

Soniccouture

ARRAY MBIRA

USER GUIDE

TABLE OF CONTENTS

THE ARRAY MBIRA 3

SAMPLING THE MBIRA 5

THE KONTAKT INSTRUMENT 6

- OVERVIEW 6
- THE STRUMMER 6
- THE EDITOR 7
- ENVELOPE 7
- FILTER 8
- LFO 8
- MICROTUNING 9
- OPTIONS 10
- DAMPING 11
- THUMB 11
- PHASE 12

EFFECTS 13

- THE INSERT EFFECTS 14
- EQUALISER 15
- STEREO AND SATURATION 15
- SPACE 16

GENERATIVE TOOLS 17

- JAMMER 18
- WEAVER 21

SUPPORT 26

END USER LICENSE AGREEMENT 27

THE ARRAY MBIRA



The Mbira is originally a folk instrument from Africa. Sometimes called a Thumb Piano, or Sanza, or Kalimba, they are typically home-made and consist of several metal tines attached to a gourd or piece of wood, which are then plucked with the thumbs.

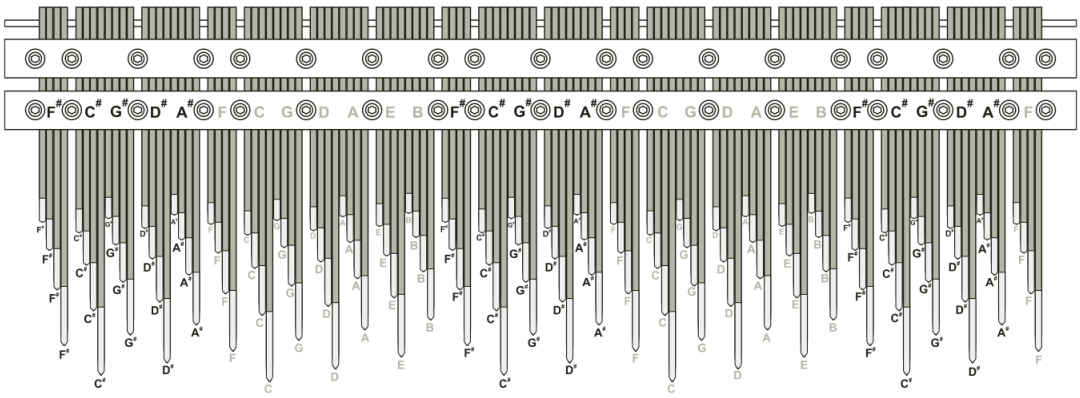
Array Instruments, a company started by Bill Wesley and Patrick Hadley, have taken this ancient African idiophone and converted it to a whole new level, not only in terms of instrument design but also in purity of sound, and in range of pitch. The Array Mbira is no toy, it's a highly advanced musical instrument built to exacting specifications.



The large sound box (this model is about 77 cm across) allows for much deeper pitches to be heard acoustically (the lowest fundamental on our model is in the region of 33 Hz). Plus, all the Array Mbira's also come equipped with a 2-channel piezo pickup system, allowing for easy amplification and line-out recording.

All Array instruments are designed with a unique note arrangement, invented by Bill Wesley to facilitate playing harmonically. Whereas a chromatic keyboard places harmonic notes at some distance from each other, the Array system places the most harmonic notes beside one another. The Array note system looks like this:

The Array System of note arrangement



This also means that all octaves of a single note are beside one another, allowing for octave "strumming" or doubling, which would be much more difficult on a chromatic note layout.

Our Kontakt instrument is mapped chromatically. If you want to experience the Array harmonic system first-hand you would need to get a hold of one of the instruments themselves, or else use one of Bill's Array MBoard MIDI controllers.

The Array Instrument that we ordered was the largest model they make, the 5 octave chromatic Mbira, which has a range from C1 to B5 (actually the fundamentals are one octave below that, but for ease of use we mapped it for a standard 61 note keyboard). We chose the American Cherry model, which is noted for it's purity of tone and long sustain.

This is the Mbira that ate Manhattan.

You can find more information about Array Instruments, Bill and Patrick, at:
http://www.thearraymbira.com

Some well known users of the Array Mbira include Ry Cooder, Emil Richards, and Imogen Heap.

SAMPLING THE MBIRA

Since the Mbira contains stereo pickups, we decided to record it with microphones and pickups at the same time. This recording was then mixed down to a 4 channel file for each note, preserving the phase relationship between the pickups and microphone channels throughout the entire recording and editing process.

In the Kontakt instrument these 4 channels are available for each and every sample. They are aligned no matter which robin or velocity zone happens to be triggered. This allows you to mix the Mic and Pickup signals in Kontakt as if you were mixing the instrument in the studio yourself.

Since the pickup signal arrives sooner than the acoustic signal, we provide a control for you to delay the Pickup signal to alter it's phase relationship to the Mic signal. We find that about 1.3 ms aligns the transients, but you can adjust this yourself and hear how the timbre and stereo image change.

This Mbira covers a range of 5 octaves, mapped from C1 to B5. We sampled each pitch at 8 velocity levels, 3 times for round robin. We also sampled the damping sound of each pitch 8 times for each note (a small clunk sound when the ringing note is stopped).

The Array system of note layout makes it possible to strum a single pitch through all 5 octaves. We sampled strums for each pitch at 4 velocity levels 3 times each for round robin. These strums appear on your MIDI keyboard at C6 to B6.

This makes for a total of 4,112 samples, in stereo at 24 bit / 44.1kHz.

The uncompressed version of the library utilises approximately 9.5 GB of disk space. Kontakt's sample compression allowed to get this down considerably.

