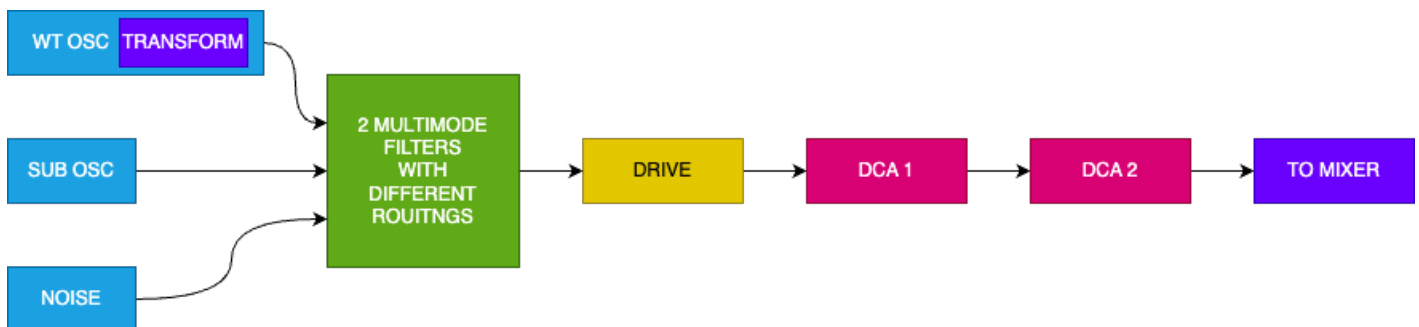


Wavetable Synth

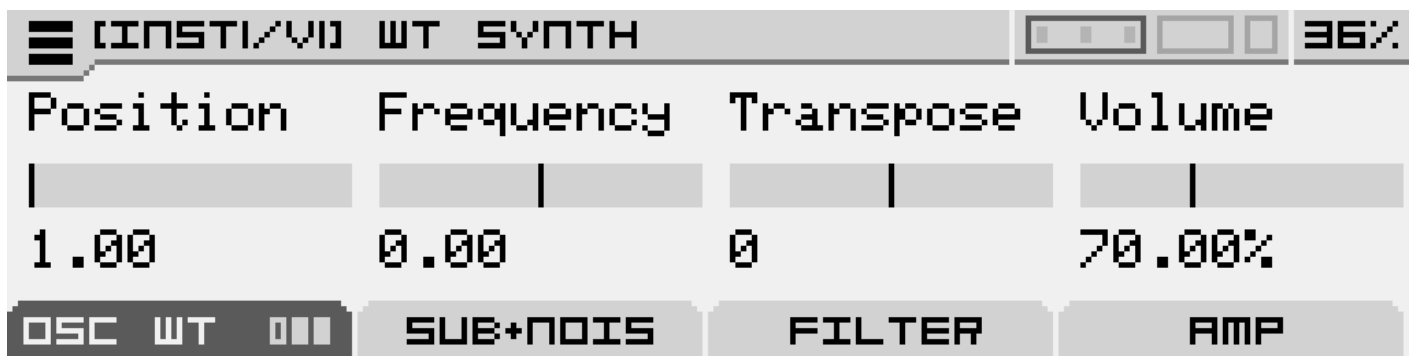
General information

This Machine features a wavetable oscillator with additional wave transformation capabilities, a sub oscillator and noise generator.



The oscillator, Sub and Noise go into a [Filter section](#), then a Drive section and finally an [Amp section](#) before going to the [Mixer](#). Go to the respective sections of the manual for more information on the Filter and Amp Sections.

Main screen of the wavetable synth

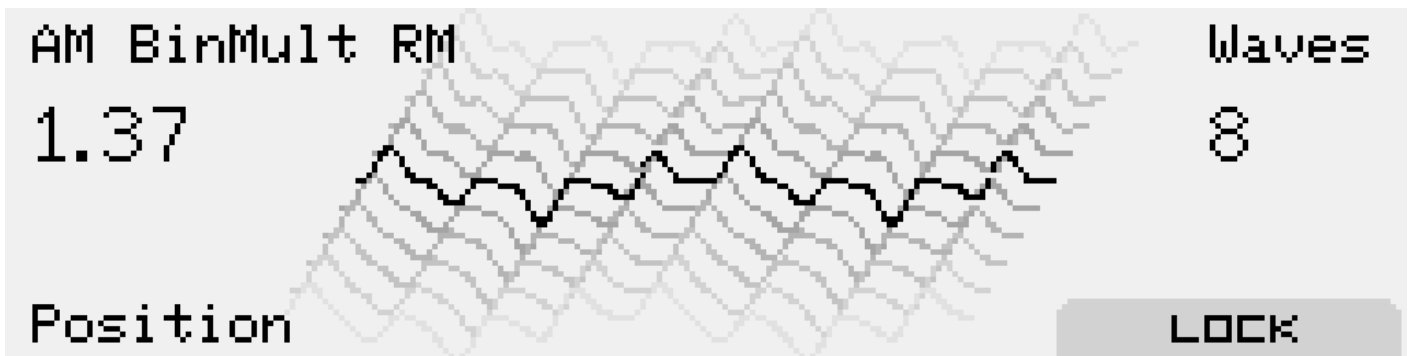


When opening the Wavetable Synth Machine you will land on page 1 of tab 1. Use the first 2 tabs to configure the wavetable oscillator and the sub oscillator + noise generator.

