Zebralette 3

USER GUIDE

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Heckmann Audio GmbH • Berlin

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Introduction

About Zebralette 3

Zebralette 3 is a highly flexible wavetable / additive oscillator with unified, spline-based editing within a minimum environment consisting of two LFOs, an ADSR, a multi-segment envelope generator (MSEG) and a pair of effects: Just enough to turn a single Zebra 3 oscillator into a great little synthesizer!

As the curves are vector graphics, morphing between them is exceptionally smooth.

Zebralette 3 presets will (to a certain extent) be upwards compatible with Zebra 3.

Online Resources

For downloads, news articles and support, go to the u-he website
For lively discussions about u-he products, go to the u-he forum at KVR
For friendship and informal news updates, go to the u-he facebook page
For video tutorials and more, go to the u-he youtube channel
For our soundsets and bundles, go to u-he soundsets
For 3rd party presets, go to Patchlib

Team 2025 (Q4)

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Showtime...

To explore the wide range of sounds available in Zebralette 3, click the **Presets** button to the right of the data display (top centre). Select the **Showcase** folder, then choose presets from the centre panel. When you are finished exploring those presets, either exit via the same **Presets** button, or check out the content of the **Local** sub-folders. The 50 randomly selected presets in the **Discover** folder can be replaced by right-clicking and selecting *Rebuild*.

For details of the powerful preset browser, click on the PRESETS link at the bottom of any page (e.g. this one), which will take you directly to the appropriate chapter.

Some Terminology

Zebralette 3 is such a complex little beast that it is impossible to avoid specialist words, or to be 100% precise without getting too wordy. Familiarity with the following should help a bit...

Spline Method used in vector graphics applications to create and manipulate shapes. Read all about Splines and Bézier curves in Wikipedia.

Spectrum Short for *audio spectrum*, the range of audible frequencies. Read all about the Harmonic spectrum and the Harmonic series (music) in Wikipedia.

Curve Set The multiple waveforms distributed along the timeline.

Curve A single member of a Curve Set (or in lower case: any editable shape). Often called a "path" in the world of vector graphics.

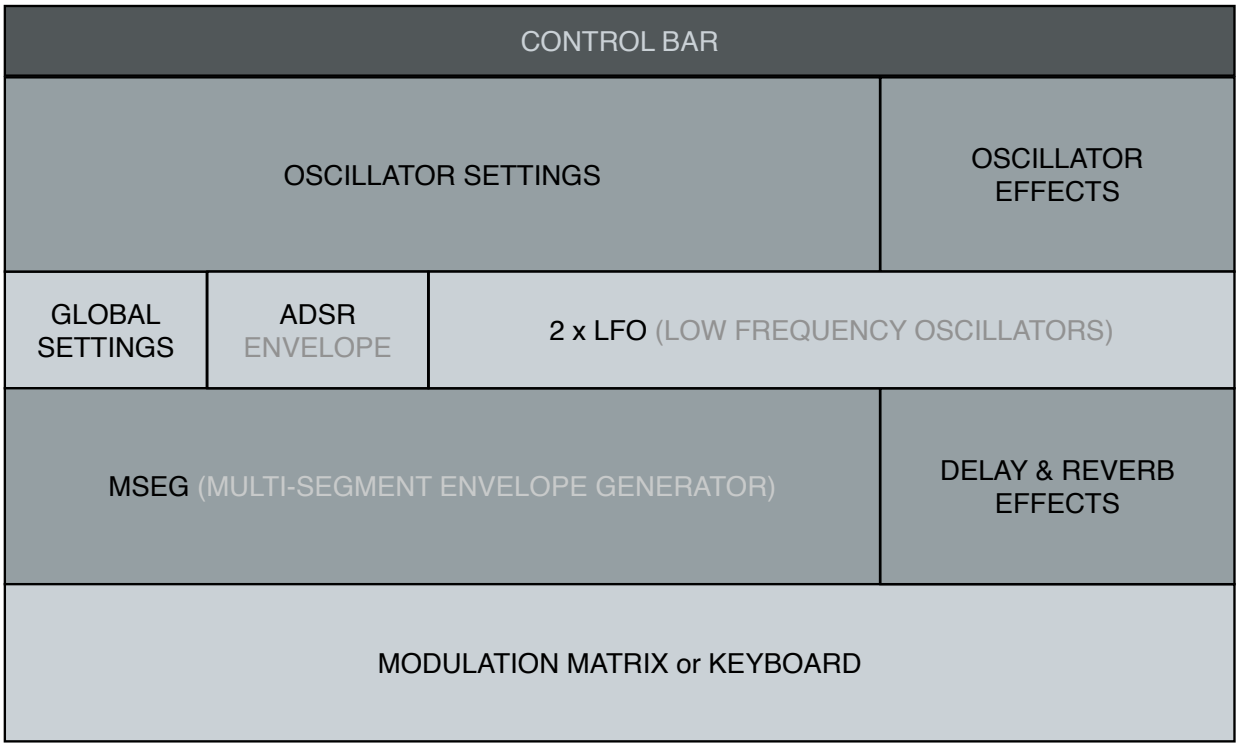
Guides The set of 3 helper curves used in the graphic EDITOR. The oscillator Guides are also available as source in certain oscillator effects.

Points Nodes / anchors / handles that determine the structure of the Curve.

Segments The lines between Points.

Overview

The main Zebralette 3 view comprises the following panels:



The oscillator is a set of morphable spline-based Curves which can be processed by a pair of oscillator effects arranged in series before being rendered either as a classic wavetable or as the sum of up to 1024 sine waves. While the former Render mode (switchable in the main oscillator panel) allows up to 16 x unison, the latter offers a choice of seven spectral distortion types which are able to compress or stretch partials towards serious inharmonicity – great for percussion, bell-like sounds or ambient effects.

Adjusting Values

The knobs and sliders react to left-click & drag as well as to the mouse wheel, while a right-click opens a context menu. Fine tune values by holding SHIFT before clicking on the control or rolling the mouse wheel. Set to the default value via double-click. See also Key Control.

Selectors

Left-clicking on any rectangular box containing text will usually open a list of options. If there are only two options (e.g. Plot Domain), clicking will simply switch between the two. Tip: It is often easier to change values by rolling the mouse wheel instead of opening the menu, for instance Transpose or an LFO Waveform.

Graphic Editing

Add points	double-click in the background or option+click (Mac) / ctrl+click (Win)
Merge points	drag one point on top of another and release
Move a point	click+drag
Move a selection	click+drag any selected point
Select multiple points	click+drag in the background (invisible marquee)
Extend / reduce selection	shift+click points
Clear selection	click anywhere in the background
Remove a point	double-click on the point
Remove a selection	right-click anywhere and select *Delete* from the menu If Key Control is active, press the Backspace key
Adjust curvature	click+drag on segments
Straighten segment(s)	click on a segment
Zoom in	roll the mouse wheel (the hover point is fixed during zoom)

Parameter locking

Right-click on any control and select *Lock*. The lock prevents values from changing when you switch presets, it does **not** prevent you from adjusting values! To unlock, right-click again and untick *Locked*.

Direct Modulation

Many of the knobs have modulation source selectors below them for direct control as well as to save precious slots in the modulation matrix. If a modulation source is selected here, a small **circle** appears above the knob, like in this image.

To adjust the modulation depth, click on (or very close to) the circle and adjust it like a regular knob. The arc around the knob indicates modulation depth, including polarity: Modulation Depth is always bipolar, even if the parameter itself isn't. See Direct vs Matrix in the Tips & Tricks.

GUI Size

Zebralette's window can be temporarily resized to anything between 50% and 200%: Right-click anywhere in the background and choose an option from the **context menu**. Values larger than your screen will be greyed-out and can only be selected here if you hold down a SHIFT key. To set the GUI size more permanently, change the Default Size preference.

At the top of the context menu you will find GUI 'skin' options. Check out **Dark Mode**!

Control Bar

The narrow strip along the top hosts a few global parameters and utility functions...

REV (revision)

Hover over the REV label to view the revision number in the data display.

MIDI

The MIDI activity indicator flashes whenever MIDI data is being received.

Transpose

Shifts the pitch by up to +/- 24 semitones (for a wider range also use the Tune knob).

Fine Tune

Offsets the overall pitch by up to +/- 100 cents i.e. 1 semitone.

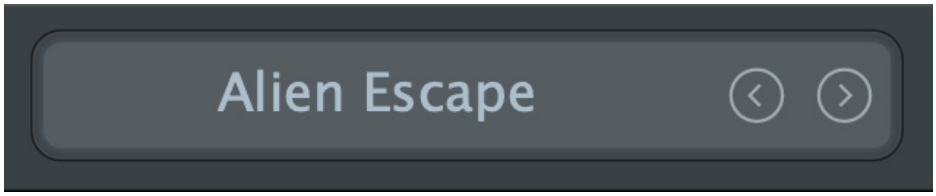
Drift

If active, each new note is slightly detuned. Deactivate for more precise, consistent pitches.

Data Display

Apart from showing the name of the selected patch, the central display has a few other duties:

The triangles to the right step backwards and forwards through the presets.



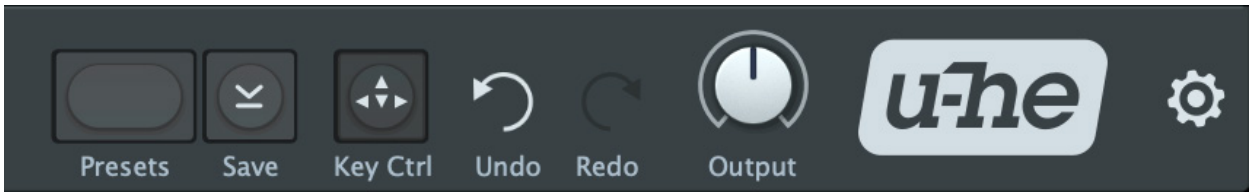
A click on the display opens a list of all presets in the currently selected directory. This is often easier than opening the browser, selecting a preset and exiting the browser again.

If you drag a Zebralette preset from outside the plugin and drop it onto the Data Display, it will be loaded (but not automatically saved).

Initialize preset

To start programming a new sound from scratch, right-click on the data display and select *init*.

To the right of the data display we have...



Presets

The **[Presets]** button opens / closes Zebralette's browser. See the Preset Browser chapter.

Save

Clicking on **[Save]** opens a window where you can give your sound a name, enter your name (as author) and other details. Hit Return to confirm (for line breaks in the editable fields, use SHIFT+Return). The preset will be saved in the User folder by default (see Preferences).

Shortcut: cmd+**[Save]** (Mac) / alt+**[Save]** (Win) saves immediately, bypassing the dialog box.

Right-click on **[Save]** to select format options: The standard, cross-platform compatible *.h2p* is recommended. The *.h2p extended* option is similar but also allows per-line comments.

Clicking on the final *Tag this Patch* entry opens a window where you can specify CATEGORY, FEATURE and CHARACTER tags for the currently loaded preset. See Preset Tagging.

Key Control

Experimental feature: Activate this button, click on the desired control or navigate to it using cursor keys. Enter a value then confirm with Return or Enter. For negative values, type a minus before confirming. Increment / decrement values via plus (+) and minus (-) keys. Tip: +/- also works for toggle switches.

Hold Shift for fine steps, option (Mac) / ctrl (Win) for steps of 10. Backspace resets to the default value and removes selected editor points. Copy/paste and undo/redo shortcuts will work as expected. In the Matrix, try partial source names, e.g. 'L' then Return then '+' gives you LFO2.

Undo / Redo

Use these buttons to fix recent mistakes. Although the number of steps in the buffer is limited, you can even undo a change of preset, so switching presets before saving doesn't necessarily mean losing your work!

