Odin 2
Synthesizer Plugin

Manual
for version 2.2.0

TheWaveWarden

www.thewavewarden.com

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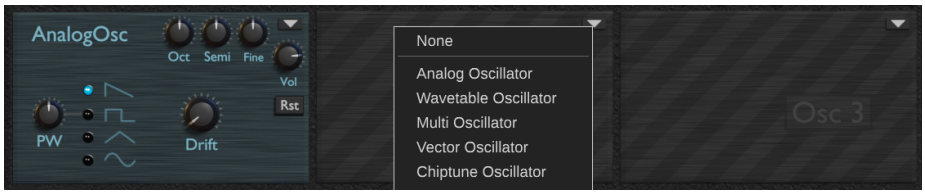
Oscillators

Three oscillators form the basis of sound generation in Odin 2. You can choose from a wide variety of different modules, which are capable of a wide palette of sounds, even without any further processing. Initially, Odin 2 starts out with an Analog Osc in slot 1 and none in slot 2 & 3. You can change the module being used with the small dropdown button on the top-right of the osc-module:



3.1 Common Parameters

There are some controls which are common to all oscillator modules:

Osc Octave

Detunes the oscillator by whole octaves.

Osc Semitones

Detunes the oscillator by semitones.

Osc Finetune

Detunes the oscillator by cents.

Osc Volume

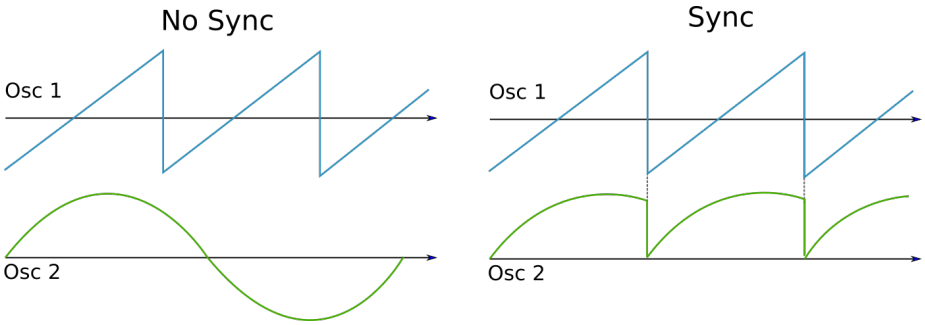
Regulates the volume of this oscillator in deciBels. Can be used to shut the oscillator entirely. Modulating this parameter from the modulation matrixwith -1 will always shut the sound. Modulating this parameter with $+1$ will raise the sound to 0dB if the current value is smaller than -12dB. If it is bigger than -12dB, it will modulate to +12dB from the current value.

Osc Reset

Resets the waveform to its initial position each time a key is pressed. This is usefull to get more consistent sounding notes, for example for tight basslines. If this is turned off, the wave will continue where it ended on the last note.

Osc Sync

This parameter is only available for Osc 2 & 3. Activating sync will sync this osc to Osc 1. That means each time Osc 1 completes a cycle, this osc is reset to its initial position. The pitch of the oscillator is thereby controlled by Osc 1. This can introduce lots of harmonics, even for soft waveforms like the sinewave.



Internally, any osc with activated sync will use 3x oversampling to prevent aliasing on the hard resets.

3.2 Analog Osc

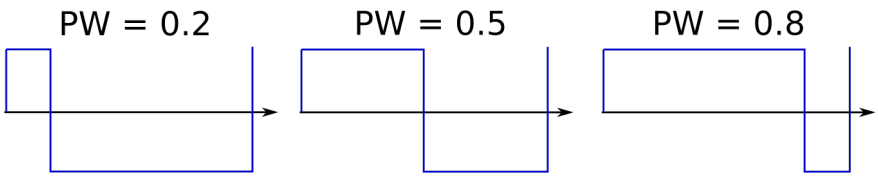
The analog osc aims to emulate the sound of classic analog synthesis. The first obvious choice you have is the waveform:

Analog Waveform

Sawtooth:
The classic sawtooth wave. It is very rich in harmonics and forms an excellent starting point for a wide variety of sounds. This particular Sawtooth emulates the way analog syntheizers generate saw-waves. The result is a (phase-corrected) "fat-saw". This variant doesn't rise linearly as the icon would suggest, but in a slight curve, providing a different tonal character.
Pulse Wave:
The pulse wave has a thinner sound than the savetooth, sometimes giving the impression of a "hollow" sound body being emulated. The pulse still has a lot of harmonics, making it a common alternative to the sawtooth. The width of the pulse can be adjusted, see the next parameter **Pulse Width**.
Triangle:
The triangle wave is much gentler than the saw and pulse waves. It still has a lot of harmonics present though. This wave is well suited for flute like sounds.
Sine:
The purest of all waveforms. The sinewave (by its very definition) has no harmonics at all. The resulting sound is very easy on the ears.

