Gotharman's SPAZEboard6 For Little deFormer 3

Granular Analog Workstation

Update Manual 82.03

-New oscillator types: Smooth oscillators and Resonator oscillators for oscillator1, Type2 for oscillator 2.

-Resonator Type 2 added to Resonator Insert effects.

-The analog filters can now be arranged as one big filterbank.

-It is now possible to copy/paste a selected number of steps from any location, to any location of a sequencer track.

-Output Effects gain can now be adjusted.

-Alphanumeric touch keyboard has been added, for more convenient naming of presets, songs and samplings.

-Importing of Cue Points (Markers) as Chop Points has been optimized, to cover cue points generated on a wider range of programs.

-An "Esc" touch button has been added to the Auto Sample Rec "Waiting For Trigger…" page.

-THIS FIRMWARE VERSION WILL ONLY RUN ON LD3's, THAT HAS SPAZEBOARD6 INSTALLED!

Bug fixes:

-Sometimes, when doing a chopped audio track recording, clicks would appear on the first 5-6 steps of the recording. This has now been fixed.

-In some cases, at some specific sample lengths, adjusting the start point of the last sampling in a sample bank, would cause LD3/Tiny LD to freeze. This has now been fixed.

Oscillator 1 New Oscillator Types

2 new oscillator types have been added to Oscillator 1: A smooth oscillator and a resonator oscillator.

The first set of LD3 oscillators (now named Type1) was designed from the theory, that the waveforms should contain as many harmonics as possible.

The smooth oscillators (named Type2) are designed from the theory, that the sound and the pitch modulation should be as smooth as possible.

The Resonator oscillators (named Reso) are designed using real filtering with multiple resonances fed back. This gives some fat resonators, with control over the amount of resonances.

The new oscillator types can only be selected for part 1 to 6, and when they are selected for a part, this part Insert Effect 2 is no longer active.

When entering the oscillator 1 pages, it will now look like this:

The waveform drawing has been moved to the upper left corner, to make room for 2 new parameters:

Type: Oscillator type select. Choices are:
1: The type1 bright oscillators.
2: The type2 smooth oscillators.
Reso: The Resonator oscillators.

Reso: The amount of resonances fed back. Will only work in Reso oscillator mode. The higher this parameter is set, the more resonances are fed back into the oscillator. Even at setting zero, some resonances are fed back. Range: 0 to 511.

The Type parameter is not morphable, but the Reso parameter is.

When Oscillator 1 is in Reso oscillator mode, the FM amount modulation are replaced by Reso modulation:
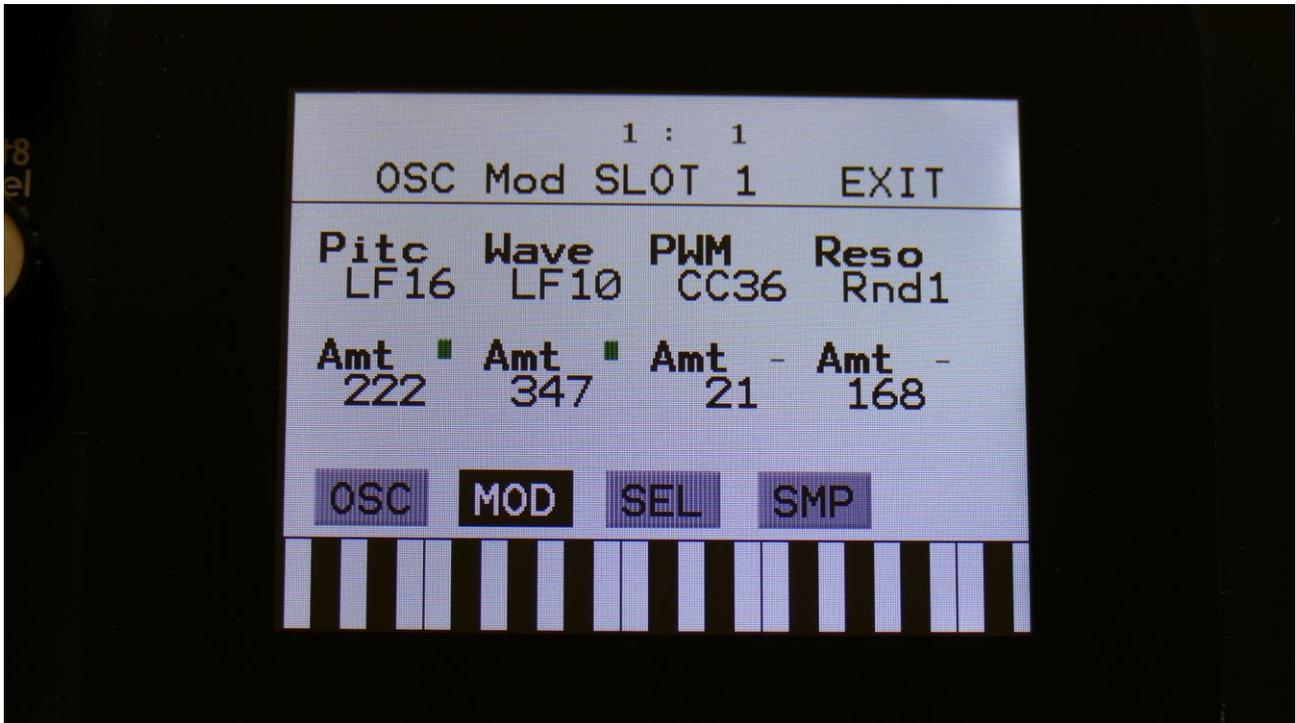
When the new Type 2 or Resonator oscillators are selected for a part, Insert Effect 2 will be bypassed, and its box will be grey:
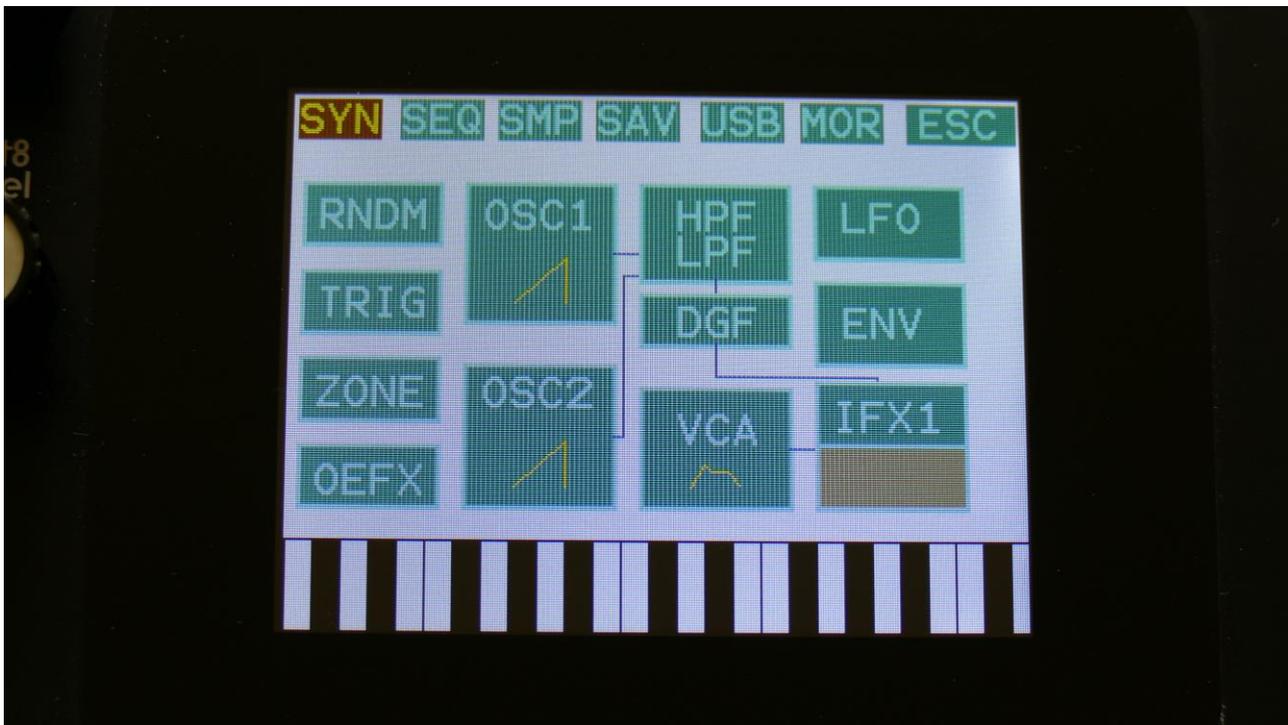
Oscillator 2 New Oscillator Type

