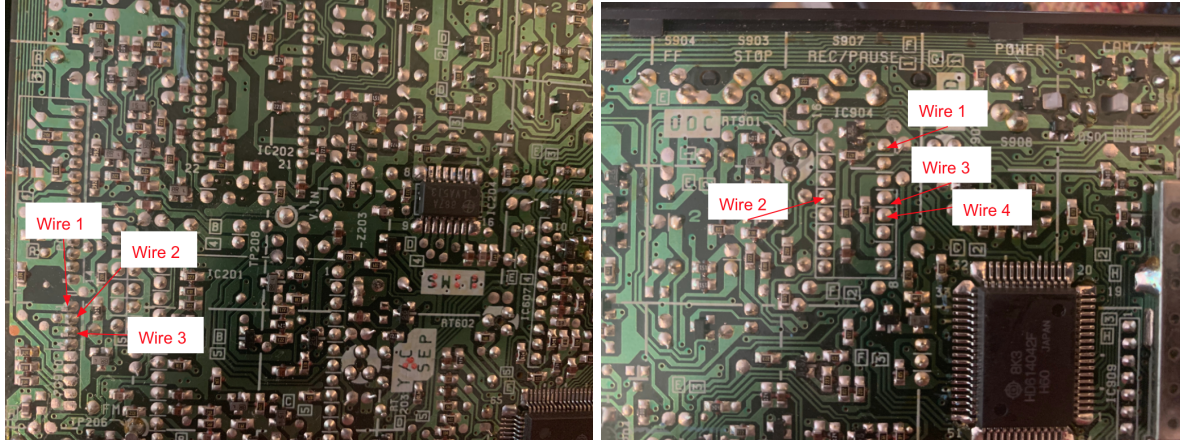
Drill a hole large enough to fit all of the wires through on the right side of the camera's plastic casing so that you can attach the circuit to the plastic case in roughly the area seen below.

Now using a small perf board create the basic interface seen below.
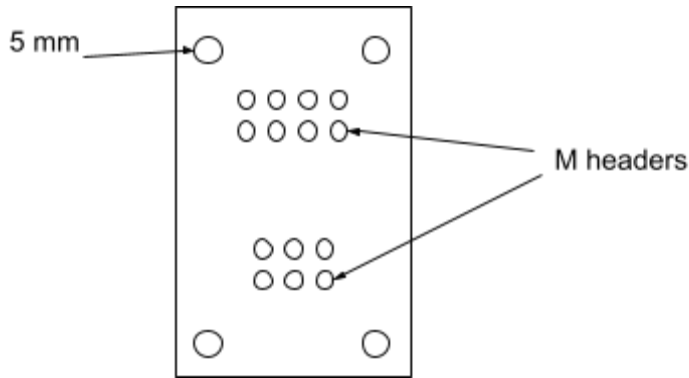
Lastly solder the wires to the headers on the circuit you just built. The wires from the camera port should connect to the bottom row of three headers in the order that they are labeled in the photos left to right. Same for the four wires from the chip.

You can now glitch the date and time display by touching any of the exposed ports either with your hands or by attaching vga sync signals.

Camera Ports
This is by far the simplest part of the build. Just remove the small plastic piece of the camera to the right of the lens. This will expose several headers as seen below.
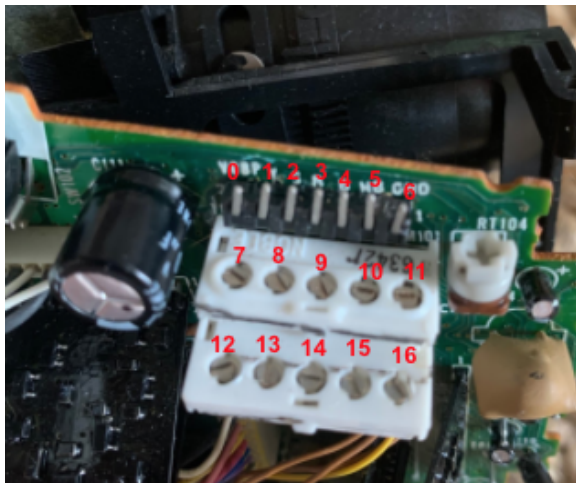
The top row is what we're mostly concerned with. Simply add jumper wires to these male pins. I explain how to get different color distortions in the use section. The two rows below that also allow color distortions but can be very finicky and difficult to adjust except through the use of a small screwdriver so I've left them alone in this version.

