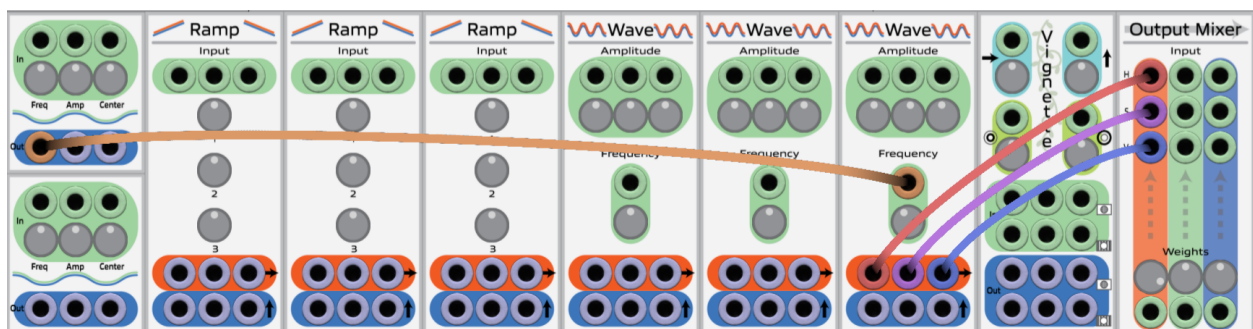


## Modular Video Synthesizer: Example Patches

## Basic Tips

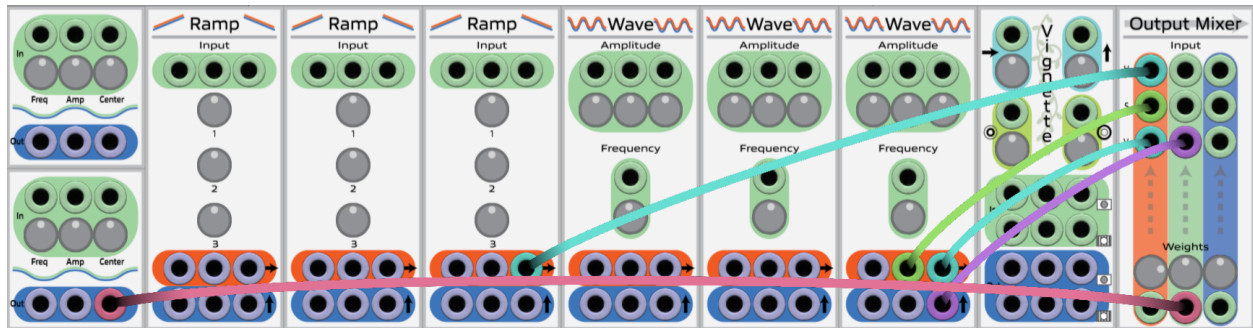
- In order for any video to appear on the screen, it must first be patched to the **Output Mixer**.
  - The mixer takes input in [HSV](#): each column is a separate channel.
- When patching to the Output Mixer, make sure to not leave the ‘V’ input empty! Otherwise, the value of the video stream will be set to 0 and the screen will remain black.
- Each knob has a corresponding input port (in [green](#)) where you can patch in signals to **override** the knob value.
  - Turning the knob that corresponds to an active port will not change the video.
- **Don’t make loops!**
- Start exploring by patching the Ramp, Wave, and LFO modules directly to the output mixer to see what they do. **If you get stuck, just copy the patches below!**

### Example Patch #1: Accordion



Copy the patch above, which sends 3 identical horizontal waves into HSV for output channel 1. The orange wire is patching in an oscillating signal from the LFO to modulate the wave's spatial frequency. Try twisting knobs on the LFO and Wave to see what they do. Also try unplugging the cable from the LFO and re-plugging it into the other inputs of the Wave module!