Output

The final volume after the effects. Normally set to 100%, a preset's volume can be boosted up to 200% if necessary.

u-he Badge

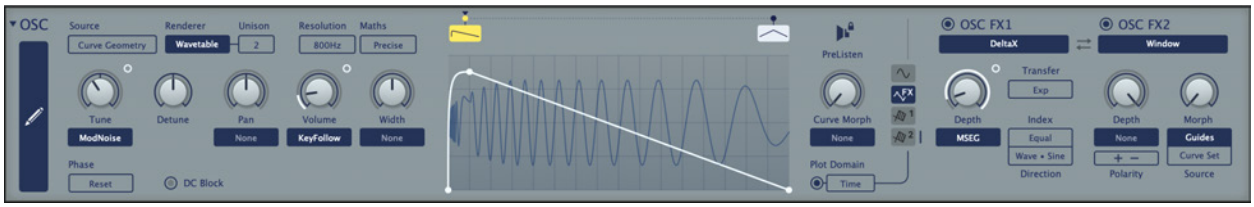
Clicking on the u-he company logo opens a pop-up menu containing links to this user guide, to other relevant documentation, to our website, to our support forum and to our presence in a few social networks.

Configuration

Click on the cogwheel to set up various global preferences as well as remote control via MIDI CC ('control change'). See the Configuration chapter.

Oscillator Panel

The upper panel contains all the basic oscillator parameters on the left, a functionally reduced version of the oscillator editor in the centre, and the two Oscillator FX on the right:



Oscillator Editor Button

Clicking on the large vertical button on the left opens the full OSC EDITOR page with its toolbox and many options. For details, read the dedicated Oscillator Editor chapter.

To the left of the OSC label is a small downward-pointing triangle which opens a menu allowing complete oscillator settings to be copied/pasted, saved or loaded.

Source

The Curves can be interpreted in two fundamentally different ways:

Curve Geometry	The curve represents the waveform as-is (like *GeoMorph* in Zebra2).
Curve Spectrum	The curve represents the harmonic spectrum: 1024 harmonics are scaled logarithmically for a range of about 10 octaves.

Renderer

Generates the final waveform, either in the form of a classic wavetable or as an additive spectrum with up to 1024 sine oscillators. The set of controls in the panel will change dynamically according to this option as well as to the selected Modifier in Additive mode.

Wavetable	Renders the waveform like a classic wavetable synthesizer, updating it at the rate set by the *Resolution* parameter (see the next page).
Additive	Reproduces the spectrum of the waveform with the number of partials (sine waves) specified by the *Harmonics* parameter (see below). As these are free running and independently tunable, they can be processed to create inharmonic sounds (see *Spectral Distortion* and *Modifier* below).

Unison

Only available if Renderer is *Wavetable*. Sets the number of stacked oscillators (2 to 16). As unison 'voices' are processed in blocks of 4, CPU-usage does not rise linearly: While Unison = 5 uses more CPU than Unison = 4, Unison = 8 is no more CPU-intensive.

Harmonics

Only available if Renderer is *Additive*. The number of sine waves used for the render, with a range of 16 to 1024. As this parameter affects CPU usage, the default 256 is the recommended maximum unless you can hear a significant improvement at higher values. Low values are great for glassy/bell sounds while higher values are better for richer waveforms e.g. virtual analogue.

Resolution

The density of waveform calculations (200 Hz, 800 Hz or 2000 Hz) i.e. how often they are updated per second. Higher resolution improves precision and smoothness at but costs more CPU. Note: Resolution currently has no effect when the Renderer is set to *Additive.*

Maths

Precise	the cleanest but most CPU-intensive option
Fast	good compromise, often sounds as clean as *Precise*
Rough	minimum CPU usage, less precision

Tune

Pitch offset below / above standard. The range is -48 to +48 semitones.

Detune

Only available if the Renderer is *Wavetable.* Tuning offset when Unison (see above) is set to 2 or more. The maximum range is +/- 2 semitones.

Spectral Distortion

Modifier strength. Only available if the Renderer is set to *Additive.*

Pan

Shift the overal stereo position to the left or right.

Volume

Oscillator gain before the delay and reverb. Tip: Set to a low value first.

Width

Stereo separation if Unison is 2 or higher. Only available when the Renderer is *Wavetable*.

Noise

Only available if the Renderer is *Additive.* Spectral chaos effect. Tip: Low to medium values guard against unwanted rapid 'beating' created by Spectral Distortion (see above).

Phase

Random	If the Renderer is *Wavetable*, this option resets the oscillator to a random phase each time a note is played. If the Renderer is *Additive*, the phase of each individual harmonic is randomized.
Reset	Ensures that notes always start with the same phase. If the Renderer is *Additive*, the phases of the individual harmonics are unaltered.

Modifier

Only available if the Renderer is *Additive*. Some modifiers enable various additional knobs and switches. All modifiers are applied relative to the fundamental frequency i.e. the first harmonic.

Expansion	Stretches harmonics up one octave. At maximum *Spectral Distortion* the result is odd-numbered harmonics only.
Compression	Compresses all harmonics down towards the fundamental.
Curve	Shifts overtone pitches according to the Guides or Curve Set. Note: Like the other two options, the fundamental is not affected.

DC Block

Only available if the Renderer is *Wavetable*. Removes DC ('Direct Current'—static offset components of a signal) and any extremely low frequencies.

[**Spec Morph**] adjusts the position in the Timeline or crossfades between the three Guides (Guide #2 = 50.00).

While editing source curves for this modifier, the Harmonic Grid view is often best, as each vertical line corresponds to a particular harmonic. Zoom in to view more grid lines / harmonics and their indices (numbers).

Negative Y values along the curve bend pitches down towards the fundamental, while positive values bend them upwards. The range increases with the harmonic index, peaking at about +/- an octave.

Harmonic Clusters At maximum *Spectral Distortion* this mode organises the resulting spectrum into equally spaced 'clusters' according to a pattern set by *Cluster Select,* a parameter which is only visible with the Harmonic Clusters modifier:

Cluster Select

0	Even Harmonics
10	Odd Harmonics
20	Every 3rd harmonic, starting from the 2nd
30	Every 3rd harmonic, starting from the 4th
40	Every 4th harmonic, starting from the 2nd
50	Every 4th harmonic, starting from the 5th
60	Every 5th harmonic, starting from the 2nd
70	Every 5th harmonic, starting from the 6th
80	Every 6th harmonic, starting from the 2nd
90	Every 6th harmonic, starting from the 7th
100	Every 7th harmonic, starting from the 2nd

Intermediate values are crossfades: the pitches of clusters are shifted while their relative tuning remains intact. Note that unwanted beating effects created by Spectral Distortion can often be remedied by adjusting Noise.

Log Clusters Similar to *Harmonic Clusters*, but instead of clusters being spaced evenly across the spectrum, they are distributed to ensure equal energy across the spectrum. Starting with 3 clusters, at maximum level 10 clusters are spaced precisely octaves apart – great for bells or organs etc..

Chaos Patterns Reorganises harmonics into random patterns. [**Random Seed**] selects one of 100 preset patterns. [**Distortion Range**] selects one of the following:

Full Spectrum: Harmonics can be shifted anywhere in the spectrum.

One Octave: Each harmonic is randomly shifted +/- one octave.

Four Octaves: Each harmonic can be randomly shifted by as much as four octaves above or below its original frequency.

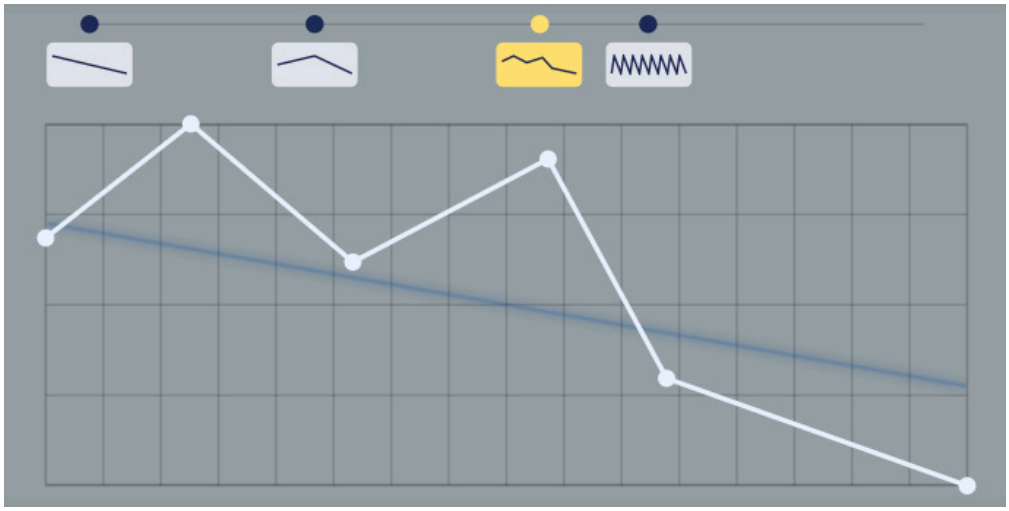
Ordered: The frequency of each harmonic is juggled up or down, but cannot cross paths with neighbouring harmonics: the order is preserved.

One Harmonic: Each harmonic is randomly shifted toward neighbouring harmonics only. This option lets you sequence or otherwise modulate randomness during playback: good for cymbals and other percussion.

Wild Randomness Reorganises the harmonics in a randomised pattern sampled at Note On. Similar to *Chaos Patterns* but without repeats. Includes [**Distortion Range**] with the same options as *Chaos Pattern* (see above).

Simple Editor

In the centre of the upper panel is a simplified version of the oscillator editor with a fixed 16 * 4 grid. The mouse pointer is equivalent to the ARROW drawing tool there.



Graphic Editing

Add points	double-click in the background or option+click (Mac) / ctrl+click (Win)
Merge points	drag one point on top of another and release
Move a point	click+drag
Move a selection	click+drag any selected point
Select multiple points	click+drag in the background (invisible marquee)
Extend / reduce selection	shift+click points
Clear selection	click anywhere in the background
Remove a point	double-click on the point
Remove a selection	right-click anywhere and select *Delete* from the menu If Key Control is active, pressing Backspace will also work
Adjust curvature	click+drag on segments
Straighten segment(s)	click on a segment
Zoom in	roll the mouse wheel (the hover point is fixed during zoom)

These also apply in the full editor with the **Arrow Tool** selected, as well as in the MSEG editor.

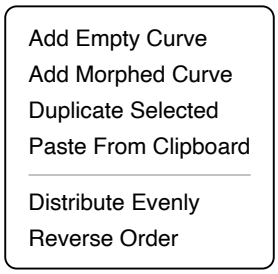
Timeline

Representation of the Curve Set containing up to 15 moveable Curve thumbnails. Click to select a Curve for editing, and activate **[PreListen]** to audition the highlighted Curve without any curve morphing. Double-clicking a thumbnail sets the Curve Morph parameter to that position.

To reposition a Curve within the Timeline, click and drag on (or close to) its anchor. To reposition the highlighted curve, click and drag anywhere within the timeline. To remove a curve, right-click and select *Delete Curve* (but please note that there is a minimum of two curves).

Timeline Context Menu

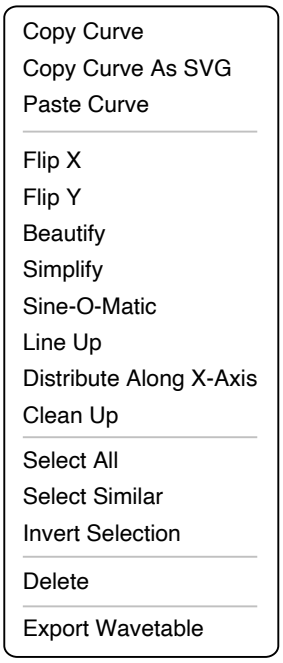
Right-clicking on the Timeline (the dotted line along the top) opens this menu:



Add Empty Curve	inserts a falling sawtooth at the clicked position
Add Morphed Curve	inserts an interpolated Curve ("frozen morph")
Duplicate Selected	inserts a copy of the currently highlighted Curve
Paste From Clipboard	inserts whatever has been copied via Copy / CopySVG (see below)
Distribute Evenly	repositions Curves so that they are evenly spread between 0 and 100
Reverse Order	reverses the positions of all Curves (100 minus original Y-position)

Oscillator Context Menu

The main context menu of the graphic editor reveals several useful functions:



Copy / Paste (various) Clipboard functions. *Copy Curve* is high resolution and uses our 'UHM' scripting format. *Copy Curve as SVG* has slightly lower resolution but lets you paste the selection into any graphics application that supports Scalable Vector Graphics (SVG).

