



*VIDEO SYNTHESIS  
FOR VIDIOTS!*

## Acknowledgments

### Vidiot

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### User Manual

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First Printing, December 2017

Manufactured in Portland, Oregon USA by  
Darkplace Manufacturing & Distribution LLC



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*“Dedicated to the pioneers of analog video art and all multi-dimensional travelers across time and space.”*



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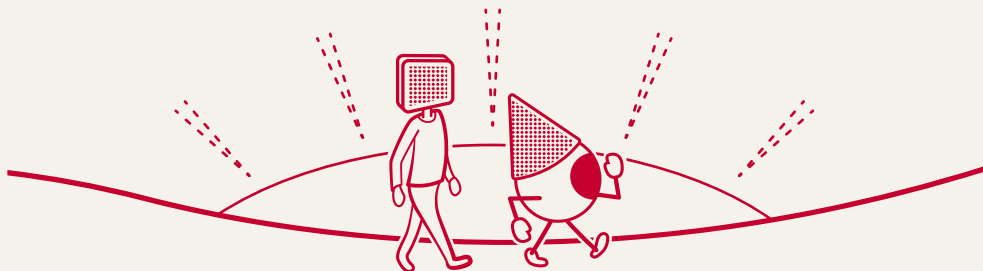


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## Welcome Video Artist

In 2009, analog television broadcasts went off the air forever in the United States. In the same year, LZX was born. We knew our mission to preserve and empower the tradition of analog video art instruments would be difficult, but that a potential revolution lay in wait.

And here you are, an artist in a new age of video art, holding an impossible instrument.

Vidiot would have cost a fortune in the 1970s. Strictly the domain of television broadcast studios and universities. That's why engineers like our design partner Dan Bucciano had difficulty making video synthesizers a reality for the common artist... until now!



## Meet Dan Bucciano

At 14 years old, Dan began his lifelong journey with video art by experimenting with broken TV sets, creating visuals to entertain himself and his friends.

This fascination drew him to New York City in the 1970's to become a player in the eclectic community of artist-engineers responsible for some of the world's first analog video synths. As a young technician, he worked for video synth pioneers such as Eric Siegel and Steve Rutt.

Releasing his own video instrument has been a life long ambition, now fulfilled with Vidiot. Dan currently lives in Maine on an 11-acre plot of woods where he creates video art and teaches workshops about essential oils.

## Why Analog Video?

The analog video signal is one of the 20th century's most exciting innovations. It is inherently both artificial and organic.

Artificial in the sense that it is a process divorced from the natural world of color and light as perceived by the cones inside human eyeballs.

Organic in the sense that it is a realtime, continuous voltage intended to drive the position and brightness of a cathode ray tube, and subject to all the little idiosyncrasies thereof.

A digital image is frozen. A precise grid of numerical values to be read, modified and rewritten. An analog image is always in motion, redrawing itself with slight differences with each recursion.

Working with digital video is like being a sculptor or a surgeon. Working with analog video is like piloting a vehicle -- you've gotta be along for the ride!

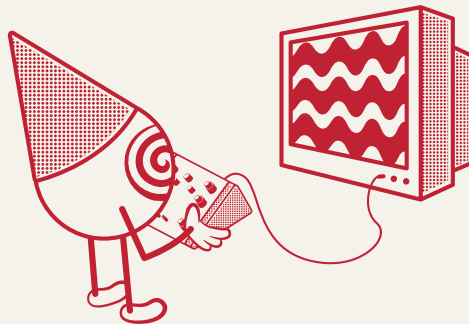
Both types of imagemaking have their different creative uses and strengths, but to lose analog video as an artistic medium would be a tragic loss.

## Learning Objectives

After working through this User Manual, you should be able to:

- Connect Vidiot to televisions, cameras, and other external video devices.
- Understand and use Vidiot's front and rear interfaces, including bias controls, attenuators, switches and I/O jacks.
- Expand Vidiot's capabilities with EuroRack synthesizer modules.
- Engage with the user community.

Let's start on the next page by getting your video art studio set up!



