



OPERATION MANUAL v.1.0

# Welcome to Pallas

## The semi-modular Synthesizer System

Thank you for choosing Max for Cats - the new sound is yours!

We hope you enjoy using Pallas in your music as much as we did enjoy creating it.

Modular? Semi-Modular?

Pallas is a semi-modular Synthesizer - this means that some connections between functions and 'modules' (function-blocks such as a filter module, a oscillator module etc.) are already established.

This means that YOU, the musician, can play on your MIDI device a sound without touching a single patchcord. Some famous semi-modular synths in the hardware world are e.g. the ARP 2600 or the EML 101 synthesizer. The advantage of a semi-modular synth is usually that you don't have to 'waste' a lot of patchcords (and time) to patch a basic sound with Oscillators, Envelopes, Filter and VCA's. With semi-modular synths, you mainly concentrate your sound-efforts on modulations and musical expression...

Core Features of the Pallas semi-modular Synthesizer (in Version 1.0):

- up to 8 Voices incl. Unisono mode
- 3 Oscillators
- 2 Multi-mode filters with drive, additional comb and formant filters and morph functionality
- 6 Audio Effects
- Patchpanel with over 50 out- and more than 60 input points!
- Modifiers for control signals
- 3 Visual control panel modes
- Auto-update notification system
- 8 Push-ready Macros with free patching functionality
- 2 LFOs , 1 with morphable saw-tri waves, pulse width and phase retrigger
- 2 ADSR envelopes and 1 multi-segment Breakpoint envelope
- 8-Step Sequencer with Scale and Random modes

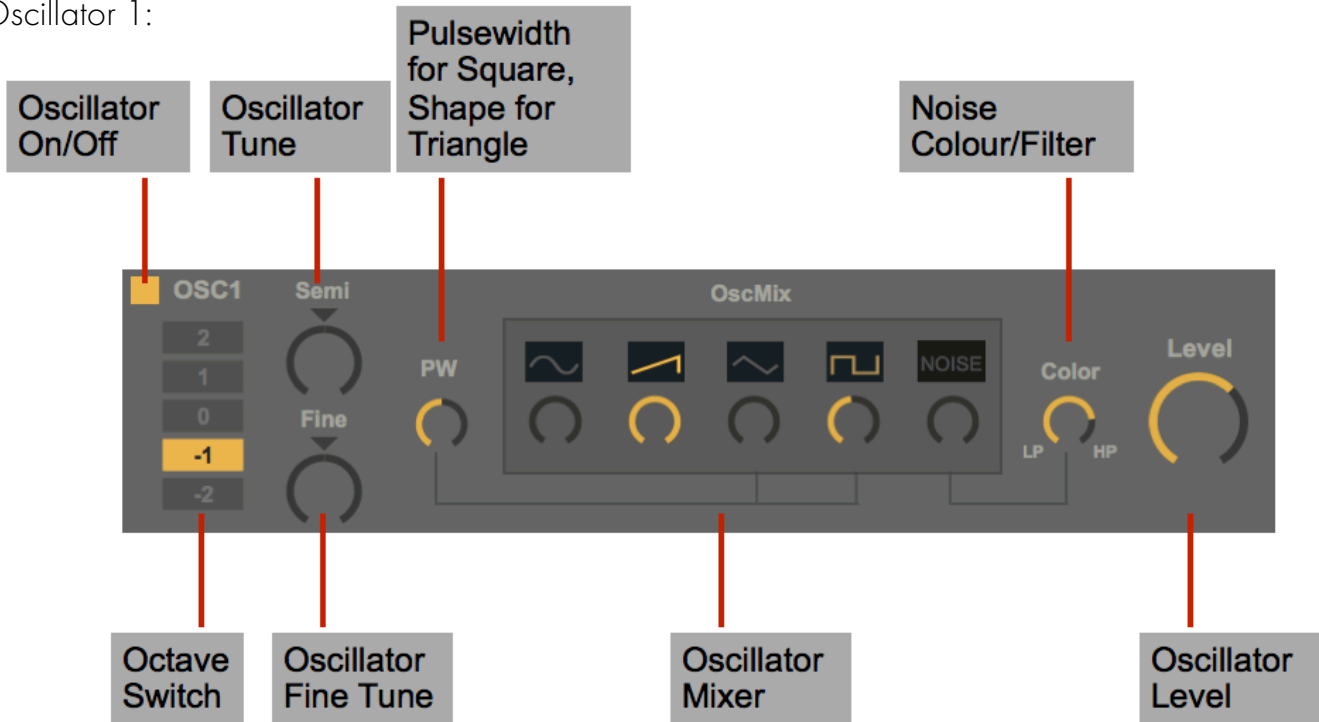
# 1. OSCILLATORS

Oscillator 1 offers 4 waveforms which can be mixed together.

