VISUAL CORTEX

BASIC PATCHES

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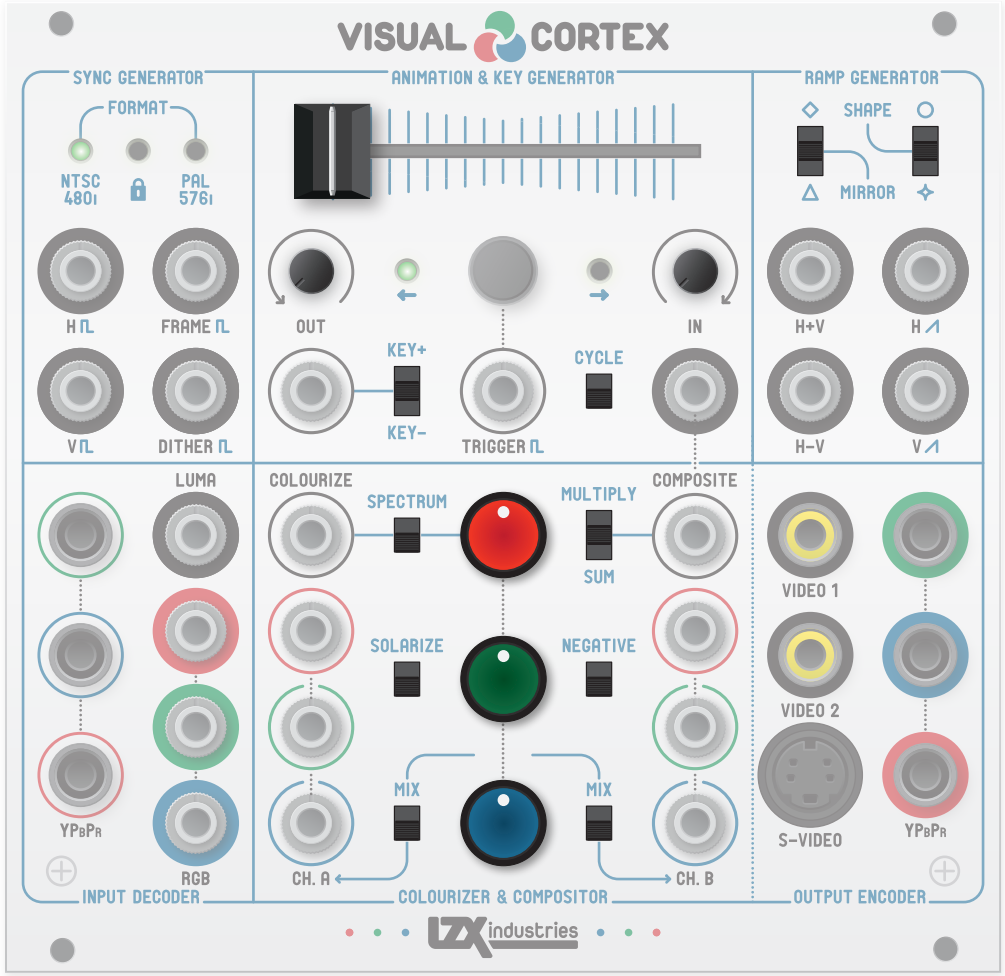
LZX industries

CORTEX BASICS 00. DEFAULT SETTINGS

Before beginning your patching, install the module in your EuroRack case as described in the Technical Manual. Then, set all the controls and switches to the positions shown below.

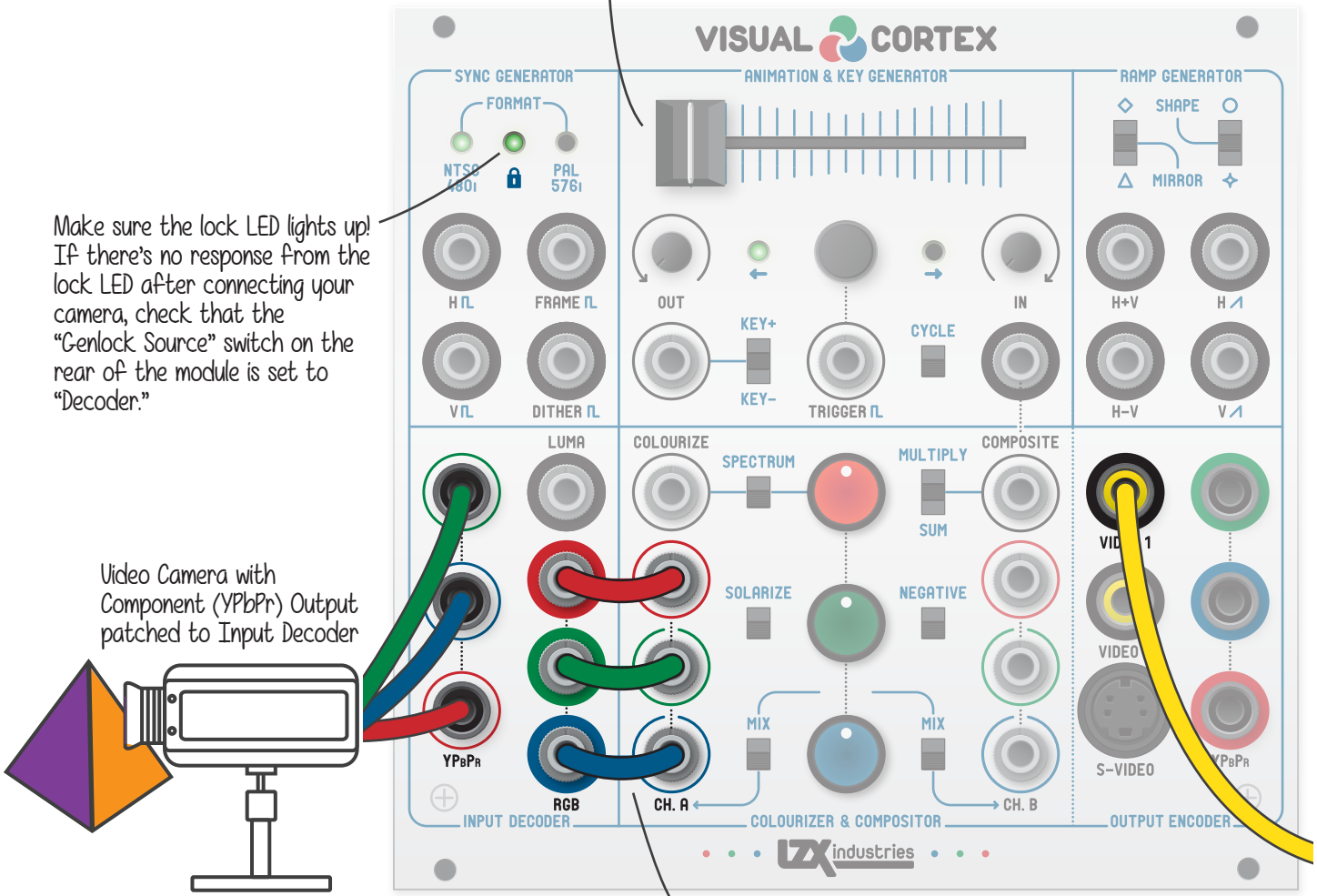


CORTEX BASICS 01. VIDEO INPUT & OUTPUT

In this patch, we'll connect an external video source, such as a Camera or DUD player, and a video display.

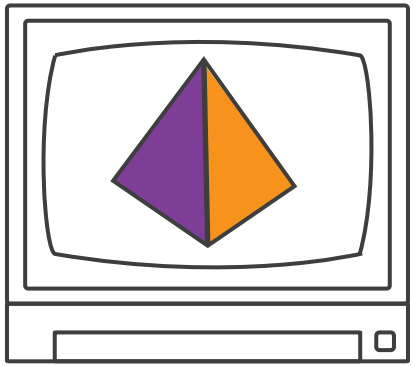
Slider is in its leftmost position.