## Basic Setup

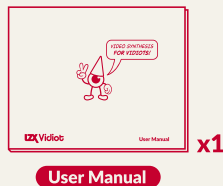
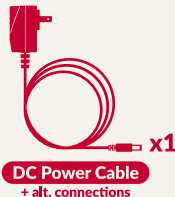
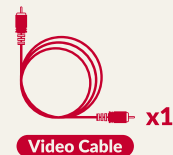
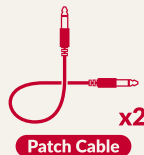
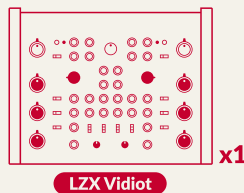
Everything you need to immediately begin using Vidiot is in the box, except for one thing: A display. For your display, you can use any kind of television or projector with a Composite video input. Look for the yellow RCA jack labeled Composite, or just Video, and connect to it using the included video cable.

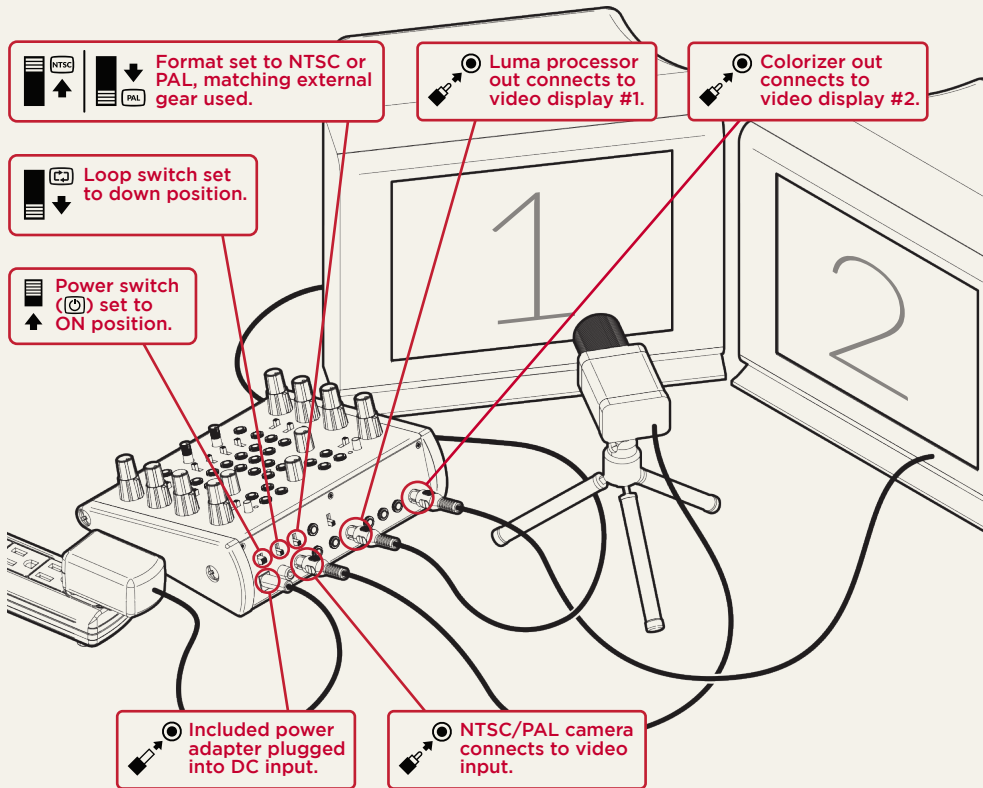
The diagram on the opposing page demonstrates Vidiot's default studio configuration, although there are endless possibilities. If you don't have two displays and a camera, don't worry. Only the connection to a single display from either the Colorizer or Luma Processor outputs is required.

## NTSC vs. PAL

NTSC and PAL are two different standards for analog video. NTSC has a higher frame rate, but less vertical resolution. PAL has a lower frame rate, but more vertical resolution.

If you are in the United States, chances are any gear you use will be NTSC. If you are in the UK or Australia, your gear will be PAL.