Use Tab 3 to configure the Filter section and Tab 4 to configure the Amp section.

The wavetable oscillator tab (Tab 1) has 3 pages containing different controls. When a Tab header displays small bar icons, click its corresponding button underneath to jump between its pages.

On any Tab in the Wavetable Synth Machine, the encoder is used to select wavetables in the current folder. Click the encoder, then "Load wavetable" to load other wavetable folders.



When turning the encoder (or the Position knob), a dedicated display will pop-up, showing the name of the wavetable, the position you're in, the number of waves in the wavetable and a wave display. This screen will stick for a couple of seconds, but you can lock it if you press button 4, labeled "Lock". Use knobs 2 and 3 to adjust the X and Y axis of the wave display to your liking.

You can see on this screen that there are 8 waves in total in the wavetable. The *position* parameter can therefore range from 1 to 8. Intermediate (non-integer) values are interpolated between the previous and next waves when the oscillator is in "MORPH" mode.

Wavetable Oscillator tab

There are 65 factory wavetables, licensed with Galbanum (<https://www.galbanum.com/>) derived from their "Architecture Waveform 2010" library. These wavetables are 16-bits, 2048 samples per wave (in the ANTIGONE_2048 folder or 256 samples per wave in ANTIGONE_256 folder)

Note that using 2048 samples wavetables are more CPU intensive than 256 sample wavetables. The sonic differences are negligible especially with the antialiasing enabled (Quality parameter)

680 free to use wavetables from WaveEdit Online <https://waveeditonline.com/> (released under the CC0 1.0 Universal Public Domain Dedication) are pre-loaded on the SD Card.

You can also load custom wavetables using the SD card, you are only limited by the size of the SD Card. The oscillator will read 32/24/16 bits wavetables but play them in 16-bits. It will function with 2048, 1024, 512, 256 and 128 samples wavetables.

User wavetables have to be put in folders, anywhere on the SD card. You can't mix different sample formats within a folder, and the folder name has to end with "_XXX", with XXX being the sample format of the waves in the folder. For example "MyCustomWavetables_1024" if the wavetables are in the 1024 samples-per-wave format.

The excellent wavetable editor from Synthesis Technology can be used to edit all these 256 samples wavetables: <https://synthtech.com/waveedit/>

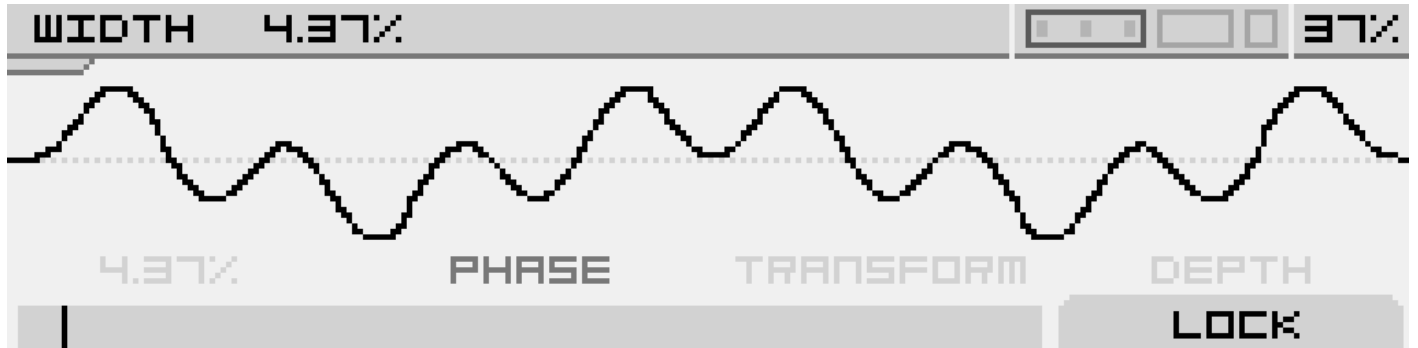
The wavetable oscillator tab has 3 pages.

Page 1:

Position	Frequency	Transpose	Volume
Navigate the wavetable. Modulate for classic wavetable morph sounds.	Fine-tune the oscillator. This can also be used to detune the oscillator from the sub oscillator for chorusing or dissonance effects	Tune the oscillator in semitone increments	Set the amplitude at which the oscillator is sent into the Filter Section. 100% is unity gain, beyond that the output is amplified, useful for driving the Filter or Amp sections or even overdriving the final DAC.