Make sure the lock LED lights up! If there's no response from the lock LED after connecting your camera, check that the "Genlock Source" switch on the rear of the module is set to "Decoder."



What you'll need:
- A camera or DUD player with Component (YPbPr) video outputs.
- A video display, such as a television.
- RCA cables designed for video. Triple cables designed for Component video are nice to have.
- Some 3.5mm patch cables of various lengths.

Output Encoder patched to Television Display with Composite Video Input



Video Camera with Component (YPbPr) Output patched to Input Decoder

A DUD player or other video source will also do the job.

Input Decoder RGB outs patched to Compositor Channel A inputs

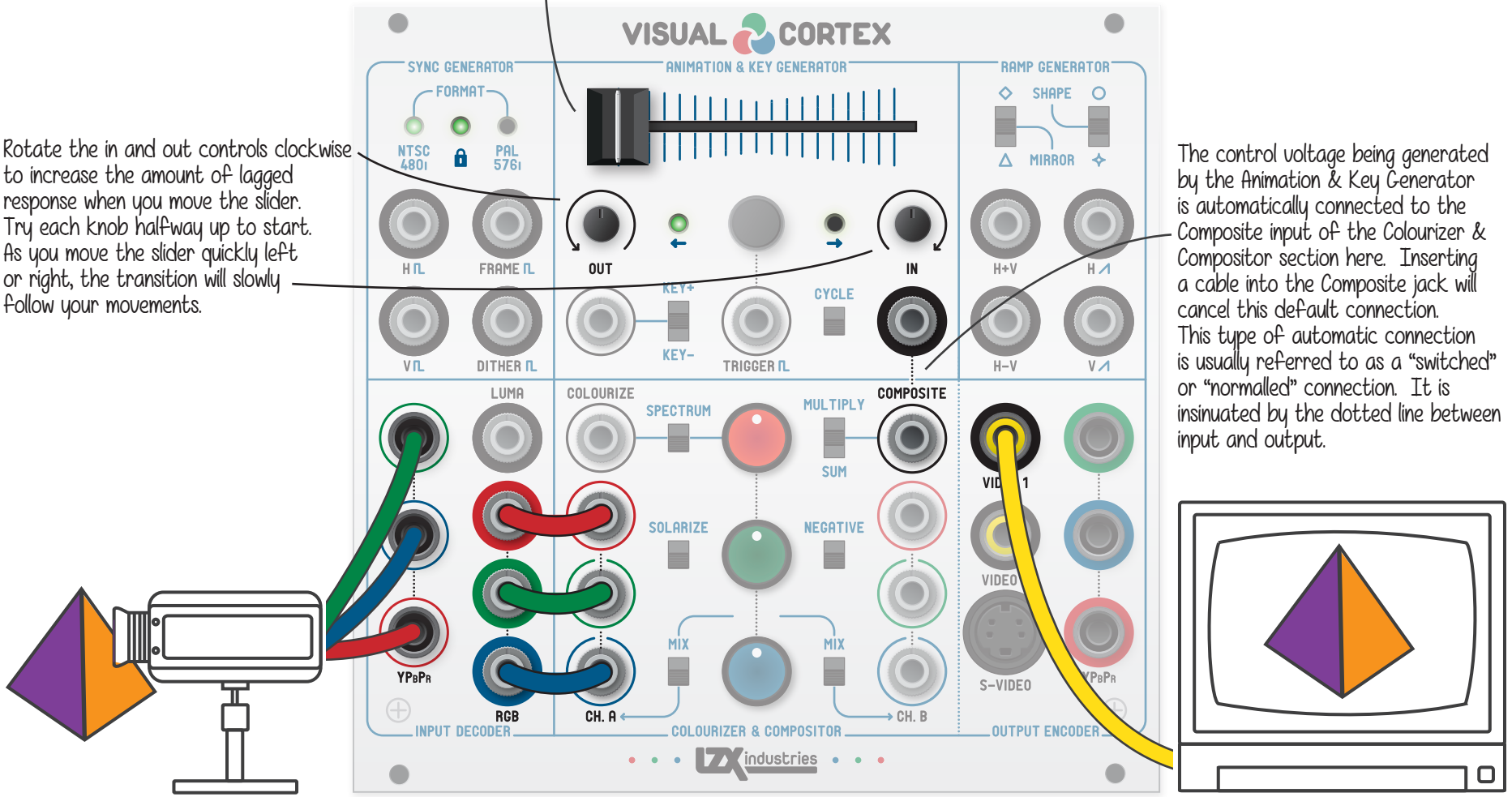
CORTEX BASICS 02. MANUAL TRANSITIONS

In this patch, we'll learn how to fade the input video source to black, by using the Animation & Key Generator section's slider to control the Colourizer & Compositor section.

Move the slider left and right to crossfade between Channel A (the video source) and Channel B (black, because there is no input to Channel B.)

Rotate the in and out controls clockwise to increase the amount of lagged response when you move the slider. Try each knob halfway up to start. As you move the slider quickly left or right, the transition will slowly follow your movements.

The control voltage being generated by the Animation & Key Generator is automatically connected to the Composite input of the Colourizer & Compositor section here. Inserting a cable into the Composite jack will cancel this default connection. This type of automatic connection is usually referred to as a "switched" or "normalled" connection. It is insinuated by the dotted line between input and output.



CORTEX BASICS 03. TRIGGERED TRANSITIONS

In this patch, we'll learn how to trigger automatic translations from Channel A to Channel B, and back again -- as well as vary the speed of the transitions.

Leave the slider in its leftmost or rightmost position to start.
Moving the slider towards the center will decrease the output range.

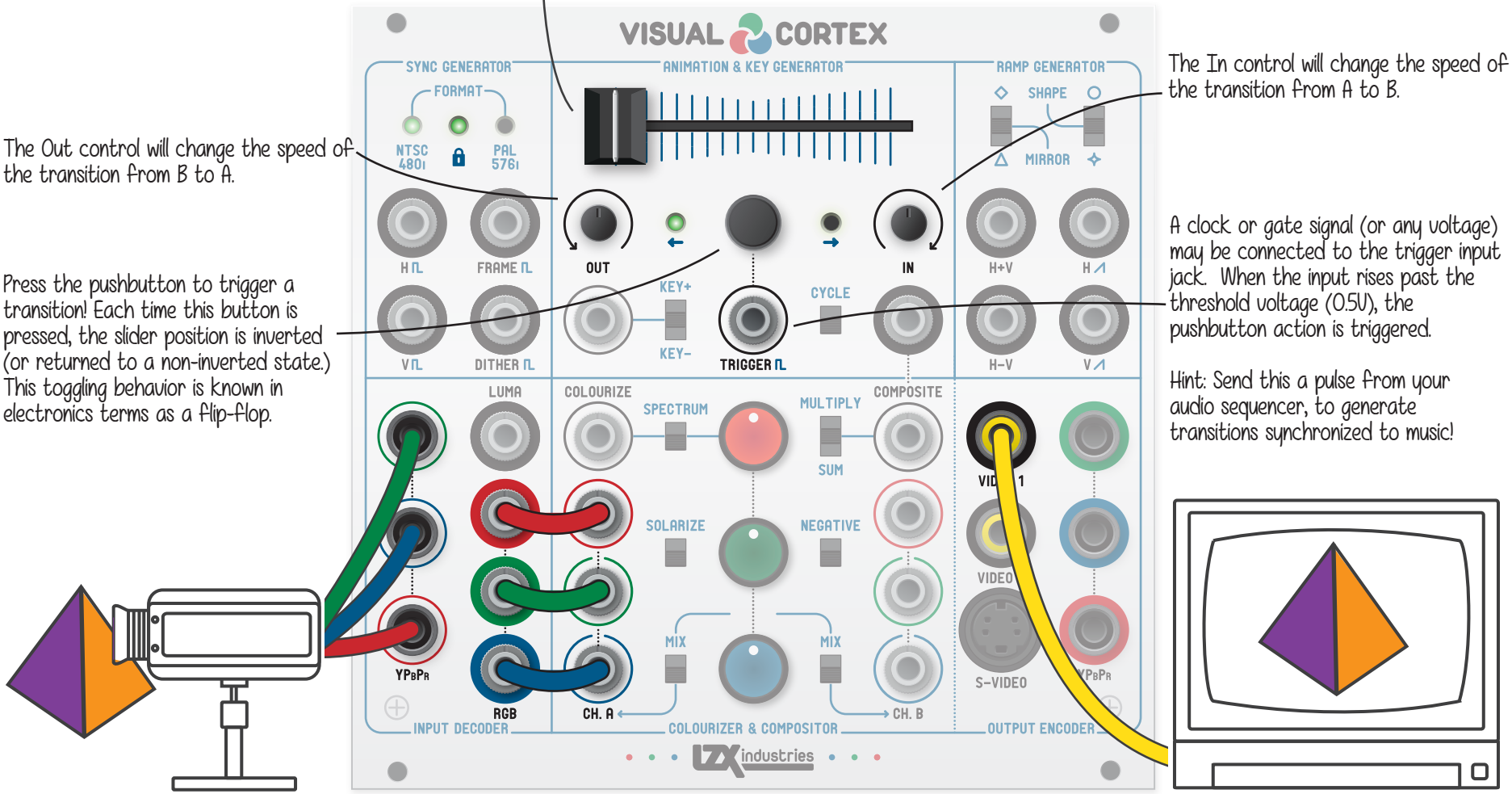
The Out control will change the speed of the transition from B to A.