THE KONTAKT INSTRUMENT

OVERVIEW

The Mbira instrument contains three main pages, Generative Tools, Instrument, and Effects. These are selected with the Kontakt tabs at the bottom of the instrument GUI.



The main Instrument page in the middle has three large knobs, and a row of tabs in the upper middle. The two knobs at the left and right control the level of the Microphone signal and the Pickup signal respectively. You can also pan these signals, and turn them on or off using the large switches beneath.

THE STRUMMER

The knob in the middle is the STRUM function. This allows you to strum the instrument with whatever notes are being held down on your keyboard. By default this is assigned to the Mod Wheel as well, but you can change that by right clicking on the knob. For example, if you hold down a C major chord (C, E, and G), and move the strum controller you will generate a strum that includes all the Cs, Es, and Gs that the instrument contains,

across the entire range. It doesn't matter what octave you hold down on your keyboard, the strummer will include all octaves of any pitch being held.

Beside the STRUM knob is a small switch that will MUTE the non-strummed notes, should you want to only hear the STRUM.

THE EDITOR

Across the middle, above the words Array Mbira, you can see a row of icons. These open the various edit pages, should you want to edit any of the playback parameters within Kontakt.

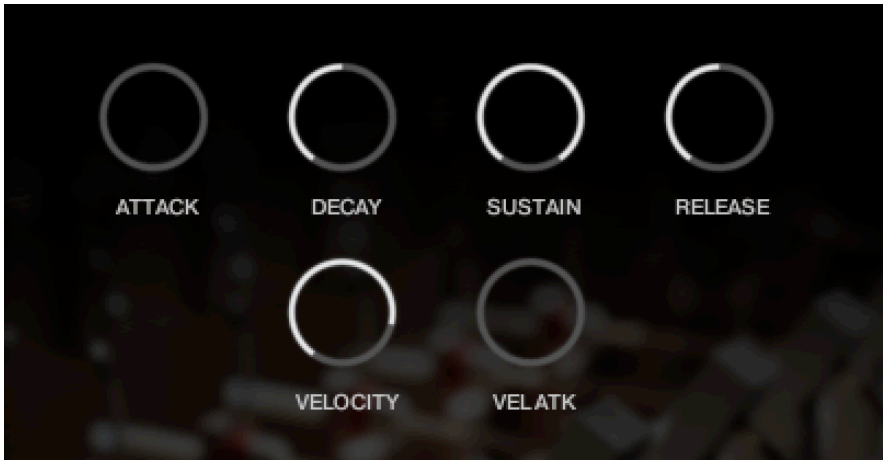


These five tabs open five different parameter editors. From left to right they are Envelope, Filter, LFO, Tuning, and Performance Options.



ENVELOPE

The ENVELOPE tab gives you control of the ADSR Amplitude envelope, as well as VELOCITY sensitivity and VELOCITY to ATTACK time modulation depth.

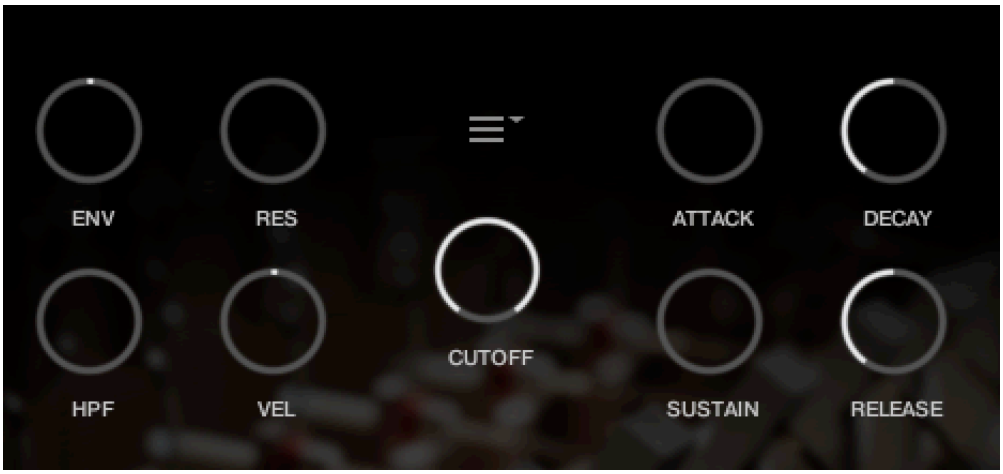




FILTER

On the FILTER tab you can control the filter CUTOFF frequency, as well as choose the filter type with a drop down menu. Here you can also control the RESONANCE of the filter, the ENV depth, the High Pass Filter cutoff, and the VELOCITY to filter cutoff depth.

The ADSR controls of the filter envelope are on this same tab.

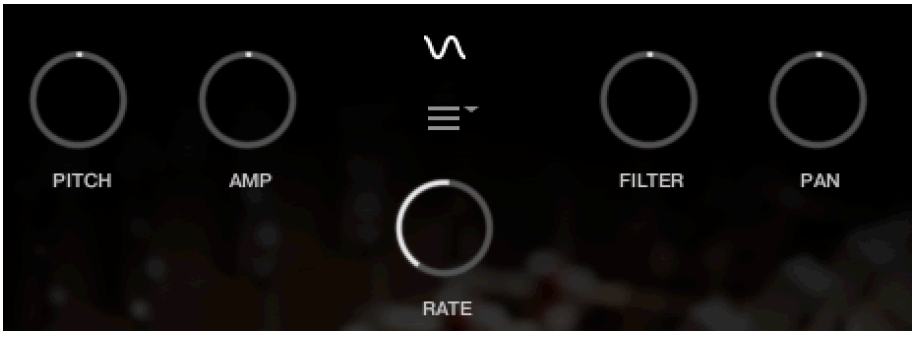




LFO

The LFO tab lets you control the LFO RATE, as well as the depth of modulation to the PITCH, AMPlitude, FILTER cutoff or PAN of that department.