On Oscillator 2 it is now possible to choose between type 1 and type 2. Type 1 are the oscillator type, that has always been available, type 2 are a new type of oscillator, on which the pitch modulation is more smooth.

When entering Oscillator 2, it will now look like this:
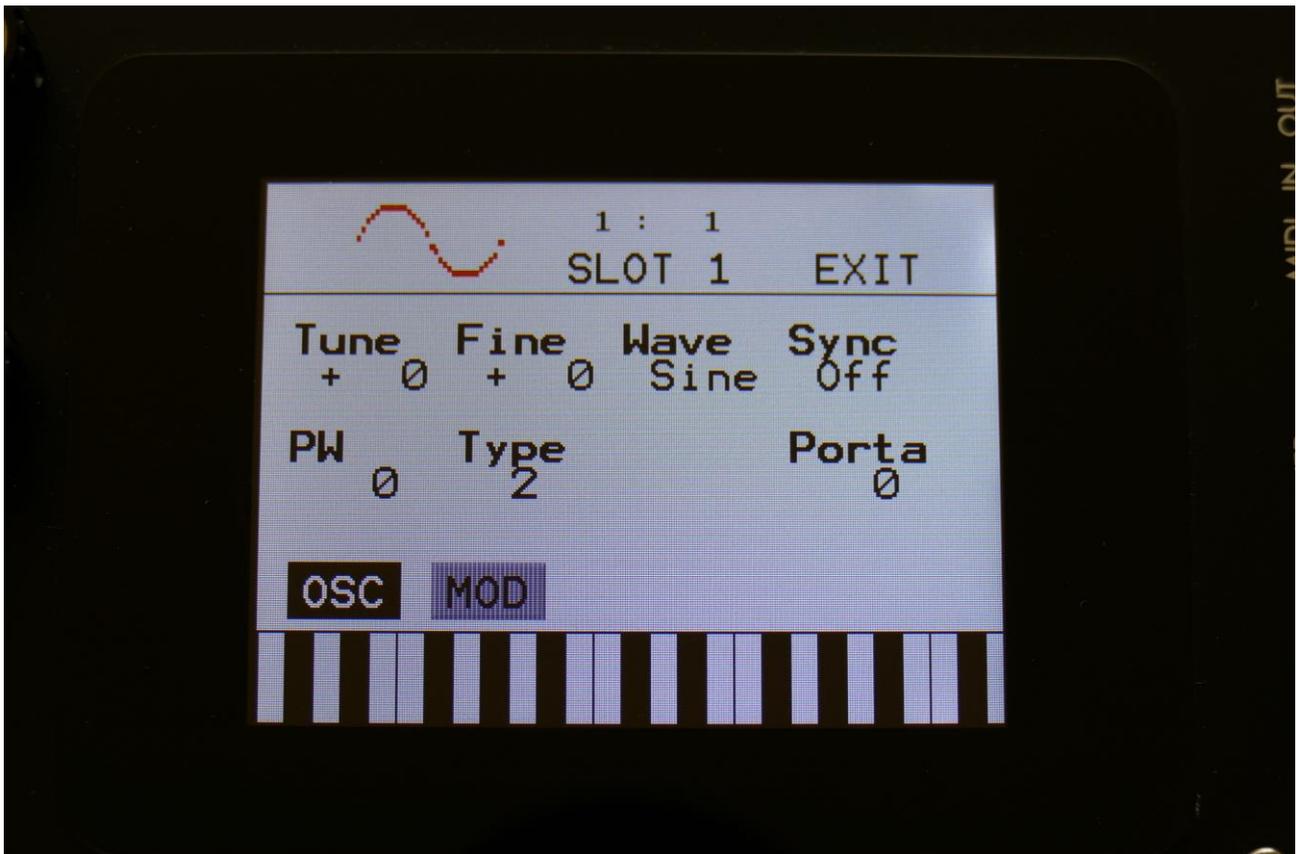
The waveform drawing has been moved to the upper left corner, to make room for the new parameter:

Type: Oscillator type select. Choices are:
1: The type1 bright oscillators.
2: The type2 smooth oscillators.

The Type parameter is not morphable.

Resonator Type2 Insert Effect

On the Resonator insert effect, it is now possible to switch between type 1 and type 2, using the new Type parameter:

Type 1, that has been there since the beginning of Spazeboard6, are a traditional resonator, based on the Karplus Strong algorithm.

The Type 2 Resonator are a new type, that is based on generating the resonances, that are fed back, using real filtering. The 2 types are quite different.

Analog FilterBank Mode

The 12 analog filters of Spazeboard6, can now be arranged as one big filterbank.

When in filterbank mode, part 1 to 6 will no longer have their analog filters in the parts. Instead part 1 to 6, after the VCA's, are mixed and outputted into the filterbank.

The filterbank is formed by the 12 filters arranged in 6 chains with 2 filters each, to form 1 LPF (low pass filter), 4 BPF's (band pass filters) and 1 HPF (high pass filter). It is possible to set the LPF and HPF in BPF mode too, to get 6 BPF's.
The filters are connected in parallel to each other. The cutoff frequencies of the filters are equally spread over an adjustable range. The frequency spread can also be modulated. It is also possible to adjust and modulate the offset cutoff frequency, resonance, and band pass filters band width. The output level of each filter in the bank can be adjusted.

On the next page you will find an overview of the Spazeboard6 structure in filterbank mode.

FilterBank Mode

Gotharman's SPAZEboard6 Structure

Tempo Control

MIDI IN

MIDI OUT

PARTS 9 to 16

Note sequencer
16 Note Tracks
Each up to 64 steps with:
-Note on/off track
-Note Number track
-Gate time track
-Velocity track
-Position track
-Sub position track
-Modulation

Controller tracks sequencer
32 Controller tracks
Each up to 128 steps with:
-Control value track
-Max resolution 1/64

Modulation

Audio In L,R

SYNC
FM

Oscillator2

Oscillator1/ Sampler

Modulation

Ring Modulator

Digital Multimode Filter (DGF)

4 Random Generators

INS EFX 1

INS EFX 2

VCA

Modulation Sources

ENV1 ADSR

ENV2 Decay Env

VCA ENV ADSR

16 global LFO's

Modulation

4x Random
3x ENV

Oscillator/ Sampler

Digital Multimode Filter (DGF)

VCA

PART1
PART2
PART3
PART4
PART5
PART6
PART7
PART8

Analog HPF/BPF

Analog BPF

Analog BPF

Analog BPF

Analog BPF

Analog LPF/BPF

VCF3,4 out → Audio Out 5,6 (Optional)

VCF1,2 out → Audio Out 3,4 (Optional)

Output Effect 2

Output Effect 1

Sample and chop Recorder and Editor

Audio Out L,R

4 CV In's (optional)

Modulation Triggers

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Entering FilterBank Mode

Enter the Synth>TRIG page:

A new parameter, **VCFs**, has been added to this page.

Set this to **Part**, to place the analog filters as part filters, for part 1 to 6.

Set it to **Bank**, to put Spazeboard6 in FilterBank mode.