Press the pushbutton to trigger a transition! Each time this button is pressed, the slider position is inverted (or returned to a non-inverted state.) This toggling behavior is known in electronics terms as a flip-flop.

The In control will change the speed of the transition from A to B.

A clock or gate signal (or any voltage) may be connected to the trigger input jack. When the input rises past the threshold voltage (0.5V), the pushbutton action is triggered.

Hint: Send this a pulse from your audio sequencer, to generate transitions synchronized to music!

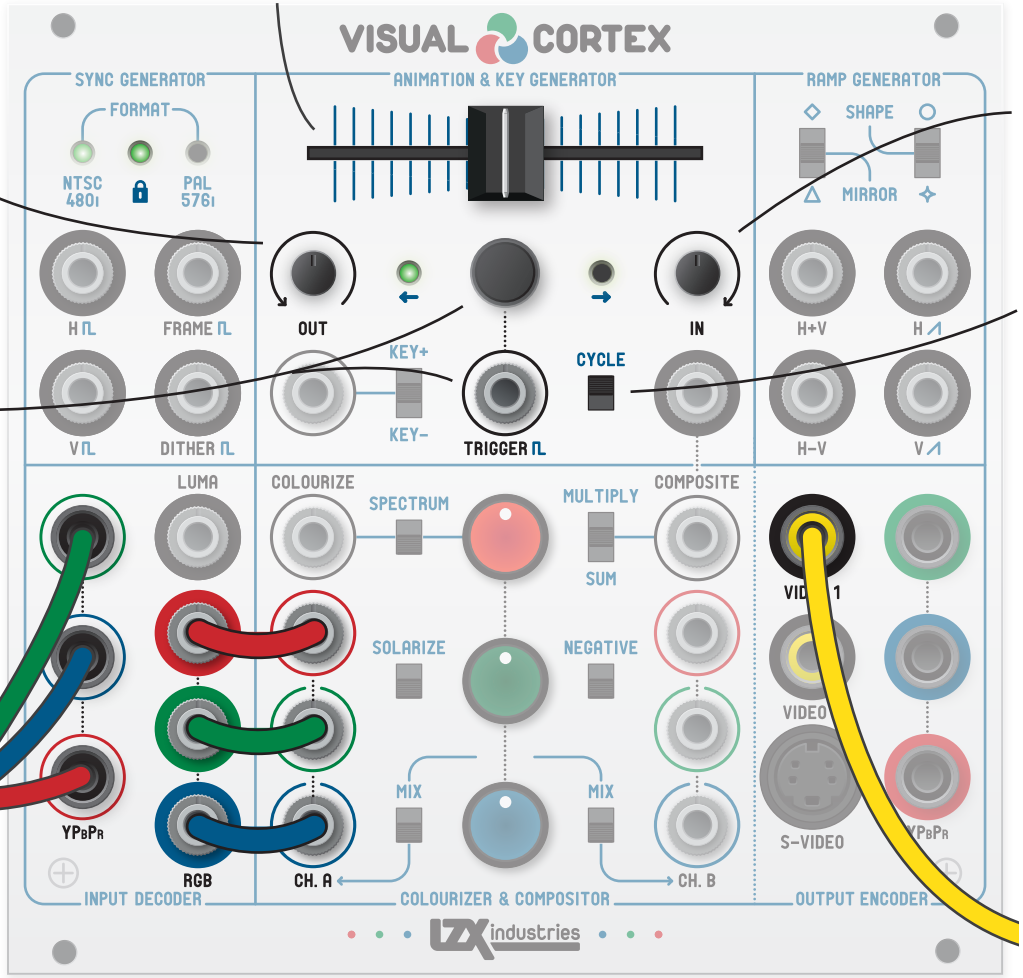


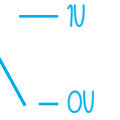
CORTEX BASICS 04. AUTOMATED TRANSITIONS

In this patch, we'll learn how the Animation & Key Generator section's Cycle mode works, and how to use it to create automatically cycling transitions.

The slider has a special function while in Cycle mode. It controls the amplitude of the output waveform.
In the center position, the output is at 100% gain. Moving the slider to the left will decrease this gain to 0%.
Moving the slider to the right will increase the gain.
Hint: Higher gain values will create a "rise" ... "pause" ... "fall" .. "pause" type of response.

The Out control will change the speed of the falling voltage.

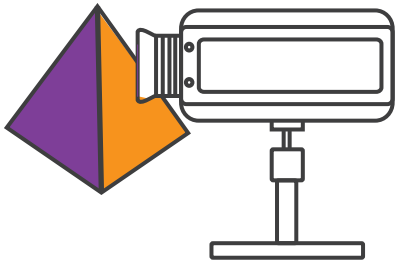


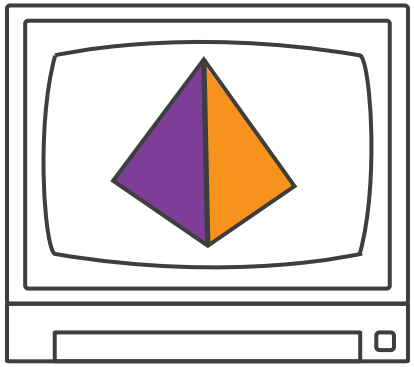


The In control will change the speed of the rising voltage.

Turn Cycle mode on by flipping this switch to its up position!
In Cycle mode, the output will bounce back and forth without any need for manual triggering or slider control.

In Cycle mode, the pushbutton and trigger input will reset the output waveform to zero.
Hint: This allows you to synchronize automated transitions with the start of a sequencer or similar device.