This part of the menu is **dynamic**: If one point is selected you will see *Copy Value*, if several points are selected you will see *Copy Selection*.

Curves can be copied/pasted as plain text (XY values in hexadecimal), or single floating point values between 0.00000 and 100.00000.

If Key Control is active the system clipboard shortcuts will also work.

Flip X / Flip Y	Inverts the Curve or selection horizontally (X) or vertically (Y).
Beautify	Smoothes the Curve or selection (Note: *Beautify* doesn't affect steps).
Simplify	Removes all points that have little or no impact on the shape of the Curve or selection, adding curvature wherever necessary.
Sine-O-Matic	Similar to *Beautify*, but attempts to create perfect sine arcs.
Line Up	Vertically realigns selected points between the leftmost and rightmost in the selection so that they form a straight line. Keyboard shortcut 'L'.
Distribute Along X-Axis	Evenly distributes (horizontally) all points in the Curve or selection.
Clean Up	Removes points with no impact on the shape of the Curve / selection.
Select All	Selects the entire Curve.
Select Similar	Selects all points / segments with a similar function to the current selection. Will only appear in the menu if something is selected.
Invert Selection	Selects all unselected points instead of the current selection. Will only appear in the menu if something is selected.
Export Wavetable	Saves the entire Curve Set, including all morphed intermediates as a 101-frame wavetable file in .WAV format. See Transferring Curves.

PreListen

Temporarily freezes the selected Curve, effectively ignoring the Curve Morph parameter as well as any modulation. PreListen is especially useful while auditioning the effects of Morph editing.

Curve Morph

Nominal position within the Oscilllator's timeline. The Curve Morph position is also indicated by a small triangle above the timeline.

Plot Domain

The blue line (orange in Dark Mode) can represent the realtime waveform (like an oscilloscope) or the amplitudes of frequencies across the audio spectrum (like a spectrum analyzer).

Time	Oscilloscope mode
Frequency	Spectrum analyser mode

To save CPU and simplify the view, deactivate the button to the left of the selector.

Plot Source

Appearance of the blue "realtime oscilloscope" trace in the editor window.

	Waveform before the oscillator effects	(*Osc Wave preFX*)
	Waveform after the oscillator effects	(*Osc Wave postFX*)
	The source used in OSC FX1	(*FX1 Guide/Curve*)
	The source used in OSC FX2	(*FX2 Guide/Curve*)

To save CPU the plot is always **pre-Renderer** and is independent of the editor window's zoom factor (you can check that by rolling your mouse wheel).

Oscillator Effects

This twin panel appears at the top right in the main view as well as at the bottom right in the expanded Oscillator Editor. Note: FX1 and FX2 are arranged in series and can be swapped.

Extra Parameters

The pair of oscillator effects in the original Zebralette had just one user-adjustable parameter each, plus modulation source selector and depth control. Most of the oscillator effects in Zebralette 3 include extra parameters, some of which even offer a choice of related effects.

All oscillator effects have at least one modulatable parameter, most often labelled *Depth* or *Frequency*, the role of which is as diverse as the oscillator effects themselves.

The main knob controls the nominal amount of the effect, while the amount of modulation from the selected source is via the **small ring** above it (this only appears if a modulation source is selected). Click and drag the ring just like any regular knob. You don't have to be extremely precise: Clicking anywhere near it will also work.

Source

Several of the oscillator effects can use either the Guides or parts of the Curve Set itself. If *Guides* is chosen as source, the Morph parameter knob **crossfades** between all three Guides, with Guide 2 at the central position (50.00). This option is very CPU efficient.

The *Curve Set* option lets you morph between curves applied to the effect. Different parts of the Curve Set can be dedicated to different tasks, for example 0-50 for the audio and 60-100 for the effect. These parts can overlap, and you can even use the same Curve for the audio as well as the oscillator effects...

Before you get TOO adventurous, however, please note that each use of a morphed *Curve* for an oscillator effect will increase CPU usage considerably, as these curves are calculated at **audio rates** (see the Resolution options).

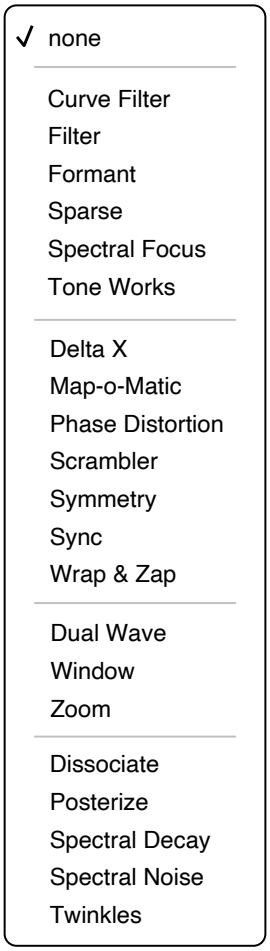
Mute

Click on the round button to the left of the label. Mute status is saved with the preset.

Swap

Exchanges the two oscillator effects so that FX1 becomes FX2 and vice versa. Any FX targets appearing in the modulation matrix are also swapped.

FX Select



Spectral Effects

Warping Effects

Windowing Effects

Animation Effects

Spectral Effects

The first six oscillator effects in the menu process harmonics differentially:

Curve Filter

Either the Guides or part of the Curve Set define the frequency response of a filter within a range of 10 octaves. The levels of frequencies below or above this range is set by the vertical position of the left and right end points. The Frequency knob shifts that curve for the full range of about 20 Hz to 20 kHz. Includes about 50% key follow (slightly less for higher notes).

Filter

Simple non-resonant lowpass, bandpass or highpass. Includes 100% key follow.

Formant

Similar to Curve Filter except that the source attenuates partials within a fixed spectrum: the lines of the harmonic grid represent overtones of 20Hz here, with a maximum close to 20 kHz.

Sparse

Randomly generates gaps in the spectrum. Depth controls the number of gaps as well as how strongly they are attenuated. The Sparse effect is great for randomized bell-like sounds, especially in combination with Spectral Decay (see below).

Spectral Focus

Attenuates harmonics

Odd	Reduces even harmonics, boosting adjacent odd harmonics.
Even	Reduces odd harmonics, boosting adjacent even harmonics. Note: As the fundamental is an odd harmonic, its level is also reduced.
Octaves	Reduces harmonics that are not octaves of the fundamental, boosting adjacent ones that are. Turns a sawtooth into an organ-like waveform.
Fundamental	The level of the lowest harmonic, from zero to about 150%.

Tone Works

Four different types of tonal control:

Brilliance	Boosts upper harmonics
Smoothness	Attenuates upper harmonics
Compression	Boosts quieter overtones (typically increases brilliance)
Expansion	Attenuates quieter overtones (effectively similar to Smoothness)

Warping Effects

The next seven effects directly process the complete waveform:

Delta X

Similar to FM synthesis, but with a choice of transfer modes: *Linear*, *Absolute*, *Square*, *Sqr Abs*, *Exponential* or *Exp-*. The closest equivalent to the original DX7-type phase modulation is *Linear*.

The Index option offsets the pitch of either the FM modulator or the carrier. The modulator is usually the waveform itself while the carrier is an extra sine wave, but you can swap these by switching the Direction to *Sine • Wave*.

Map-o-Matic

Applies the oscillator Guides or the Curve Set itself to either the phase of the waveform or the gain of harmonics. There are four different modes:

RePhase	The Phase of the waveform is remapped to the selected Source. A rising sawtooth as source will play the waveform as-is, a falling sawtooth plays it in reverse, and a triangle plays it forwards then backwards within a single cycle. The Influence knob blends between zero and 100% effect.
Phase Offset	The Source is applied to the waveform as a relative phase offset, for an effect which is about 20 times stronger than *RePhase*. A horizontal line in the centre results in silence. Influence is the overall phase offset: higher values create sounds similar to oscillator sync.
Value Grade	The levels of harmonics are remapped to the selected Source. A rising sawtooth will have no effect on the waveform while an inverted sawtooth will invert it. Influence blends between no effect and full effect.
Curve Distort	Uses the selected Source as a distortion curve. The Influence parameter is practically an input gain control. Tip: Try a rising s-curve.

Phase Distortion

Form of synthesis used in the Casio 'CZ' series of synthesizers of the 1980s. The Curve acts as a transfer function for the phase of a raised cosine. Depth crossfades between a ramp (rising sawtooth) and the current Curve (0 = ramp, 100 = Curve).

Scrambler

Similar to operator feedback in FM synthesizers, the curve's phase is modulated by the curve itself, creating many new overtones. Scrambler is processed by the same transfer functions as Delta X (*Linear*, *Absolute*, *Square*, *Sqr Abs*, *Exponential* or *Exp-*) before modulating the phase of the original. Can get noisy very quickly, delivering all sorts of bright transitions!

Symmetry

Moves the centre of the wave to the left or right, expanding / compressing each half. With Depth set to 50.00 there is zero effect. Tip: Create classic PWM by applying Symmetry to a square.

Sync

Classic oscillator sync with a twist: The Center parameter adjusts the phase of the leader while the follower frequency is controlled by Depth. The effect is symmetrical if Center is set to 50. Tip: Sync sweeps can be made smoother by appling a Window (see below) in OSC FX2.

Wrap & Zap

Foldback distortion with several extras…

Mirror	The Depth control increases the gain and (recursively) folds back those parts of the wave that exceed the maximum.
Rotate	Same as Mirror, but folds from the opposite maximum. Resembles Sync when applied to a regular sawtooth, for instance.
Multiply	Similar to a sinusoidal wavefolder, this delivers a sync-like effect.
Clip / Soft Clip	Simple clippers.

Windowing Effects

These effects change the 'view' of the Curve:

Dual Wave

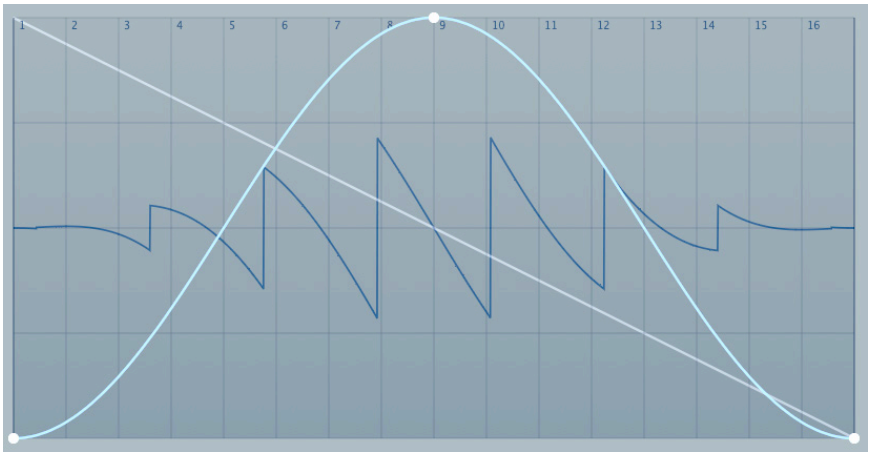
Appends a curve from within the Curve Set itself or from the Guides. The Depth parameter controls the relative sizes of the two waves, while Morph specifies the morph position of the extra curve Note that the extra curve is always interpreted as Curve Geometry.

Window

Applies a Guide or Wave as a kind of 'envelope' for the waveform. Includes a *Polarity* option:

+	*(unipolar)*	Source curve values below zero (i.e. below the central horizontal line) will drag waveform values towards the bottom (-1).
+–	*(bipolar)*	Source curve values below zero drag waveform values towards the centre (0).

Practically: You can remove the usual grunge from Sync sweeps by effectively fading the left and right edges out. Try a sine or trapezoid as source curve first...



*Sawtooth with Sync within a sine-shaped **Window***

Zoom

Zoom in / out of the waveform. The Depth parameter sets a zoom factor, while Center specifies the position along the Curve that remains fixed i.e. doesn't move when you zoom in or out.

Animation Effects

These five functions create animation / motion.

Dissociate

Independently shifts the phases / pitches of partials, often creating inharmonic timbres. Note that the phases of partials are random per note, even if oscillator Phase is set to *Reset*.