To edit the parameters of the filterbank, simply enter the HPF/LPF pages, where the parameters for the analog filters were placed in VCF part mode.
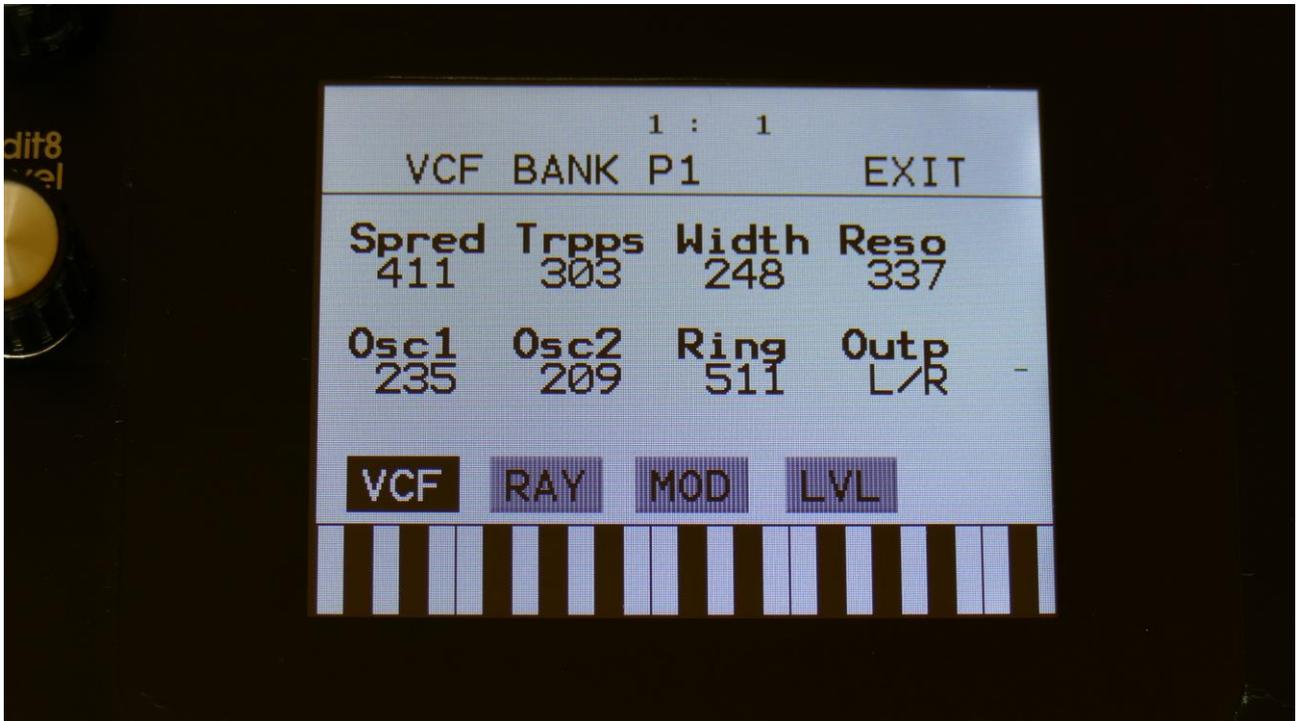
Parameters:

Spred: 0 to 511. Cutoff frequency Spread. The more this is turned up, the more the cutoff frequencies of the six filters are spread out. At zero, all the filters has the same cutoff frequency.

Trpps: 0 to 511. Transposed position. Will transpose the cutoff frequency of all the filter up, when set to a value above 256, and down when set to a value below 256.

Width: 0 to 511. BandWidth. Sets the cutoff frequency gap between the LPF and HPF of each filter pair, in order to adjust the bandwidth of the band pass filters.

Reso: 0 to 511. Sets the resonance of all the filters at the same time.

Osc1: Sets the output level of oscillator 1 for the selected part.

Osc2: Sets the output level of oscillator 2 for the selected part.

Ring: Sets the output level of ring modulator for the selected part.

Out: Sets the output of the filterbank to go to either the **L/R outputs**, or the **Output Effects**.

Touch RAY, to go to the G-Ray page:
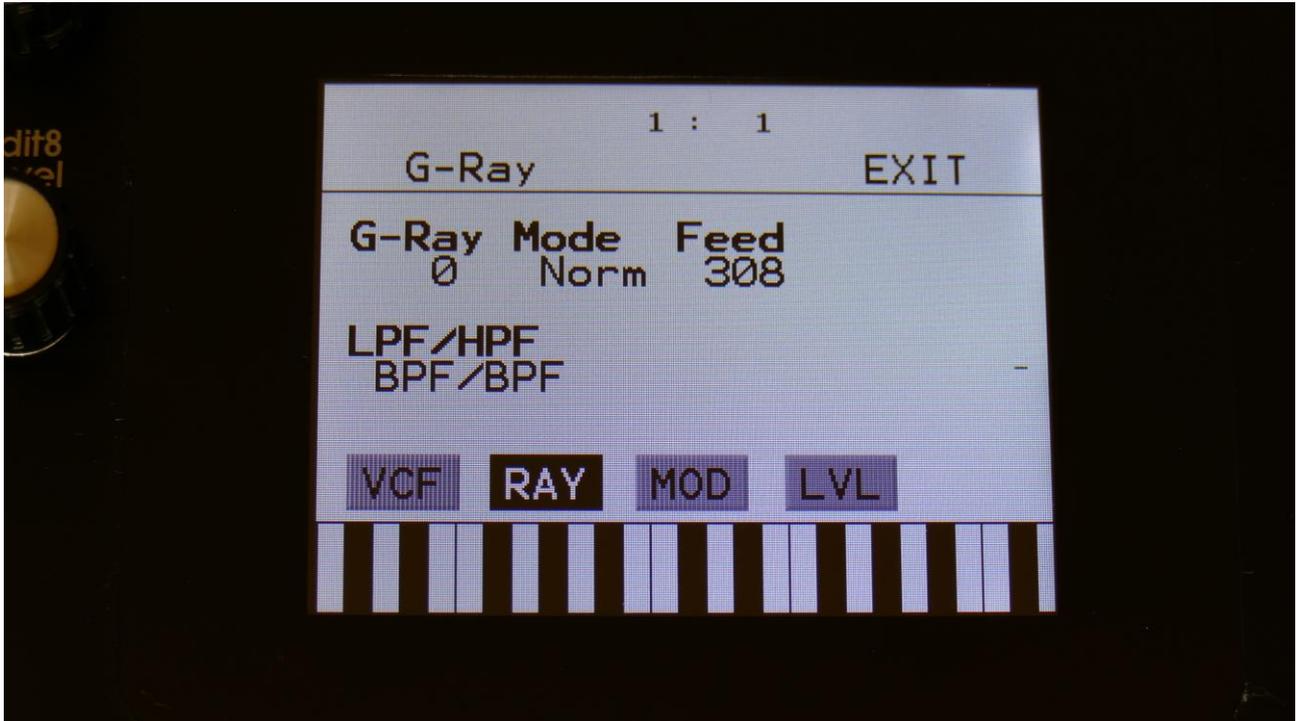
The G-Ray parameter are in FilterBank mode adjusted for all the filters at the same time.

