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STRANGE LOOP MK-II

USER GUIDE

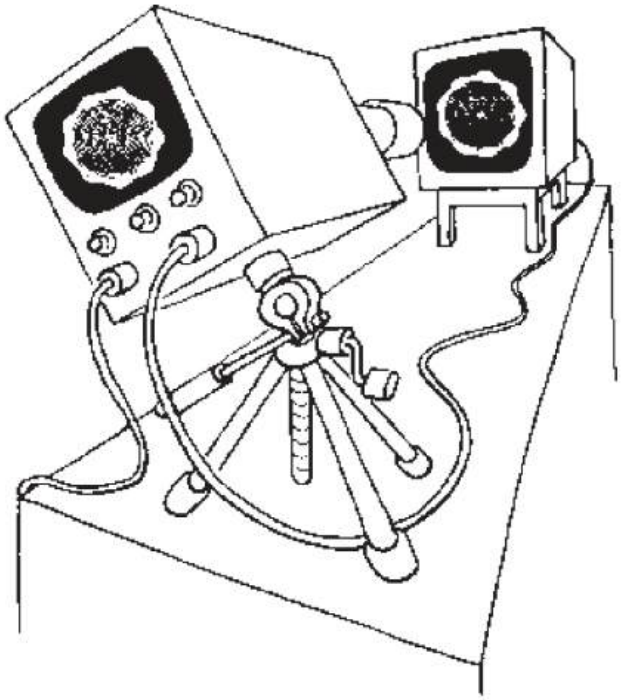
INTRODUCTION

This manual explains how to use your Strange Loop MK-II, but first, let's briefly explore what a feedback loop is.

A video feedback loop is comparable to the familiar audio feedback phenomenon that occurs when a microphone is placed too close to a speaker.
When feedback causes a speaker to screech, the instinctive reaction is usually to silence it. However, experimenting with it reveals that moving the microphone alters the pitch of the sound.

When the input of a system connects to its own output, the system resonates within itself, creating dynamics we can control by adjusting various parameters.

In video, feedback loops have often been generated by pointing a camera at a screen displaying its own output-very much like the microphone and speaker example. By moving the camera or changing screen settings, the adventurous video explorer can discover different feedback "zones."



Your Strange Loop MK-II is essentially a video feedback loop contained in a box, specifically crafted for video art, live performances, and experimental setups.

The device can process live NTSC and PAL video from a capture card and also play 720x576 videos from a USB drive.
It's also compatible out of the box with some webcams and HDMI capture cards.

It allows for luma-keying of the source video into a frame buffer feedback loop, and lets you adjust this loop's parameters using knobs and thumbstick, as well as scaling, rotating and tilting the source image.
It also responds to audio or CV signal, allowing you to modulate those parameters in real time.

It's time to explore!

GETTING STARTED:

Power-Up:

First, connect your USB flash drive or the capture card into the "DATA" port.
Next, connect either an HDMI cable to the mini HDMI port or an RCA cable to the video output.

Note:
Only one output can be used at a time. If no HDMI screen is connected at startup, the device defaults to the analog video out.

Finally, connect the correct power supply, switch it on if necessary, and wait for the device to boot up for a few seconds.

Power-Off:

To power down the device safely, press and hold the "POWER" button for 3 seconds, then wait approximately 5 seconds for it to power down completely before unplugging the power cord.
Never disconnect power before the device has turned off completely.
Repeatedly doing this could corrupt the device micro SD card.

CONTROLS:

Mode Button:

Cycles through available shader effects. Default effects include contrast, hue shift, pixelate, negative, and sharpen.
If your USB flash drive contains .frag and .vert files, the device automatically adds them to the shader list alphabetically.
Ensure these files follow the provided shader template (at the end of this manual).

Ctrl Change Button:

Switches controls between affecting feedback or source video parameters for pan, tilt, zoom, and rotation.
After pressing the Ctrl Change button, knobs update only after their physical position matches the stored value, preventing sudden shifts. Move the knob slowly until it engages. This does not apply to thumbsticks.