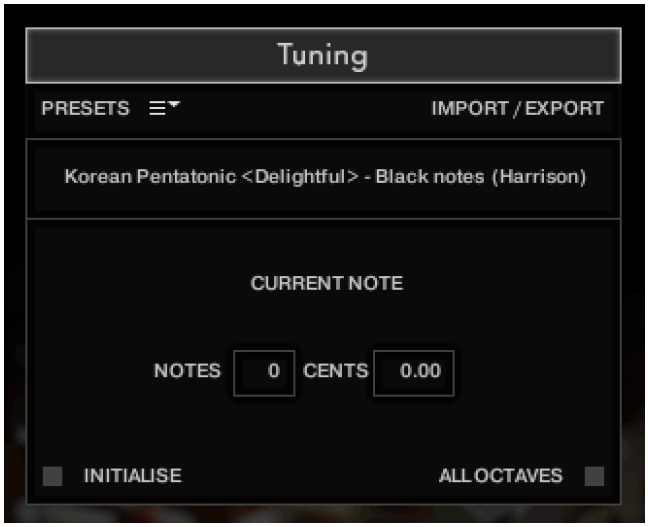
There are two menus beside the large RATE knob. One of these lets you set the LFO WAVEFORM, and the other lets you set LFO Sync options.





MICROTUNING

In the Microtuning Editor you can design or import/export scales to and from other Soniccouture instruments.



The title bar is a switch that turns the microtuning function on or off.

There is a menu of some example factory tunings at the top left, and the import/export menu on the top right.

In the middle is displayed the current TUNE KEY, the key that is currently being edited. You can adjust the NOTES (semitone) or CENTS offset of this key.

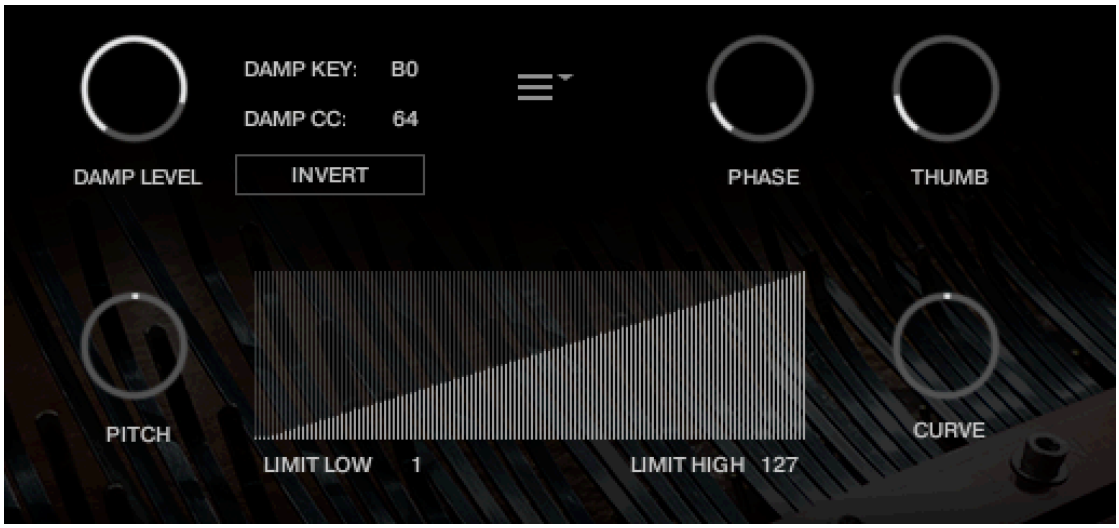
If ALL OCTAVES is checked (at the bottom right) then all instances of that key will change together… this is very useful if you're designing a scale that repeats at the octave, which many of course do.

INITIALISE will set the microtuning to nominal, no offsets for any notes.

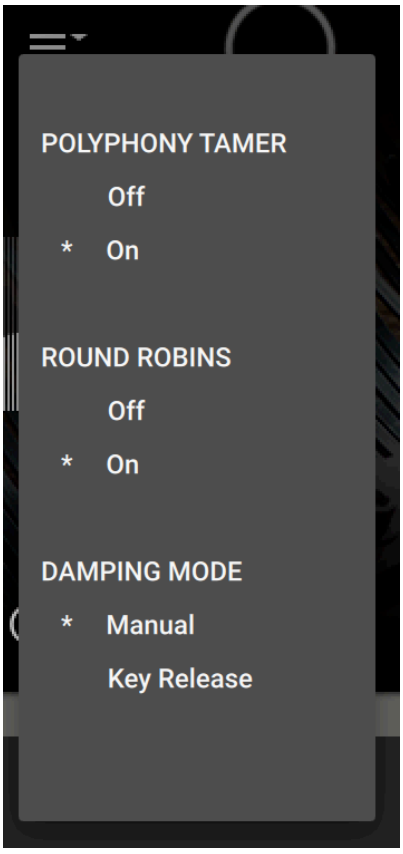
OPTIONS

In this editor you can adjust the velocity response, curve and limits.

There are also knobs for the DAMP level, the PITCH, the PHASE and THUMB options.



There is a menu in the centre with some other options that can be turned on or off.



The POLYPHONY TAMER option can be turned on or off.

You can disable ROUND ROBINs if you like.

And you can change the DAMPING MODE.

More about DAMPING and PHASE and THUMB to follow.

DAMPING

The DAMPING section gives you options to control ways of stopping the Mbira sound. Since the Mbira rings so long, and common technique while playing is to damp the notes with your hand. This results in a little buzz or chunk sound, as well as cutting the note that's ringing.