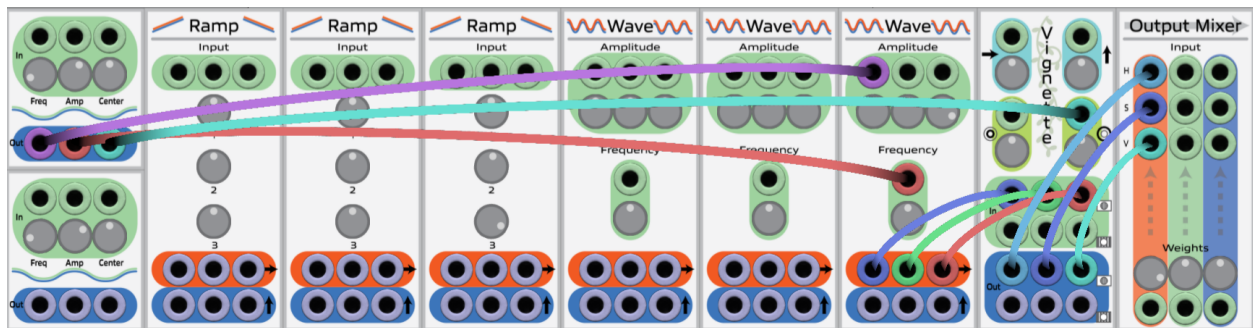
## Example Patch #2: Glare



This patch will take advantage of the ‘weight’ parameters of the Output Mixer. This module solely performs additive mixing - it does not normalize the sum of channels or take any kind of weighted average. Instead, it just clamps any sums that exceed their maximum values. If used wisely, this can give the screen output a gorgeous “glare” effect!

Take a vertical and horizontal wave of the same frequency, and patch them into two different ‘V’s of the Output Mixer. Next, take one more horizontal wave of the same frequency as the last two, and patch it into the ‘S’ of the first Output Mixer channel. Patch a horizontal ramp into the ‘H’ of that same first channel. Last, turn the weight knob for that first channel up, and patch an LFO into the weight port of the second channel. Flashing lights! The screen should look like [this](#).

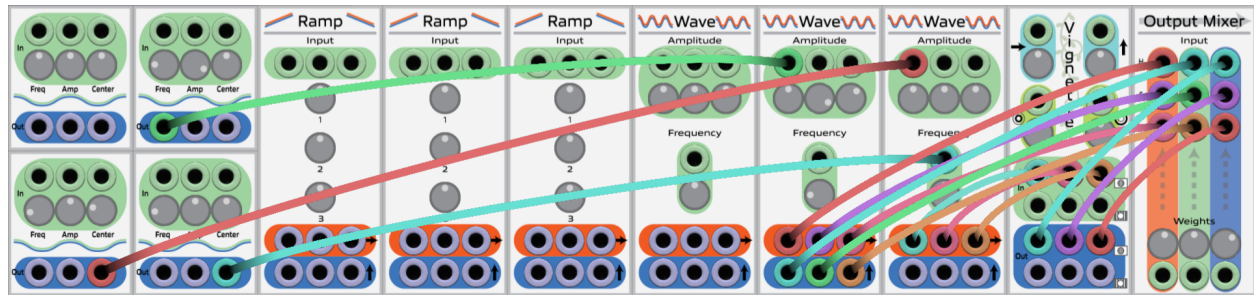
## Example Patch #3: Vignette



This is a simple showcase of the Vignette module! Take 3 identical waves and patch them into Vignette (we’re going to use the top row of the input for this patch, since it applies the classic vignette effect). Then, take the corresponding row of output from the Vignette (in blue) and patch it into the HSV of the Output Mixer. Now, patch 2 identical LFO signals (top-left) into the left-most amplitude input for the Wave and into the frequency input - this will change the wave hue and frequency over time. Patch one more signal from the same LFO to the outer radius input on the Vignette module. Now, the vignette will grow and shrink over time! To make this effect even better, copy the exact knob settings in the above image. Turn the frequency of the LFO way down while turning its amplitude up. Finally, turn the weight of the used Output Mixer channel all the way up (bottom-left knob on the module).