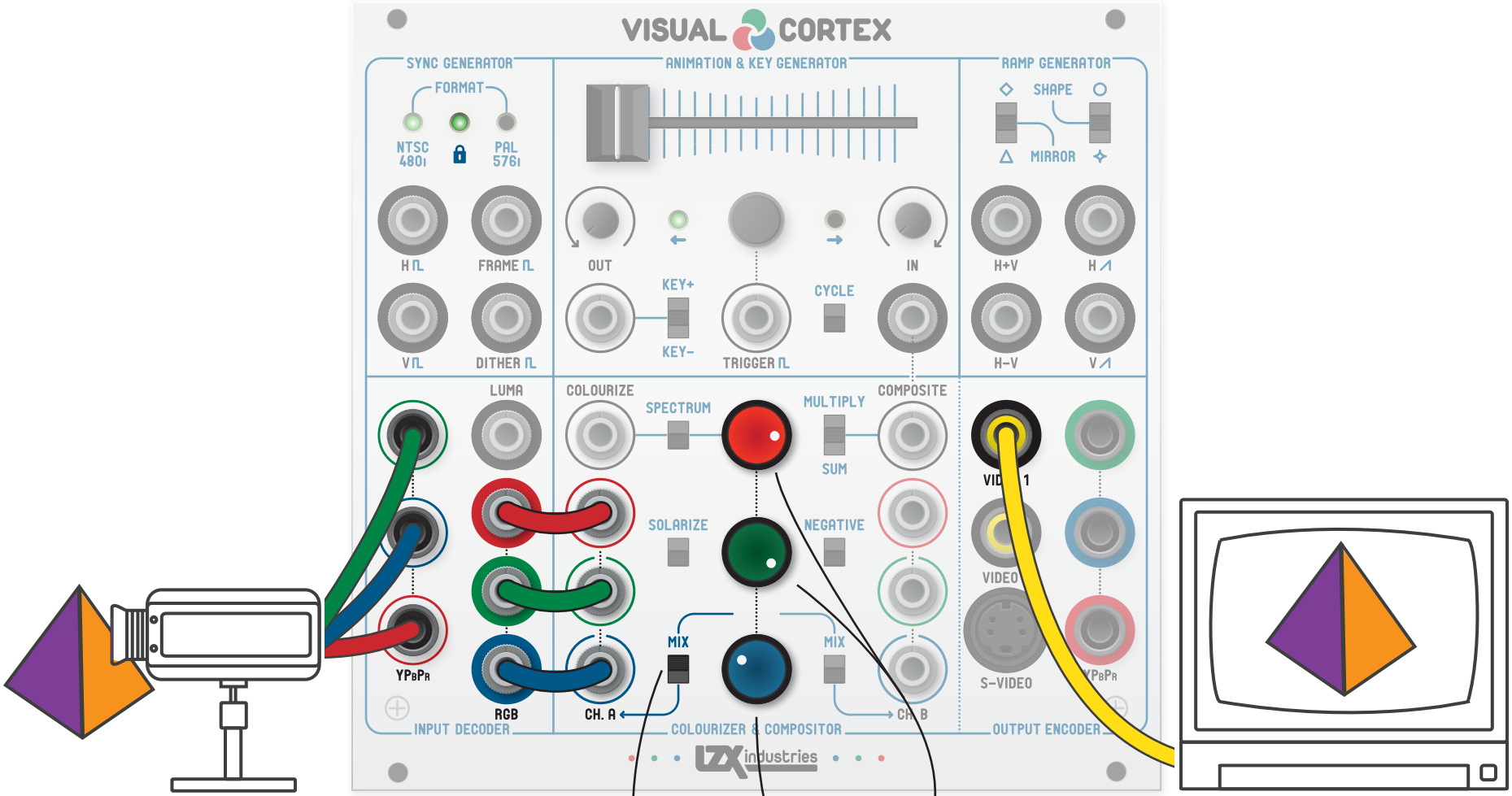




CORTEX BASICS 05. RGB OFFSET

In this patch we'll use the Colourizer & Compositor's red, green and blue controls to adjust the color balance of the Channel A input by adding or subtracting an offset voltage.

Before starting this patch, reset everything to positions found in CORTEX BASICS 01. VIDEO INPUT & OUTPUT.
Don't forget what you've learned about generating transitions, however! Revisit those techniques as you explore the rest of these patches.



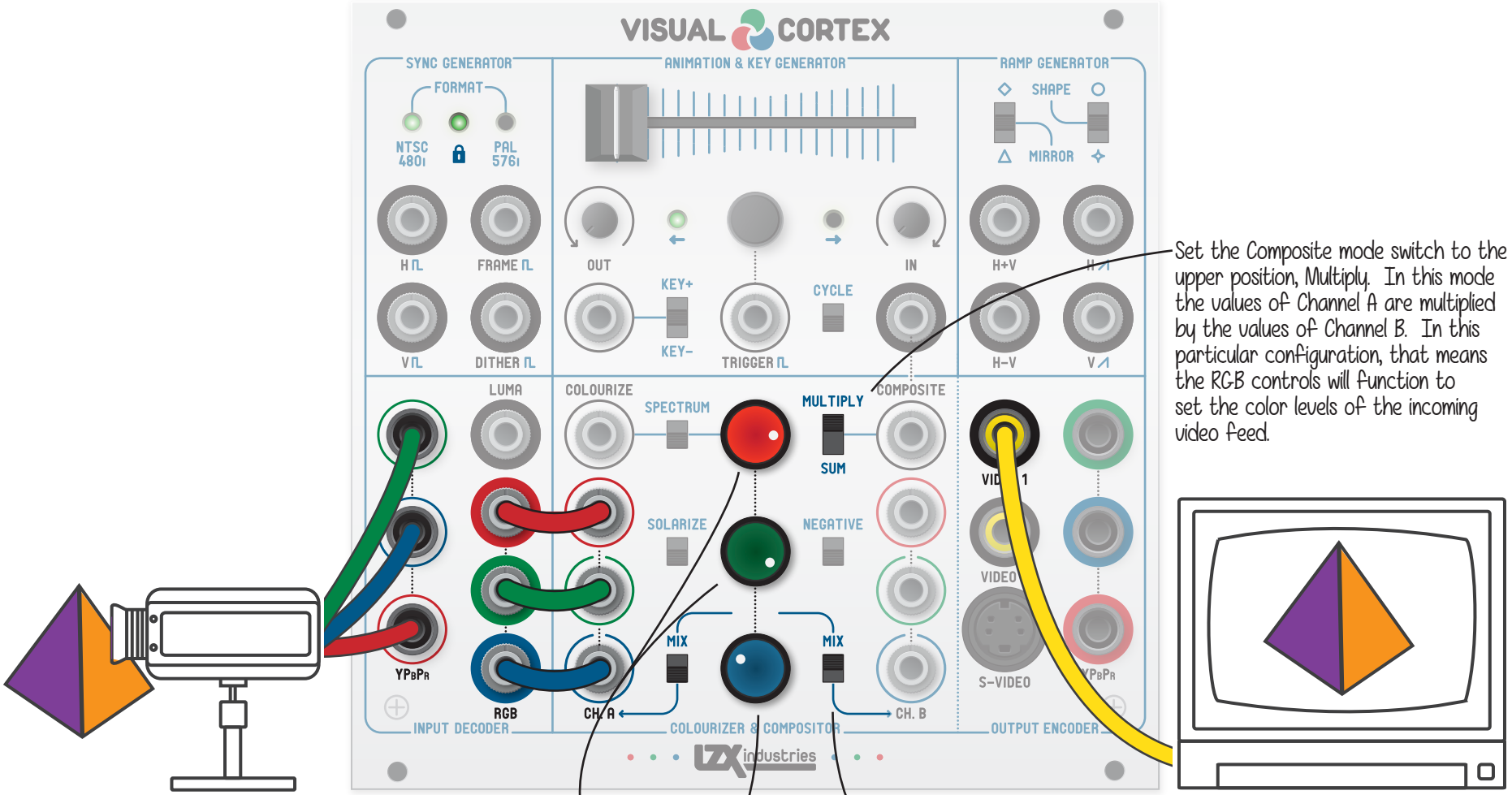
Turn the Mix-to-Channel A switch on, in its up position. Doing this means that the outputs of the RGB knobs will be added to the Channel A RGB inputs.

Rotating the RGB controls clockwise from center will add to the brightness of the color channels in question.

Rotating the RGB controls counter-clockwise from center will subtract from the brightness of the color channels in question.

CORTEX BASICS 06. RGB GAIN & INVERSION

In this patch we'll use the Colourizer & Compositor's red, green and blue controls to adjust the gain and inversion of each color channel of the video input.



