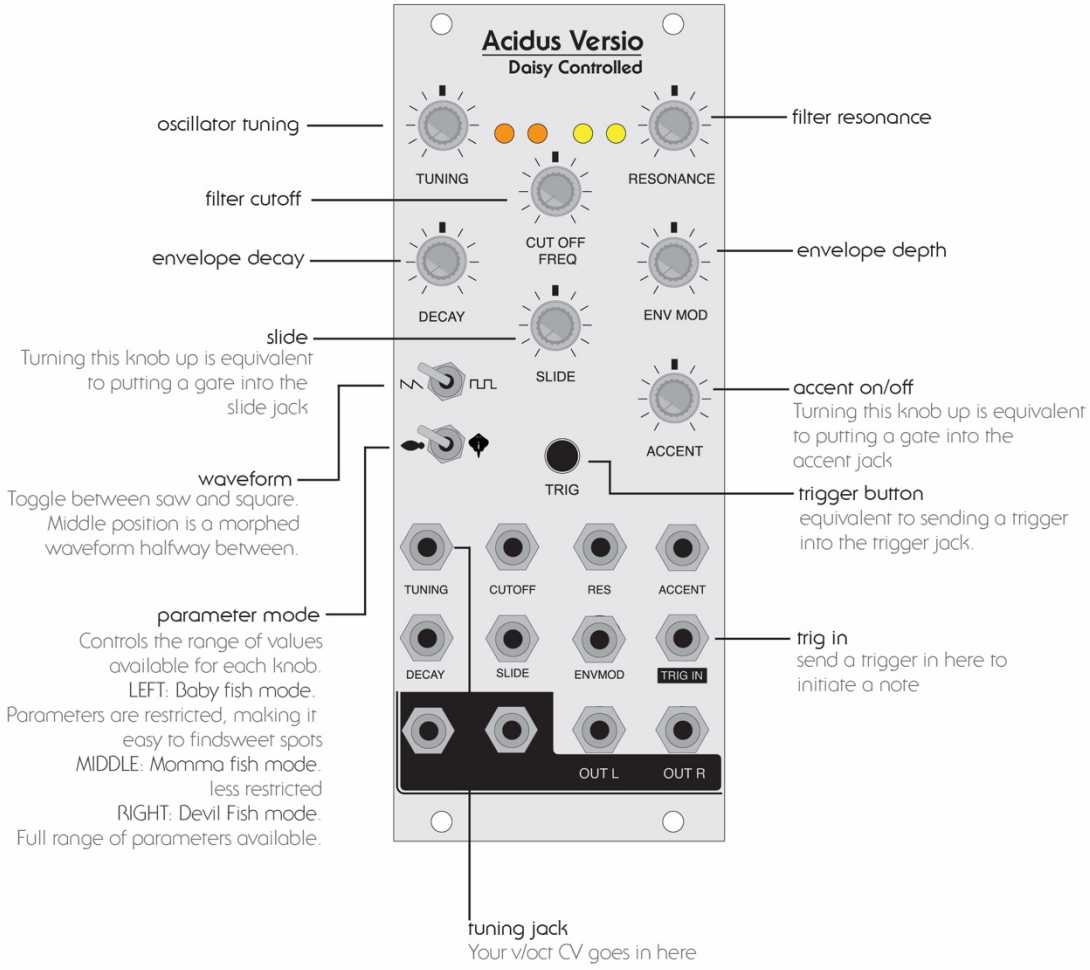
Acidus Versio

A port of open303 to Noise Engineering Versio platform



Introduction

This is an alternative firmware for the Noise Engineering Versio platform. It's a simple acid bassline voice based on the Open 303 firmware written by Robin Schmidt. Just plug your module in with a good USB cable, flash the firmware, and you'll be burning an acidic hole through your eurorack case in minutes.

Caveats

Before you get your test tubes and beakers out, please read this part to set your expectations. Or you know, just plug it in and start playing around and worry about these details later on like you always do.

The Versio line really wasn't built for voices; it is set up as an audio effects processing platform and therefore are some features of the hardware that are not ideal for this application. For instance, the knobs and jacks are inextricably linked at the hardware level. **All knobs linearly add with CV at the corresponding jack, and zero is always in the most counter-clockwise position**. That means we can't have a knob that behaves any differently from any of the inputs. For instance, there is an accent input, which turns on the accent behavior of the 303. You would expect the accent knob to set the level to which this CV input affects your tone. However, turning the accent knob up is totally equivalent to sending a positive voltage in to the jack! So we can't separate the behavior of the knobs and jacks.