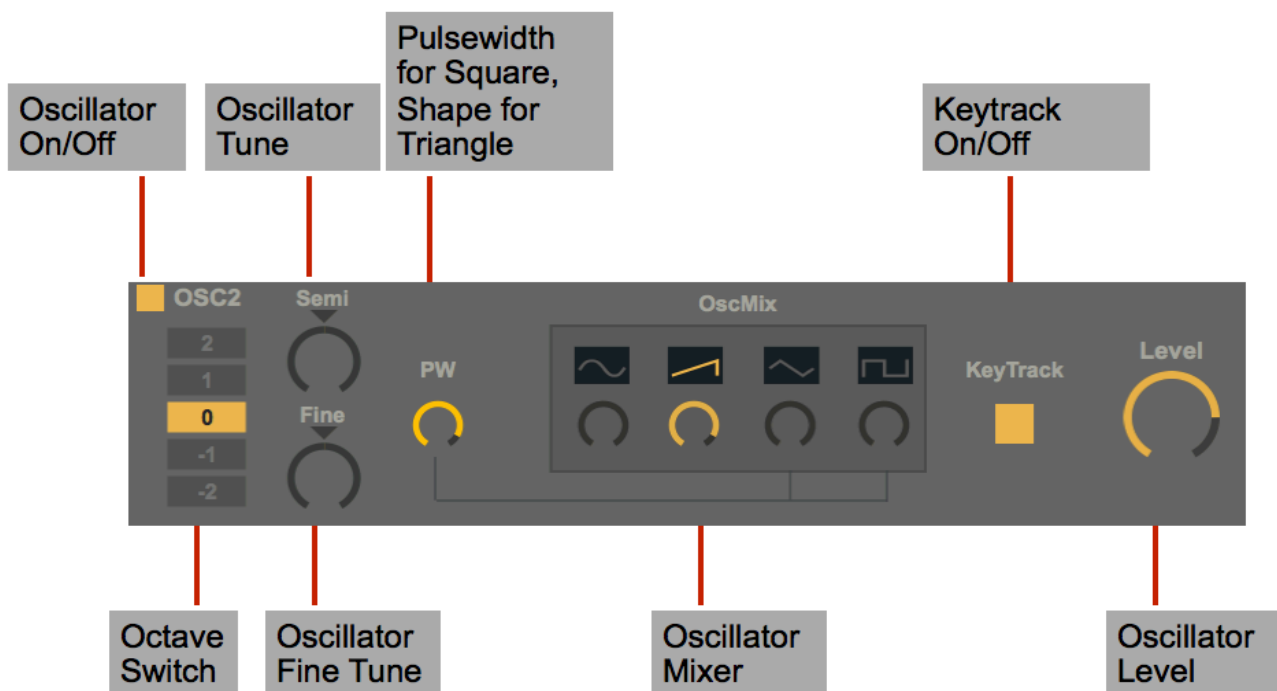
Additionally, a noise generator offers different 'colors' of noise, thanks to the variable mixing of the noise generator through a high- and lowpass filter.

Pulsewidth adjustment is available for the Square Wave Oscillator while the PW dial can also shape the Triangle Waveform from a upward sawtooth to triangle to downwards sawtooth.

Oscillator 1:

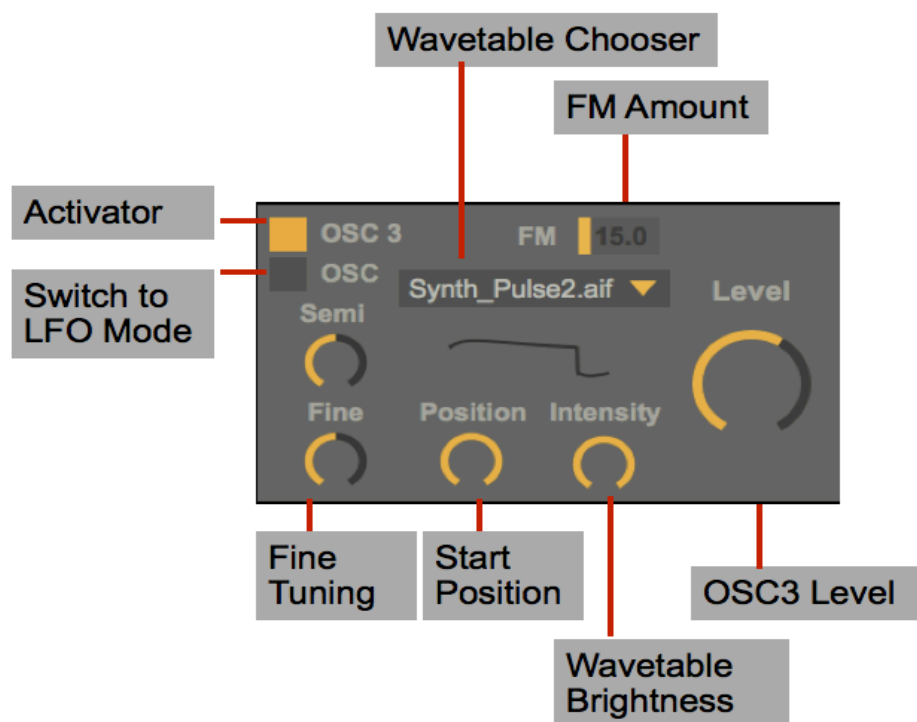


Oscillator 2 is almost identical to Oscillator 1 but offer a Keytrack Switch. If turned off, the pitch does not react to incoming MIDI notes anymore - this is e.g. useful for Oscillator Sync techniques. Sync Input is offered via the Patchpanel for OSC2 - also each Oscillator has Ringmodulation input ('RM')



Oscillator 3 is a Wavetable-based Oscillator and offers a large variety of waves. It can be used also as additional LFO via the LFO switch. Note that in LFO mode, it's recommended to turn down the Level to avoid ultra-low signals on the output (unless this is wanted!) The 'Out' patchpoint is pre-Level. Due to the many different Waveforms, it makes a versatile LFO as well. The position and the intensity of the Wavetable can be modulated. It also offers special FM-capabilities via the patchpanel - the Carrier and Modulator can be patched.

Oscillator 3:



Oscillator 3 in LFO Mode - Note that Semi-Tone tuning switches to a Rate dial and finetune is removed in this mode.



## 2. FILTERS

Pallas offers 2 Multimode filters.

Filter 1 offers 3 switchable types:

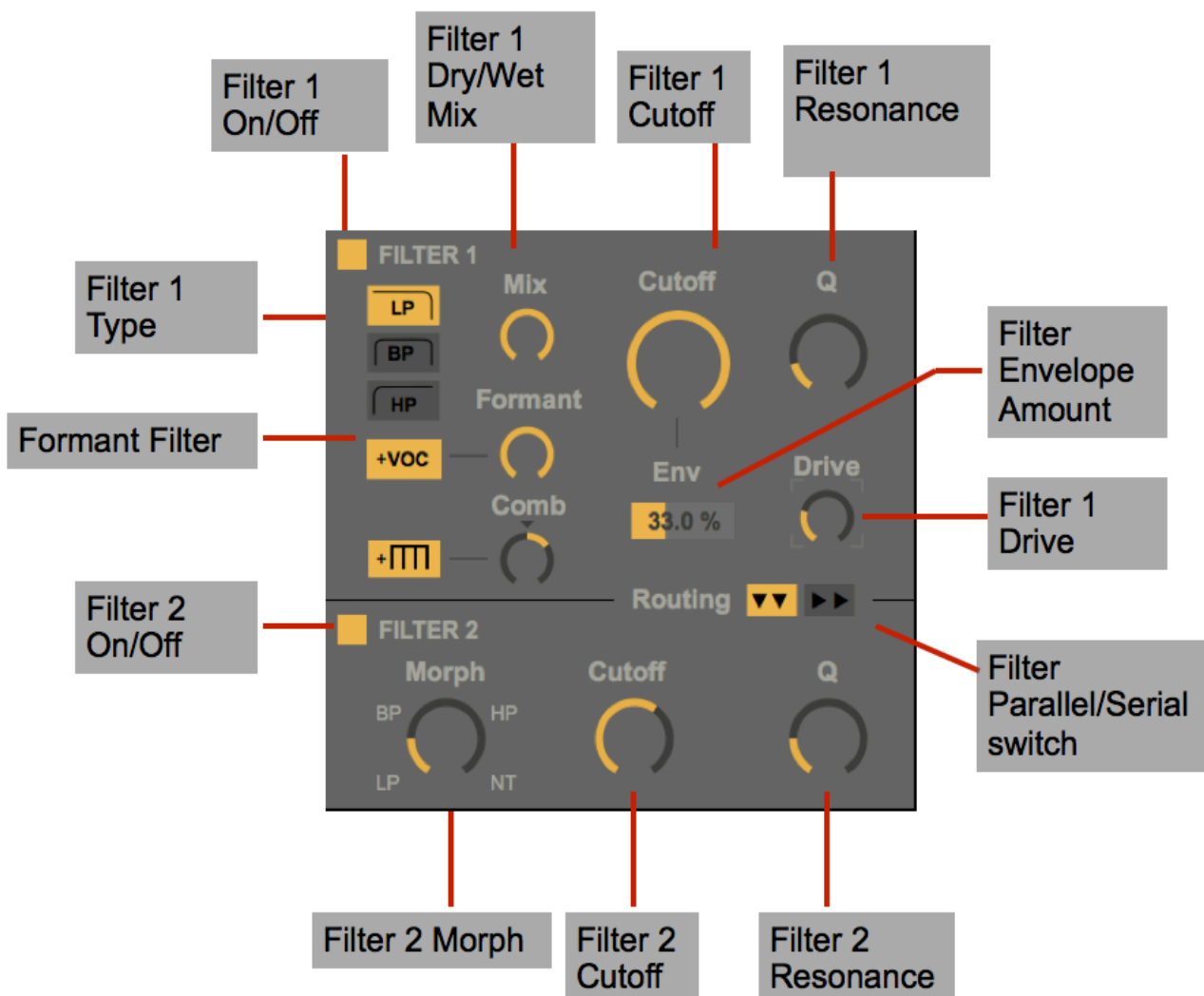
1. Lowpass
2. Bandpass
3. Highpass

In addition to these filters, a Vowel- or Formant filter can be activated. The Formant Dial sweeps through different vowels. Furthermore, a Comb Filter with adjustable positive and negative Feedback can be activated as well.

An additional Drive parameter lets you Overdrive Filter 1 for a more crunchy and distorted sound. The Filter 1 Mix parameter acts as a 'dry/wet' Mixer for the filtered/unfiltered sound.

Filter 2 offers 4 filter types which can be morphed from LP > BP > HP > Notch

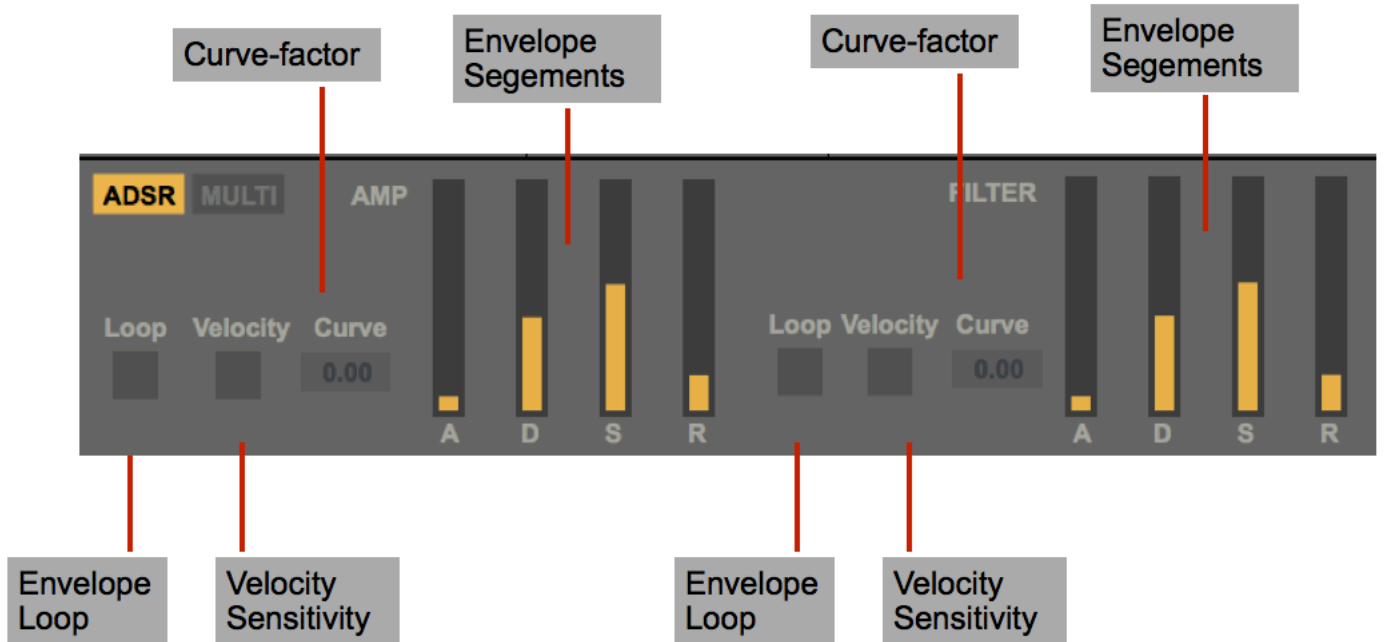
The Filters can be set to parallel or serial operation.