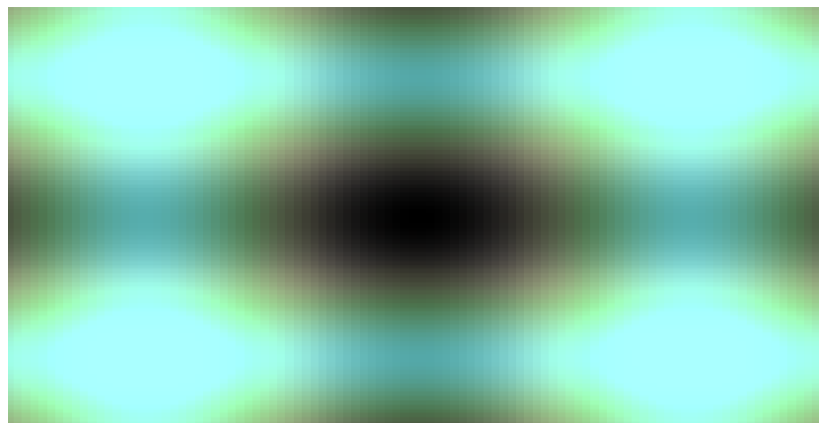
**Note:** The Vignette module has 2 input and output channels for video, so it can produce far more complicated effects than what you are seeing on your screen. Try it out!

## Example Patch #4: Portal



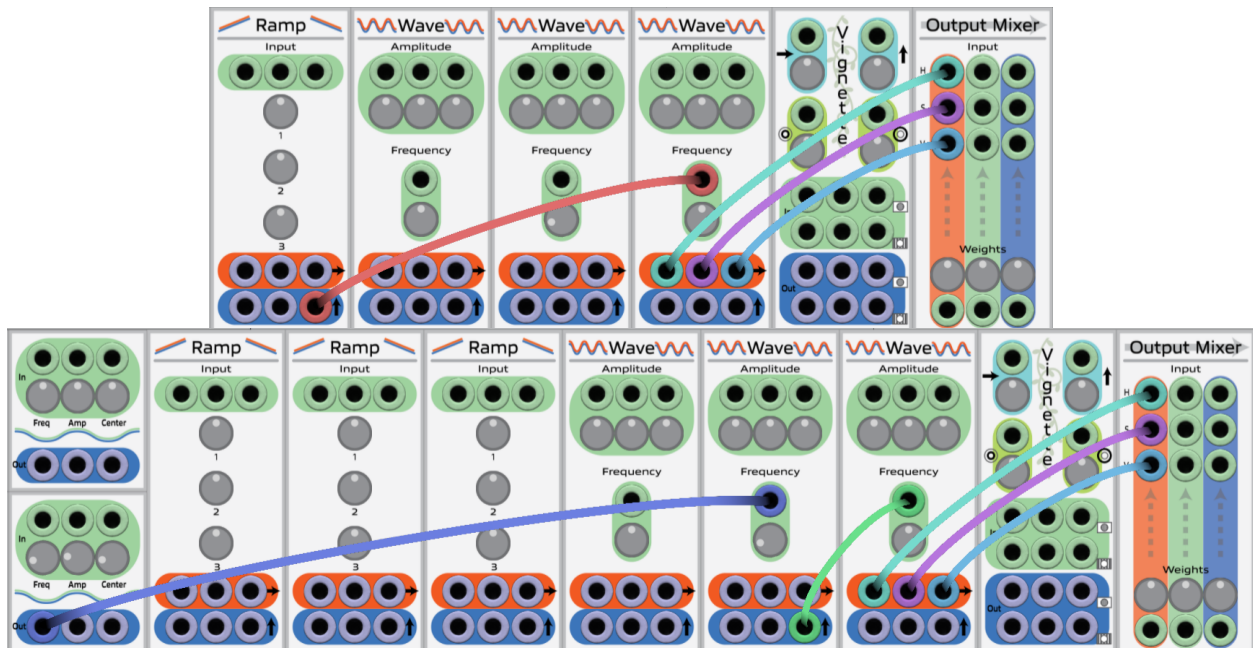
**This is probably the prettiest example patch listed here.** A video of how it looks can be found [here](#). To recreate it, it is key to copy the exact knob settings in the above image.