This is especially uncomfortable when it comes to pitch input. We would want the V/OCT CV input to cover a nice reasonable range of values, and perhaps the corresponding tuning knob would have no effect at noon, tune our pitch down to the left of noon, and up to the right of noon. Nope. Turning the pitch knob is just linearly adding to the pitch, with zero addition in the completely counter-clockwise position. Also, because the open303 is based on MIDI notes, the outputs are always going to be quantized to the nearest chromatic tone. Because of these factors, we think it's best to think of this knob as a "transpose upwards" knob, and it will probably spend most of its time in the zero spot.

Installation

Download the latest firmware from here:

https://github.com/abluenautilus/AcidusVersio/releases

Go to the NE firmware update page:

https://portal.noiseengineering.us

You're going to update the firmware using the same procedure you would use to change any Versio firmware:

1. Plug a micro-USB cable into the Daisy on the back of the module. Plug the other end into your computer.
2. Open up Google Chrome, and navigate to the link above.
3. Put your module into DFU mode by pressing the buttons on the Daisy (hold BOOT and press RESET)
4. Click the button on the website to connect your module
5. Choose Custom File… and select the AcidusVersio.bin file
6. Press the Change Firmware button

If you can't connect your module, it's probably the cable.

Code availability

The code for this project is open source, MIT licensed, and available here:

https://github.com/abluenautilus/AcidusVersio

Using the Acidus Versio

Start by turning the TUNING, SLIDE, and ACCENT knobs fully counterclockwise. Those parameters you will generally want to modify with CV rather than with the knobs.

The firmware provides a full TB-303 voice, but does not provide a sequencer. You have to sequence the module by providing a trigger in to the TRIG (FSU) jack, and pitch cv into the Tuning jack. You can accent notes by sending a positive voltage into the Accent jack, and you can add slides with positive voltage in the Slide jack. I won't include a whole bunch of info here on the signal path or general functioning of the 303, as all of that information is available elsewhere. This guide just covers this implementation.

Tuning. Remember, the knob sums linearly with the CV input, so to hear the pitch that corresponds directly to your CV input leave this at zero (fully counter-clockwise). Zero volts corresponds to C2, and the input range is 0-5V.

Slide. Slides to the next note. When there is a slide, envelopes are not re-triggered, unless you are in "babyfish mode".

All of the parameters below are affected by the PARAMETER MODE. PARAMETER MODE is adjusted using the bottom toggle switch and has three settings:

LEFT, "Babyfish Mode": Restricted parameter ranges allow for easier
MIDDLE: "Mommafish Mode": The parameter ranges available correspond pretty closely to the actual 303 ranges.
RIGHT: "Devil Fish Mode": This expands the range of the values to extend to those offered by the famous Devil Fish modifications to the 303 created by Robin Whittle.

Cut Off Freq. Adjusts filter cutoff frequency for the 24-db low-pass filter.

Resonance. Adjusts filter resonance.

Env Mod. Adjusts the effects of the filter envelope.

Decay. Adjusts envelope decay time.

Accent. Turning this knob is equivalent to sending an accent trigger into the accent jack.

OUT L / OUT R. These two are the same; the output is monophonic.

Calibration

After you install the firmware, the unit should work fine. However, if you experience any issues with tuning, you may need to perform a calibration procedure. To do this, you will need a constant DC voltage source. If you have the MORDAX Data module, the Voltage Monitor mode will provide output voltages. You may also use the Voltages app on Ornament & Crime.

To enter calibration mode, plug your module into your case. Make sure both toggle switches are in the RIGHT position. Turn the Tuning knob to the most counter-clockwise position. Press and hold the TRIG (FSU) button while you power on the case. The lights on the module should show white. You can then release the button.

STEP 1: Green lights are showing. Plug in a 1 VOLT constant source into the tuning jack. Press the TRIG button.
STEP 2: Blue lights are showing. Plug in a 2 VOLT constant source into the tuning jack, then press the TRIG button.
STEP 3: Cyan lights are showing. Plug in a 3 VOLT constant source into the tuning jack, then press the TRIG button.

Your module is now ready to use. Calibration data persist through power-offs.

Tips and Tricks

The accent input may sound better if you give it envelopes instead of straight gates.

Acknowledgements

Thanks to Noise Engineering for building these modules and for providing the source code necessary for community development. Thanks of course to Robin Schmidt who did the hard work of writing the open303 code.

Thanks to everyone who tested the firmware, provided feedback, audio, tips, and support, including @oscidigi, and @bill_get_still.