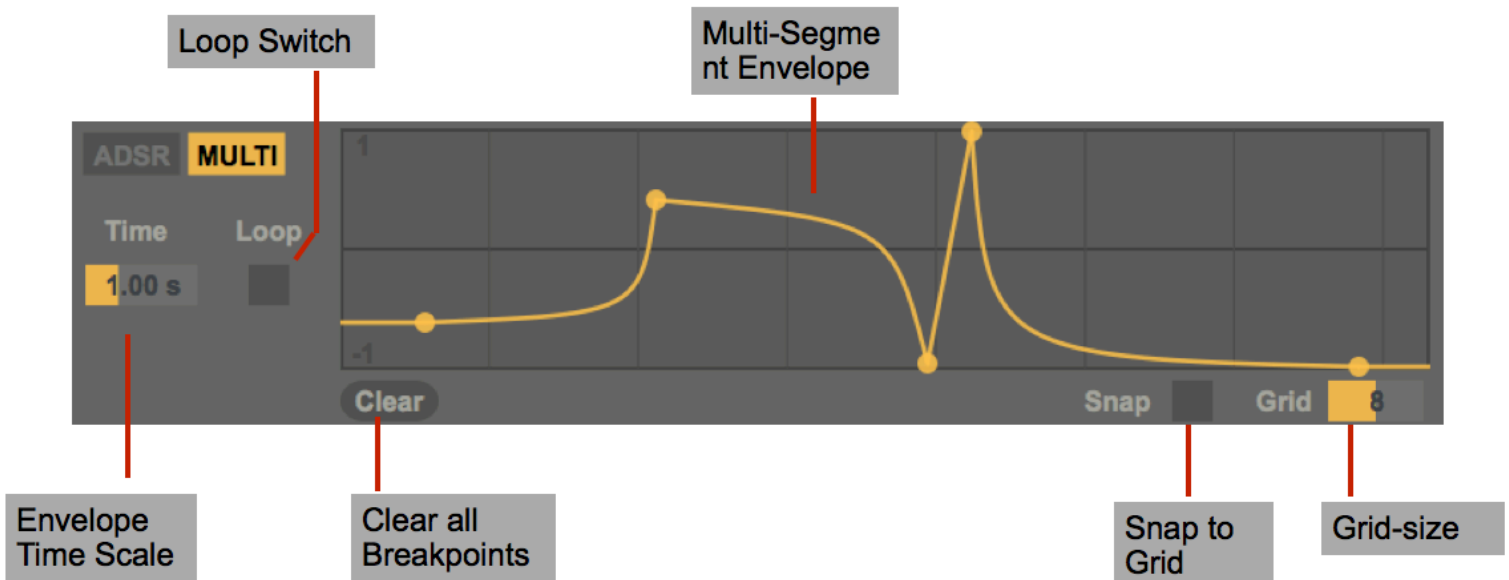
### 3. ENVELOPES

Pallas offers 2 classic ADSR Envelopes for Amp and Filters and an additional multi-segment Envelope which can act also as modulator, depending on the patchings.

Both ADSR Envelopes offers looping, Velocity sensitivity switched and curve parameters.



The Multi-Envelope offers a multiple breakpoint, free time-scalable envelope. Hover over the line and click to create a breakpoint, Shift-click to delete a breakpoint and select & alt-click a segment to bend it. The Envelope can be as short as 5ms or as long as 40 seconds.



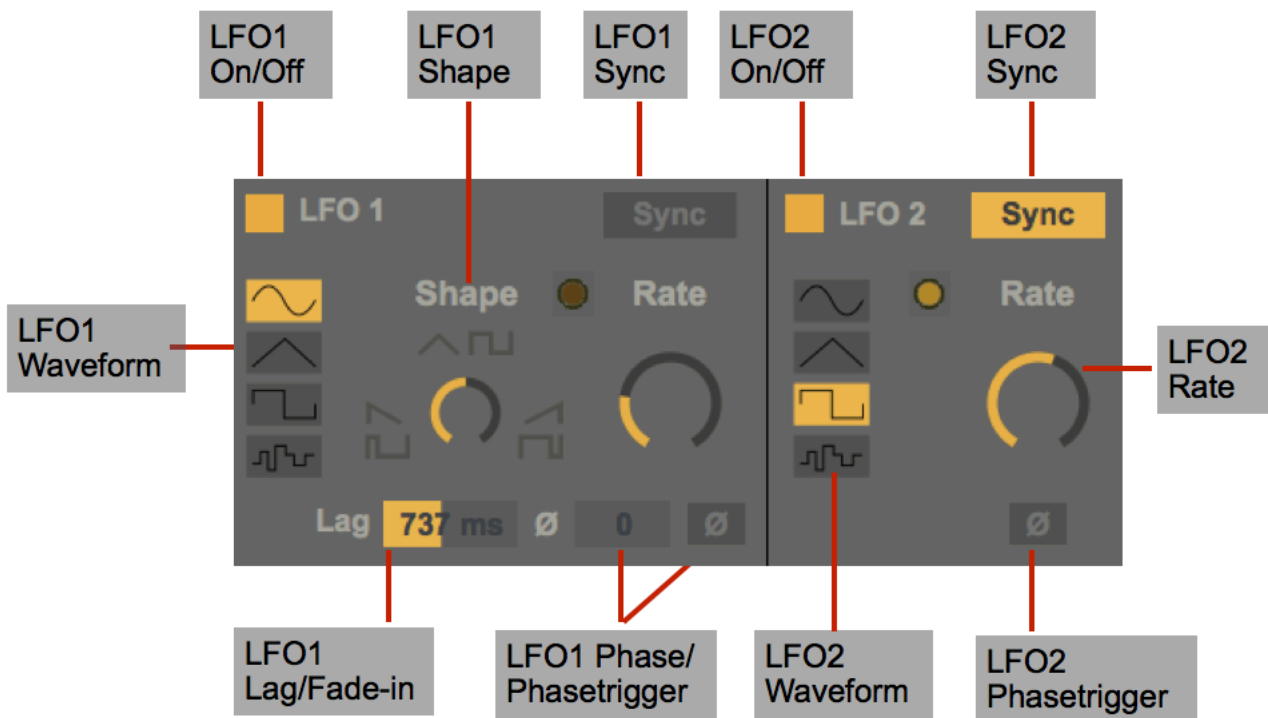
#### 4. LFO

The two Low Frequency Oscillators can be used to modulate many functions of Pallas.