First, patch 3 identical horizontal waves into one of the Output Mixer channels, and patch 3 identical vertical waves from **the same module** into another output channel. This will create a grid of waves on your screen. Adjust the frequency knob of this Wave module to zoom in and out of the grid (this is already a great starting point for many fun patches). Zoom in with the frequency knob until the grid just has 4 points, like in the below image:



To match this image exactly, try slightly turning up the third amplitude knob for your waves (controlling value) - this will give the screen a nice glare. Next, patch 3 identical horizontal waves from **a different Wave module** into the top row of Vignette module inputs, and patch the corresponding row of outputs into the last available input channel. This will position an ellipse of stripes directly in between the four glowing points of the image. Last, patch two LFO signals into the first amplitude input and frequency input of the wave that you just patched into the Vignette. Match their knob settings to the image of the patch above. These will slowly change the hue and frequency of the center stripes. For additional modulation, try patching a third LFO into the first amplitude input (controlling hue) of the waves that produce your grid.

## Example Patch #5: Frequency Modulation

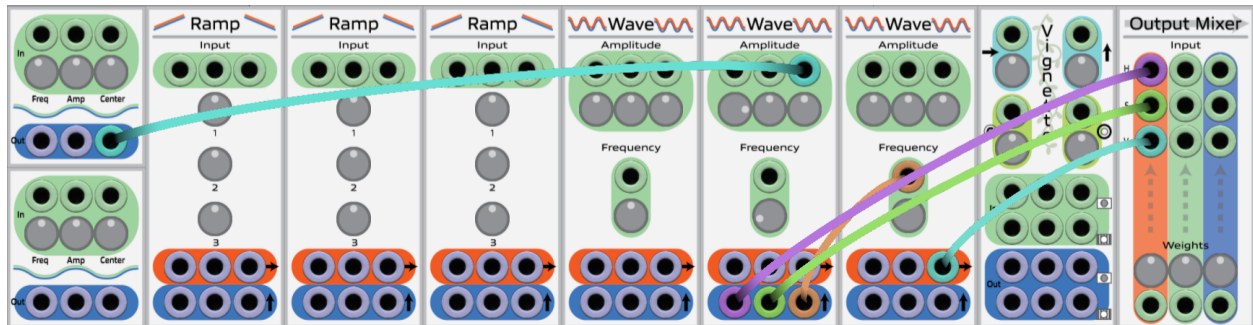


Frequency modulation is a really popular feature of modular synthesizers that is used and abused very often. This patch has 2 different variations that explore how this is done. The options are:

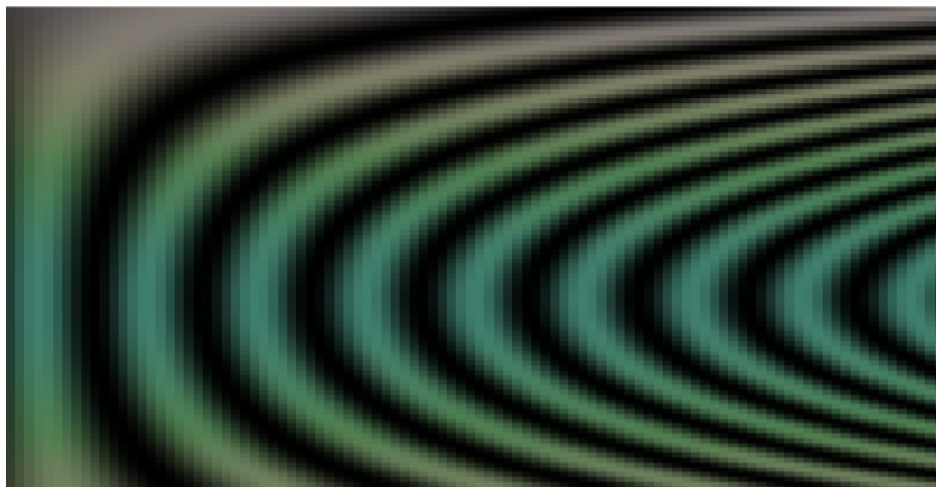
**Use a ramp** (top image). Patch 3 identical horizontal waves into one Output Mixer channel. Then, take a **vertical** ramp (it must be perpendicular) and patch it into the frequency input for that wave. Now, the wave frequency increases along the y-axis. Try turning knobs - especially knob 3 for the ramp!