This little sound helps the realism. You can adjust the LEVEL of the DAMPING sound with the main knob in this section.

The DAMPING in can be triggered by both a note and a MIDI controller (CC). You can set the MIDI KEY and MIDI CC in this section. By default these are set to MIDI note 35 (B0 , which is the note just below the lowest note of the Mbira) and MIDI CC 64, which is the Sustain pedal on most MIDI keyboards. When the MIDI CC is received at a value higher than 65 it results in the damping being triggered.

CC INVERT allows you to invert the behaviour of the MIDI CC so that DAMPING is triggered if the MIDI CC is received below a value of 64.

Since Mbira version 1.5 you can also trigger the damping of each key on its release, which is what the main DAMPING MODE in the menu on the previous page will do if you set it to "KEY RELEASE".

THUMB

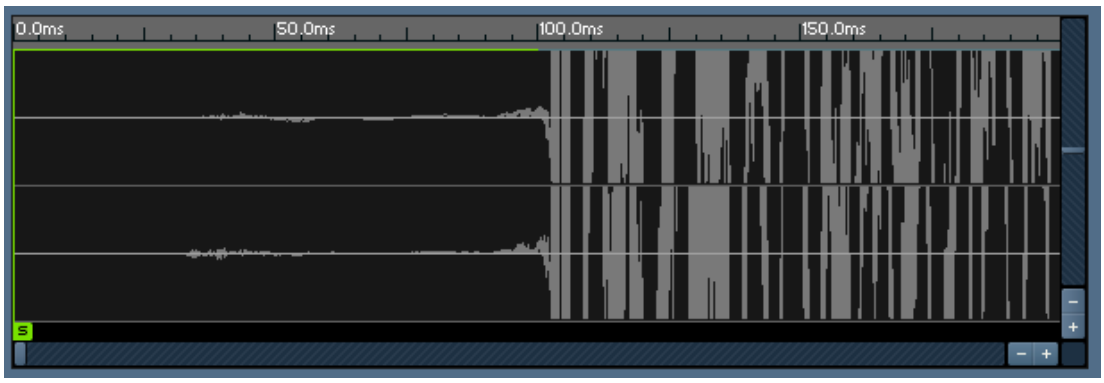
THUMB controls the start position of the samples.

When THUMB is at 0, the sample is played from the beginning of the transient. But a thumb piano has a bit of noise before the transient that is quite integral to its sound quality, this is the THUMB noise, or pluck sound.

The green line in this picture shows the modulation area of THUMB.

When THUMB is at maximum, or 100 ms, then 100 ms of sound before the transient is heard. This results in a more natural attack.

However, it also results in the sound being 100 ms late!



So, using the THUMB control you can do one of two things.

1- You can use it to find a comfortable medium in which the sound is natural enough for your purposes but responds relatively quickly (often 30 ms or so is fine for this).

2- You can be very exact and program your sequence so that the rhythm is precise when THUMB is set to 0. Then change the THUMB to 100 ms, slide your MIDI part 100 ms earlier in your track, and the result will both sound natural and be in time.

PHASE

PHASE delays the pickup signal by a few milliseconds. It has a range of 0.1 to 10 ms, but at the default of 1.3 ms it aligns quite precisely with the Microphone signal.

EFFECTS

The EFFECTS panel is divided into 5 sections.



Insert Effects
Equaliser
Stereo
Saturation
Space

THE INSERT EFFECTS

Here you can choose up to 3 insert effects. The effect is enabled with the square power switch to the left of its name at the top of the tab, and the appropriate controls will appear below when its tab is selected.

You can select from a list of effects using the menu to the right of the effect name in the tab.



The effects are in routing order from left to right, and are before the EQ and other effects on this panel.

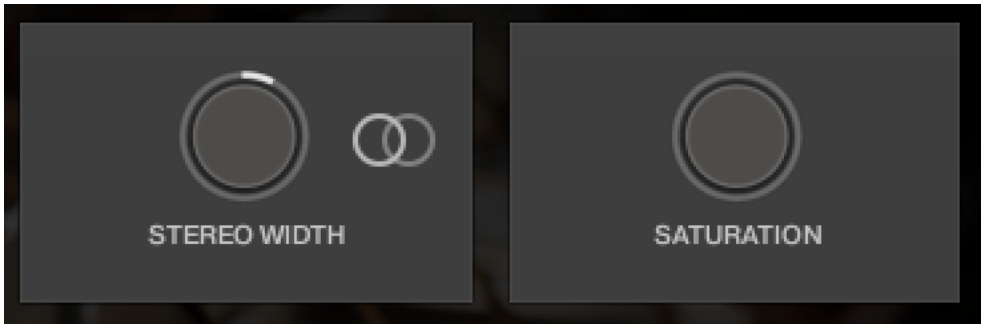
You can only select each type of effect once, if you select an effect already in use, then the position of those effects will be swapped.

EQUALISER

This is a fairly obvious four band parametric EQ. The fader on the far right is the output level from the EQ.



Note that BELL and SHELF are drop down menus, you can choose either for the top and bottom bands. You can enable or disable the EQ with the power switch at the top left.



STEREO AND SATURATION

Here you can adjust the STEREO WIDTH (the natural recording is nominal at 12 o'clock). Moving the control left narrows the width, and to the right increases it.

There is a stereo SWAP feature, enabled with the symbol: 

SATURATION will adjust the SATURATION effect.

SPACE

This is the convolution reverb section. In the middle there is a drop down menu with a selection of our impulse responses.



As usual, the power switch is at the top left.

The controls below are the PREDELAY, the convolution impulse SIZE, a High Pass and Low Pass Filter, as well as the return MIX level on the large central knob.

