



# Granular VSTi Synth

## Operation manual

Draft	01/03/05	first draft version
<b>rev</b>	<b>date</b>	<b>description</b>

## 1 INTRODUCTION

This is a granular synthesis VSTi polyphonic synth. Sound generation is based on samples and physical modeling.

All parameters are accessible from four screens.

The synth is monotimbral and polyphonic (16 voices).  
It features mono-mode with glide and legato.

GUI is in development.

On [www.sknote.it](http://www.sknote.it) we maintain active a forum. Please, feel free to contribute! Patches, sound examples, comments, will be very appreciated.

Disclaimer: We are not english people. This is the best english we can write. Please, be good ! ;-)

This synth is distributed as freeware.

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VST is a trademark of Steinberg Media Technologies GmbH

## 2 INSTALLATION

This synth is a VSTi plugin software.  
It requires a VST Host application to work.

Simply copy the software (Solo.dll) in your plugins directory.

The synth needs .wav files to generate sound. These files must be called wfx.wav, where “x” is a number from 0 to 19. The wav files must be placed exactly in “C:\Granular\”

Twenty wav files are provided, you can remove each file and place another one with the same name. Files from wf0.wav to wf19.wav are waveform1 to waveform20 in the menus.

Wav files must be mono. Different sampling rates give different base frequencies when playing. In this version you have to tune the file by oct, st and cent controls.

## 3 SOUND SYNTHESIS

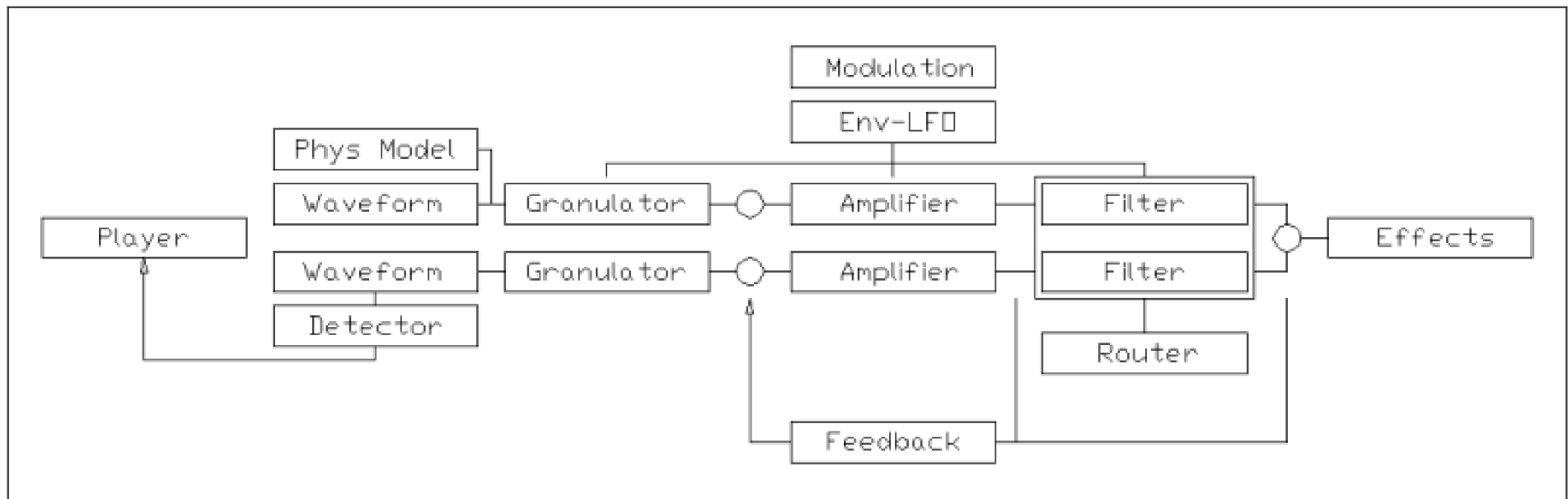
The synth is based on two synthesis methods:

- Granular synthesis
- Physical modeling

The oscillators are linked to a feedback delay line.

The delay line is connected BEFORE a multimode variable filter with drive control.

The following picture shows the structure of the synth.



### 3.1 Granular synthesis

There are two oscillators based on granular synthesis, osc2 and osc3.