Used in OSC FX2 with Depth set to about 20 it adds subtle motion without any detuning. But Dissociate can be used very dramatically in OSC FX1! Set OSC FX2 to e.g. Wrap & Zap! Then check out the other Wave Manipulation effects.

Posterize

Like a lowpass filter applied to wave morphing: Depth determines the smoothness of transistions, and the Trigger Source effectively applies a sample & hold to the waveform.

Spectral Decay

Uses a Guide or Curve Set to make harmonics decay differently: high values along the curve mean longer decay. Spectral Decay is great for creating natural-sounding plucked strings.

Experiment! Load init, select Spectral Decay, turn Depth up to maximum then edit Guide 1...

Spectral Noise

Creates a fuzzy, moving 'cloud' effect, adding a little drift at first followed by increasingly rapid random modulation of the spectrum.

Twinkles

Random overtones. The Trigger Source 'pings' an overtone each time it leaves zero in the positive direction. Tip: Try an LFO first, then an MSEG with several points set to zero. The Depth knob controls how slowly the overtones decay. Low values generate short clicks.

Oscillator Editor

Click on the OSC button (the upper vertical blue rectangle) to open the full OSC EDITOR. Whenever you want to return to the main window, click on the yellow EXIT button at the top left.

The oscillator editor is also used for editing the three Guides.

Assuming you have explored the options in the simple oscillator editor, you should already be familiar with many of the options. The Timeline, for instance, is not described again here.

You can jump directly to the MSEG EDITOR by clicking on that label at the top of the window.

Graphic Editing

Add points	double-click in the background or option+click (Mac) / ctrl+click (Win)
Merge points	drag one point on top of another and release
Move a point	click+drag
Move a selection	click+drag any selected point
Select multiple points	click+drag in the background (invisible marquee)
Extend / reduce selection	shift+click points
Clear selection	click anywhere in the background
Remove a point	double-click on the point
Remove a selection	right-click anywhere and select *Delete* from the menu If Key Control is active, press the Backspace key
Adjust curvature	click+drag on segments
Straighten segment(s)	click on a segment
Zoom in/out	roll the mouse wheel (the hover point is fixed during zoom)

Zoom Bar

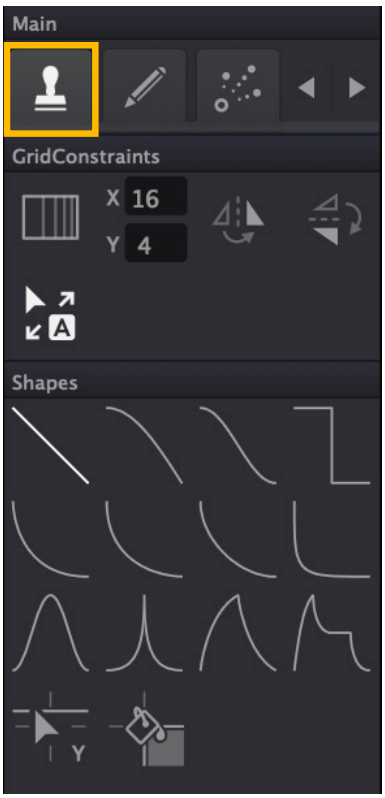
Not available in the simple editor. Drag the handles or the area between them to the left or right.

Hover over the bar and roll your mouse wheel to reposition it. Double-click to zoom out fully.

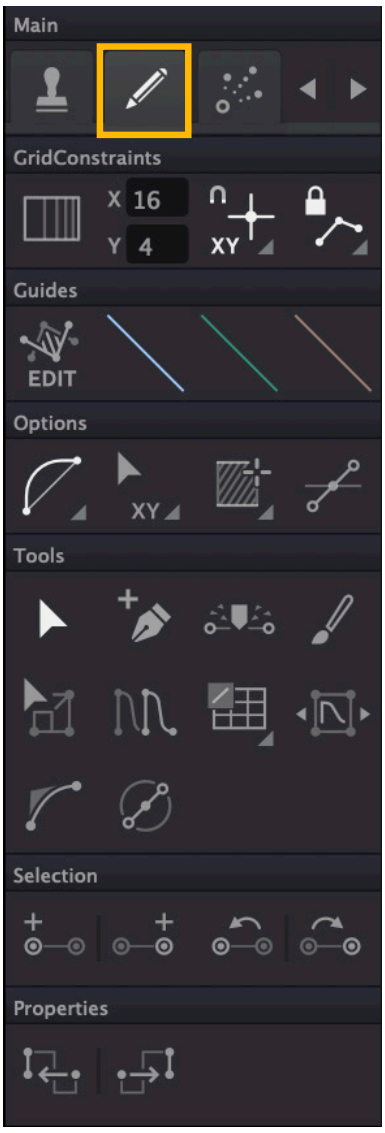
Toolboxes

To the left of the oscillator editor is a dynamic toolbox full of options and drawing tools: The content of the toolbox depends on what is selected in the **MAIN** palette:

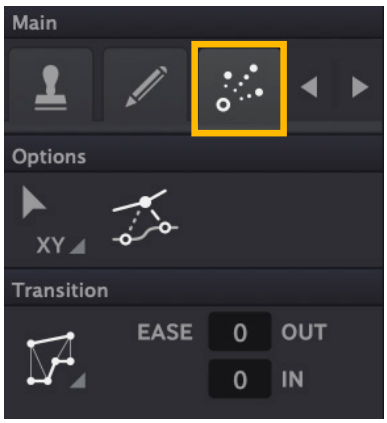
Shape Tools



Drawing Tools



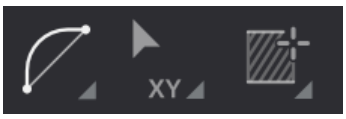
Morph Tools



Context Help

Click on the question mark icon at the top of the toolbox to view appropriate **help text**, which will appear above or below the graphic editor while you work.

Context Menus



The small **triangle** at the bottom right corner of all **option icons** is an alternative to **right-clicking** i.e. a left-click on it opens the context menu containing the various options for each tool.

Shapes Toolbox

Opens options and tools with which you can quickly draw complex forms using preset shapes.

Harmonic Grid

Activate this to replace the regular grid with one representing the harmonic series. The stronger lines are at harmonics 2, 4, 8, 16, 32, 64, 128, 256, 512. Defeats Grid X...

Grid X / Grid Y

The number of lines in the grid, horizontally and vertically. X is ignored if the Harmonic Grid is active. Either hover and roll your mouse wheel, or click and drag the numbers.

FlipX

Horizontally flip all shapes in the toolbox (see *12 Shapes* below).

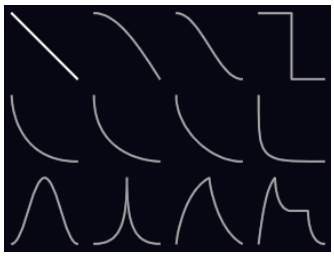
FlipY

Vertically flip all shapes in the toolbox (see *12 Shapes* below).

AutoFlip

Automatically flips the curve, depending on the direction of drawing.

12 Shapes



Select a shape you want to use as 'brush' in the graphic editor. The image here shows the 'un-flipped' palette.

Note: Grid Snap is always active while using shape tools.

GridMoveY

Click and swipe left or right, then while still holding down the mouse button, vertically shift the highlighted content.

GridStep

Click and swipe left or right to draw horizontal lines, creating steps.
Tip: Click and swipe across the entire width to erase a curve.

Drawing Toolbox

Opens a set of options and tools used for creating complex curves. Currently (beta version!) appears as "Edit" in the data display.

Harmonic Grid

Activate this to replace the regular grid with one representing the harmonic series. The stronger lines are at harmonics 2, 4, 8, 16, 32, 64, 128, 256, 512. Defeats Grid X...

Grid X / Grid Y

The number of lines in the grid, horizontally and vertically. X is ignored if the Harmonic Grid is active. Either hover and roll your mouse wheel, or click and drag the numbers..

Grid Snap

The grid lines can be magnetic – click to enable. Right-click to select whether points should snap to X (vertical lines), Y (horizontal lines) axes, or both.

Shape Constraint

Squish compresses a selection dragged to any edge (left/right/top/bottom). As soon as you release the mouse button, the new form becomes permanent.

Keep Shape ensures that the shape and size of the selection remains intact when it reaches the left or right edge.

Keep Order is like *Keep Shape* except that movement is limited by neighbouring points. Often the best option when you are moving individual points.

Env Mode is similar to *Keep Order* except that movement to the right is not limited. Mainly useful in the MSEG editor, hence the name: see MSEG Specialities.

Guide Selectors

EDIT: While a Guide is selected this button is highlighted and the editor's context menu contains guide-to-curve functions. Click for Curve editing with curve-to-guide functions.

Select a Guide to be edited: 1 = blue, 2 = green, 3 = salmon. Click again to return to normal Curve Set editing.

Curvature Selector

Click to select a curvature type:

L is a unidirectional curve.

S is a bidirectional curve.

Lpointy is similar to *L*, but with a distinct knee.

Lsharp is like *L* except that all handles are either horizontal or vertical while dragging a segment. Check: Activate Handles, select a segment and adjust it using the Arrow tool.

Ssharp is like *L* except that all handles are either horizontal or vertical while dragging a segment. Check: Activate Handles, select a segment and adjust it using the Arrow tool.

Move (X/Y)

Optionally restricts movement of points or selections to the X or Y direction only. Also acts as a kind of ARROW tool (see below) but without the ability to adjust curvature.

Move XY movement in any direction
Move X only horizontal movement possible
Move Y only vertical movement possible

Selection Mode

Right-click, or left-click on the little triangle bottom right to choose a selection mode. Note that selection is always available, whatever the current drawing tool.

Select (box select) lets you select points that lie within the invisible box.

HSelect (horizontal select) ignores the Y position and is thus more inclusive.

Handles

Reveals spline handles of a selection for detailed editing. Note that the handles cannot be dragged outside an invisible rectangle defined by the two neighbouring points. Horizontal and vertical segments have no handles, as a curvature cannot be defined.

Arrow

The main tool! Swipe to select points. Double-click to create a new point. Click & drag a selected point to move the selection. Click & drag a segment to adjust curvature.

Add Points

A single-click in the background inserts a point at that position. Clicking on a segment (the symbol changes from an ink-pen to a blade) splits it at that position.

PointSplit

Click on a point and drag upwards to insert a horizontal segment, compressing the rest of the curve to make room. Note: All selected points or segments will be split.

Paint

Freehand drawing. The curve is optimized as soon as you release the mouse button.

Scale

For horizontal scaling i.e. resizing, click & drag on the selection's leftmost or rightmost point (but not if this point is at the left or right edge). For vertical scaling, click & drag the lowest or highest point in the selection.

Multiply

'Clone' a selection to the left via click & drag on its leftmost point, or to the right via click & drag on its rightmost point. You will need to drag at least the width of the selection.

Warp

WarpLinear: Linearly warp the curve or selection via click & drag on any point.

WarpExpo: Similar but exponential.

WarpCubic: Similar but cubic (more extreme).

Rotate

Shifts the 'phase' of the entire Curve or selection. Click & drag on a point.

ExpoForm

Create an exponential segment across multiple points. The more points there are in the selection, the more closely the result will resemble a proper exponential curve. Similar to 'L' curvature if there is no selection, overriding the *Curvature Selector* (see above).
Tip: ExpoForm is particularly useful for emulating analogue envelope stages.

HandleRotate

Clicking on a single point resets its spline handles to a straight line (activate the Handles option to view this). Click & drag a point or selected segment to rotate both/all handles.

ExpandSelection

ExpandSelectionL: Add a point to the left.

ExpandSelectionR: Add a point to the right.

MoveSelection

MoveSelectionL: Shift the selection one point to the left.

MoveSelectionR: Shift the selection one point to the right.

CloseShape

CloseShapeLeft: Creates a mirror of the final point and positions it before the first point.

CloseShapeRight: Creates a mirror of the first point and positions it after the final point.

Note: Under certain circumstances the new point becomes independent. Just try it!