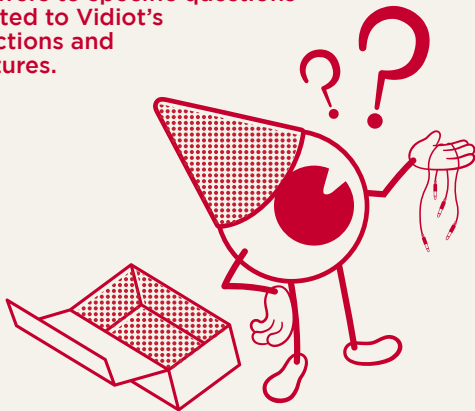




## How To Play

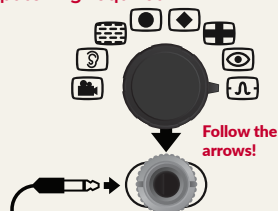
Video synthesizers are experimental instruments. Freeform experimentation can be intimidating, especially without prior experience using audio synthesizers and CV (Control Voltage) signals to modulate parameters.

Don't worry, you have plenty of time to learn all the details. We recommend you start by just turning it on and spending time turning knobs, flipping switches, and having fun. After that, return to this section to learn more about what is going on. Then, explore the next sections when you want the answers to specific questions related to Vidiot's functions and features.



### Select modulation presets.

The rotary switches select preset modulation paths. No patching required.

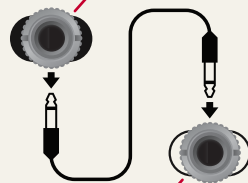


When you patch to an input, you will override the preset.

### Patch outputs to inputs.

Any output jack can go to any input jack... experiment!

Outputs are filled.

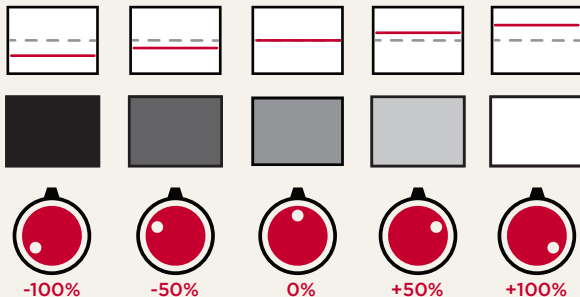


Inputs are outlined.



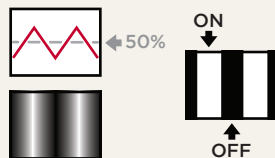
### Manipulate functions manually.


The top knobs adjust an offset voltage which is added to the control voltage signal.



### Use binary functions and keys.

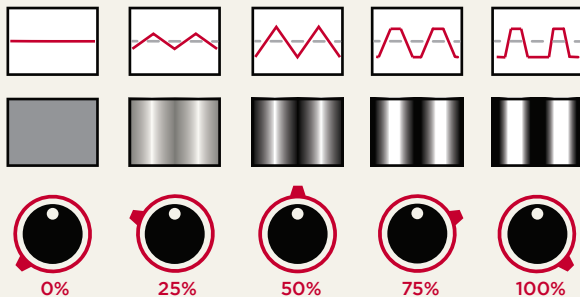
Binary functions, such as Solarize and Negative, turn on when the input signal is above 50%, and turn off below.



The two key generators create binary control signals with variable threshold values. 

### Change the depth of modulation.

The bottom knobs adjust the level of the control voltage input signal.