Set the Composite mode switch to the upper position, Multiply. In this mode the values of Channel A are multiplied by the values of Channel B. In this particular configuration, that means the RGB controls will function to set the color levels of the incoming video feed.

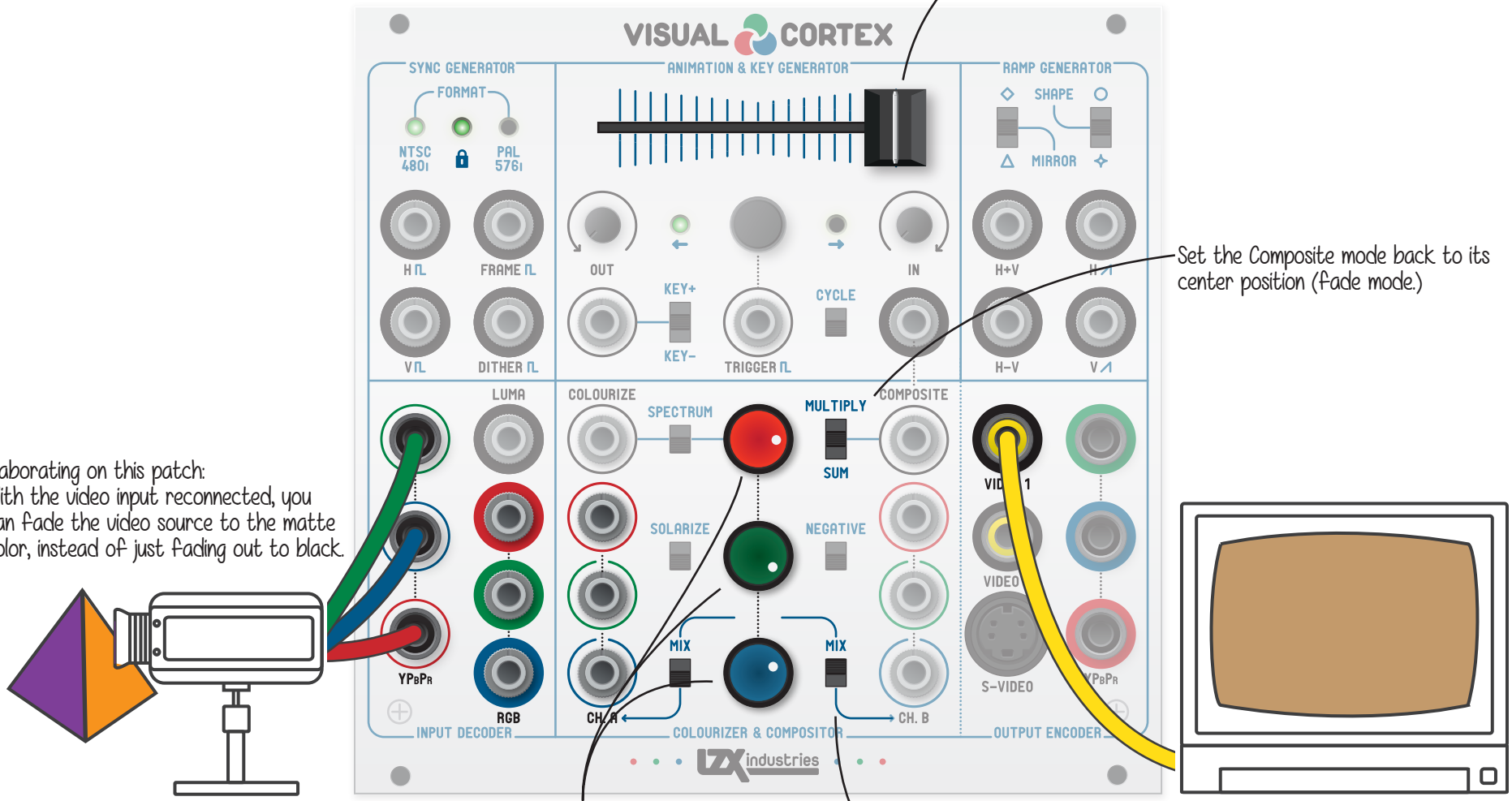
Rotating the RGB controls clockwise from center will increase the contrast of the color channels in question.

Rotating the RGB controls counter-clockwise from center will increase the contrast of the color channels in question, and also subtract them. Since the signal is now below black, you won't see it. But it's still there... keep that in mind later, when we're discussing the solarize effect.

Turn the Mix-to-Channel B switch on, and make sure the Mix-to-Channel A switch is now off. This means we'll have the camera input on Channel A, and the RGB control values on Channel B.

CORTEX BASICS 07. MATTE GENERATION

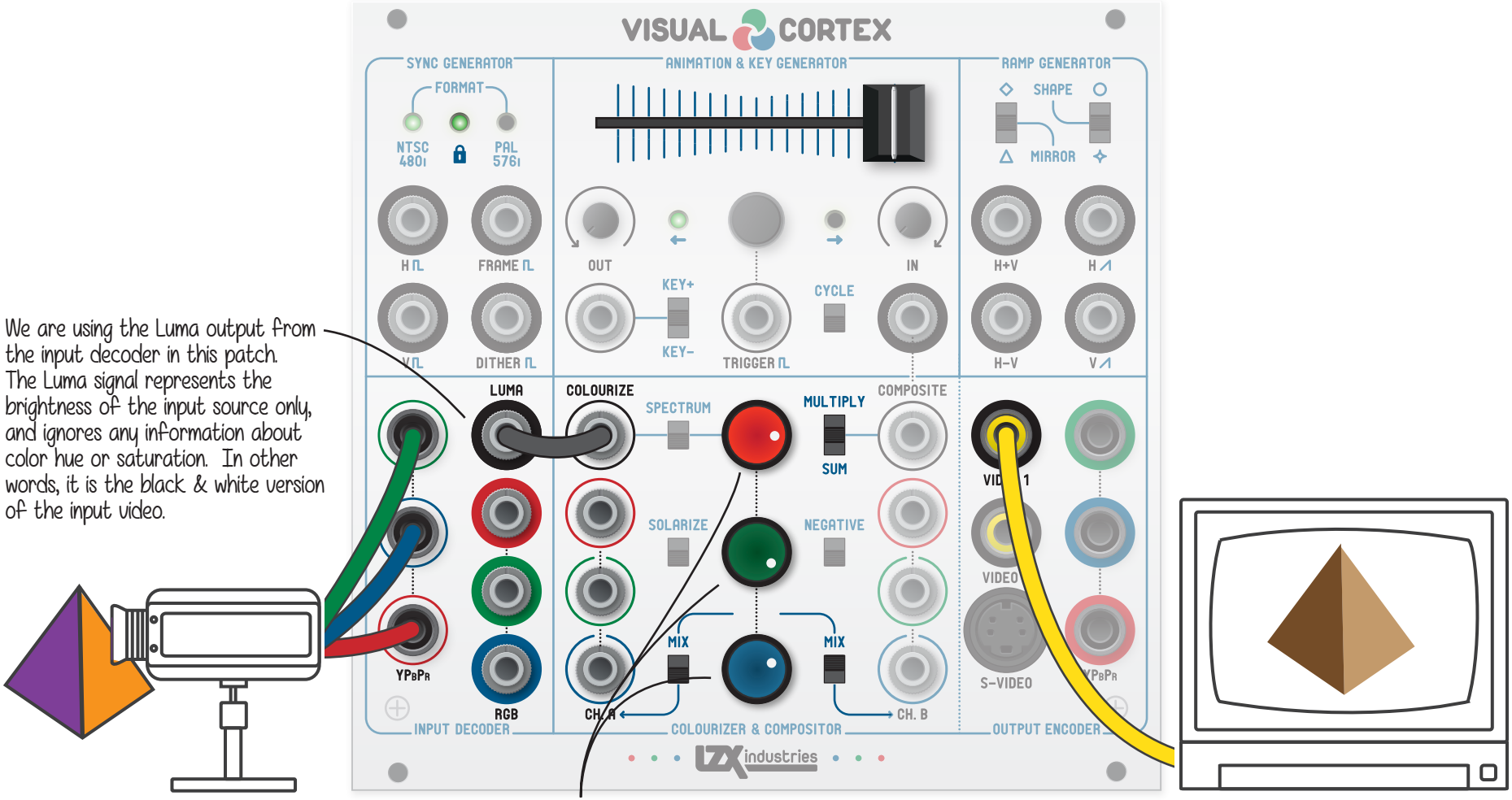
In this patch we'll use the Colourizer & Compositor's red, green and blue controls to create a flat color field.