GENERATIVE TOOLS

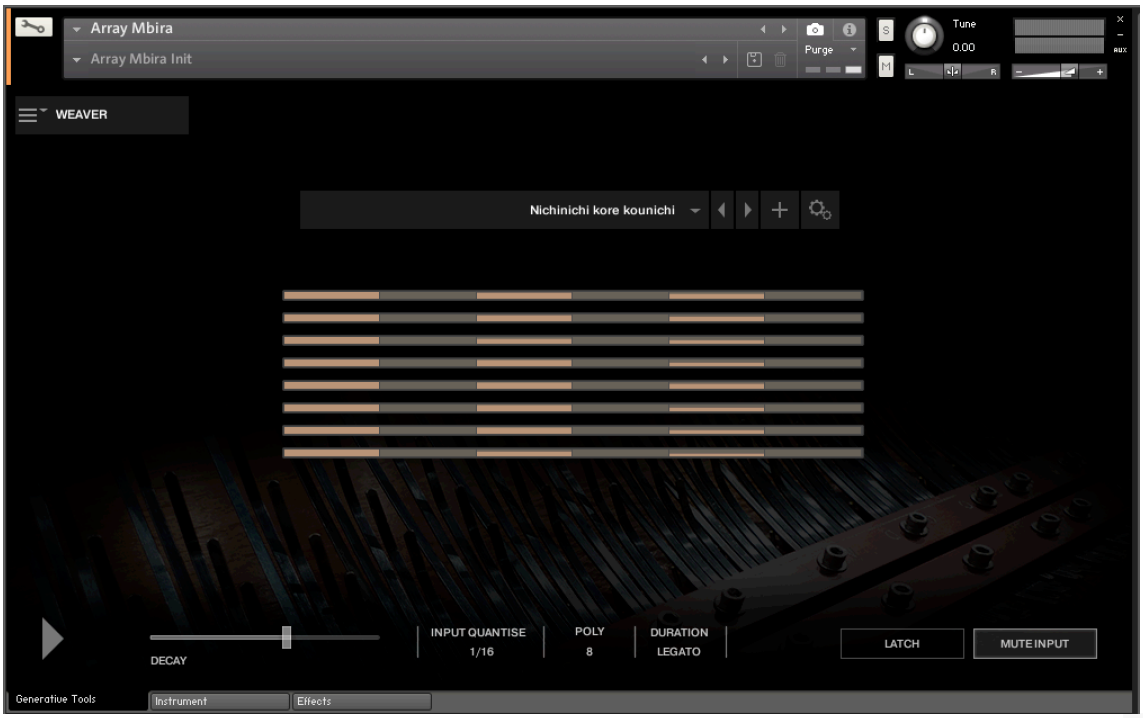
The GENERATIVE TOOLS panel has two options, chosen with the menu at the top left.

JAMMER



and

WEAVER



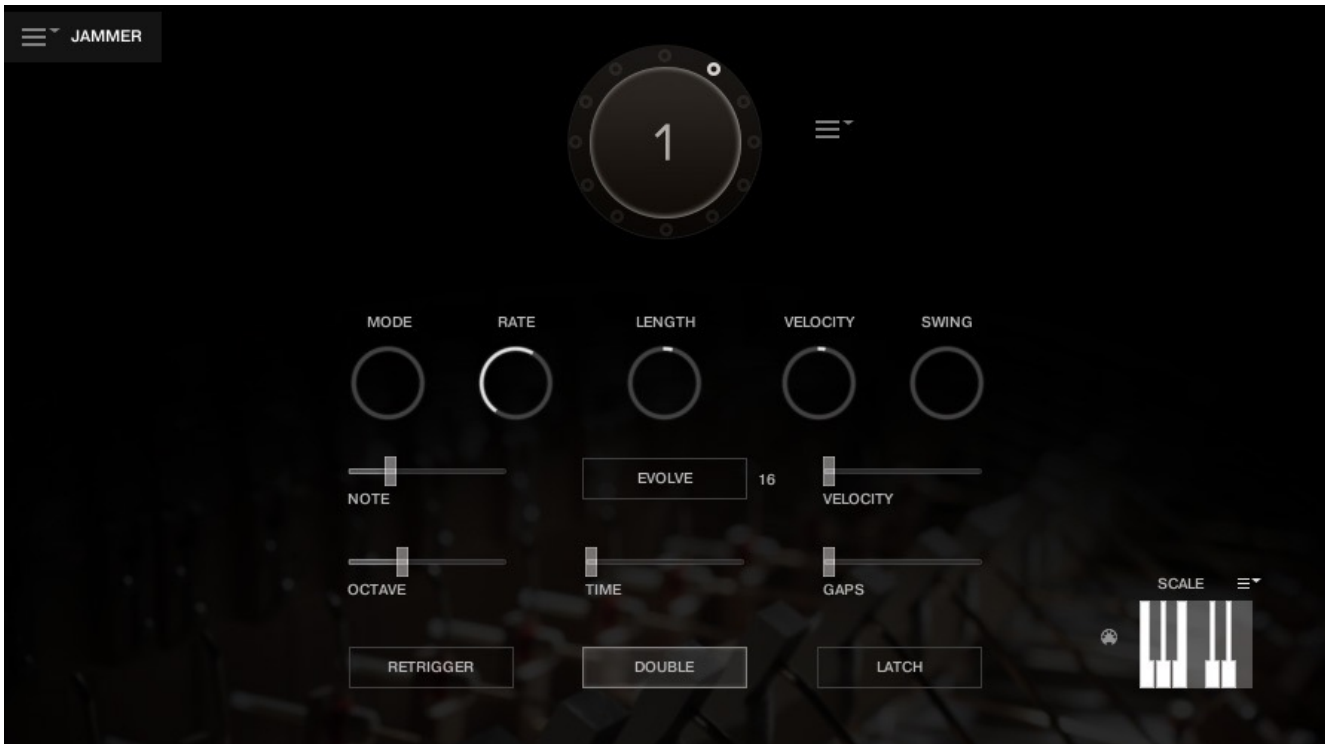
JAMMER



The PLAY icon at the bottom left enables or disables the Jammer. This control is duplicated on the other pages for convenience.