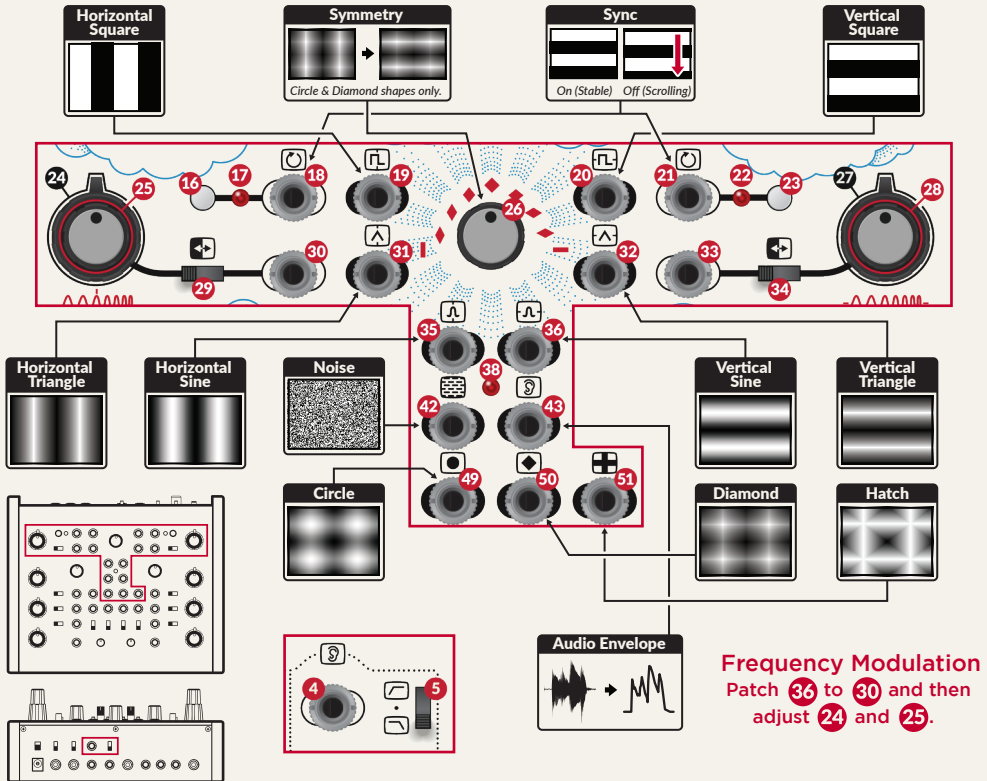


### Invert the modulation.









































To the left, control voltages are positive. To the right, inverted.



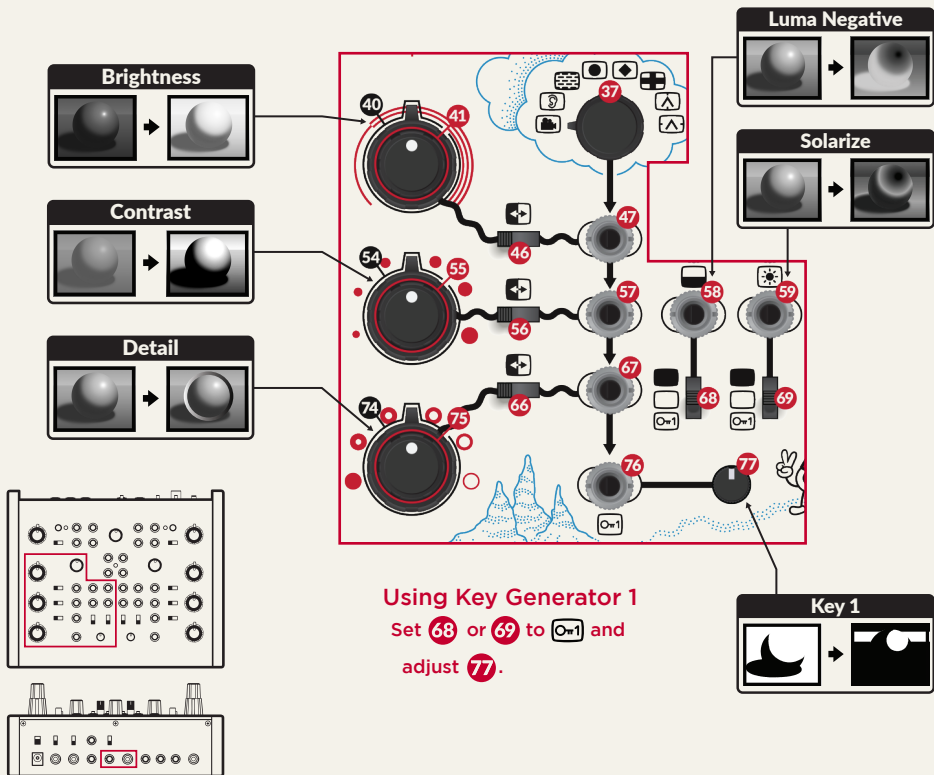
# The Pattern Generator














































Vidiot's Pattern Generator creates abstract pattern elements in real time with analog circuits. There is a horizontal oscillator, a vertical oscillator, a noise generator, an audio envelope follower, and three shape mixes. You can route these elements to the Luma Processor and Colorizer via the modulation selection switches in those sections, or directly with patch cables.