Variable waveforms are useful for these oscillators:

- filter opening
- gradual feedback
- gradual growl
- gradual overtones
- evolving signals

Each oscillator acts as follows:

- A sampled waveform is loaded in memory.
- A position variable controls enveloped grains that are extracted from the waveform and played in succession.

With this method you can extract harmonic content from the wave and manage it as independent regarding to pitch and time.

Several effects can be achieved:

- time stretching
- pitch shifting
- sound morphing
- total sound destruction

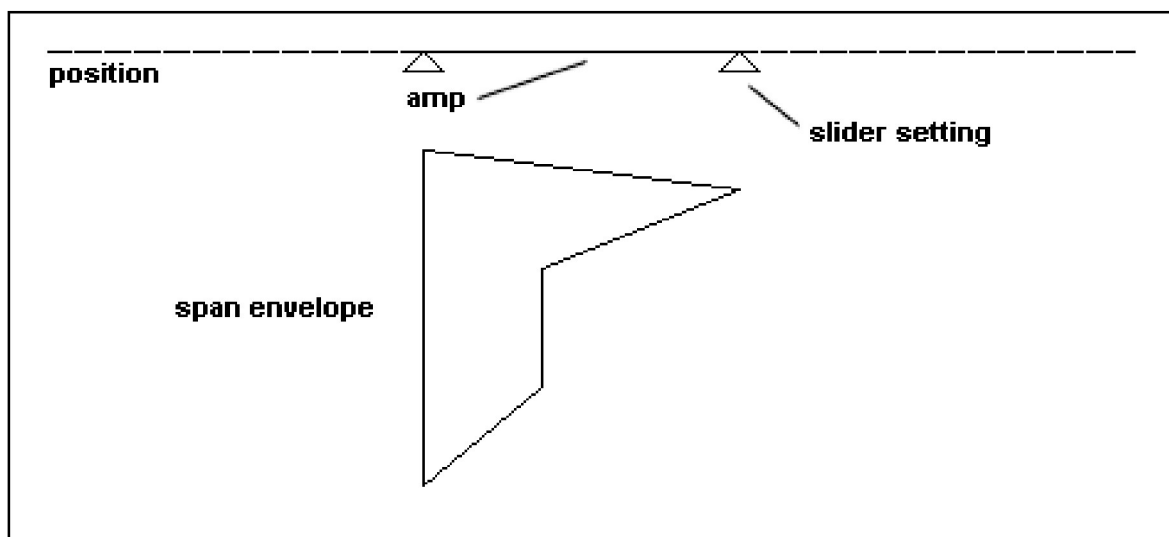
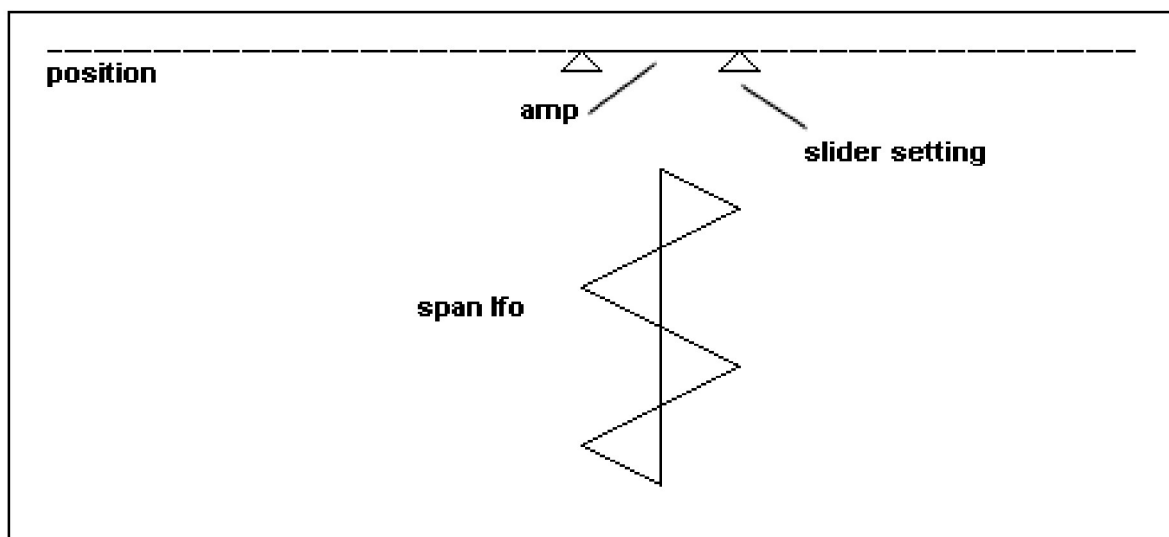
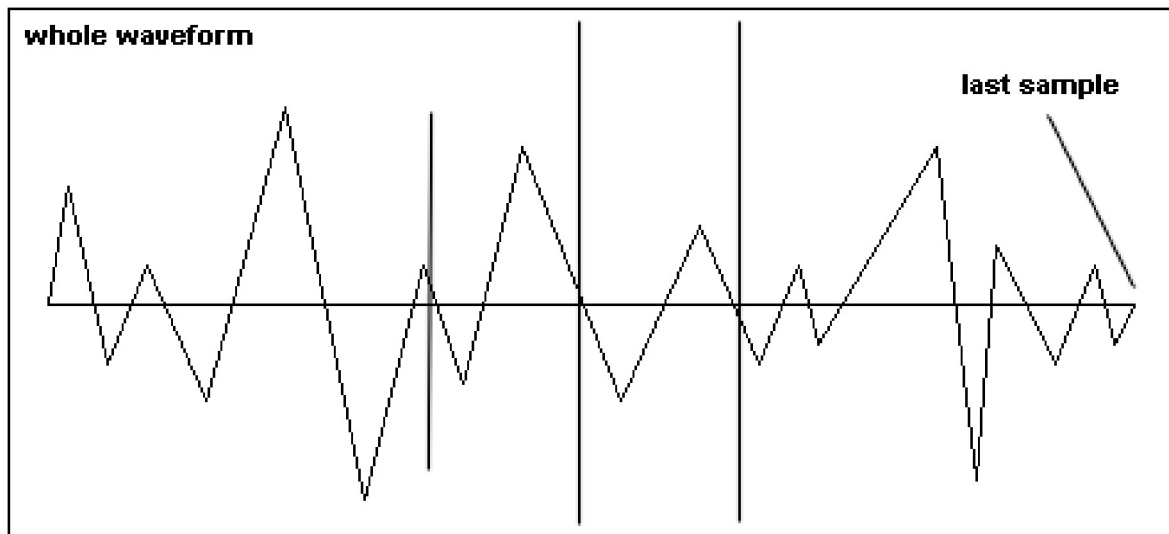
Position variable is controlled by:

Slider – It sets the max position of the grain in the wave

Dedicated lfo (span) – it is multiplied with Slider position

Dedicated 64 stages envelope – it is multiplied with Slider position and lfo

The following picture shows how position is computed:



If you want to experiment with position, do as follows:

- set amp to 0
- set span envelope to max value, for everyone of the 64 points
- play a note while slowly moving the position slider
- experiment with different velocity, to find the original sample

### **3.2 Physical modeling**

Osc1 is based on physical modeling.

You can select:

plucked string

bowed string

Osc1 can be amplitude modulated with osc2.

### **3.3 Feedback delay**

Each oscillator has a single delay line send control (FB).

For the delay line you can set:

- delay time
- feedback amount

The delay line is connected to filter input. This is different from a classic delay effect, because the delayed signal is filtered together with the dry signal.

### **3.4 Mix**

Each oscillator volume can be set separately (vol).

### **3.5 Draggable envelopes**

In this version there are 4 draggable 64-points envelopes.

You can see the envelopes in page 2, by the “envelopes” button.

The envelope shown is the one active for editing. You can switch the active envelope by the menu in the left-lower part of the graph.

Simply click on a point with the pointer and drag it vertically or draw with the pointer while holding left mouse button down.

### **3.6 Filters**

There are two identical multimode variable filters.

You can select:

- Mode – There are lowpass with resonance and highpass with variable slope active in this version
- Drive – To be implemented
- Frequency – The transition frequency
- Resonance – Filter resonance near cutout frequency for LP, slope for HP
- Filter action – Percentage of action of the filter – Left: no filter – Right: full filtering

Frequency envelope to be implemented

Drive control to be implemented

Filter 2 to be implemented

Filters routing to be implemented

### **3.7 Output volume**

There is an overall output volume control, to level different patches output volume.

Have fun!