The large knob in the top middle is a Preset wheel with 12 presets. You can overwrite these, copy them, import and export them, using the menu to the right of the wheel.

The five knobs along the top of the Jammer are global controls, these are:



MODE This sets the type of arpeggiation used to create patterns. The original Jammer mode is Random mode, but you can also choose Up, Down, or Up Down, for somewhat more traditional arpeggiator results. This controls how the notes are selected from what you are holding down.

RATE controls the speed of the Jammer, this is always related to the tempo of Kontakt or the host sequencer.

LENGTH is an offset to the duration of the created notes. In the centre position, the notes are created at the same duration set by the Rate knob, but using LENGTH you can make these longer or shorter.

VEL OFFSET adds or subtracts from the velocity of the notes created by the Jammer. Automating this can be useful for creating fades.

SWING adds some time to the offbeat notes to give a shuffle or swing feeling to the rhythm.

The next five sliders are controls for the generative part of Jammer, which are essentially randomising various aspects of note generation. These are:

NOTE add random offsets to the pitches you give Jammer (are holding down). This is in semitones, so if it's set to "1" the Jammer will output notes plus or minus 1 from the notes you play, as well as the note you play.

OCTAVE add random octave offsets to the pitches created by Jammer. This control only ADDS octaves, it doesn't subtract octaves.

TIME add random changes to the timing of the Jammer, so that the result is less stable and rhythmic.

VELOCITY add random changes to the velocity of the output notes. This always uses the input velocity as a starting point, so if the VELOCITY range is small, it will just add small changes to your input velocity.

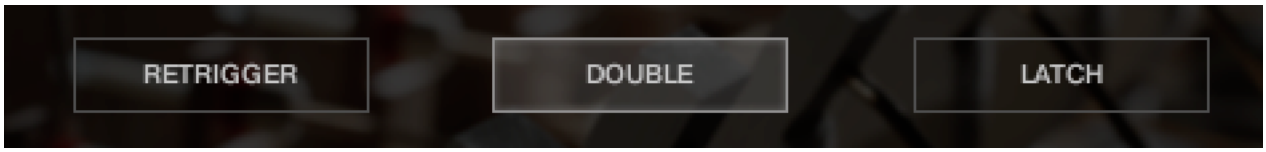
GAPS add random rests or silent beats into the Jammer sequence.



In the middle of this section you'll see a button titled "EVOLVE", with the number 16 to the right of it (by default). EVOLVE mode means that the Jammer is working to generate new data constantly, the randomisers are always creating new patterns from your input notes.

If you click on EVOLVE, the button changes to display LOOP. Now the Jammer is repeating the pattern it most recently created. The length of this pattern is determined by the number to the right, so by default it repeats the last 16 generated 'notes'.

It's important to remember that the Jammer is not storing the 'notes' themselves, but rather the choice of, and offsets to, the input notes you play into it. So even in LOOP mode, the Jammer will output different notes depending on what notes you play. The pattern is stored, not the exact notes themselves. This means you can created quite complicated patterns, but play them with any chord or input notes.

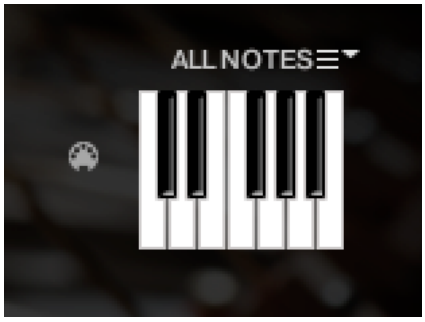


RETRIGGER will force the Jammer to start from the beginning after all notes are lifted (legato).

DOUBLE will trigger two notes on each step, as if you are playing with both hands simultaneously.

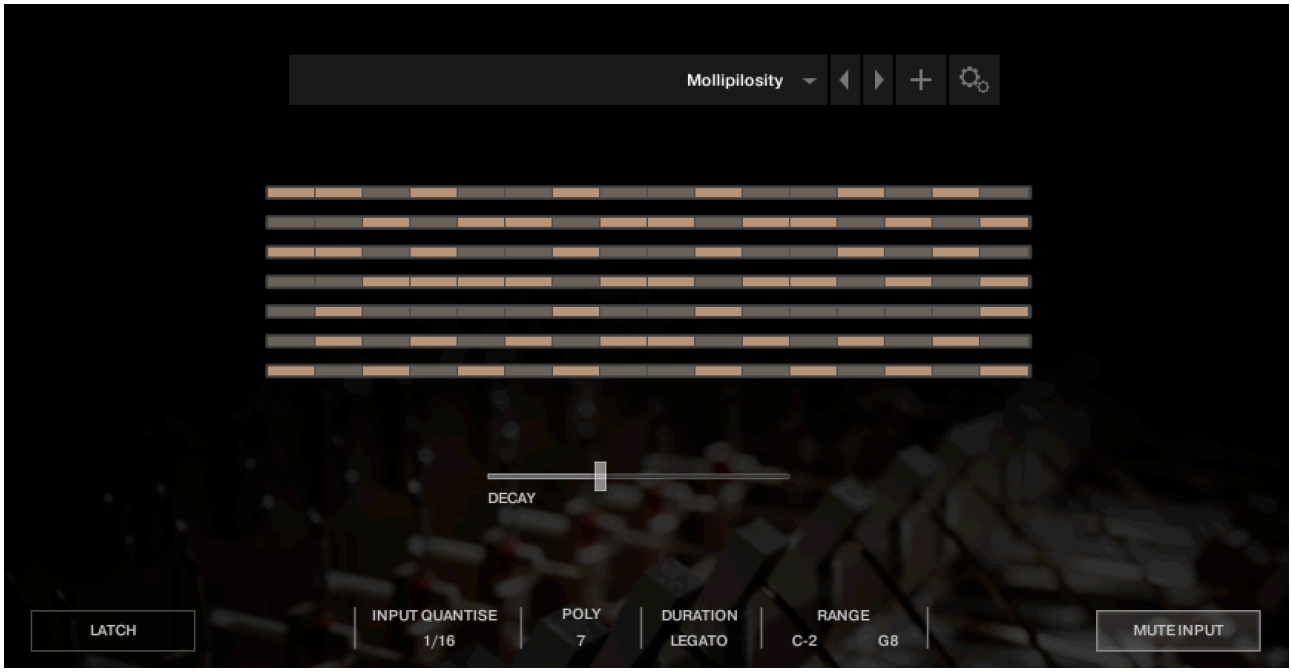
LATCH will tell the Jammer to hold the current notes until new notes are received.