Mirror Button:

- no mirror
- feedback only mirrored.
- both feedback and video mirrored.

Play/Pause Buttons:

Toggles video playback.

Skip Forward/Backward Buttons:

A single click skips 15 seconds forward or backward in the video.
A double-click loads the next or previous video from your USB drive, sorted alphabetically.

Audio/CV Assign Button:

Press this button and then move a knob or thumbstick to assign external audio or CV signals to that control. Press again and move the control to unassign it, or double-click to clear all assignments.

The Strange Loop MK-II will automatically detect if the signal is either audio or a slow modulation CV source (like and LFO or an envelope), and will behave like an envelope follower with a filter in case the signal is audio, while it will simply directly respond to modulation bypassing both the envelope follower and the filter in the other case.

Luma Key Knob:

Adjusts the threshold for black or white.
Turning clockwise removes lighter image areas; turning counter-clockwise removes darker areas. Center position is neutral.

Zoom Knob:

Zooms in or out on the feedback or video being processed.

Rotation Knob:

Rotates feedback or processed video left or right.

Effect Knob:

Adjusts parameters specific to the currently selected shader.

Hue Knob:

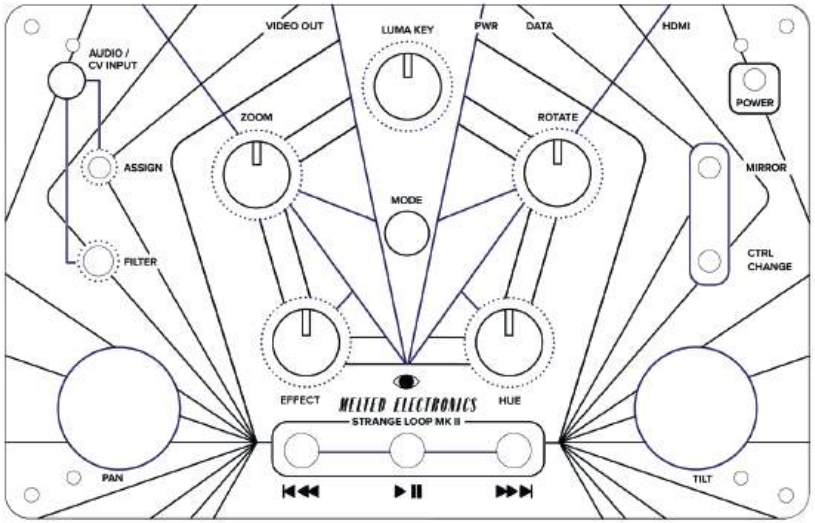
Shifts the color of the feedback portion without altering its dynamics.

Filter Knob:

Controls the low-pass filter for the Audio/CV input. This smooths out parameter modulation when using audio input, giving it a clearer rhythmic quality. It's only active when feeding audio, when sending a slow modulation signal it will be bypassed automatically.

Thumbsticks (Pan & Tilt):

Use thumbsticks to pan and tilt feedback or processed video
Clicking resets them to neutral.



LOADING VIDEOS AND SHADERS

You can load and play back .mp4 videos in 720x576 resolution by having them loaded in a USB drive. Connect the USB drive with the micro usb adapter to the DATA port, before turning on the device.
They will be loaded automatically and you can cycle through them with the transport buttons (double clicking either fast forward or reverse).