Page 2:

When you adjust a parameter on page 2, a wave display is briefly shown to reflect the changes on the output wave. Click Button 4 while the wave display is shown to lock it on. Click Button 4 again to unlock the display.



Width	Phase	Transform	Depth
Reduces the width of the waveform, without changing its pitch, by windowing it between blank spaces. It will affect the harmonics of the wave.	Change the starting point of the waveform. When using Width, it will scroll which segment of the wave is heard	Select one of the 6 wave-altering effects. See below for a reference of those.	Control the selected Transform effect

Oscillator Transform effects reference:

Off	Sync	Sync Window	Asymmetry +/-

The Transform effect is inactive	Simulates a sync effect. Depth will change the tuning of the master oscillator, the result is phase distortion.	Same as Sync but there is a "fade-in/fade-out" effect on the edges of the waveform in order to smooth out artifacts	Classic Phase Distortion. Depth is at 0% at noon, and turning it clockwise or counter-clockwise will distort the phase in either direction.
Sine	Decimator	Folder	Triangle
Phase distortion, but with a sine function instead of a linear function.	A bit-reducer effect. Turn Depth clockwise to reduce, down to 2bits, with an audio crossfading between the bit-rates.	A Chebyshev wavefolder	Triangle wave phase distortion
Fractal	Bounce	Gravity	Tidal
Fractal-like recursive phase folding	Multiple phase segments with alternating directions (1-8 bounces per cycle)	Phase acceleration toward center attraction point using inverse distance relationship	Slow multi-harmonic tidal waves with period variations
Magnetic	Crystal	Steps	Quantum
Dual magnetic poles with inverse square law force calculations	Geometric faceted patterns (3-8 crystal faces) with lattice spacing	Divides phase into discrete steps (2-16 levels)	Discrete energy levels (4-16) with probabilistic quantum jumps
Fade	Collapse		
Applies fade windows of varying shapes based on transform depth	Wave collapse simulation with multiple attraction points		

Page 3



It contains general settings regarding the wavetable generation:

Quality	Transition	-	-
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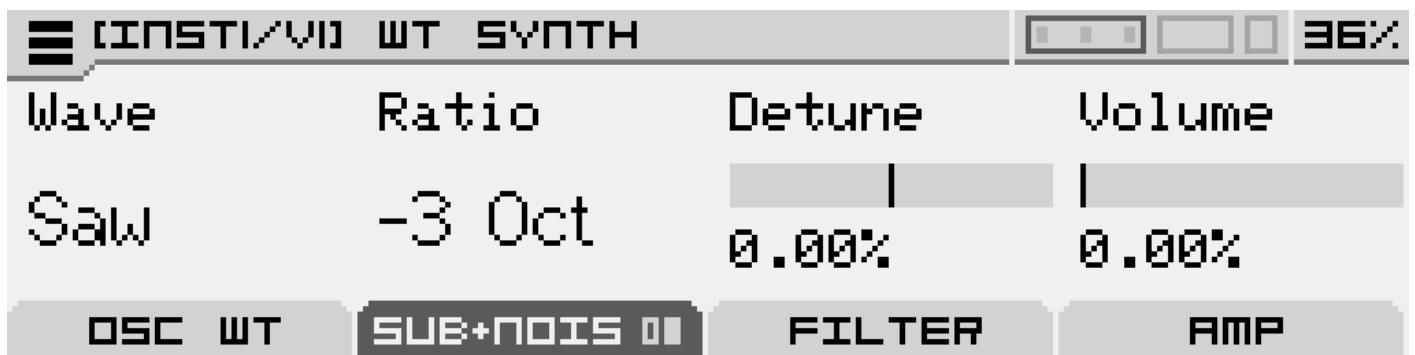
<p>The amount of oversampling while reading the wavetable. Draft means no oversampling, resulting in aliasing on complex waves but low CPU usage. Above Draft, an anti-aliasing filter is present. Medium is x2 oversampling Great is x3 Highest is x4. It will use a lot of CPU power.</p>	<p>Select between classic wave interpolation or discrete change from one wave to another (no morph)</p>	<p>-</p>	<p>-</p>
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Sub + Noise tab

A sub oscillator with extra features and a simple noise generator.

The Sub+Noise tab has 2 pages

Page 1:



(outdated screenshot, will be replaced soon)

Wave	Frequency	Transpose	Volume
<p>Select the sub oscillator's waveform between Saw, Square, Triangle, Sine and Wavetable.</p> <p>The Wavetable mode use the same wave as the main oscillator (without anti-aliasing, and without modifications)</p>	<p>Fine-tune the sub oscillator.</p>	<p>Tune the sub oscillator in semitone increments</p>	<p>Set the amplitude at which the sub oscillator is sent into the Filter Section</p>



Noise	-	-	-
Set the amplitude at which the noise generator is sent into the Filter Section	-	-	-

Revision #24

Created 9 December 2024 23:13:06 by Paul

Updated 23 July 2025 11:04:56 by Vincent