Each LFO offers Sine, Triangle, Square and Sample&Hold Waves.

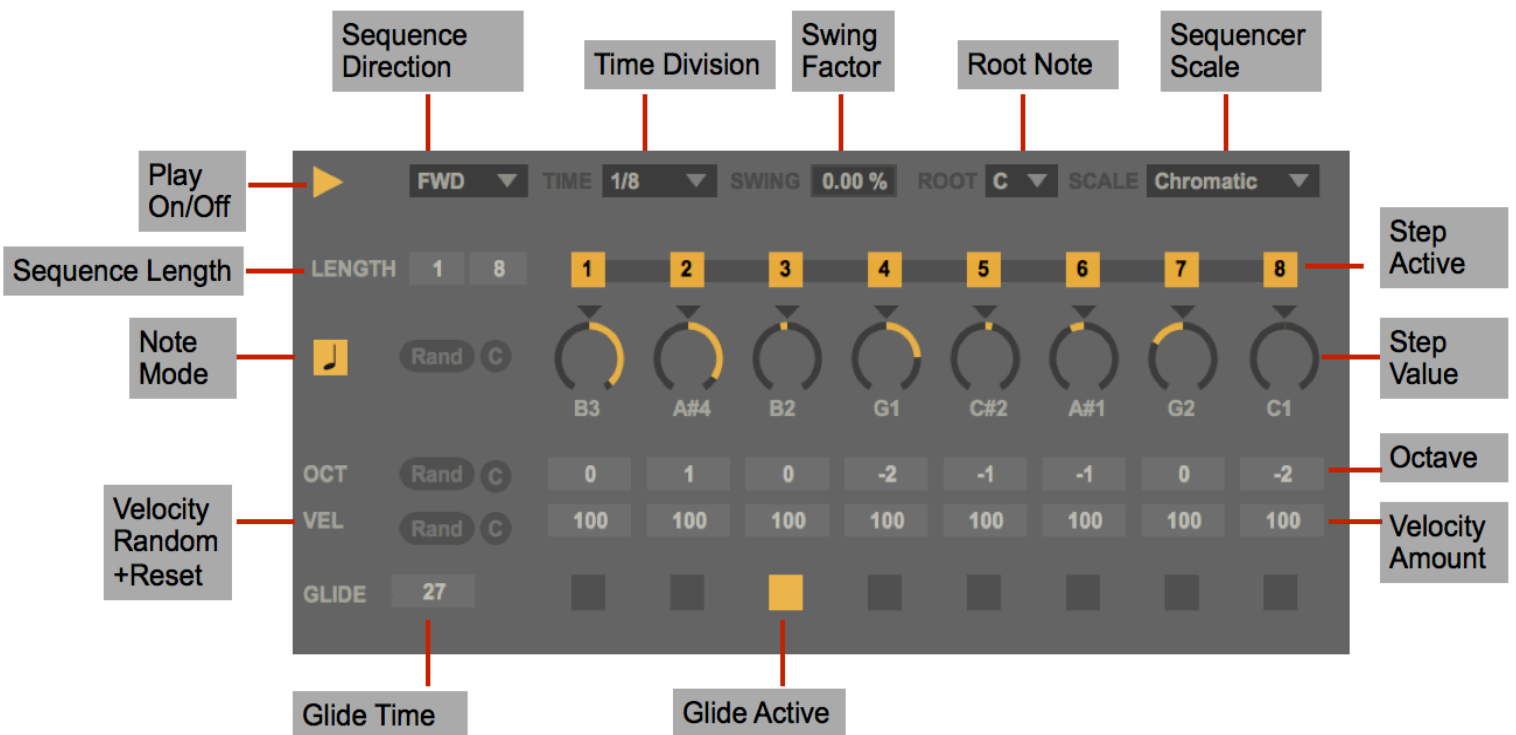
On LFO 1, the Triangle can be morphed into a upwards or downwards Sawtooth and the Squarewave can be modulated in its pulsewidth. The Frequency Range of the LFO's go well into the audio range so you can use them for even more frequency modulation (e.g. on the Filter etc.)

Don't forget that the OSC3 and the Multi-Envelope can be used as LFO's as well!



## 5. SEQUENCER

The 8-step Sequencer can be used to either create little melodies or to generate data for the patchpanel. In MIDI note mode, the sequencer takes over the MIDI input from Pallas with the adjusted sequence. Note that in this case, Pallas does not react to external MIDI note anymore. Also, in Sync mode, you have to start Live's Transport in order to play the sequence. The sequence can be played forward, backward, back-and-forward or randomly. Many of the Sequencer functions can be patched via the Patchpanel, such as the Root note tranposition or Key trigger.