**Use a wave** (bottom image). Follow the same set-up as the previous patch, but patch a vertical wave instead of a ramp into the frequency. Try turning the frequency knob of the vertical wave and see what happens. To make things more interesting, patch an LFO into the frequency input of the vertical wave and turn all of its knobs down.

## Example Patch #6: Curves



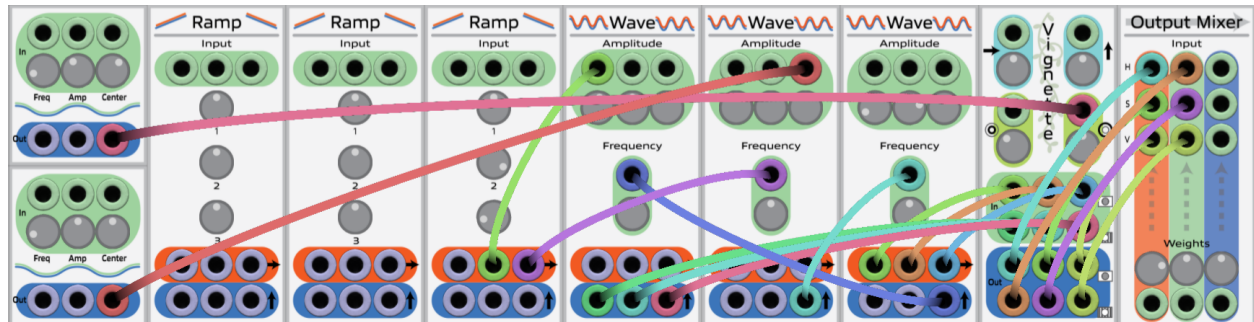
Now let's make something more interesting with frequency modulation. Patch a horizontal wave into the 'V' of an Output Mixer channel. Next, take 2 identical vertical waves from **a different Wave module** and patch those into the 'H' and 'S' of the same output channel. Now, patch one more identical vertical wave to the frequency input of the original horizontal wave (orange cable). Finally, take an LFO and patch it into the third 'amplitude' input of the module with your horizontal waves. Turn the frequency knob of that module down until you see something like this:



It should be pulsing horizontally. Try adjusting knobs (like frequency and first amplitude of the horizontal waves) and see what happens. This particular patch is a great starting point if you want something to build on top of when experimenting on your own! [Here's](#) one example, and [here's](#) another.



## Example Patch #7: Utter Madness



Now let's put it all together. If this patch looks like too much effort, you can see how it looks [here](#).

Patch each output channel of the Vignette module to an input channel on the Output Mixer. Then, patch 3 identical horizontal waves into the top input channel of the Vignette; patch a vertical wave from **the same module** to the frequency inputs of one of the other Wave modules. Next, patch 3 identical **vertical** waves from **the Wave module you just patched to** into the remaining input channel of the Vignette module. Patch a horizontal ramp into the first amplitude input of this same Wave module (controlling hue). Now, patch one more horizontal ramp into the frequency input of the remaining, unused Wave module (modulating frequency). Patch a vertical wave from that same module into the frequency input of the Wave module with all of your horizontal waves (modulating a frequency with a modulated frequency). Last, patch two LFOs into the outer radius input of the Vignette module, as well as an amplitude input of the Wave module whose frequency you are modulating with the ramp, in the **same column as from where you patch out a vertical wave** (animating the image). Turn the frequency of these LFOs down. To get the best-looking visuals possible, copy the knob settings in the above image and try to tweak them one at a time. You will find knob 3 of the Ramp module that you are using to be the most interesting to turn - especially downwards. Try patching an LFO to this knob's input port to make the patch even better!