At the bottom right is a small keyboard that represents a pitch filter. Here you can limit the output notes of the Jammer to a certain key or chord or any selection of notes you like. At the top of the small keyboard is a drop down menu with some popular scales, but you can click on the keyboard directly to allow or disallow any pitch as you like.

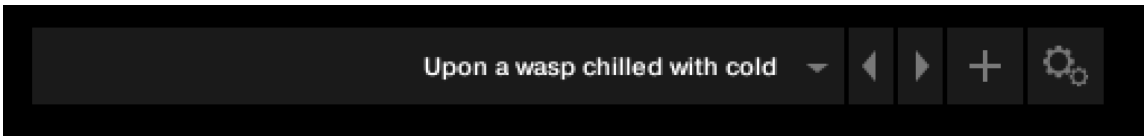


You can also use the MIDI input switch on the left of the keyboard to LEARN a scale by playing it into the Jammer.

WEAVER



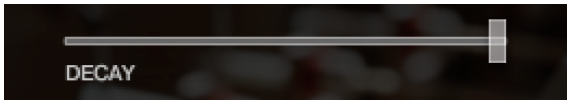
The WEAVER is a tool that allows you to define a rhythmic sequence to be played by an input note. More about how this works later, in the Weaver Editor section below.



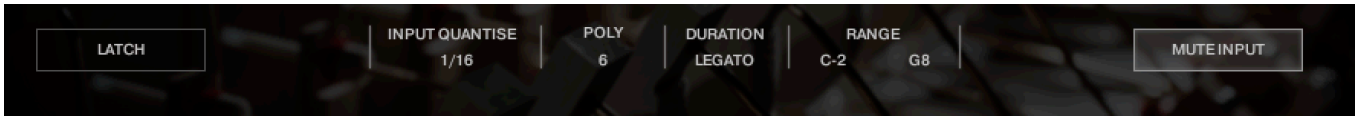
The main page has a PRESET menu at the top, you can choose these from the drop down or by stepping through them. You can store your own settings to any of these menu positions using the + button. And you can import and export presets if you need with the cog menu on the far right of the PRESET bar.

In the middle of the page is a rough representation of the WEAVER pattern, and if you click on that you will open the WEAVER EDITOR.

Below that, there is a large slider labeled DECAY. This controls the overall decay time of the sequence, since each pattern will loop. If set all the way to the right, the pattern will never decay.



At the bottom are some global controls for the WEAVER sequence.



LATCH will hold the current notes, even if you let go of the keys.

INPUT QUANTISE. This is very useful, but only works if Kontakt is running it's own transport, or else is inside a running DAW. But when this is the case, none of the WEAVER patterns will trigger until they're in sync with the value set in INPUT QUANTISE. (ie. 1/16th note) This keeps your patterns really tight and in sync with the song you might be working on.

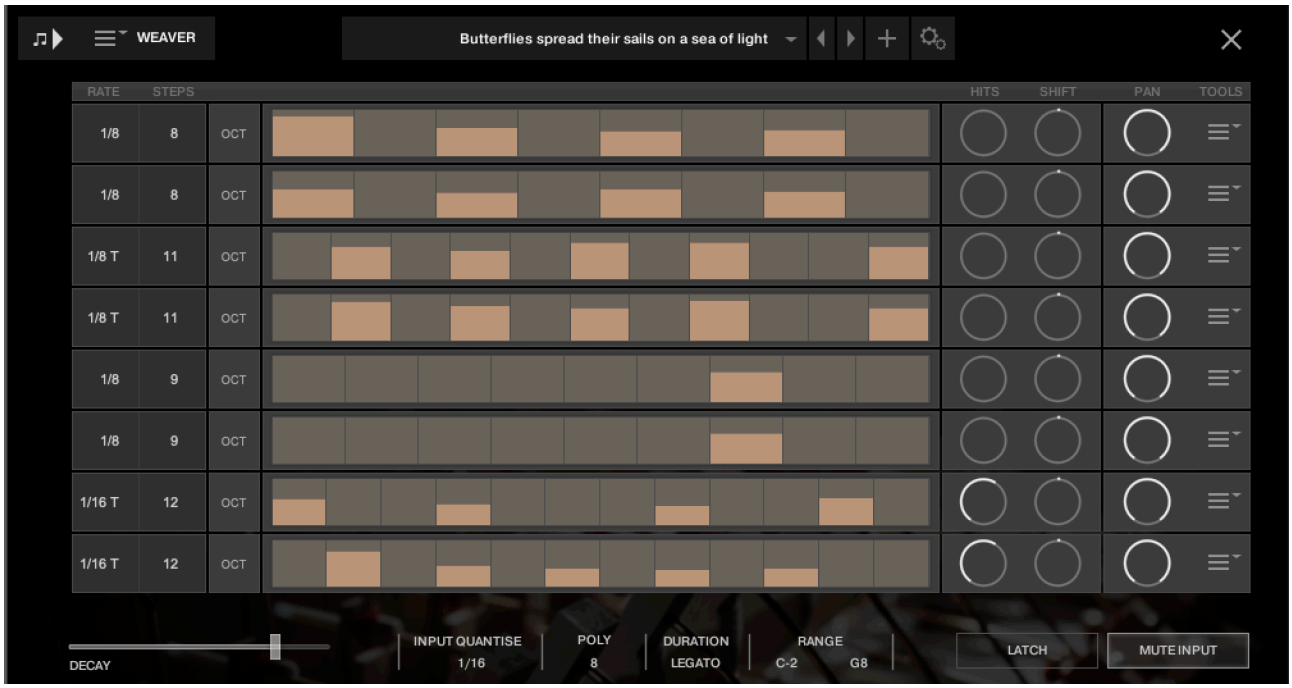
POLY is the polyphony of the WEAVER pattern. From 1 to 8. If you play more notes than that, they are ignored by the WEAVER engine.