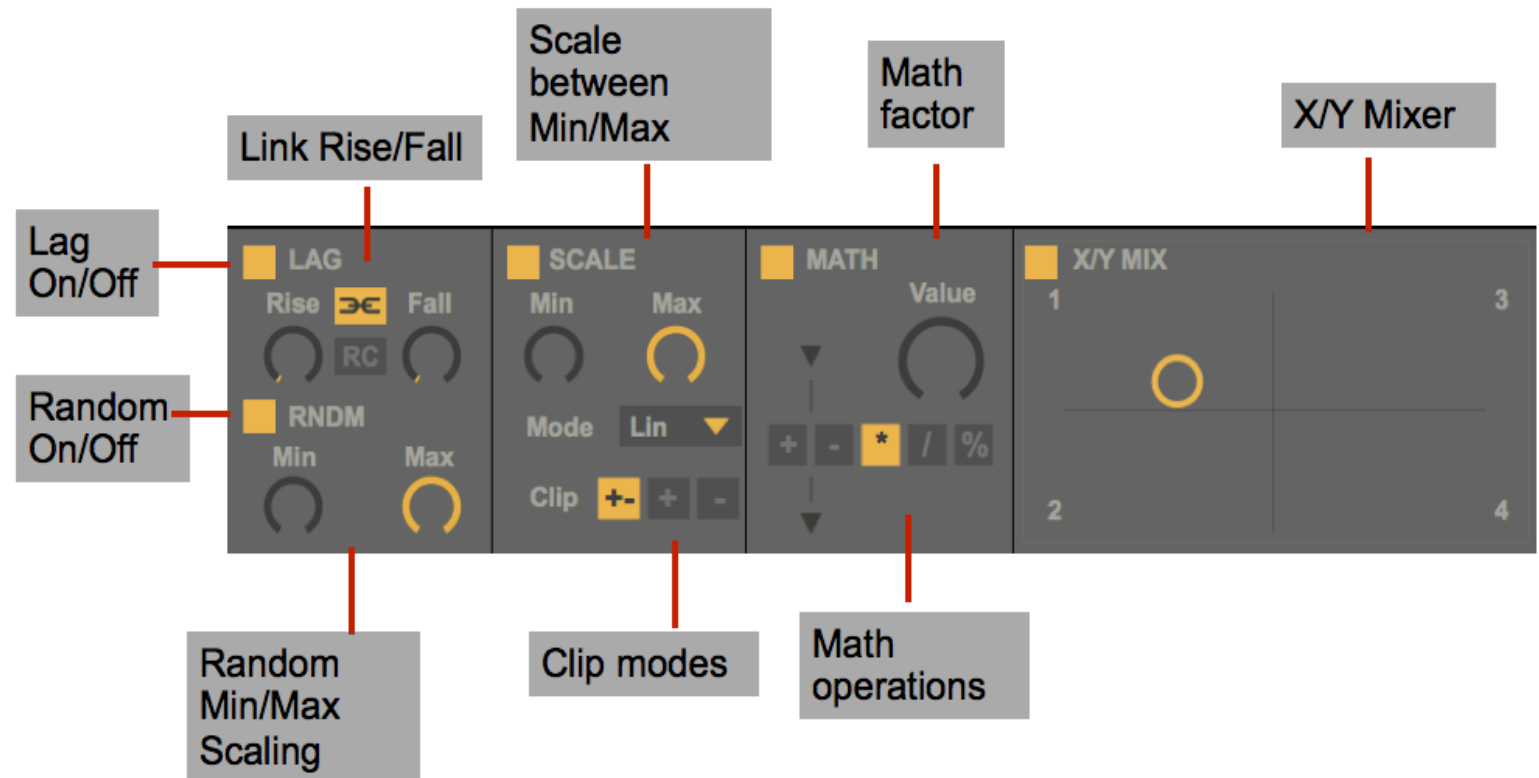




## 6. MODIFIER

The various modifiers can be used to alter control/modulation signals for specific needs.

- the LAG generator smoothes incoming values with an upwards, downwards or up-downwards ramp over a given time  $x$  (samples). The Rise/Fall controls can be linked and the smoothing can be linear or logarithmic.
- Scale lets you re-scale an incoming signal, again either linear, logarithmic- or exponentially. It can be used as a VCA as well. Its output is connected to a diode clipper which clips either the positive or the negative portion.
- Math lets you multiply, add, subtract, divide or perform a modulo function on a signal.
- The X/Y Mixer takes four input signal and lets you mix those on a XY grid while the X and Y axis can be modulated by an external signal.



## 7. AUDIO EFFECTS

Bengal offers 7 build-in Audio Effects for sound design.

### 1. DELAY

offers a delay line with up to 2.5 seconds. The 'PP' parameters lets you create Ping-pong delay effects.

The 'F' labeled toggle switches from free to sync mode. In sync mode, an additional parameter appears - the offset which lets you create a slight 'swing' from the hard tempo grid.

The functionality is quite similar as the Ableton 'Simple Delay'. All the parameters can be modulated here!

This means you can create subtle Flanger-type effects or Autechre-style glitch artefacts.

### 2. KRUSH

Krush offers a bitreducer with a soft/hard mode switch and a distortion module for 'analog-style' distortion.

### 3. FOLD

A wavefolder with Timbre and Width controls for the effect.

### 4. SPACE

The 4 Space parameters let you dial in all kind of reverb sounds, from dark plate reverbs to bright Rooms.

### 5. FREQSHIFT

Lets you shift the incoming frequency and mix the shifted with the dry sound.