- 16 **Horizontal Sync Switch**  •  On/Off
- 17 **LED Indicator**  • 
- 18 **Horizontal Sync In**  • 
- 19 **Horizontal Square Out**  •  1V DC
- 20 **Vertical Square Out**  •  1V DC
- 21 **Vertical Sync In**  • 
- 22 **LED Indicator**  • 
- 23 **Vertical Sync Switch**  •  On/Off
- 24 **Horizontal CV Level**  0% - 100%
- 25 **Horizontal Frequency**  • 10KHZ - 1MHZ
- 29 **Horizontal CV Mode**  •  Pos. / Neg.
- 30 **Horizontal CV In**  • Up to +/-10V DC
- 31 **Horizontal Triangle Out**  •  1V DC
- 35 **Horizontal Sine Out**  •  1V DC
- 36 **Vertical Sine Out**  •  1V DC
- 32 **Vertical Triangle Out**  •  1V DC
- 28 **Vertical Frequency**  • 50HZ - 5KHZ
- 27 **Vertical CV Level**  • 0% - 100%
- 34 **Vertical CV Mode**  •  Pos. / Neg.
- 33 **Vertical CV In**  • Up to +/-10V DC
- 26 **Symmetry Control**  • Horizontal - Vertical
- 42 **Noise Out**  •  1V DC
- 43 **Audio Envelope Out**  •  1V DC
- 49 **Circle Out**  •  1V DC
- 50 **Diamond Out**  •  1V DC
- 51 **Hatch Out**  •  1V DC
- 4 **Stereo Audio In**  •  Line Level
- 5 **Audio Filter Switch**  •  HP  OFF  LP
- 38 **LED Indicator**  • 

# The Luma Processor


















































Vidiot's Luma Processor is located on the left hand side of the instrument. It's purpose is to change the properties of monochromatic (black and white only) video signals. Video from the external video input is sent into it as the source image. The Luma Processor has a dedicated video output which can be displayed, or the Colorizer can select its output as a modulation source directly.

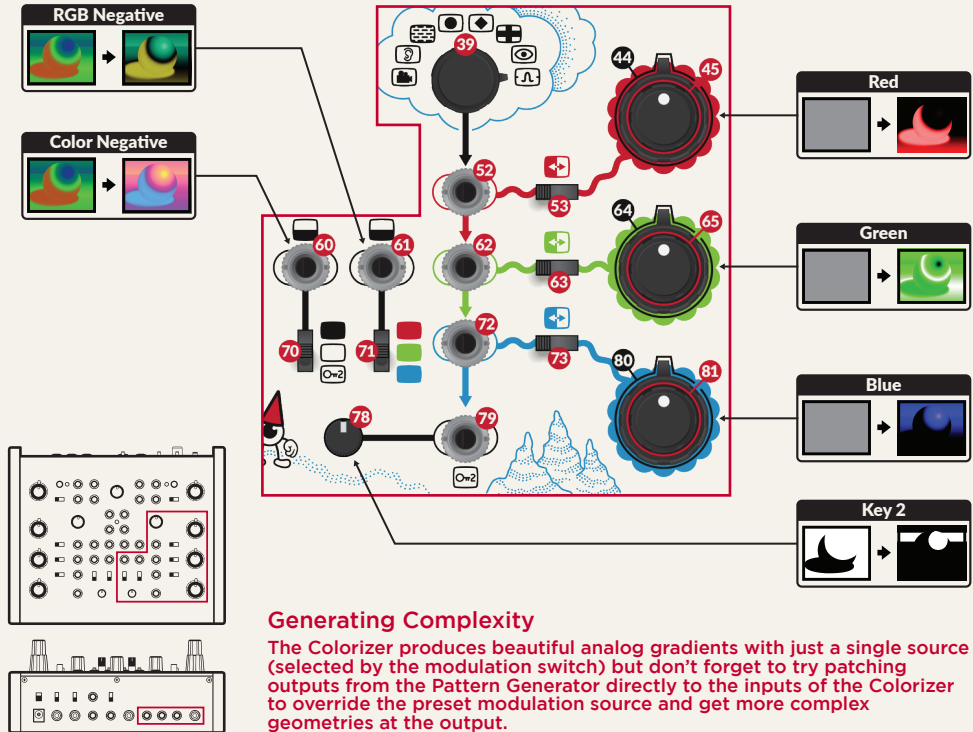
- 10 **Luma Out**  •  1V DC
- 11 **Luma Video Out**  •  75R Video
- 41 **Brightness Control**  • +/- 100%
- 40 **Brightness CV Level**  • 0% - 100%
- 46 **Brightness CV Mode**  •  Pos. / Neg.
- 47 **Brightness CV In**  • Up to +/-10V DC
- 55 **Contrast Control**  • +/-100%
- 54 **Contrast CV Level**  • 0% - 100%
- 56 **Contrast CV Mode**  •  Pos. / Neg.
- 57 **Contrast CV In**  • Up to +/-10V DC
- 75 **Detail Control**  • 0% to 100%
- 74 **Detail CV Level**  • 0% to 100%
- 76 **Key 1 Source In**  • 0 - 1V DC
- 77 **Key 1 Threshold**  •  0% - 100%
- 37 **Modulation Select**  •  Video  Audio  
 Noise  Circle  Diamond  
 Hatch  Horizontal Triangle  
 Vertical Triangle
- 58 **Luma Neg. Gate In**  •  0.5V Threshold
- 68 **Luma Neg. Mode**  •  Off  On  Key 1
- 59 **Solarize Gate In**  •  0.5V Threshold
- 69 **Solarize Mode**  •  Off  On  Key 1
- 66 **Detail CV Mode**  •  Pos. / Neg.
- 67 **Detail CV In**  • Up to +/-10V DC