A new parameter, **LPF/HPF**, has been added to this page.
When this is set to **LPF/HPF**, the upper and lower filters in the filterbank will act as LPF and HPF.
When set to **BPF/BPF**, all filters in the bank will be band pass filters.

Touch MOD, to go to the modulation page:
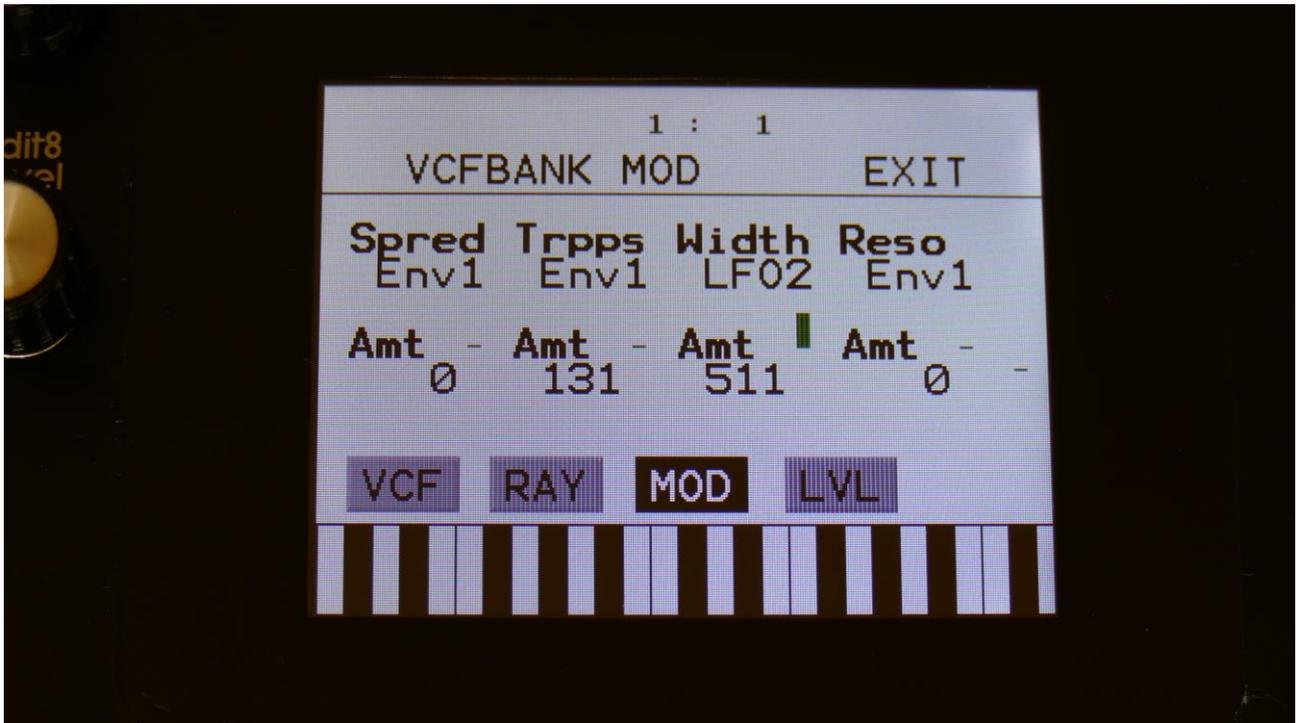
Spred: Will modulate the cutoff frequency spread of the filters.

Trpps: Will modulate the transpose position of all the filters.

Width: Will modulate the band width of the band pass filters.

Reso: Will modulate the resonance amount on all the filters.

Touch LVL to go to the filters levels page:

Here you can attenuate (negative value) or boost (positive value) the output levels of each filter separately.

In FilterBank mode the MIDI CC's for controlling parameters from MIDI or a sequencer track, are a bit different:

VCF Bank Spread	35	MIDI channel 1-6
VCF Bank Transpose	36	MIDI channel 1-6
VCF Bank Bandwidth	37	MIDI channel 1-6
VCF Bank Reso	38	MIDI channel 1-6
VCF Osc1 Level	39	MIDI channel 1-6
VCF Osc2 Level	40	MIDI channel 1-6
VCF Ring Modulator Level	41	MIDI channel 1-6
VCF Bank G-RAY Feed	43	MIDI channel 1-6
VCF Boost	44	MIDI channel 1-6
VCF Bank SpreadMod	45	MIDI channel 1-6
VCF Bank TransposeMod	46	MIDI channel 1-6
VCF Bank BandwidthMod	47	MIDI channel 1-6
VCF Bank resoMod	48	MIDI channel 1-6

Sequencer Steps Copy/Paste

It is now possible to copy/paste a specific range of steps, from any location of a sequencer track, to any location of any track. This is possible only when copying a single track, not when copying all tracks or the whole preset.