### 6. CHORUS

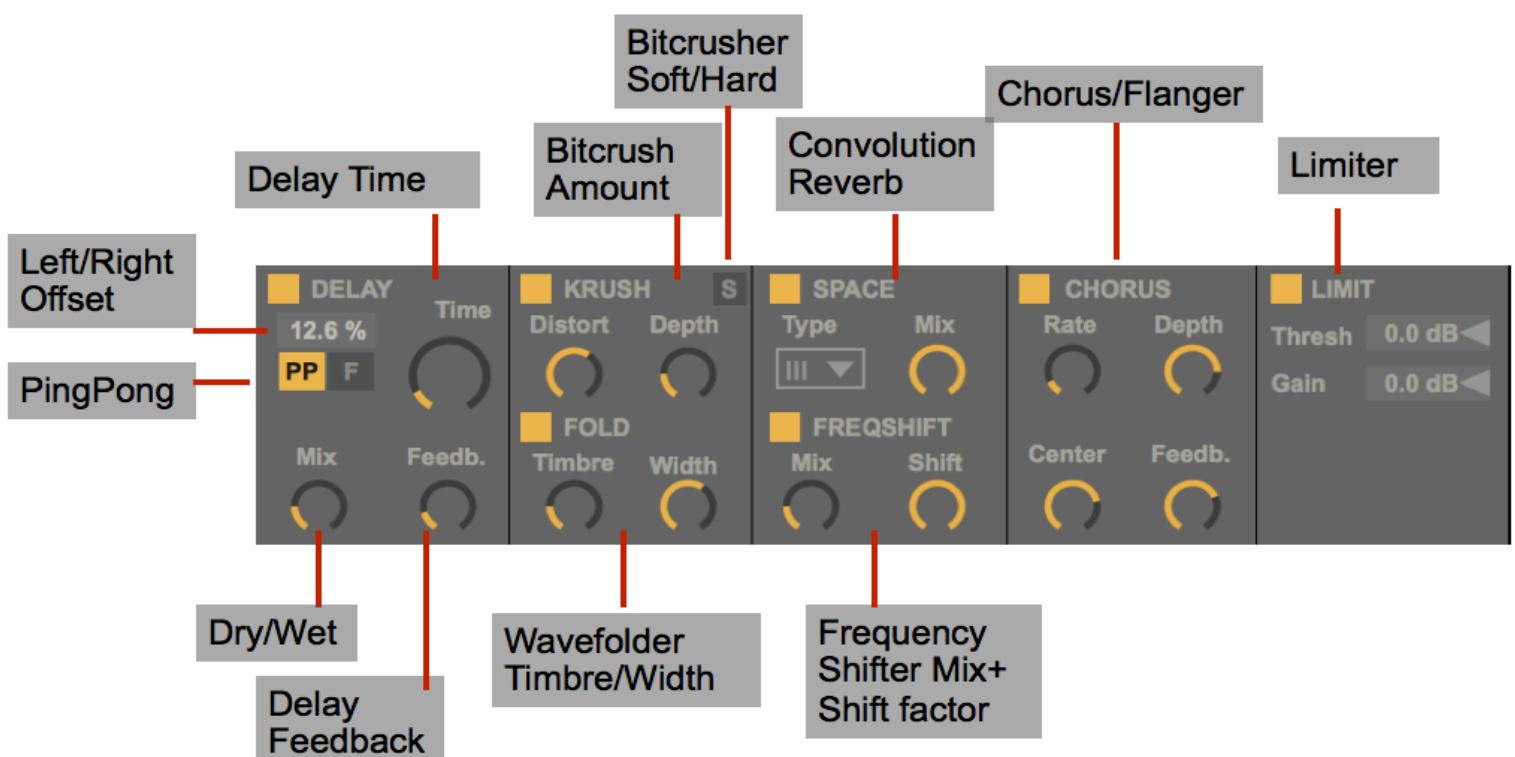
Chorus is a 3-phase chorus implementation and offers also a wide range of sound effects from string-chorus effects to slowly modulated phaser-like sounds.

### 7 LIMIT

the Limiter has two functions: a) limit the output and b) turn-up the input.

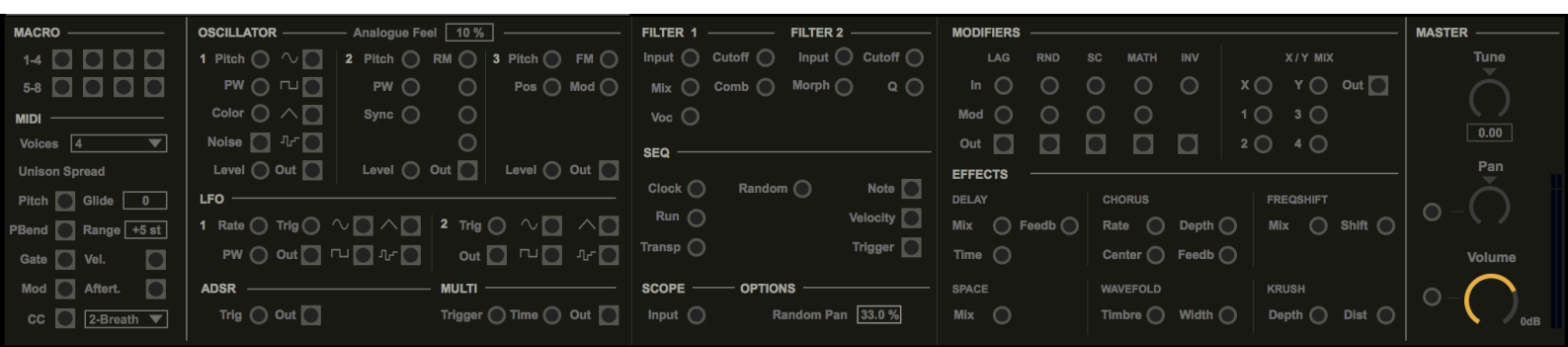
Thresh: When the input signal level exceeds this threshold, it will be attenuated as necessary to keep the level below the threshold.

Gain: sets the gain in dB applied to the signal after limiting.

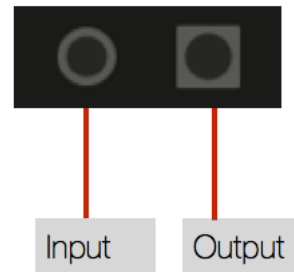


## 8. THE PATCHPANEL

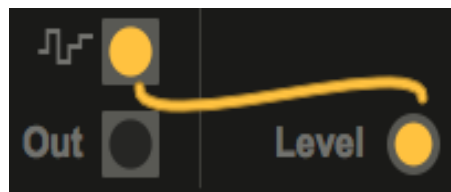
Offers access to the many in- and output points of the Bengal Synth Engine. Over 50 out- and more the 60 input points guarantee almost endless possibilities for modulation and control needs.



The inputs are round, the outputs have a squared border:



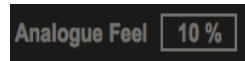
To create a cable and establish a connection, hover with your mouse over an in- or output, then click and drag the created cable -still the mouse held down- to an in- or output and let go of the mouse cursor. To delete a connection, doubleclick on the connected in- or output.



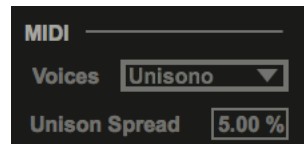
Note that the patchpanel offers access to the 8 Macro dials, these Macros are automatically mapped to the first bank of your PUSH. Also, MIDI data such as Pitchbend (PB), Modwheel, AfterTouch (AT) etc can be routed freely to the various inputs. Several outputs can feed a single input. The connections are summed at this point then.



The 'analog Feel' Parameter in the Oscillator section will create instabilities to create a more 'vintage Synth' sound.