The TV Transmitter & VGA Synth

The visual synth and tv transmitter can be built from the guides above. I kept my ec500 synth off of the camera and mounted the tv transmitter using four brass standoffs to the side of the camera with the zoom controls as seen below.


Once you build the tv transmitter you should attach the video input wires to two male headers and hot glue it to the side of the copper plate. This makes it easy to attach and detach it from the cord interface you built above.

How do I use it?

Cord Interrupt
Once you've built and mounted all the components the only thing left to do is wire it up. I've kept the wires color coded to make it easier to double check that I'm lining up the wires from the port to the cord correctly but you can also double check the numbering I outlined in the build section.

You should have 8 male to male jumpers coming from the lower av port to the lower row of the interrupt interface. Plug in the 8 male jumper wires that are glued to the cord into the top row of the interrupt interface. Now your camera will transmit its signal normally to a monitor through the attached rca cord, and you're free to interrupt any individual pin as you please.
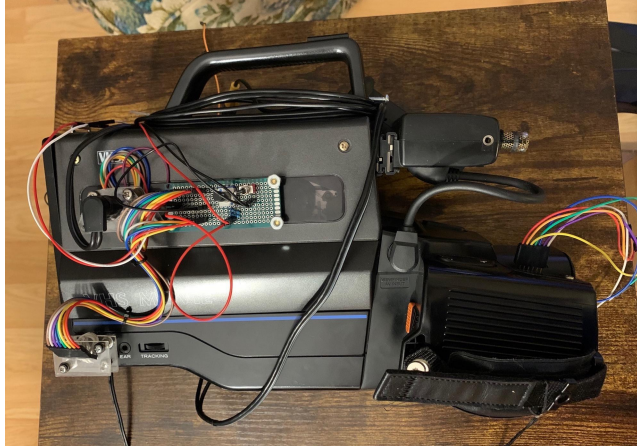
If you want to splice in another rca source take a normal rca cord, cut off one side of the adapter and strip the wires, soldering them to two female jumper wires.

Attach the ground of the rca cord to one of the male headers in front of the switch, and the signal wire to one of the headers in front of the potentiometer.

Take two F-F jumper wires, attach one to the left most pin in the middle row of the interrupt circuit and to the remaining available M header in front of the pot. Attach the other to the free header in front of the switch and the pin second leftmost pin.

Now you can take any external rca source in by simply plugging in the rca cable and flicking the switch. Adjusting the pot will vary the levels of glitching as will experimenting with using other pins to transmit the video signal. Some of the expected effects are shown below.

Camera Ports

Wire Connections

Pin 1	Pin 2	Effect	Add a capacitor?	Picture
0	1	White lines		
0	3	Green filter	104	
0	4	Red filter	104	
0	5	Dark blue	104	
1	3	Color tint	104	

1	3	Color tint, red dots when attached to oscillator	104	
1	2	Color tint, green dots when attached to oscillator	104	
1	5	blurring	104	
1	6	blurring	104	
2	3	Yellow backgournd and red dots when connected to the oscillator with the 104		
2	4	Cool color distortions With the oscillator its cyan blue with snow	104	
2	5	Cool color distortions With the oscillator its pink and green snow	104	
2	6	Cool color distortions With the oscillator its pink and green snow	104	
3	4	Red and blue distortion, red snow that turns the screen pink	104	
3	5	Red and blue distortion, red snow	104	
3	6	Red and blue distortion, red snow	104	
4	5	Blu eand yellow with blue snow	104	
4	6	Blu eand yellow with blue snow	104	

5	6	Dark blue		
0	1	Fun rainbow snow		
0	2	Pink filter		
0	3	Blue filter		
0	4	Yellow filter		
1	5	Groovy Blurring and light color distortion		
1	6	Groovy Blurring and dark color distortion		