Morph Control Toolbox

Opens a small set of tools used to specify how each Curve morphs to the next. The selected Curve appears above the one to its right in the timeline, with blue connecting lines showing how points morph between the two. To check intermediate stages, click anywhere in the background and drag downwards... and activate **PreListen** if you want to audition the morph.

Morph Vectors

Note: This only works with the two *Closest* morph types. Clicking and dragging any point (except the first or last) makes that point 'pretend' to be elsewhere as far as the morph calulation is concerned. To remove a morph vector again, simply click on its handle.

A simple example: A Curve Morph value of 10 results in the **dark blue line** you can see in the first screenshot below. Let's assume you don't want the middle peak of the triple sawtooth to wander to the left, as the transition isn't very interesting when modulated. Adding a morph vector (that little tag in the second image) results in a much more dramatic, PWM-like effect.

The morph vector here makes the point 'pretend' to be closer to the triangle's peak than to its first point. As the point below the morph vector has the same X value, it also connects to the peak. That the third tooth suddenly connects to the endpoint of the triangle remains a mystery...

Morph vectors can be used to create dramatic transitions, which are often especially effective between complex curves. There are only two morph vectors here... things can easily get wild!

Morph Type

Morphing methods to apply between successive Curves in the Curve Set. Morph types are set **individually** for each pair of Curves along the Timeline:

Crossfade: No actually morphing—points from both curve are used to interpolate vertically only (points are not moved along the x-axis).

Point By Point: Connects points by index, left to right. Surplus points in the more complex Curve are connected to the final point in the simpler one.

Closest X: Connects points by proximity along the X axis – see Morph Vectors.

Closest X & Y: Connects by proximity along both X and Y axes – see Morph Vectors.

Peaks & Valleys: Connects high points to high points and low points to low points. Peaks & Valleys is the default setting.

Ease In/Out

The linearity of morphing between adjacent Curves.

OUT how smoothly the morph vector exits the source (currently selected) Curve
IN how smoothly the morph vector enters the target curve (i.e. the next Curve along).

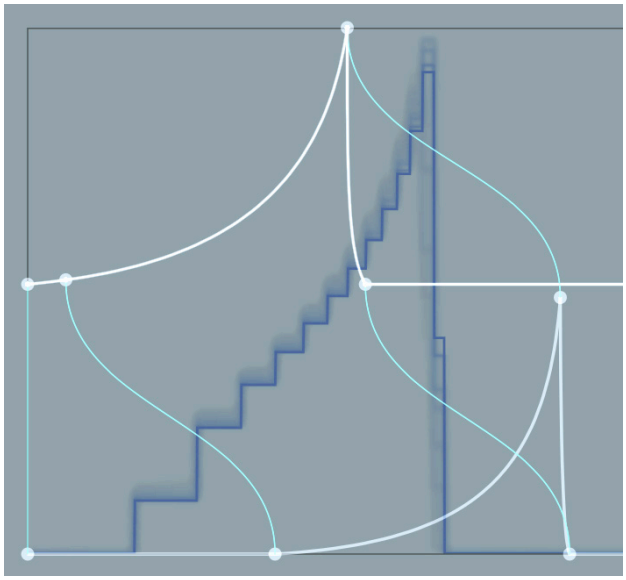
Note how the various values (0 to 100) affect the curvature of the light blue lines...

Demonstration

Load the preset 'Ploppsies', set the Plot Domain to *Frequency* and open the OSC EDITOR. Activate the Harmonic Grid. Hold a note and listen to how successive harmonics are picked out when the morph is linear. The steps are taken faster where the harmonics are closer together.

Now select the **Morph** tool. Set EASE OUT to 50, EASE IN to 100 and hold a note: The morph starts more slowly than before, picks up speed in the middle, then finishes more slowly.

Compare once more by setting both EASE OUT and EASE IN back to zero.



Transferring Curves

Firstly, Zebralette 3 presets will of course be upwards compatible with Zebra 3!

As well as copy / pasting individual waveforms in *.SVG* (Scalable Vector Graphics) format, **complete Curve Sets** can be exported as **101-frame wavetables** in *.WAV* format. Import also works, but due to the wide variety of possible .WAV files from single waveforms to complete songs, it is a hit-and-miss affair – see Wavetable Import below.

Wavetable Export

Right-click in the oscillator editor area and select the bottom option, *Export Wavetable*. A dialog box notifies you that the wavetable has been exported to a particular location which can be viewed by clicking on the **[Show Export Folder]** button.

The naming convention for exported wavetables is *CurveWavetable dd-mm-yyyy hh-mm-ss.wav* (i.e. CurveWavetable day-month-year 24hour-minute-second). Feel free to rename it afterwards!

All exported wavetables contain 101 frames, the number of possible positions on the timeline. Intermediates are interpolated according to the selected Morph Types (see the previous page).

Wavetable Import (experimental!)

To import a .WAV file, simply drag & drop it into the OSC EDIT window. Single cycle files will be recognized as such and will only replace the currently selected Curve, while multi-cycle samples will replace the entire Curve Set.

CAUTION

Importing large .WAV files can cause Zebralette 3 beta to stall or crash the host app. It is best to run Zebralette in a simple host while experimenting, one that can be quickly restarted should problems occur, e.g. *Ju-X Hosting AU* (Mac) or *SaviHost* (Win).

After dropping the .WAV file, several import options will appear in the Toolbox.

The import routine detects pitch then slices the sample into individual cycles, noting which ones represent the most significant differences. This is repeated whenever you click on **[UPDATE]**.

The sample rate, bit depth etc. of the source .WAV file are not very important, but remember that low pitched samples naturally contain more detail than high pitched samples.

The parameters can be adjusted and applied via **[UPDATE]** as often as you like, but no further changes can be made after the import panel is closed via **[X]**.

Note: As the import feature is still at an early stage of development, the individual parameters are not described here. If you would like to keep up with news at u-he, please check out our user forum at KVR and/or subscribe to our newsletter.

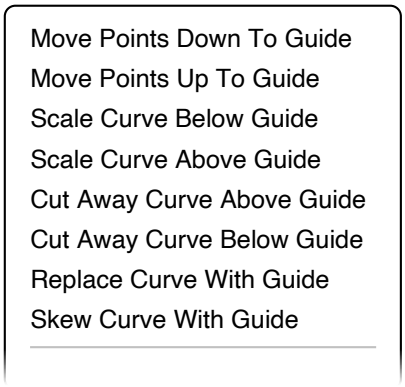
Guides

A set of 3 colour-coded (1, 2, 3) 'construction lines' mainly used for manipulating Curves or MSEGs. If you own a vector graphic program you should already be familiar with the concept. The oscillator guides are also available as CPU-friendly shapers for certain oscillator effects.

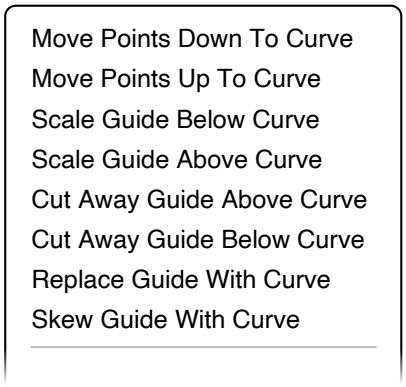
The EDIT button on the left activates **Guide editing**. Disable this to return to Curve editing.

Context Menu

While Curve and Guide are both visible (one will be highlighted), the top of the editor menu will include some extra functions (see Oscillator Context Menu for the other menu items). Toggle between these two via the EDIT button:



while a Guide is being edited



while a Curve is being edited

Move Points Down To Guide	Points above the Guide are moved down to the Guide
Move Points Up To Guide	Points below the Guide are moved up to the Guide
Scale Curve Below Guide	The Curve is scaled to fit in the area below the Guide
Scale Curve Above Guide	The Curve is scaled to fit in the area above the Guide
Cut Away Curve Above Guide	All parts of the Curve above the Guide are removed
Cut Away Curvee Below Guide	All parts of the Curve below the Guide are removed
Replace Curve With Guide	The Curve is replaced by the Guide (they become identical)
Skew Curve With Guide	The Guide is added to the Curve, skewing it vertically

...and of course vice-versa for the *Curve To Guide* functions while a Curve is being edited.

Points are automatically added or removed wherever necessary. If no segments are selected, these functions are applied to the entire Curve.

Modulating Guides

When Guides are used for OSC FX (Curve Filter, Formant, Map-o-Matic, Dual Wave, Window or Spectral Decay) they can be cross-faded. The Morph parameter presents the 3 Guides at the following positions: Guide 1 = 0.00, Guide 2 = 50.00, Guide 3 = 100.00.

Remember: With *Guides* selected as Source, the knob labelled Morph actually **cross-fades**.

Centre Panel

GLOBAL

Voice control parameters.

Soft Attack

OFF allows strong clicks when envelope attack (A) is set very fast. The default is ON.

VCA

Use Gate (a simple on/off), the ADSR envelope, or the MSEG to modulate the amplifier.

Voice Mode

POLY	Normal polyphonic.
MONO	Monophonic – each new note triggers the envelopes.
LEGATO	Monophonic – envelopes are only retriggered after a space between successive notes. This option allows for more interesting musical phrasing.

ENV

The envelope used for the VCA or other modulation targets (especially if VCA is set to Gate).

Velocity

How strongly MIDI velocity affects the envelope's output.

A | D | S | R

A	Attack time
D	Decay time
S	Sustain level
R	Release time

Note that A, D and R modulation is not continuous: it only updated at Note On (see Matrix).

LFO 1+2

Zebralette 3 includes two identical low frequency oscillators:

Waveform

sine	Pure sine
triangle	Pure triangle
saw up	Rising saw (aka ‘ramp’)
saw down	Falling saw
sqr lo-hi	Square wave, restarts at the lower level
sqr hi-lo	Square wave, restarts at the higher level
rand hold	Random steps
rand glide	Random curves

Rate

This bipolar control scales the value set by the Time Base parameter (see below). Each integer step divides or multiplies the LFO speed by a factor of 2.

Restart

You can specify how LFO phase is reset (to the value of Phase):

sync	LFOs of all voices are synchronized to the host, so they all adopt the same phase and are never retriggered. Unlike *single* mode, the phases can still be modulated apart using a 'polyphonic' source such as Velocity or KeyFollow or Random.
gate	Notes retrigger the LFO independently for each voice at the specified Phase.
single	All voices share the same LFO, which is retriggered at the next MIDI note after all previous notes have been released.
random	Notes retrigger the LFO for each voice independently at a random phase, ignoring the value of Phase.

Time Base

The basic 'speed mode'. Time Base offers non-synchronized times measured in seconds (0.1s, 1s or 10s) as well as several values synchronized to song tempo, including dotted times (50% longer) and triplets (3 in the space of 2). Scaled by Rate (see above).

Phase

The position along its waveform at which the LFO will be started whenever a note is played. The value of Phase is irrelevant if Restart (see above) is set to *random*.

Polarity

When active i.e. *positive*, the LFO wave is shifted upwards so that it can only adopt positive values. The absolute amplitude is halved so that the maximum value cannot be exceeded. When inactive, the LFO is *bipolar*.

Delay

A 'ramp-up' time for LFO level. Typically used for 'delayed vibrato'.

Depth Mod

Modulation of LFO level. For traditional vibrato, set the source to *Mod Wheel*, turn Depth Mod up to maximum, and connect the LFO to Tune (aka Osc1: Pitch) in the modulation matrix.

Tip: If you leave the modulation source empty ('None'), the Depth Mod knob is practically an LFO output level control in reverse – turn it up to reduce the level, or even modulate it upwards from e.g. the mod wheel to *reduce* vibrato.

MSEG

A Multi-Stage Envelope Generator with extras...

The MSEG consists of up to 7 morphable curves, each with its own loop: For instance, the MSEG can smoothly morph between an ADSR envelope and a unipolar LFO.

The MSEG is triggered / gated by MIDI notes. A vertical line indicates the current position.

The **final point** is fixed at minimum so that the MSEG can be used as VCA envelope in Zebra 3. Attempts to move this point to the left will create a new point, while moving it to the right will lengthen the last segment (see also MSEG Length).

MSEG Editor Button

Click on the large vertical button to open the full MSEG Editor with its toolbox and extra options.