"I first fell in love with solarization as a film effect in the late 60's while developing B&W photographic prints. Even causing it was entertaining: you quickly turn white light on and off while the print is in the developer tank. This causes a chemical reaction to occur which turns the lighter areas in the print to negative, but what makes it look so dynamic is the outline between the positive and negative areas. When I tried to create the same effect with video years later, I first tried full-wave rectifying the video signal. I got solarization but soon realized that simply full-wave rectifying the video signal won't give you that beautiful outline, so I set out to create circuitry that would. That circuitry is what's used in Vidiot to give the solarization that special look. And Vidiot also lets you get inverted solarization, something my original circuitry didn't." - Dan Bucciano

## The Colorizer

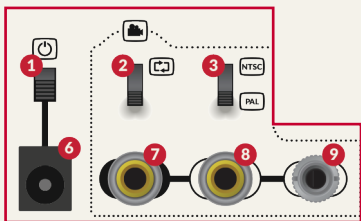
- 12** **Red Out**  •  1V DC
- 13** **Green Out**  •  1V DC
- 14** **Blue Out**  •  1V DC
- 15** **Color Video Out**  •  75R Video
- 39** **Modulation Select**  •  Video  Audio  
 Noise  Circle  Diamond  Hatch  
 Luma Processor  Vertical Sine
- 60** **Color Neg. Gate In**  •  0.5V Threshold
- 70** **Color Neg. Mode**  •  Off  On  Key 2
- 61** **RGB Neg. Gate In**  •  0.5V Threshold
- 71** **RGB Neg. Mode**  •  Red  Green  Blue
- 52** **Red CV In**  • Up to +/-10V DC
- 53** **Red CV Mode**  •  Pos. / Neg.
- 44** **Red CV Level**  • 0% - 100%
- 45** **Red Control**  • +/-100%
- 62** **Green CV In**  • Up to +/-10V DC
- 63** **Green CV Mode**  •  Pos. / Neg.
- 64** **Green CV Level**  • 0% - 100%
- 65** **Green Control**  • +/-100%
- 72** **Blue CV In**  • Up to +/-10V DC
- 73** **Blue CV Mode**  •  Pos. / Neg.
- 80** **Blue CV Level**  • 0% to 100%
- 81** **Blue Control**  • +/-100%
- 78** **Key 2 Threshold**  •  0% - 100%
- 79** **Key 2 Source In**  • 0 - 1V DC

The Colorizer is a staple of early analog video art, as it allowed the artist to take a monochromatic image and map its grayscale regions into psychedelic rainbows of red, green and blue. Vidiot's Colorizer is deceptively powerful, due to the high gain on its input channels. This functionality allows soft key processing right at the inputs, allowing the artist a great degree of control over separating and blending the different color bands.