Simply go to the sequencer track, that you would like to copy from, and hit the Copy button, as usual. The Copy screen will now pop up:
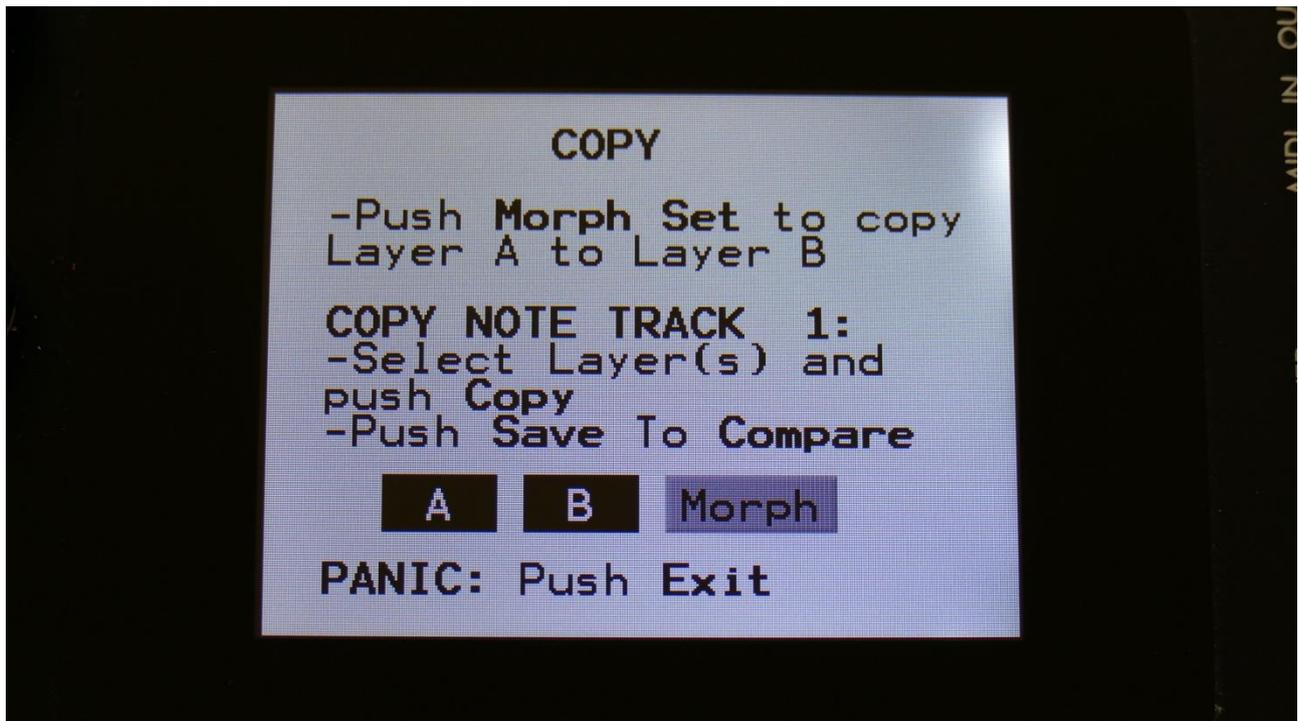
As usual, simply hit the Copy button again, to copy the track.

Now, you can stay on the same track, to copy a range of steps, to another location of the same track, or you can go to another track, to paste all the steps, or a number of steps, to any location on this.

When you have navigated to the destination track, simply hit the Paste button, and this screen will pop up:

You can now set the following parameters:

From: The first step of the source track, that you would like to copy from. Range 1 to 64 on note tracks and 1 to 128 on controller tracks.

#Steps: The number of steps, that you would like to copy. Range 1 to 64 on note tracks and 1 to 128 on controller tracks.

#To: The step on the destination track, that you would like to paste the selected range of steps to. Range 1 to 64 on note tracks and 1 to 128 on controller tracks.

Additional options, on note tracks only:

Clear Dest Steps: If you copy from or paste to a polyphonic track, or "Poly" (explained below) is on, switching this function on, will make LD3 clear all steps, which position is inside the range of the steps to be pasted, before the pasting.
If this function is off, and "Poly" is on, the steps will be placed on top of each other, without any steps being cleared. A sort of "overdub" pasting.

If you copy from and paste to a monophonic track, and "poly" is off, steps will be overwritten anyway, so it doesn't really matter, if this function is on or off.

Poly: With this switched off, both the source and destination tracks will be treated as monophonic tracks, with a linear position track, going from position 1 to position 64, and steps will be copied 1 to 1 on the step locations, without altering the position track.
With this switched on, the destination track will be treated as a polyphonic track, and steps will only be pasted to steps, that are already off. The position track will be altered.
If "Clear Dest Steps" is off, no steps will be overwritten.

When entering the Track Paste Page, LD3 will analyze both the source and destination tracks, and if any of these are polyphonic tracks, it will automatically switch Poly on. If both tracks are monophonic tracks, it will switch Poly off. You should only change this setting to deform things…

When you have done your settings, simply hit the Paste button again, and your steps has been copied.

Output Effects Gain

The gain of the 2 output effects processors can now be adjusted.