Time Base

Selects the unit that will correspond to integer steps in the editor's time-line. The *Sixteenth*, *Quarters*, and *Notes* (= 4 quarters) are synchronized to the song tempo.

Trigger

Poly .....standard polyphonic
Single.....only retriggers after all notes are released (like organ "percussion" register)

Attack Rate

Scales the speed of the Attack phase i.e. the part of the MSEG before the loop:
-1.00 is half speed, 1.00 is double speed, 2.00 is quadruple speed etc..

Loop Rate

Scales the speed of the loop: -1.00 is half speed, 1.00 is double speed, 2.00 is quadruple etc..

Release Rate

Scales Release (the part of the MSEG after the loop) speed, or the loop itself if Release Mode is *Continue* (see below). -1.00 is half speed, 1.00 is double speed, 2.00 is quadruple speed etc..

Velocity

How strongly MIDI velocity affects the MSEG output level. Turning this up allows low velocities to scale back MSEG modulation level(s).

Release Mode

On lifting a key...

Immediate .....Jump to the end of the loop, starting the Release phase.

Adaptive.....Like *Immediate*, but start the Release using the current value.

Continue .....Carry on through the curve. This is often the smoothest option.

Simple Editor

One important feature of Zebralette 3 is that the curve editors are as similar as possible so you only need to learn one way of working. For most features of the simple MSEG editor please refer to the section about the oscillator's simple editor. The few differences:

The MSEG timeline allows fewer curves (maximum 7 in the current version).

The MSEG includes a loop (indicated by the green or orange handles).

The MSEG's final point is fixed at zero.

Graphic Editing

The same as for the oscillator curves, but with additional loop functions:

Add points .....double-click in the background
or option+click (Mac) / ctrl+click (Win)

Merge points .....drag one point on top of another and release

Move a point.....click+drag

Move a selection.....click+drag any selected point

Select multiple points .....click+drag in the background (invisible marquee)

Extend / reduce selection .....shift+click points

Clear selection.....click anywhere in the background

Remove a point .....double-click

Remove a selection .....right-click anywhere and select *Delete* from the menu
If Key Control is active, hit Backspace

Adjust curvature .....click+drag on segments

Straighten segment(s).....click on a segment

Zoom in .....roll the mouse wheel (the hover point is fixed during zoom)

Loop functions

Set loop start / end .....right-click on a point and select *SetLoopStart* / *SetLoopEnd*

Move loop markers 1.....click+drag, automatically **attach** to points

Move loop markers 2.....option (Mac) / ctrl (Win) click+drag, **detach** from points

Note: When a marker attaches to a point it will change from a dot to a rhombus.

PreListen

Temporarily freezes the selected MSEG Curve. Curve Morph and any modulation is ignored.

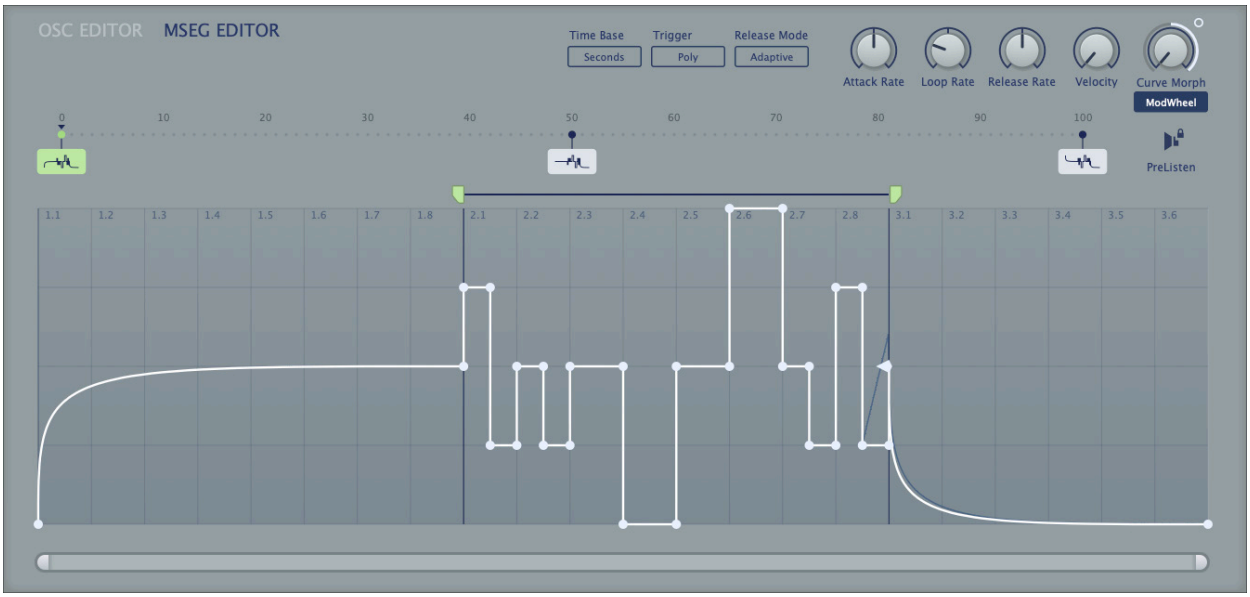
Curve Morph

Nominal position within the MSEG timeline. This value is also indicated by a small triangle above the timeline.

MSEG Editor

As it doesn't have to share a panel with oscillator effects, the **full MSEG editor** window is wider than its oscillator-mangling counterpart. Basic editing is the same as for the oscillator except that the MSEG timeline accommodates a maximum of 7 curves.

You can jump directly to the OSC EDITOR by clicking on that label.



Zoom Bar

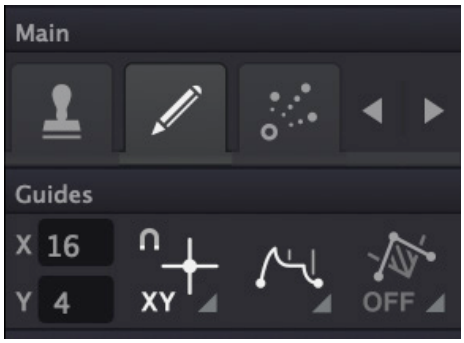
Drag the handles or the area between them to the left or right. Hover over the bar and roll your

mouse wheel to reposition it. Double-click in the grey area to zoom out, then back in again. Remember: Hovering over the edit window and rolling your mouse wheel also zooms in/out.

MSEG Toolbox

To the left is a dynamic toolbox full of options and drawing tools, the content of which depends on what is selected in the MAIN palette. The MSEG toolbox is very similar to the oscillator toolbox, with identical Morph tools.

Upper rows of the MSEG toolbox (with Shape Constraint set to Env Mode)

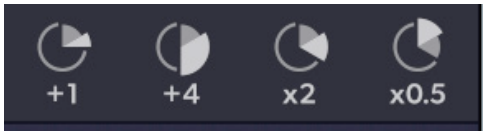


Although the drawing tools and options are very similar, editing multi-stage envelopes is not 100% the same as editing oscillators:

- The MSEG toolbox does not included the Harmonic Grid option
- The MSEG requires a user-definable overall length
- The MSEG takes full advantage of the Shape Constraint *Envelope Mode* option (see below)

MSEG Length

To adjust the size of the MSEG you can either drag the final point to the left or right or use the buttons at the bottom of the MSEG toolbox:



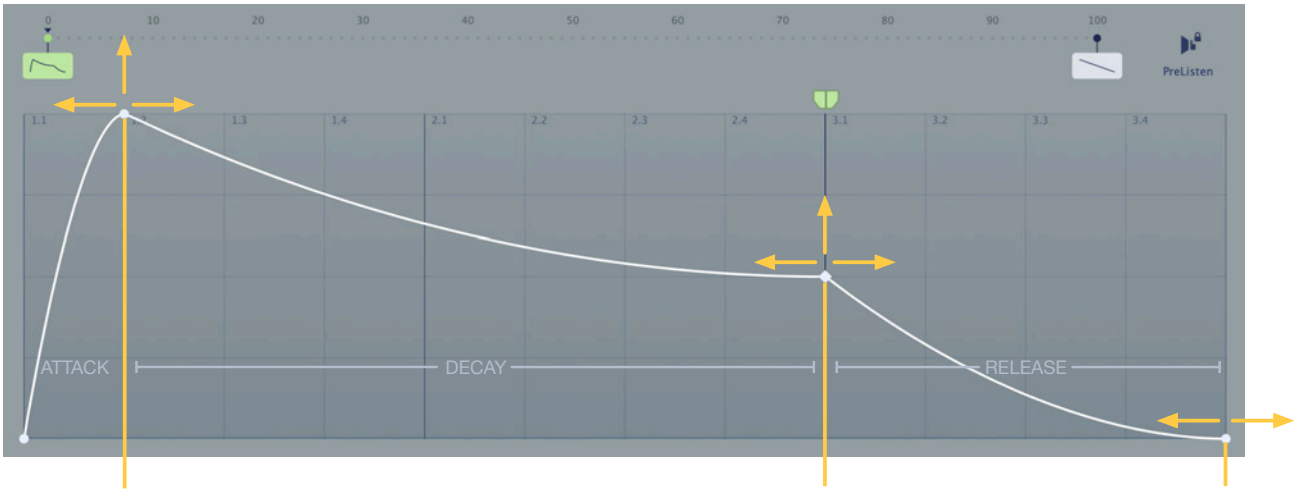
+1	Adds 1 unit to the length of the window
+4	Adds 4 units to the length of the window
x2	Doubles the MSEG length, stretching the curve accordingly
x0.5	Halves the MSEG length, with a minimum of 1 unit

Note: You might have to reposition the loop markers afterwards!

The final handle cannot be moved. It is fixed at the bottom right of the window, ensuring that MSEGs can be used as final (amplifier) envelopes in Zebra 3.

Envelope Mode

Although it could be useful in the OSC editor, the Shape Constraint option *Env Mode* was mainly created for the MSEG editor. However complex the MSEG is, adjusting basic envelope values in this mode is as comfortable as a classic ADSR envelope.



Attack Time, Attack Peak — Decay Time, Sustain Level — Release Time

In this example, moving the second point left-right adjusts the attack time, leaving decay and release unchanged, and moving vertically adjusts the peak level. Similarly, moving the loop point adjusts the decay time as well as the sustain level, and moving the final point adjusts the Release time. Note: Attack and Decay times are both scaled by the Attack Rate parameter.

Initialize the preset, set Shape Constraint to *Env Mode* and experiment with these controls!

Effects

To the right of the MSEG are two fairly simple effects. Click on the buttons below the EFFECTS label to switch the panel between **Delay** and **Reverb**...

Delay

Mode

Stereo.....independent delays without cross-feed from one channel to the other
Ping-Pong .....feeds the left channel into the right, then vice versa
Pong-Ping .....feeds the right channel into the left, then vice versa

LP / HP

Cutoff controls for lowpass and highpass filters within the feedback path. Lower the value of LP for typical damping, increase HP to reduce bass and mid frequencies.

L / R

Independent delay times for the left and right channels, synchronized to host tempo. 'T' in the menu means triplet time (3 in in the space of 2) and 'D' means dotted (1.5 times as long).

Width

Stereo width of the delay signal.

Feedback

Regeneration amount – the output signals are fed back into the input for repeating echoes.

Diffuse

Diffusion makes the delay more 'fuzzy', indistinct. When set to maximum, individual echoes sound as if they had been treated with a short room effect.

Mix

Dry/wet balance. At maximum, the dry part of the signal is faded out completely.

On

Enable / disable the Delay effect.

Hidden Parameters

The following parameters are only available as targets in the modulation matrix. For a static offset, modulate with Constant:

Time Scale.....Delay time
Wow.....Depth of wavering, tape-delay style
Pan.....Stereo pan position

Reverb

Pre

A simple delay before the reverb starts.

Size

Room dimensions, from sardine can to infinity and beyond. Balance this with Decay..

Decay

Controls room reflectivity (essentially the opposite of Damp – see below) i.e. it controls how long it takes for the reverb tail to fade to silence.

Damp

Causes higher frequencies to fade out more quickly than low frequencies, imitating the ‘warming’ effect of carpets, curtains etc. in a room, or the audience in a concert hall.