You can also load external GLSL shaders by placing them in a folder called "shaders" inside the root of your USB drive (so the full path will be, for instance, E:\shaders).
You need to have both a .frag and .vert file, both with the same name and following this template:

FRAGMENT:

```
precision highp float;
uniform sampler2D tex0;
uniform float in1; //range 0.0-1.0
uniform float dispX;
uniform float dispY;
varying vec2 texCoordVarying;

void main(){
        vec4 color;

        color = texture2D(tex0, texCoordVarying + vec2(dispX, dispY));
        //here you can add your code to process the pixel data before you pass it
        //to gl_FragColor
        //right now it just passes it without any effect, for instance to apply a
        //simple negative effect
        //you could do:

        //color.rgb = 1.0 - color.rgb;

        //you can use the uniform "in1" to modulate your processing, it will be
        //connected to the "Effect" knob
        gl_FragColor = color;
}
```

VERTEX:

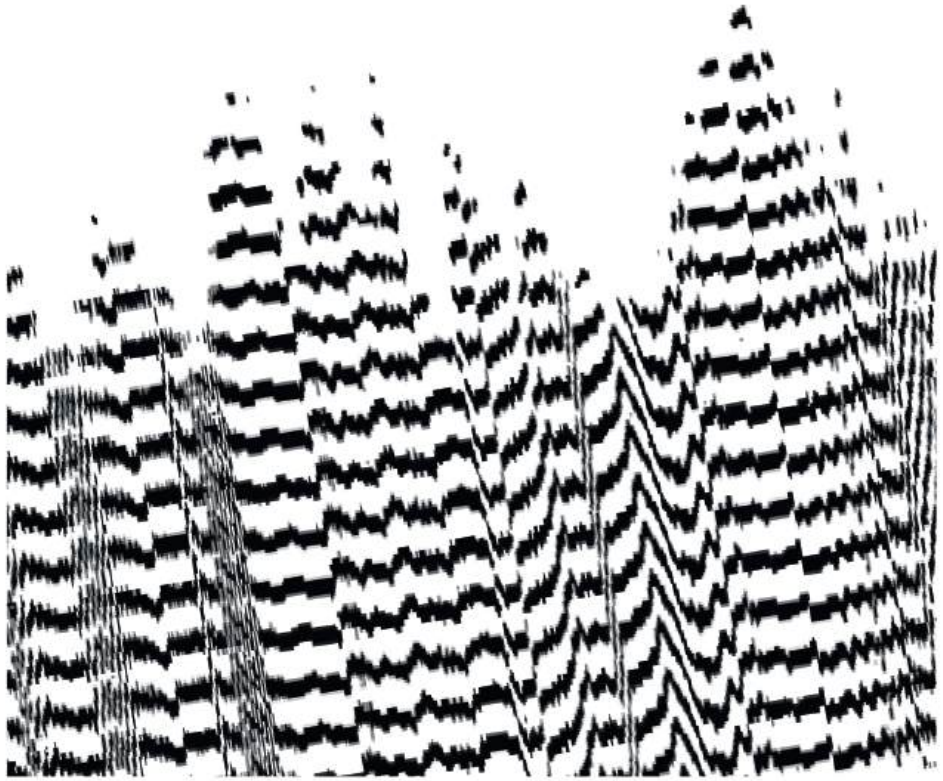
```
uniform mat4 modelViewProjectionMatrix;
attribute vec4 position;
attribute vec2 texcoord;
varying vec2 texCoordVarying;

void main()
{
        texCoordVarying = texcoord;
        gl_Position = modelViewProjectionMatrix * position;
}
```

VIDEO INPUT

To process live video,before turning on the device connect the provided USB capture card to the DATA port using the micro USB adapter.

You can also experiment with other capture device and webcams, most devices compatible with V4L will probably work out of the box, so if you have a webcam or other USB capture devices it might be worth trying to connect them!