These parameters can be found on the Output Effects Mod2 pages:
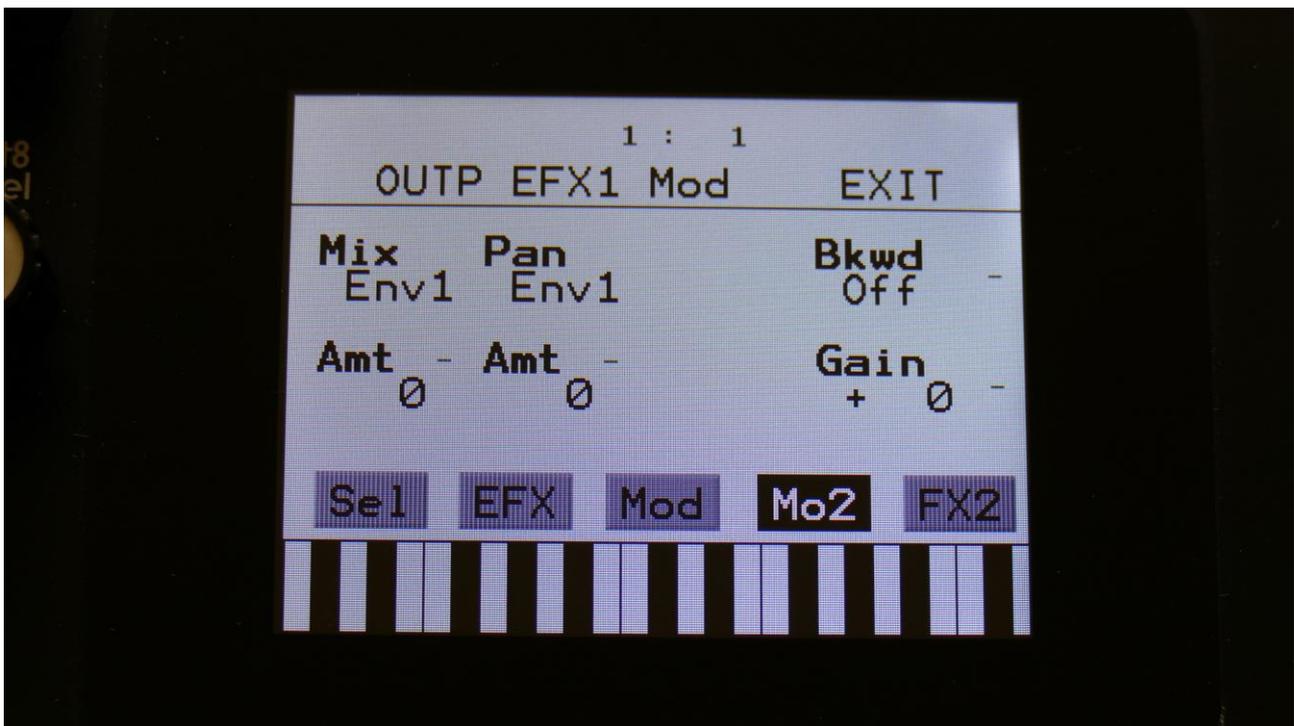
Gain: Sets the output level of selected Output Effect . A positive value gains the level, and a negative value attenuates it.

This parameters is not morphable.

Preset, Song and Sample naming

When saving a preset, a song or a sampling, an alphanumeric touch keyboard will now appear on the screen, for typing in the name.

When saving a preset or a song:
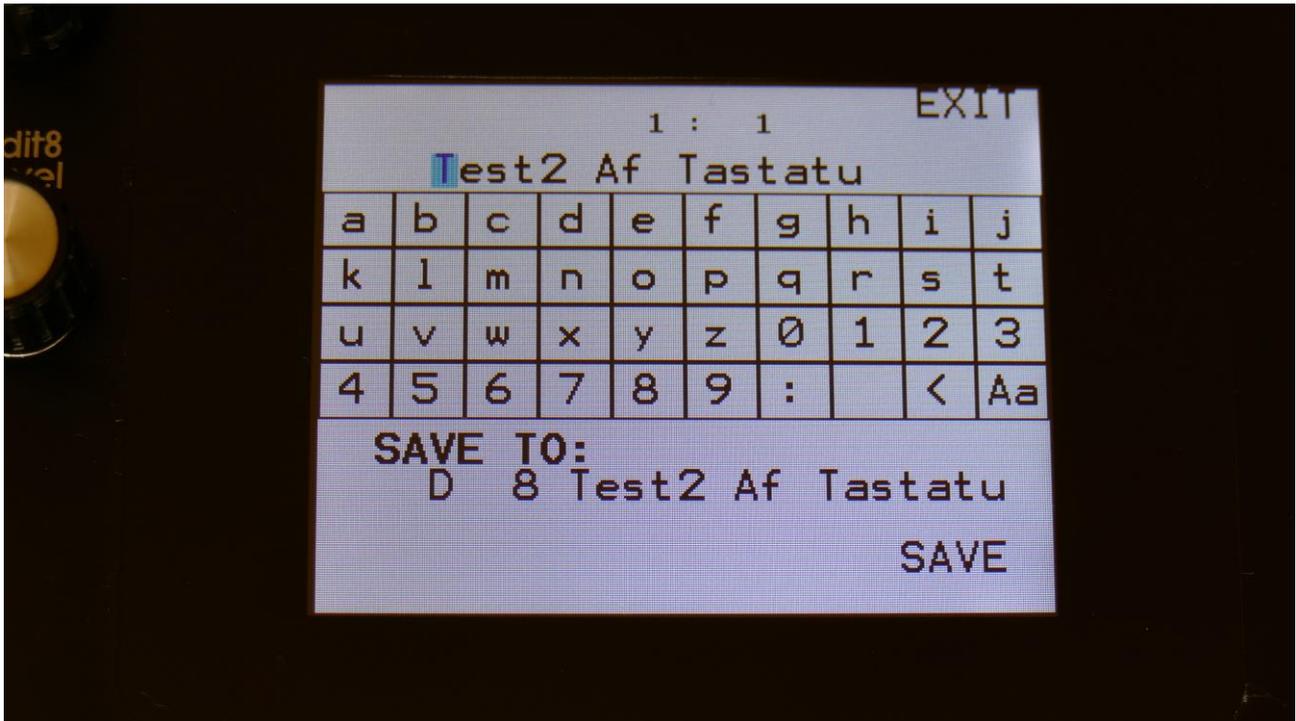
When saving a sampling:
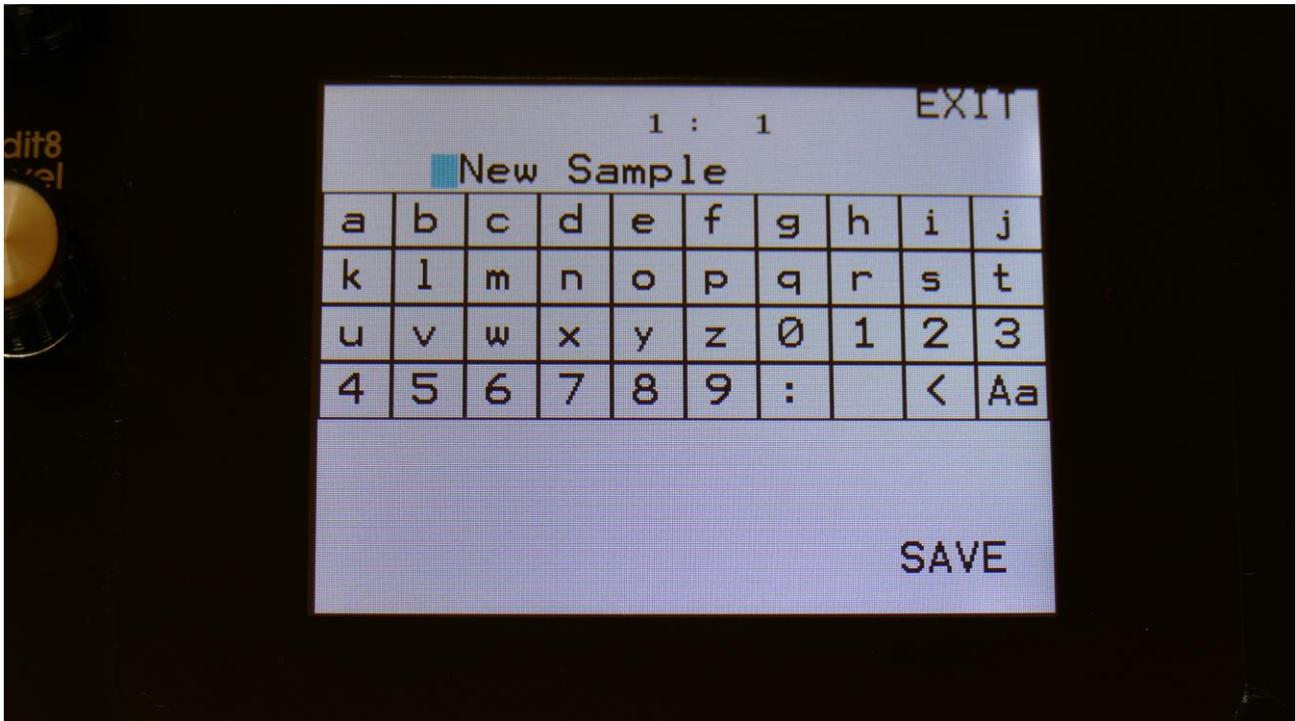
The "<" will move the cursor back, for correcting characters.