Tone

Strong ‘tilt’ equalizer. Use in combination with Damp to colour the reverb.

Width

Stereo spread of the ‘wet’ signal. Does not affect the stereo width of the input signal.

Mix

Dry/wet balance. At maximum, the dry part of the signal is faded out completely.

On

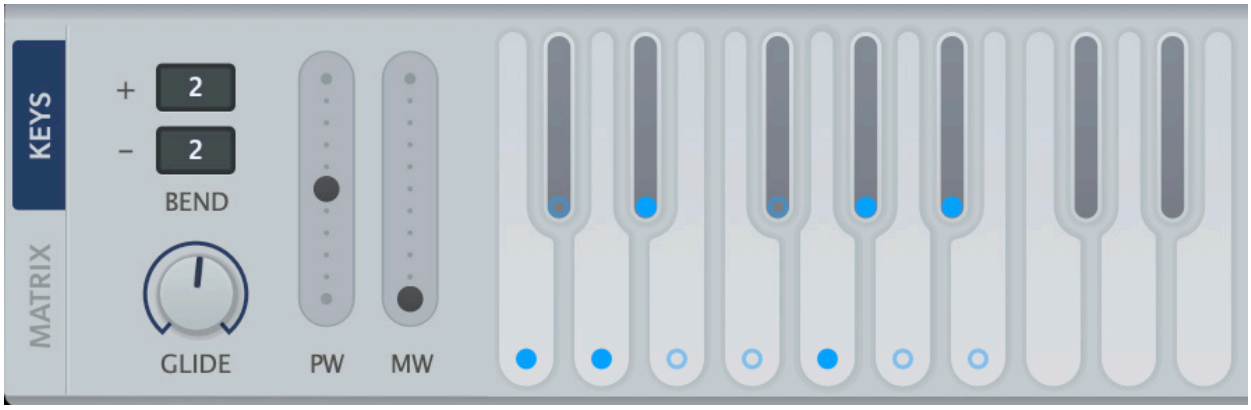
Enable / disable the Reverb effect.

Pan

Only available as target in the matrix. Reverb signal left / right position in the stereo field. For a static offset, modulate this with *Constant* as source.

KEYS

The button on the far left of the lower panel switches between the on-screen keyboard (KEYS) and the modulation matrix.



Bend

Set the pitch bend ranges (up/down) independently, from 0 to 24, 36 or 48 semitones.

Glide

Also known as portamento. Slurs the pitch between consecutive notes.

PW

On-screen pitch wheel (pitch bender). Visibly reacts to incoming MIDI pitch bend data.

MW

On-screen modulation wheel, reacts to MIDI CC#01. The value is not saved with the preset.

Virtual Keyboard

You can play notes with different velocities: Click close to the top/back for low velocities, or close to the bottom/front for high velocities.

Double-clicking on a note will sustain it. This feature is handy for sound design when you don't have a real keyboard at hand, or even for holding a drone while playing live. To release the latched note, click the same note again (or on any other note).

Scale Quantizer

Although the lowest octave can be played just like the rest of the keyboard, it can also be used to quantize MIDI notes to a particular scale. Click on the dots to include or exclude notes.

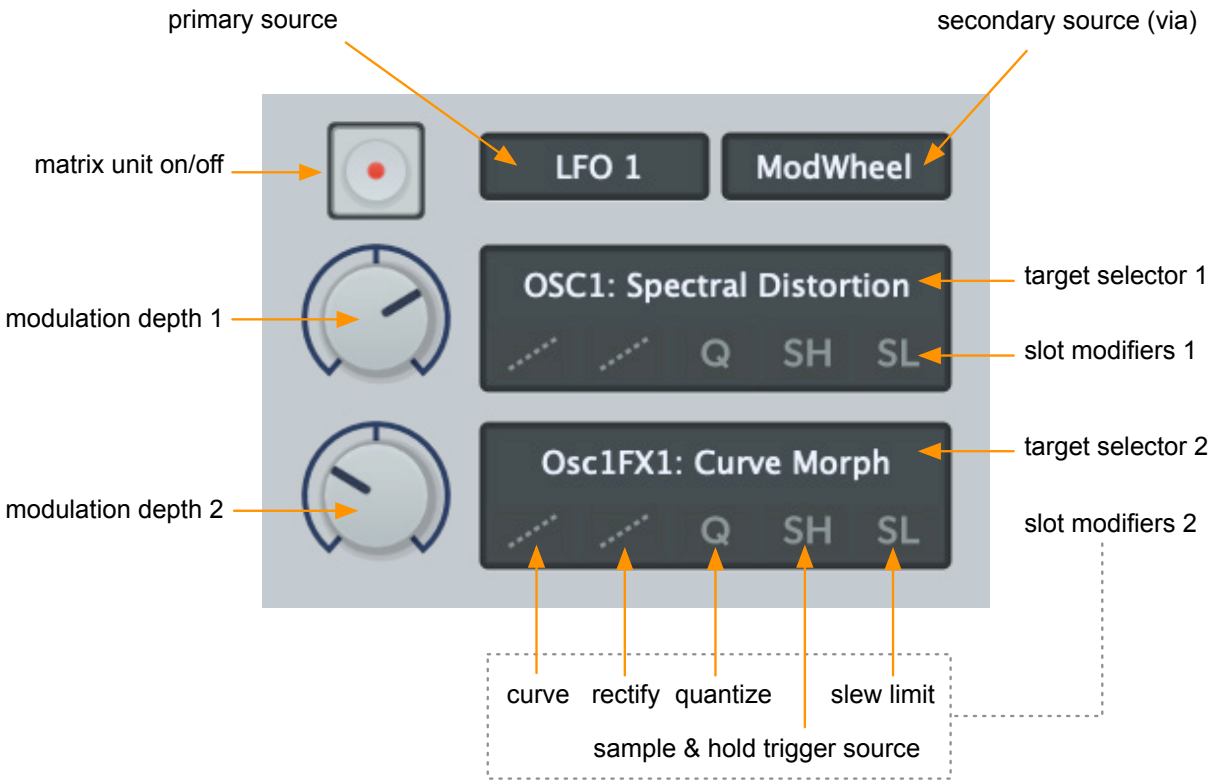
Scale Presets: Right-click on one of the dots to quickly set up one of 15 standard scales – the selected scale will appear with the clicked note as its root. To remove all dots, select *Clear*.

MATRIX

Click on the vertical MATRIX button to the left of the lower panel...

The modulation matrix connects a variety of sources i.e. MIDI controls, envelope, LFOs, MSEG to maximum 12 target parameters. Although none of the individual elements are labelled, they should quickly become familiar.

In the above example, Spectral Distortion and the oscillator effect 1 Curve Morph parameter are both being modulated by LFO1, the depth of which is being controlled by the modulation wheel.



On/Off

Disable a matrix unit whenever you want to compare its effect.

Source

The top left selector specifies a primary modulation source. Click to open the menu.

Via Source

An optional secondary modulation source which determines how much of the signal from the primary source is passed on to both targets. Click and select from the menu.

Modulation Sources

Alongside *Envelope*, MSEG, *LFO 1 and LFO 2*, the following are available:

ModNoise .....Random fluctuations.

Control A/B .....User definable MIDI CC – see Preferences.

Gate .....+100 while a note is being played, otherwise zero.

KeyFollow .....Value derived from MIDI note number, pivots around 'E3' (note 64)

ModWheel .....Modulation wheel / joystick / lever. MIDI CC #01.

PitchWheel .....Pitch wheel / joystick / lever.

Pressure .....Aftertouch. Zebralette recognizes both channel and polyphonic aftertouch.

Velocity .....MIDI note velocity data.

Alternate .....Like *Constant*, but alternates between positive and negative values per note.

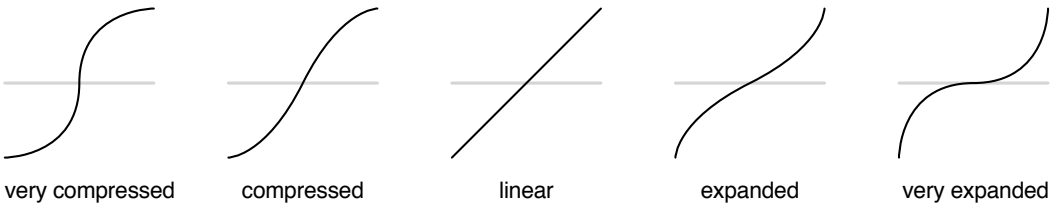
Constant .....Maximum value (100) per note.

Random .....Arbitrary values between -100 and +100, generated per note. Tip: Set SH in the modulation matrix to *Gate* if you need multiple random values per note, as Random otherwise only outputs a single value per note.

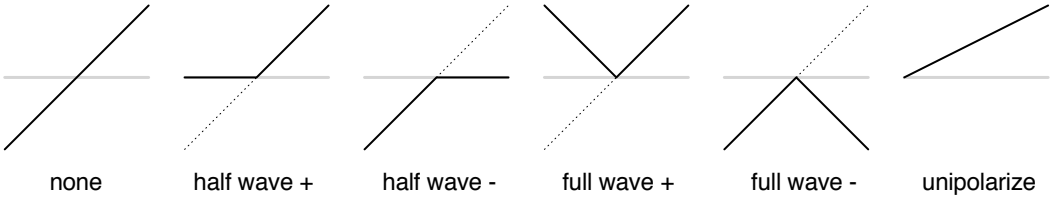
Slot Modifiers

Below each target selector is a row of buttons which can be used to modify the shape of the modulation signal, individually for each slot. They are processed in order from left to right:

Curve Map the source onto an s-curve. Like a waveshaper for modulation signals.



Rectify Half-wave or full-wave rectification (in positive as well as negative versions), or make unipolar ('unipolarize'). The icons show how a bipolar ramp wave would appear after rectification.



Quantize **Q:** Adopt closest discrete values. The *integer* setting makes the modulation typically steppy, while the steps of 12 setting transforms bipolar sources into maximum 5 values (unipolar = maximum 3) including zero. All other options except *overtone series* quantize the output to certain scales:

overtone series .....harmonic overtones
minor / major scale .....natural minor, regular major
minor / major chord.....chord tones (root, third fifth)
minor / major series.....third intervals (repeats after two octaves)
fifths and octaves .....well, it's fifths and octaves only!

Note: As quantization is applied to the signal after the Depth control, lower Depth means fewer, not narrower steps. For instance if you quantize an LFO to steps of 12, you will hear no modulation at all unless you turn Depth up to at least 25.

Sample & Hold

SH: Whenever the signal selected here crosses zero in the positive direction, the main modulation source is sampled and that value is held.

The *Random* modulation source not only retriggers when a new note is played, but also whenever the option selected here crosses zero in the positive direction. Set SH to *Gate* if you want multiple random values per note.

Slew **SL**: Slew limiting is similar to Glide, but not only for pitches. Even the *Slow* option here is quite fast – SL is meant to soften transients in a modulation source e.g. LFO square wave or ModNoise.

For technical reasons, *Alternate*, *Random* and *Key Follow* cannot be slew limited. However, setting Constant as the main modulation source and *Alternate* or *Random* as secondary source will (almost) work as expected.

Modulation Depth

The amount of the selected modulation source sent to the target.

Note that *OSC1:Pitch* modulation is scaled differently from local Tune modulation as the range of the Tune parameter is +/- 48 while matrix modulation is +/- 100. For an an octave, set the Depth to 25, not 12. Similar applies to LFO rates: +/-20 in the matrix is equivalent to +/-5 locally.

Target Selectors

Right-clicking on a target selector opens a menu containing all options (except the depths of other matrix modulation slots!) sorted into sub-menus. However, the most convenient way to select a target is via drag & drop: Click on a target selector then drag the **crosshair** onto any knob or slider in Zebralette except those in the control bar, onto the Timelines as alternative to Curve Morph, or even onto a Depth knob in the matrix.

At the top of the target menu, *Assign Recent* opens a list of recently assigned targets so you can quickly connect multiple sources to a single target. Like hidden parameters, *Glide* is not available via drag & drop (because the MATRIX panel replaces KEYS): You will find *Glide* in the target menu under *Voices*.