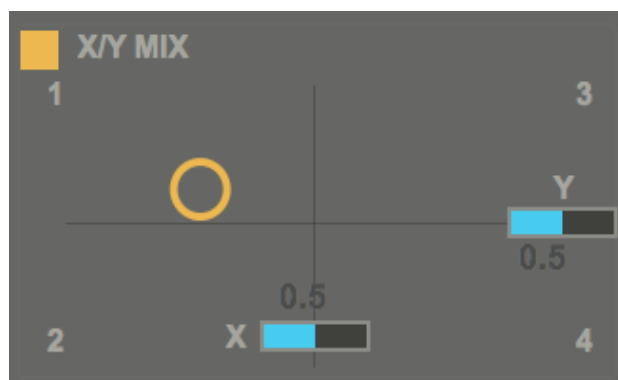
In Unisono Mode, the voices can be detuned from each other, to achieve a really 'Fat' Sound:



Modulation Amounts:

Once you created a patchcord connection to from a modulation source to a target, you usually want to define the amount of the modulation applied to this target.

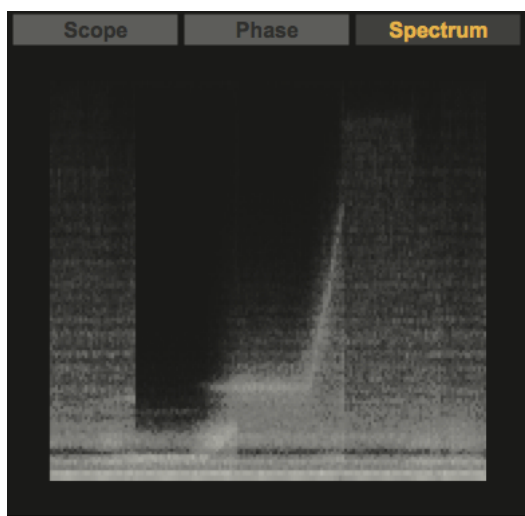
Simply hold down the SHIFT key or click the 'SHOW MOD' button in the right upper corner. You'll see in the BENGAL interface a little control bar for each target which lets you adjust the modulation amount:



## 9. VISUAL CONTROL PANEL

Right in the middle of the Pallas Interface you can find a visual control panel for realtime visual control of the Pallas output. You can choose between

- SCOPE: Scope is a waveform display.
- PHASE: A phasemeter, also known as Vector Scope. Displays a single line if your input material is completely monophonic. Try to play a single sinewave, then activate the 'Width' effect in the Audio FX panel and play with the WIDTH control to see the effect. Watch Lissajous pattern now every night with your beloved ones (and your cat).
- SPECTRUM: Displays a sonogram. A sonogram is a graph representing a sound, showing the distribution of energy at different frequencies.



## 10. MASTER

TUNE: Global Tuning ins semitones and finetuning below.

PAN: pan your Pallas output from Left to Right and back (Random Pan below)

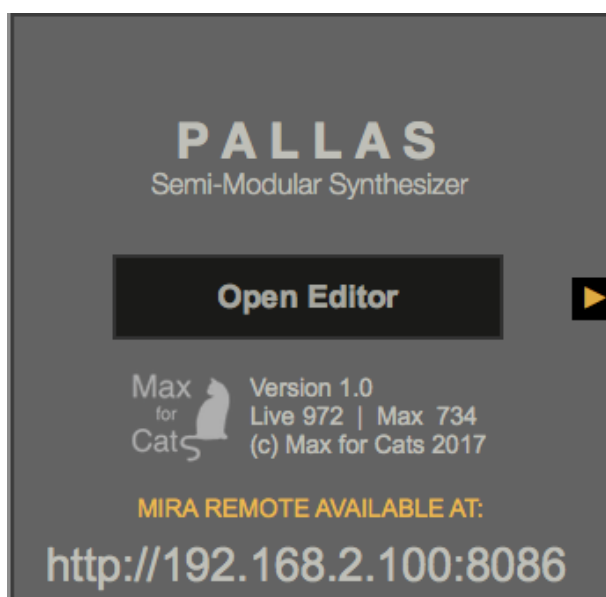
VOLUME: Adjust the final output from -70 (in fact infinity) to +10 dB.



## 11. MIRA Remote:

Certain functions of PALLAS can be remote controlled with a modern Web-browser. This can be another computer, a Iphone/Ipad etc.

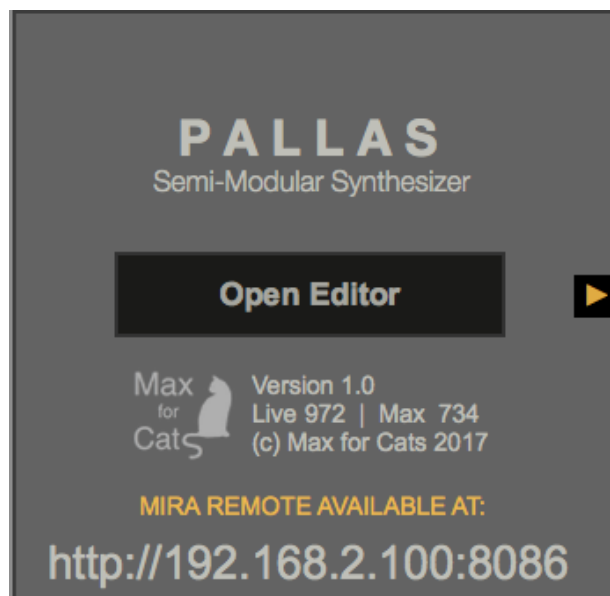
In order to establish a remote connection, type the displayed URL (e.g. <http://192.168.2.100:8086>) into your webbrowser and click the 'Connect' button.



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A few words about CPU or the processing/computing demands of a modern Synthesizer.

PALLAS has been designed to be as efficient as possible but since it is a very complex device, it can use quite some CPU - depending on the number of played voices at the same time.

General Tips:

- Activate only the parts you need. If you e.g. activate both filters but use only one, you will lose precious CPU power.
- Use only as many voices as you really need. If you don't need 8 Voices for lush textures and pads, deactivate them by choosing a lower voice amount in the GLOBAL section.
- If the output crackles, try to lower your Audio Buffer Size in Live's Preferences AUDIO Tab. Usually 256 Samples is fine. The lower the sample buffer, the more strain on the CPU.

Max for Cats 2017