The "Aa" will switch between uppercase/lowercase letters, and numbers/signs:
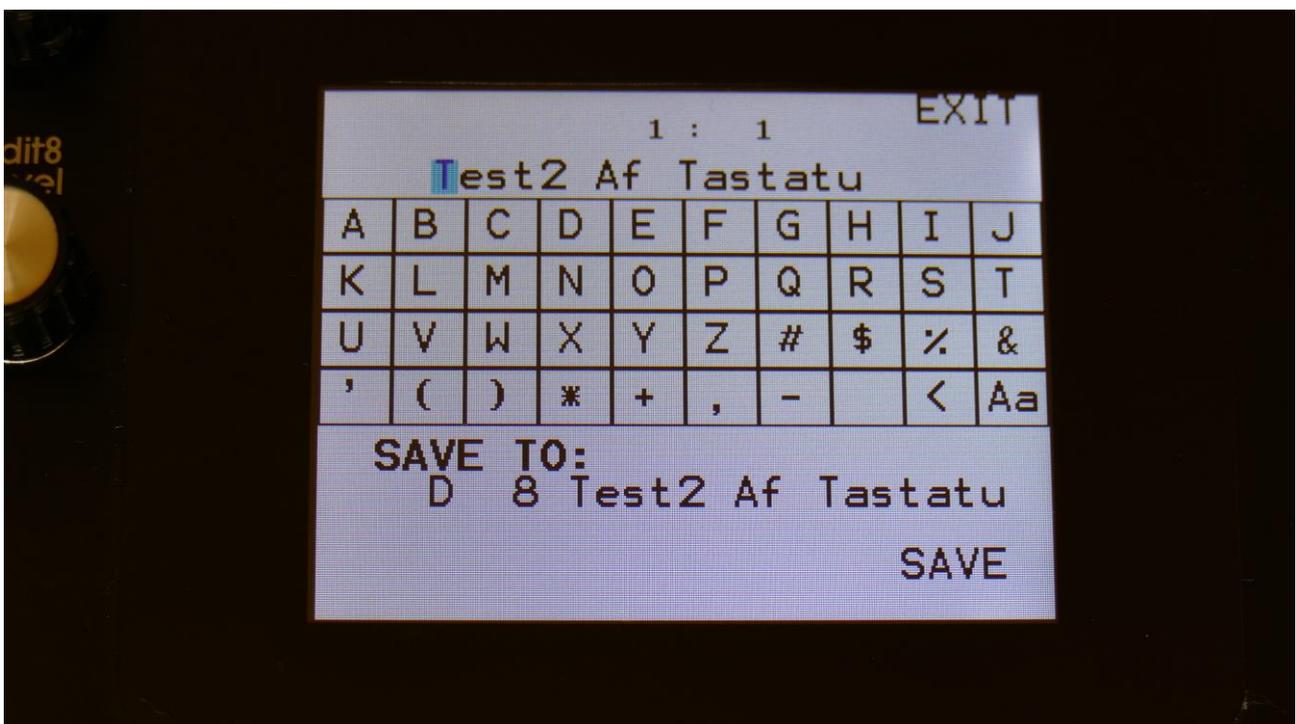
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