CORTEX BASICS 08. MATTE COLOURIZER

In this patch we'll use the Colourizer & Compositor's red, green and blue controls to mix a monochrome video source to our desired color.

We are using the Luma output from the input decoder in this patch. The Luma signal represents the brightness of the input source only, and ignores any information about color hue or saturation. In other words, it is the black & white version of the input video.



Rotating the RGB controls clockwise from center will increase the brightness of the color channel in question, only this time, we are controlling the level of the Coulourize input signal, and not a static offset value.

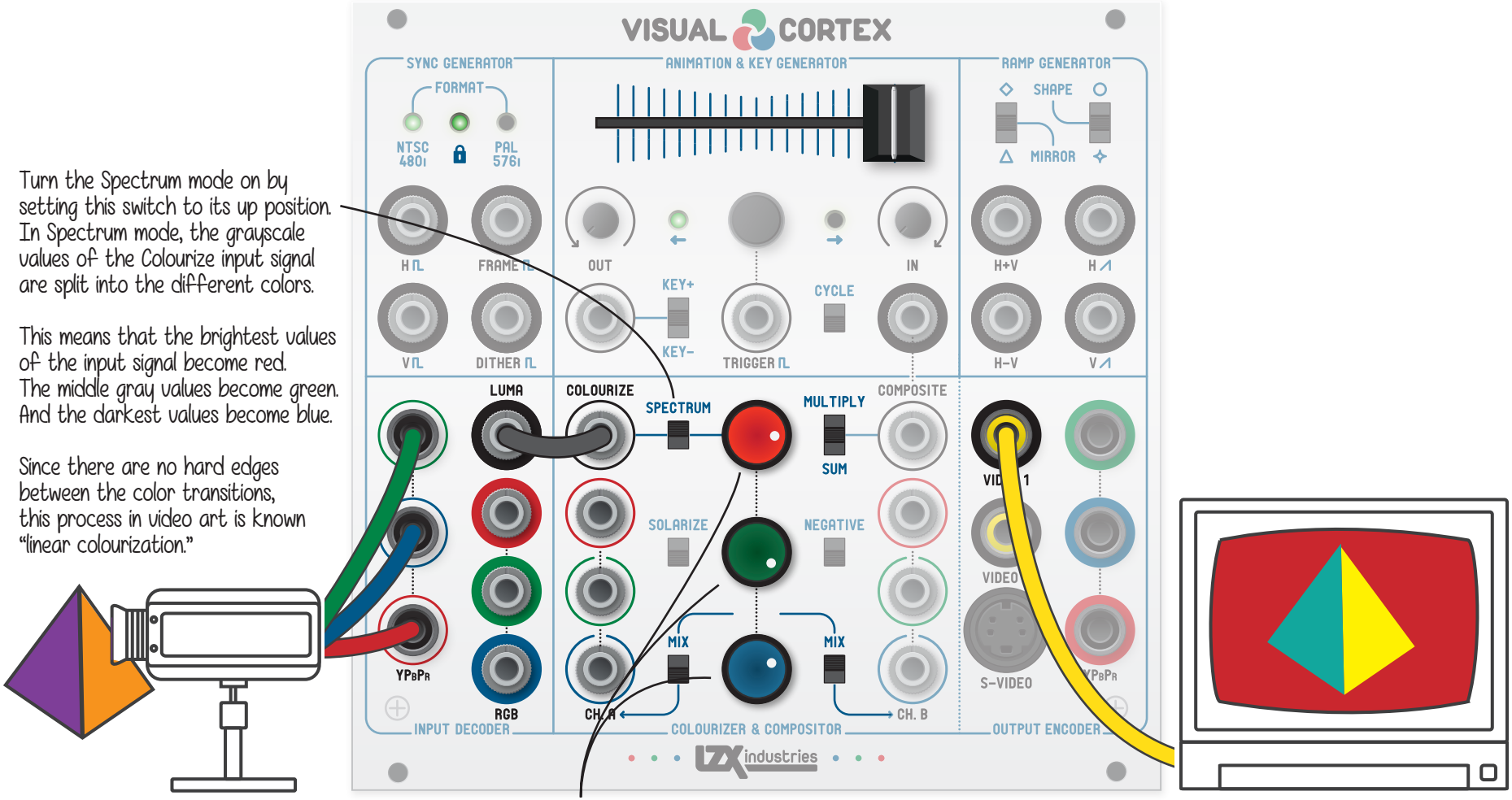
CORTEX BASICS 09. SPECTRUM COLOURIZER

In this patch we'll use the Colourizer & Compositor's red, green and blue controls to map the grayscale values of a video signal to red, green and blue color channels.

Turn the Spectrum mode on by setting this switch to its up position. In Spectrum mode, the grayscale values of the Colourize input signal are split into the different colors.

This means that the brightest values of the input signal become red. The middle gray values become green. And the darkest values become blue.

Since there are no hard edges between the color transitions, this process in video art is known "linear colourization."



Rotating the RGB controls clockwise from center will increase the brightness of the color values split by the Spectrum function., and then add them to Channel B.

CORTEX BASICS 10. LUMA KEYING

In this patch we'll use the key function of the Animation & Key Generator section to generate a luma key, and use that key to switch in the source video.

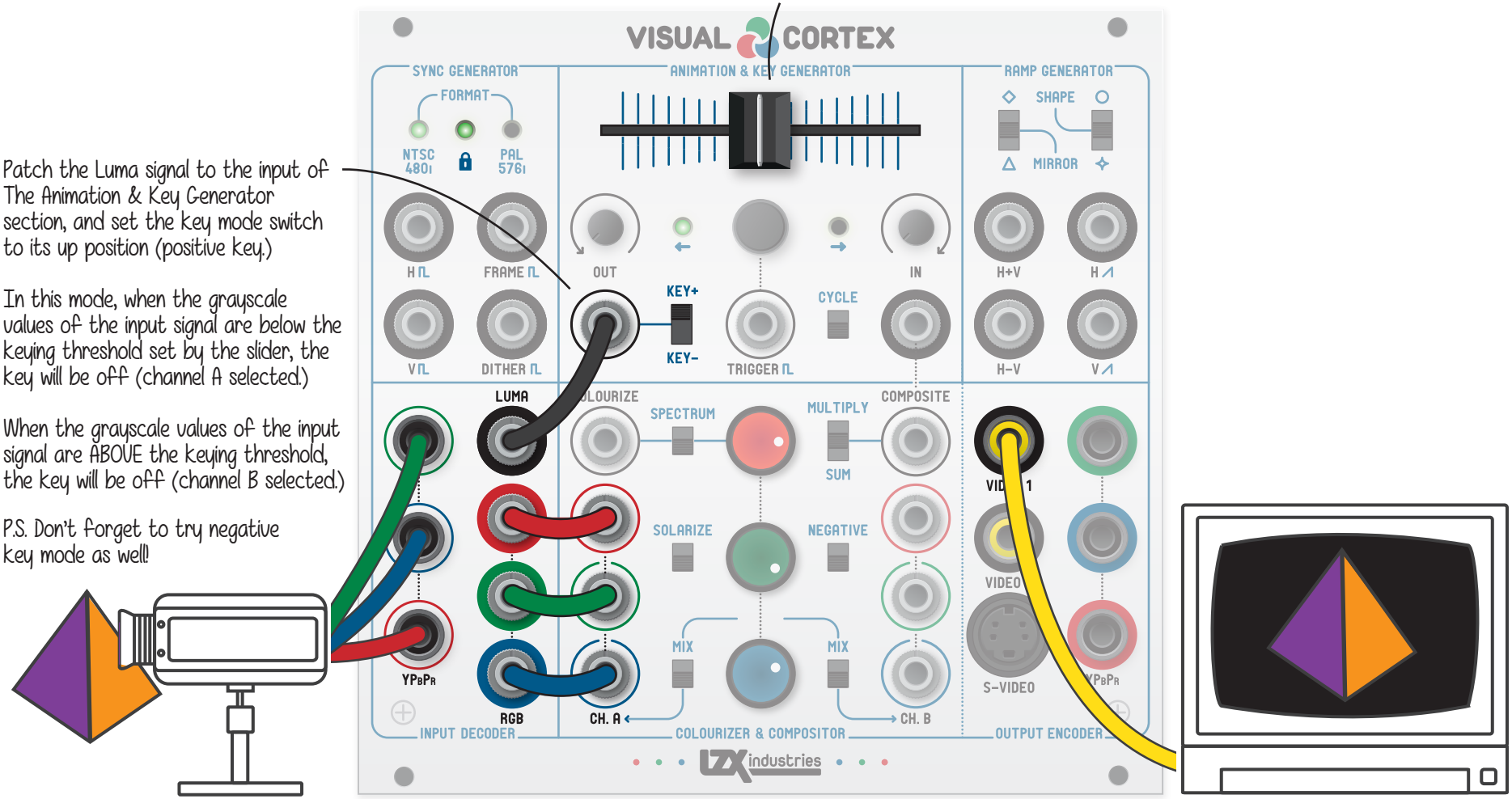
The slider now controls the keying threshold.