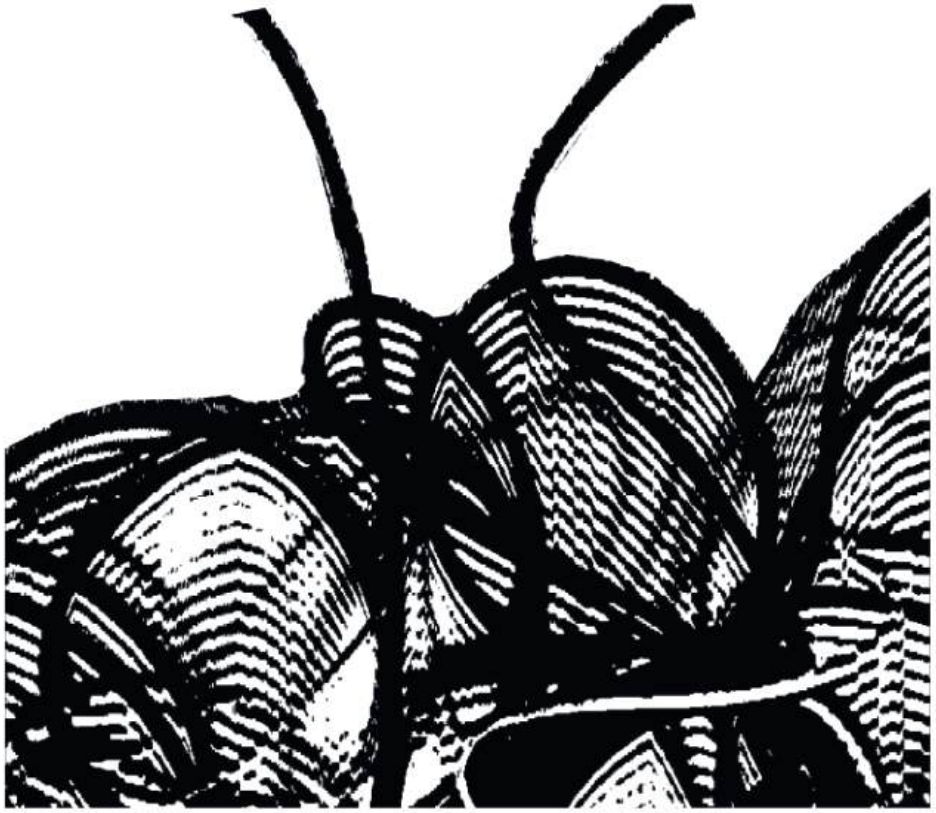


UPDATING

To update the device, copy the update files provided in the root of a USB drive. Don't put them in subfolders.

Then plug in the USB drive as usual before boot, power on the device and wait for around 5-6 minutes until it reboots by itself. Don't turn it off or unplug it before it reboots.

Done! You can now delete the update files from the USB drive if you wish.



TROUBLESHOOTING:

If video playback doesn't start:

Check that your USB drive contains compatible .mp4 video files in the supported resolution (720x576).
Ensure the USB drive is formatted correctly (NTFS recommended).
Make sure the USB to micro USB adapter is not faulty.

If the capture card doesn't work:

Make sure you are using the correct input on the capture card (the yellow RCA connector)
Check if the capture card LED is coming on, if it is not, check if the USB adapter is faulty.
Lastly, it might be that the capture card itself is faulty or has failed, you can get find replacements by searching for "Easycap" capture card (they usually retail around 5 to 15 USD).

If the device does not power up:

Check that the power supply is securely connected, on the "PWR" marked micro-USB port and switched on.

Ensure you are using a compatible power supply. It is crucial that it provides at least 3A for correct functionality.
If it still does not power on, the power supply is probably faulty, so try a new one.

If there's no video output:

Confirm that the HDMI or RCA cable is securely connected.
If you are using the RCA output, make sure that no HDMI cable is connected before powering up the device.
Conversely, if you are using HDMI, make sure you connect your HDMI screen/projector to the Strange Loop MK-II before powering it up.

Melted Electronics is a passion project from Melt Dream,
focused on creating analog video-art tools that are accessible,
dependable, and a joy to play with, both in standalone and Eurorack module form.

Every unit is designed, hand-built, and tested in-house.

Find out more at meltedelectronics.com

Designed by Melted Electronics,
Hand-built in Torino, Italy
Graphic design by: Eugenio La Rosa
User manual printed and assembled in Spazio Muffa.