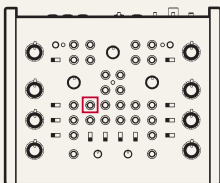


## The Video Input

The Video Input has few controls, but it is a vital piece of Vidiot's circuitry. When an external video source is connected, Vidiot synchronizes its own signal generators and video outputs to the external source's timing. This function is known as genlock, and is the feature that makes Vidiot a truly expandable, modular instrument.



- 1 **Power Switch** • On/Off
  - 2 **Loop Thru** • Off -
  - 3 **Video Format** • NTSC - PAL
  - 4 **Power In** • 5V DC 1.2A
  - 5 **Sync Out / Loop Thru** • 75R Video
  - 6 **Video In** • 75R Video
  - 7 **Luma In** • 0-1V DC
  - 8 **Luma Out** • 1V DC
- Enabling Loop Thru allows pass thru of your external video or sync source to other video devices.



### Expansion With EuroRack Modular

Vidiot is fully compatible with the signal specifications of video synthesis modules in EuroRack format made by LZx Industries and others. Any of its input and output patch points - the ones labeled 1V DC or 0-1V DC in this manual - may be patched directly to these modules or even another Vidiot! However, you need to make a connection related to video synchronization to make that work.

#### OPTION #1: Vidiot Synchronizes To EuroRack Modular

Patch any sync or video output from your EuroRack system (such as from a Visual Cortex module) to Vidiot's Video In with an RCA cable.

#### OPTION #2: EuroRack Modular Synchronizes To Vidiot

Patch the Sync Out / Loop Thru from your Vidiot to the sync input (such as Visual Cortex's Y input) of your EuroRack Modular.



### Audio Visualization

One of the techniques new video synth owners wish to explore is audio visualization: using music and sound to change the synthesized pattern. Vidiot's audio envelope follower has been designed specifically for this purpose. The audio source can come from anywhere: line outputs from a mixer at the gig you're doing visuals for, from a music synthesizer, or even the microphone on the same camcorder you're using as an external video source! Patching the audio envelope out to the Horizontal CV input will give dynamic results, but don't stop experimenting.

#### OPTION #1: Camcorder A/V Cable



#### OPTION #2: Stereo TRS Mini Cable

Line Level  
Audio Source  To Audio Input

### Video Feedback

Have you ever pointed a video camera at the image of itself on a video display? The image feeds back on itself, creating tracing, trails, and recursion. There are entire universes to explore inside this relationship once you start modifying the image as it passes through the feedback loop, and this role is one that Vidiot excels at.

How to do it? Connect a camera to your video input, connect a display to your video output, and point the camera at the display. If you're having trouble getting feedback started, try turning the Negative effects on and using the key generators. This is a great jump start to feedback.

The way Vidiot's signal path works, you can use two displays to isolate your feedback to just the Luma Processor. The Colorizer processes the results of the feedback loop for a final output. This relationship is illustrated on page 4. This works especially well if you use a vintage black & white television to display the feedback image.

## Next Steps

Congratulations! You are now ready to don your Official Party Hat and start stimulating rods and cones with your new video synthesizer.

This User Manual is only a brief introduction to the instrument, to be used as a studio reference. You can find much more instructional content, usage examples, and video recordings on our website at [www.lzxindustries.net](http://www.lzxindustries.net).

Is anything on your instrument not working as expected? Are you having trouble setting it up? Even if you're not sure about your question, we're happy to quickly answer it through our support desk. Say hello by e-mailing [support@lzxindustries.net](mailto:support@lzxindustries.net) or call us at +1 (503) 770-0726.

In our opinion, artistic movements are about fostering and engaging with the community of humans surrounding them. We strongly recommend you find other video artists and groups in your local area and get together in person. Two Vidiots are better than one!