Patch the Luma signal to the input of The Animation & Key Generator section, and set the key mode switch to its up position (positive key.)

In this mode, when the grayscale values of the input signal are below the keying threshold set by the slider, the key will be off (channel A selected.)

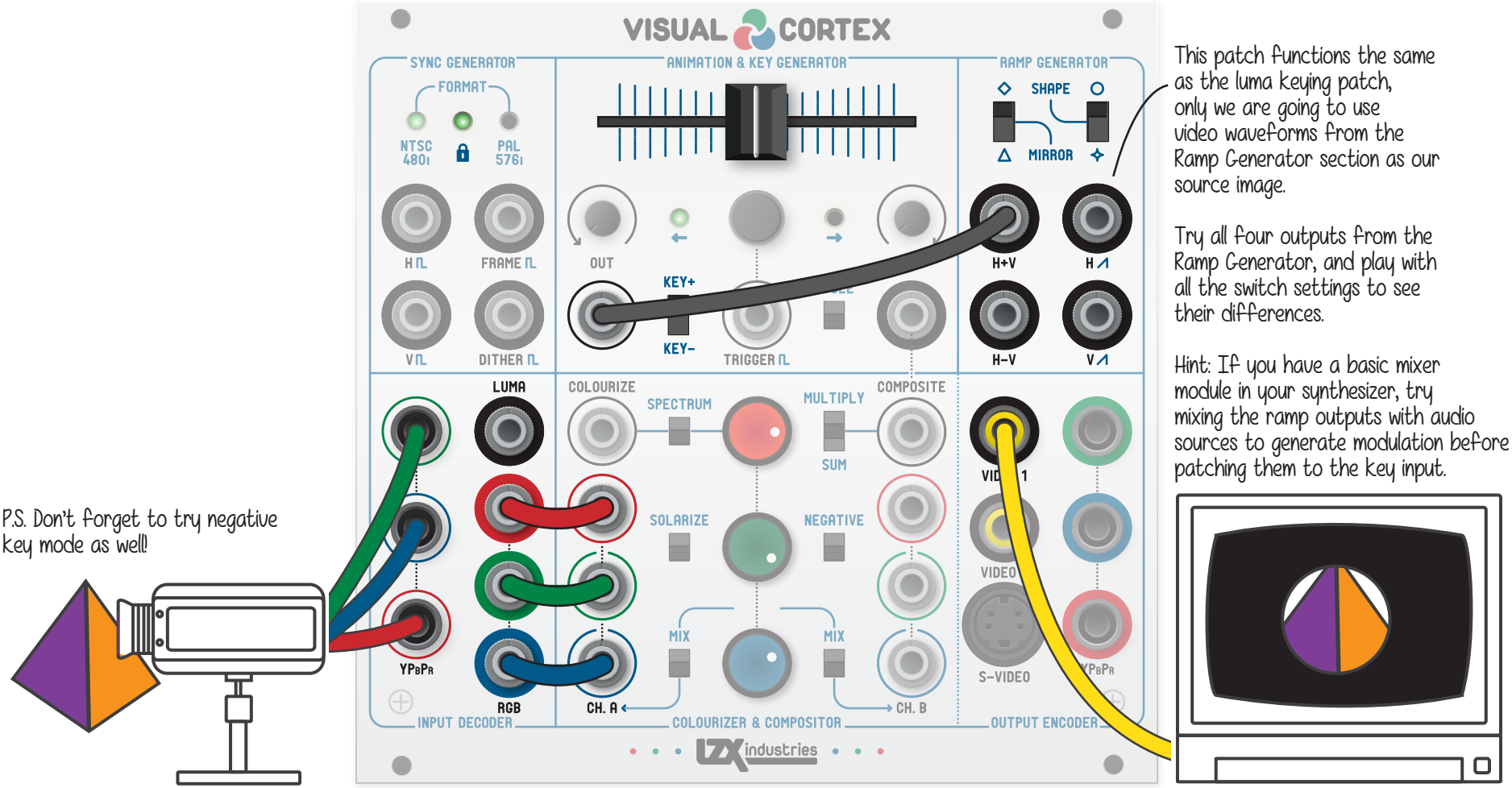
When the grayscale values of the input signal are ABOVE the keying threshold, the key will be off (channel B selected.)

P.S. Don't forget to try negative key mode as well!



CORTEX BASICS 11. WIPE & SHAPE GENERATION

In this patch we'll use the key function with waveforms from the Ramp Generator, to generate wipe and key shapes.



This patch functions the same as the luma keying patch, only we are going to use video waveforms from the Ramp Generator section as our source image.