Pulse Width (PW)

This parameter has no effect if the waveform selected is not a pulse. It shifst the duty cycle of the pulse wave, making it stay longer in the lower section for higher values.



The pulse width control can not be used to shut the sound completely ($PW = 0$ or $PW = 1$), but that can be achieved when modulating via the modmatrix.

Drift

Analog oscillators tend to not be stable in their frequency. Drift emulates this behaviour by randomly shifting the pitch up and down just a little bit over time. For a single osc, the effect is not very apparent, but becomes clear once two oscillators are used.

3.3 Wavetable Osc

The Wavetable Osc allows you to create evolving sounds, which feature more than one waveform. Each of the 35 selectable wavetables consists of four waves itself. You can sweep through these easily by hand or with pre-setup modulation.

Wavetable

Selects which wavetable to be used. A wide variety of sounds is available, starting with analog waveforms, human voice like sounds, additive waves, waveforms taken from instruments and many, many more.

Wavetable Position

Fades through the four waves in the selected wavetable. A value of 0 will give the first wave, 0.333 the second, 0.666 the third and 1 the last wave.

Modulation

Selects a modulation source, which can be used to modulate the Wavetable Position. Modulation Envelope and LFO1 are selectable. Please note that arbitrary modulation sources can be sected when working with the modulation matrix. This slot is merely for a fast and convenient way to set up modulation.

Amount

Sets the amount of modulation being used to modify the Wavetable Position. Positive and negative values are possible.

3.4 Multi Osc

The Multi Osc is four oscillators disguised as one. These can be arbitrarily detuned and can even use different waveforms, which results in a thicc, rich sound.

Detune

Detunes the four sub-oscillators agains each other. The detune values are calculated to avoid beating (random phase-cancellation).

Wavetable

The same as in Wavetable Osc: Selects which wavetable to be used. A wide variety of sounds is available, starting with analog waveforms, human voice like sounds, additive waves, waveforms taken from instruments and many, many more.

Wavetable Position

The same as in Wavetable Osc: Fades through the four waves in the selected wavetable. A value of 0 will give the first wave, 0.333 the second, 0.666 the third and 1 the last wave.

Wavetable Spread

Spreads the four sub-oscillators over the wavetable: The first sub-osc wavetable position will be shifted to the left, the last will be shifted to the right. These shifts happen around the value chosen by Wavetable Position.

3.5 Vector Osc

The Vector Osc gives even more options for evolving sounds than the Wavetable Osc. Four freely definable waves can be interpolated in a very intuitive graphic way via an XY-pad.

A, B, C & D

Select the waves to be used. Each of the four letters mark one cornder of the XY-pad, as the graphic suggests. Virtually any waveform from the entire synthesizer can be chosen for any of the corners. This also includes any of the (see Draw Oscillators).
When selecting Draw Osc 1, 2 & 3, the waves you have drawn in osc slots 1, 2 and & 3 respectively are used.

X & Y

Moves the handle over the XY pad. Each of the corners represent the waveform chosen from the A, B, C and D dropdowns. Moving closer to a corner will make the sound closely relate the waveform of that corner. When being in the corner, the resulting waveform is purely the one selected for that corner. Uses bilinear interpolation to fade through the four tables.

3.6 Chiptune Osc

The Chiptune Osc is an easy way to get nostalgic for your childhood. It aims to emulate the sound of yesteryear while emulating the processing capabilities of

a 4-Bit soundchip, like it was used in the Nintendo Entertainment System NES or original Nintendo Gameboy. It also features a simple arpeggiator, with two or three steps being selectable. Whilest being able to produce harmonic sounds, it also features a dedicated chiptune noise module.

Waveform

Lets you select from a variety of waveforms, like you would typically find on the soundchips of yesteryear. Available are a bunch of pulse waves, a triangle, saw and sine variant. All of these waves are limited to a 4Bit resolution (16 steps) on the Y-axis. On top of these, you can select any of the ChipDraw waves.
To clarify: ChipDraw 1, 2 & 3 refer to the waves you have drawn in osc slots 1, 2 and & 3 respectively. You need to apply changes in the ChipdDraw Oscs for the change to take effekt (see ChipDraw Osc).

Arpeggiator

Turns on an internal arpeggiator module, which makes the oscillator jump over predefined semitone values. See the next parameters for specifics.

Arp 1, 2 & 3

Select the semitones to be played by the arpeggiator module. For the third step to be used, the next parameter Step 3 needs to be active.

Step 3

Enables the third step in the arpeggiator. When Step 3 is not active, the arpeggiator will only loop between the first two steps.

Speed

Sets the speed of the arpeggiator in Hz.

Noise

Enabling Noise will change stop the output of the selected wavform. Instead, the oscillator will generate a random value to be output each time a cycle is complete. This creates a classic noise effect like it was used on early game consoles. Internally, 3x oversampling is used to remove aliasing on the jumps between values. Note that this noise is dependent on the note being played and has a perceived pitch. It is also possible to use the noise module while the Chiptune arpeggiator is enabled.

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