DURATION is the duration of the notes generated by WEAVER, and this can be set to a value, or else to LEGATO, in which case it will play until the next note on any given row comes along.

RANGE allows you to limit the range of the WEAVER, so you could in theory play a bassline with your left hand and have WEAVER only respond to notes played with your right hand.

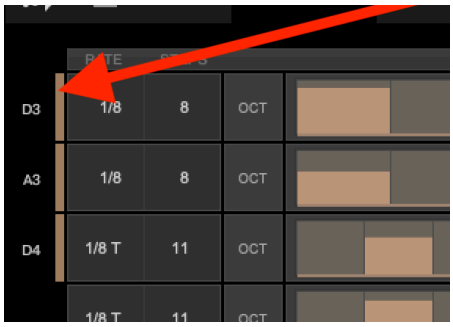
MUTE INPUT turns off the MIDI sent into WEAVER, so you'll only hear the notes generated by WEAVER. Sometimes this is what you want, but also sometimes it's nice to hear the original notes and have WEAVER accompany them, respond to the notes you play.

Let's click on the middle panel and open up the WEAVER editor. It can look a little intimidating at first.

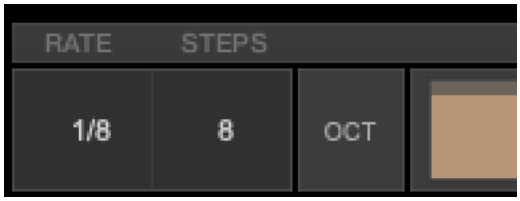


You can close this window again with the X at the top right.

The above display shows all 8 rows active (POLY set to 8). All rows are the same.



Notes are assigned a row in the order they're received. You can see the notes assigned to each row at the far left when you play.



At the left of each row, you can set the RATE and the number of STEPS for the row. Here this row is set to 8 steps of 1/8th notes.

There is also an OCT switch here, OCTAVE, which we'll discuss a bit later.

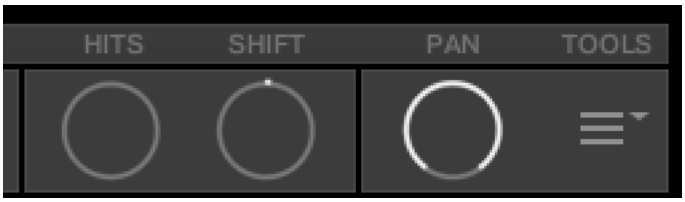
In the middle is the velocity steps table. You can draw in here as you like. This pattern uses the input velocity, so the maximum output velocity will be the velocity of the note that triggered the pattern.



If you ALT-drag, you can set all active steps to the same velocity.

On the right there are two EUCLID generator controls. HITS and SHIFT. Be careful with these, because they will write new data into the pattern table, and overwrite anything you may have drawn.

EUCLID rhythm generators basically spread a number of hits, as evenly distributed as possible, within a number of STEPS. So if you set this HITS to 5, it will try to evenly distribute those 5 hits among the 8 steps we set that row to contain.



SHIFT shifts the position of those EUCLID HITS, left or right, in the pattern.

The PAN control introduces random panning to notes generated on that row.

POWER TIP *IF YOU WANT TO SET ALL ROWS THE SAME, HOLD DOWN ALT OR OPTION WHILE ADJUSTING A PARAMETER*



And lastly at the far right, there is a menu with some drop down tools to manipulate the row.

OCTAVE

When you press the OCT button on the left, you see a blue table instead of the orange one. This is an octave shift table that can transpose the incoming note one or two octaves up. This is nice for adding some variation to the WEAVER pattern.



A NOTE ABOUT THE PRESET STORE BUTTON

When you press the preset store button, it turns green: 

This is a kind of "store enable" mode. If you now choose a menu item, your preset will be stored at the menu location you store.

If you just hit the store button again, it will overwrite the preset you had selected when you started editing. So you can just click it twice quickly to store the preset where it is.

SUPPORT

If you have any problems or questions relating to the use of this product, please feel free to contact us. You can email us at :

http://www.soniccouture.com/en/support/

We will always endeavour to reply to any enquiry within 24 hours. We are based in the UK, so please bear in mind differences in time zones.

While you are waiting, you will find lots of answers to common questions in our FAQ.

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