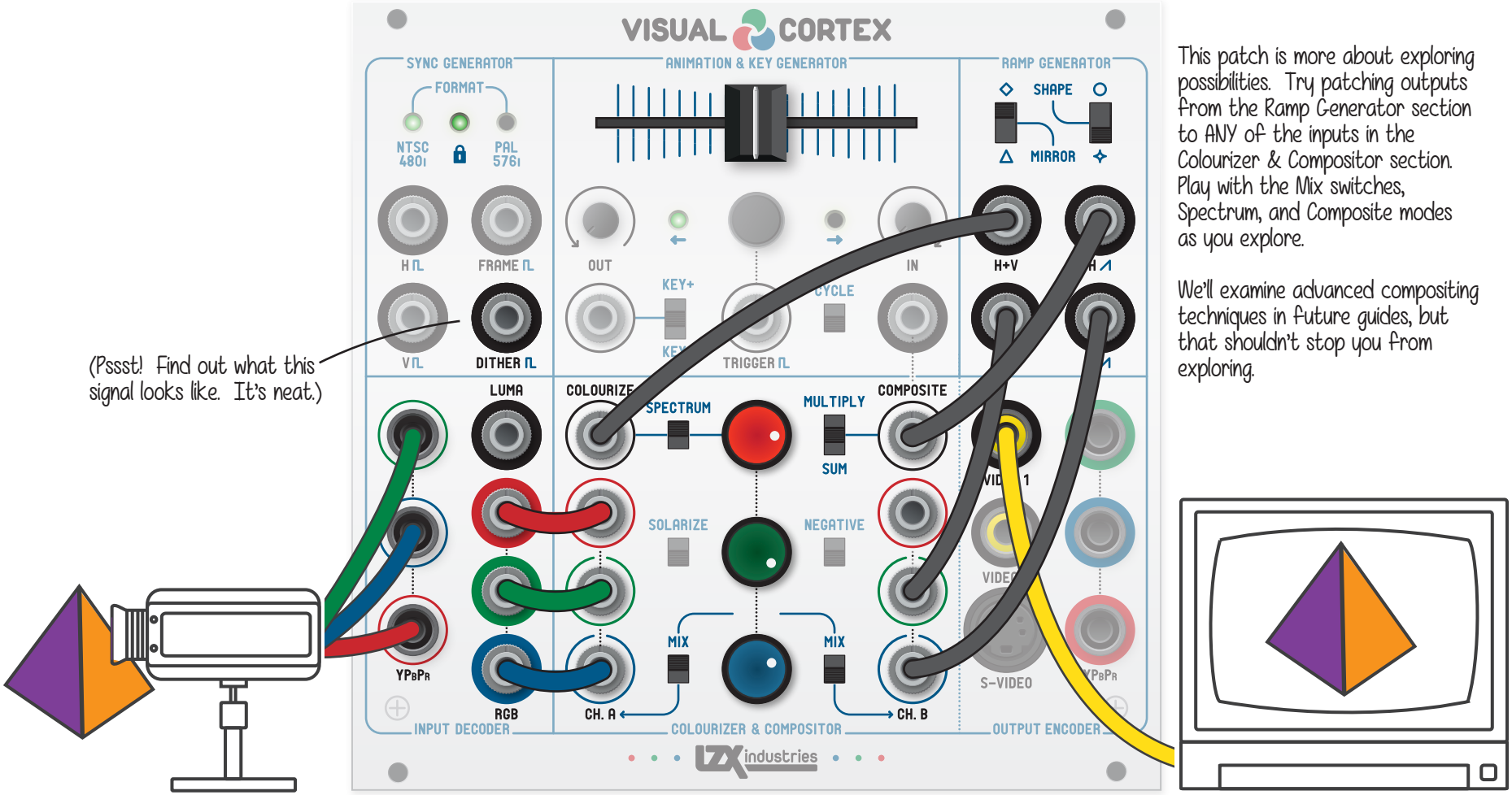
Try all four outputs from the Ramp Generator, and play with all the switch settings to see their differences.

Hint: If you have a basic mixer module in your synthesizer, try mixing the ramp outputs with audio sources to generate modulation before patching them to the key input.

P.S. Don't forget to try negative key mode as well!

CORTEX BASICS 12. LINEAR COMPOSITING

In this patch, we'll play with the Ramp Generator outputs, patching them into the Colourizer & Compositor to get complex color gradients and linear transition masks.



(Pssst! Find out what this signal looks like. It's neat.)

This patch is more about exploring possibilities. Try patching outputs from the Ramp Generator section to ANY of the inputs in the Colourizer & Compositor section. Play with the Mix switches, Spectrum, and Composite modes as you explore.

We'll examine advanced compositing techniques in future guides, but that shouldn't stop you from exploring.

CORTEX BASICS 13. SOLARIZE & NEGATIVE EFFECTS

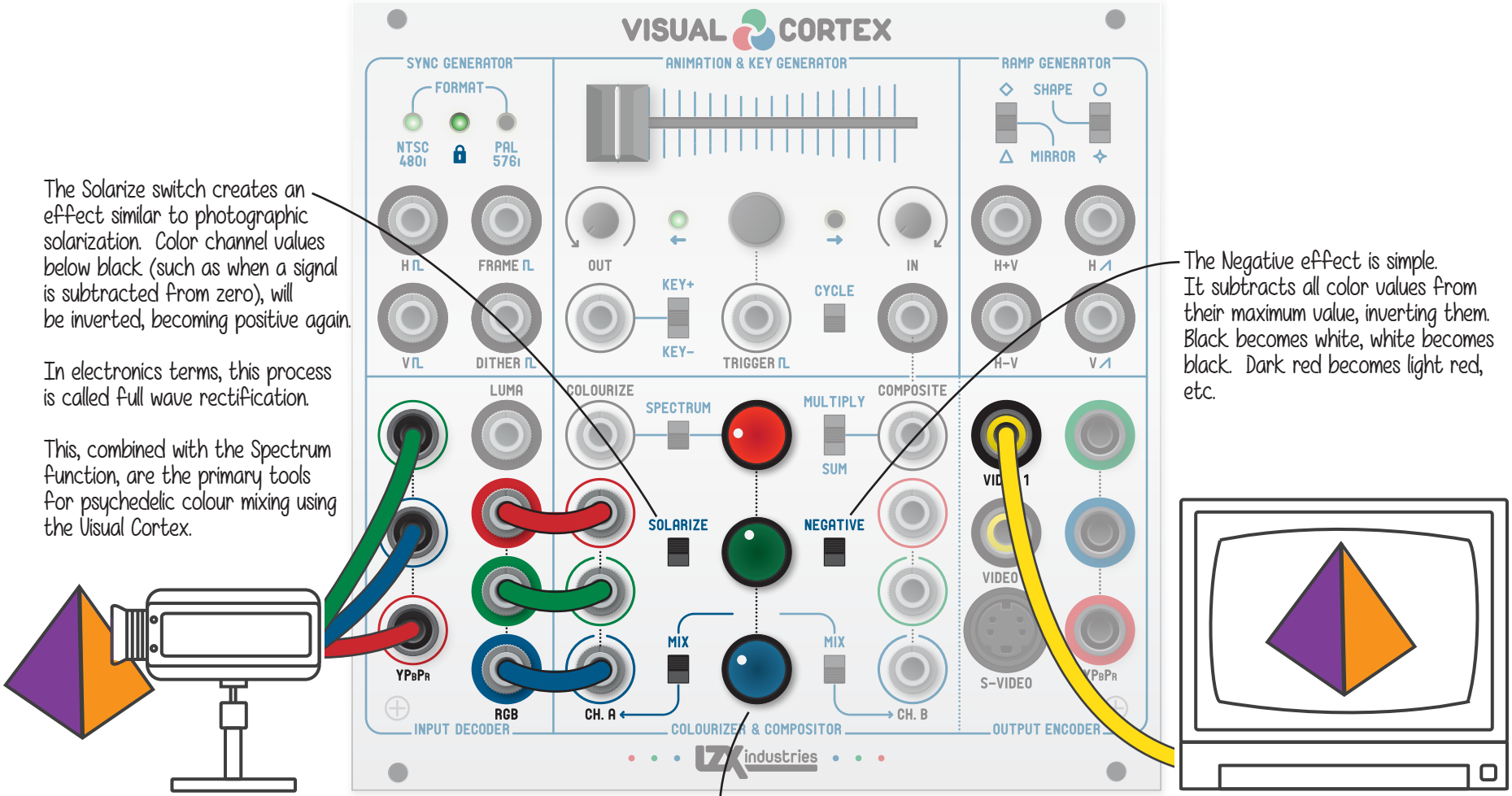
In this patch we'll try out the two output effect modes in the Colourizer & Compositor sections: Solarize, and Negative. This concludes our series of basic patch techniques.

Before starting this patch, reset everything to positions found in CORTEX BASICS 05. RGB OFFSET.

The Solarize switch creates an effect similar to photographic solarization. Color channel values below black (such as when a signal is subtracted from zero), will be inverted, becoming positive again.

In electronics terms, this process is called full wave rectification.

This, combined with the Spectrum function, are the primary tools for psychedelic colour mixing using the Visual Cortex.



The Negative effect is simple. It subtracts all color values from their maximum value, inverting them. Black becomes white, white becomes black. Dark red becomes light red, etc.

By adding negative color offsets to the input channel, you are able to push the outputs below black. When Solarize mode is engaged, the voltages going below black will be re-inverted, appearing as part of the image again. This is great for psychedelic color effects.