Remove Modulation

A right-click on a knob or slider being modulated lets you remove the connection(s) without having to go into the matrix. Tip: You can 'misuse' this feature to view all sources currently modulating that parameter.

Preset Browser

Overview

To open Zebralette's preset browser, click on the **[Presets]** button to the right of the data display. To exit the browser again, click on the same button, now marked with an 'X'.

Folders appear on the left, presets in the centre, and any information about the currently active preset appears on the right. If you can't see any presets at all, click on the 'Showcase' or 'Local' folder below the Search field. The *Showcase* smart folder references 50 presets actually located in the *Local* subdirectories '1 Poly Keys' to '8 Effects'. The *Discover* smart folder presents a random selection which can replaced by right-clicking the folder and selecting *Rebuild*.

If you can't see the PRESET INFO panel on the right, click on the hamburger **[≡]** button in the top right corner of the browser and activate *Show Preset Info.*

After selecting a preset from the central panel you can step through all the others using your computer's cursor keys. If Key Control is enabled, navigate to the Directory folder, use the arrow keys to step between preset folders, and press Enter to open or close them.

That's all you really need to know. However, the preset browser offers many more features including a clever search engine. For details, read the rest of this chapter!

Default preset

When a new instance of Zebralette starts it checks whether the 'Local' root directory contains a preset called *default*, which is then loaded instead of the standard one. If you want to change the default preset, make sure that the *Local* folder is selected then **[Save]** your preset under the name "default". Note that *default.h2p* will not appear in the Zebralette's browser.

If a fresh instance of Zebralette 3 is not loading your new default preset, it probably landed in the 'User' folder instead of 'Local' – check the preference *Save Presets To*.

Directory Panel

Click on the DIRECTORY tab to see this panel:

Showcase

The *Showcase* smart folder references a selection of presets from the *Local* folders...

Local

Zebralette's factory presets, sorted into 'genre' folders.

MIDI Programs

Important: Some hosts automatically route MIDI data into effect plug-ins, while others expect you to set this up yourself. For details, please refer to the documentation of your host app.

The 'Local' root contains a folder called 'MIDI Programs', which is normally empty. When the first instance of Zebralette starts, up to 128 presets in this folder are all loaded into memory so they can be selected via MIDI *Program Change* messages.

As the presets in the MIDI Programs folder are accessed in alphabetical order it is best to rename them, adding an index e.g. "000 rest-of-name" to "127 rest-of-name".

Unlike regular presets, MIDI Programs cannot be added, removed etc. on the fly. Any changes are only updated after the host has been restarted.

The 'MIDI Programs' folder can contain up to 127 sub-folders of 128 presets each, switchable via MIDI Bank Select message (CC#0) preceding the Program Change message. 'MIDI Programs' is bank 0 and sub-folders are addressed in alphabetical order starting with bank 1.

When Zebralette receives a Program Change message, it will display the bank and program numbers to the left of the preset name (e.g. "0:0" for the first preset in the first bank). In certain hosts, however, the first bank / preset is designated "1" instead of the correct "0".

To avoid another possible source of confusion, please make sure there are no junked presets in the 'MIDI Programs' folder: All files there are addressed, even if hidden!

User

The best address for your own creations as well as presets from other sources. You can either select ‘User’ immediately before saving, or set a global preference ensuring that it will always be saved in User (or a sub-folder thereof): See the preference Save Presets To.

To find the ‘User’ folder on your computer, right-click on it and select *Open in Finder / Explorer*.

Smart Folders

The 'Showcase' folder as well as all folders below 'User' don’t contain real files, but list the results of querying a database. The content is dynamic – it will change whenever the underlying data changes.

You can drop smart folder content onto e.g. ‘User’ or the desktop to create folders containing real copies of those presets. See **Drag & Drop** a few pages down.

You can hide any of these smart folders – see *Hidden Folders* in the Directory's context menu.

Search History

Click on this folder to display the results of past searches (maximum 10). If you want the search results to be more permanent, right-click and select *Save Search*... To remove all searches from the list, right-click on the 'Search History’ folder and select *Clear*.

Saved Searches

This folder contains any search results that were saved via right-click in the Search History list. To remove individual saved searches, right-click on the entry and select Delete.

Banks

These smart folders reference metadata about the version of the factory or third party library with which the preset was installed. See ‘Preset Info’ below..

You can create your own banks: Drag & drop one or more presets onto the main ‘Bank’ folder than enter a suitable name into the dialogue box.

To remove Bank attributes from selected presets, either drag & drop them onto the ‘[no Bank]’ folder, or right-click on the Bank and select Remove Presets from Bank.

Favourites

8 colour-coded smart folders. Presets dropped onto a ‘Favourite’ folder will be marked as such. Favourites can be imported / exported - see External Drag & Drop a few pages down.

You can clear the Favourite status from all presets of one particular colour / index at once by right-clicking on the ‘Favourite’ folder and selecting Remove All Favourite (n) Marks.

Note: As presets are referenced by name as well as relative location they will not retain their Favourite (or Junk) status if moved using Finder / Windows functions.

Junk

Smart folder pointing to all ‘junked’ presets – see the presets context menu. Presets dropped here will disappear from the browser unless made visible via Show Junk in the Presets context menu. Note: this smart folder will not appear until at least one preset has been junked.

Like *Favourites*, Junk can be exported/imported (as *Junk.uhe-fav*) – see External Drag & Drop.

Tags

Smart folders for each Category/Subcategory, Features and Character tag. Presets dropped onto these folders will adopt the corresponding tag. Presets dropped onto the '[no Tags]' folder will have all Category/Subcategory, Features and Character tags removed.

Author

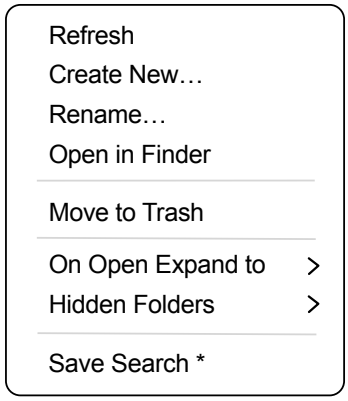
Smart folders for each preset author. Tip: Instead of signing each of your creations individually you could sign just one of them, then select and drag & drop any others onto your new author smart folder. As the process cannot be undone, please use this feature with caution!

Duplicate Names

A smart folder containing presets that share the exact same name. This smart folder is hidden by default - see *Hidden Folders* in the Directory context menu.

Directory Context Menu

Right-clicking on any folder within Local or User will open this menu:



Refresh

This function forces the Zebralette browser contents to be updated. Although it will also work on a Mac, Refresh is mainly aimed at Windows users: It is necessary after any files or folders have been moved, added, removed or renamed using Explorer.

Create New...

Insert an empty subdirectory.

Rename...

Edit the folder name.

Open in Finder / Explorer

Opens a system window for the currently selected folder. If you hold down the option key (Mac) or ctrl key (Windows), this entry will change to 'Show in Finder / Explorer' and the folder will be highlighted instead of opened.

Move to Trash / Recycle Bin

Moves the selected folder to the system trash. If you right click on the Junk folder, this entry will be replaced by 'Remove All Junk Marks'. If you right click on a Bank smart folder, it will be replaced by 'Remove Presets from Bank' (see Smart Folders above).

On Open Expand to

These options determine how deeply the browser will open subdirectories whenever the GUI is opened or the refresh function is called. The none option collapses all folders, while the all levels option reveals all nested folders.

Hidden Folders

Select any smart folders you don't want to appear in the directory.

Save Search

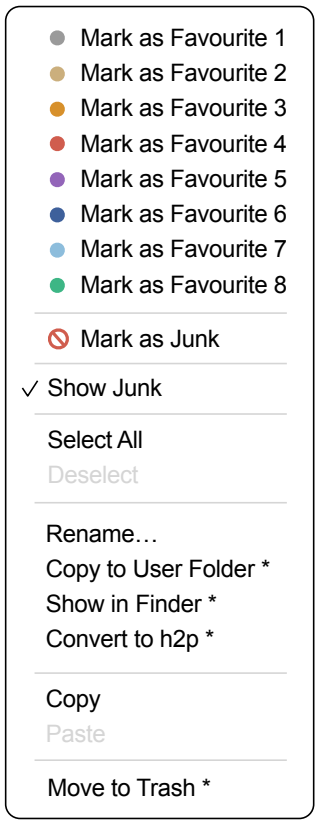
This function only appears if you right-click on a search result in the Search History. Saves the current search so that it can be repeated later.

Presets Panel

The central area of the browser displays all presets in the current folder. Click to load a preset.

Presets context menu

Right-click to open a menu containing functions which can be applied to individual presets.



Mark as Favourite

Tick one of 8 ‘favourites’. The selected entry will be replaced with 'Unmark as Favourite'.

Mark as Junk / Show Junk

Instead of deleting unloved presets, mark them as ‘junk’ so that they disappear from the browser. Activate Show Junk to display junked files instead, and mark them with a STOP symbol.

Select All, Deselect

See ‘Multiple selection’ on the next page.

Rename...

You can change the names of presets using this function. Note that only the most recently selected preset can be renamed i.e. you can’t rename multiple files at once.

Copy to User Folder / Duplicate

The entry here depends on the status of the Save Presets To preference as well as on the location of the source preset(s) i.e. whether they are in the Local or the User folder. Selected presets are copied with a number appended to the name, which increments (just like the ‘Auto Versioning’ option) so that no preset can be overwritten by mistake.

Show in Finder / Explorer

Opens a system window for the right-clicked file. In smart folders only, holding down an option key (Mac) or ctrl key (Windows) replaces this entry with Show in Browser, which highlights theselected file in its original location within Zebralette’s browser.

Convert to native / h2p / h2p extended

Converts selected preset(s) into the format previously specified via right-click on **[Save]**.

Copy / Paste

Clipboard functions. Individual or multiple presets can be copied / pasted, even between Zebralette's browser and system windows (Finder, Explorer).

Move to Trash / Recycle Bin

Moves selected presets to the system ‘trash’.

Extra Functions

Restore

At the top left of the Presets panel is a button labelled **[RESTORE]**. This lets you audition presets to your heart’s content without losing track of the one that was loaded **before** you last opened the browser. Clicking on **[RESTORE]** navigates to that preset and reloads it.

Scan / Ready

In the top right of the presets panel is a dark rectangle normally labelled ‘ready’. Whenever you use the Refresh function (see the Directory context menu on the previous page), this turns into a progress indicator showing the preset database being refreshed. The process should only take a few seconds, even for a large preset library.

Multiple selection

A block of adjacent presets can be selected via shift+click, and presets added to the selection via cmd-click (macOS) or alt+click (Windows). Presets can be moved to another folder via drag & drop. To deselect, click on any unselected preset or choose Deselect from the context menu.

Drag & Drop

Internal

You can drag and drop single or multiple files from the preset panel onto any folders in the directory panel. Files dragged onto regular folders will be moved unless you hold down option (Mac) or ctrl (Windows), in which case they will be copied instead. Files dropped onto smart folders will adopt the attribute of that folder: For instance, you can set e.g. the Author or Favourite status of several presets at once.

External

To manage your preset library externally you can drag presets and folders between Zebralette’s browser and your desktop (or any system window). On the Mac, most Finder operations will automatically update the browser. Updating might not be immediate when using multiple formats or multiple host applications, but all it usually takes is a click on the GUI or in the directory tree (sets focus to the clicked instance of Zebralette).

On Windows, a manual Refresh (see Directory Context Menu) will be required before changes to the contents of the browser appear.

Another little helper: If you drag a Zebralette preset from e.g. your desktop and drop it onto the Data Display, that preset will be loaded (but not automatically saved).

Exporting smart folders

Drag any smart folder onto the desktop to create a new folder containing those presets. Drag an entry from your Search History, or the Category ‘Duo’, or one of the Authors...

Exporting favourite status

You can export Favourites, either all at once or individually: Shift+click and drag the ‘Favourites’ folder or one of its sub-folders onto the desktop to create a file called *Favourite (n).uhe-fav*. Such files can then be imported into Zebralette's browser on a different computer (for instance), via drag & drop onto the Favourites folder or anywhere within Favourites.

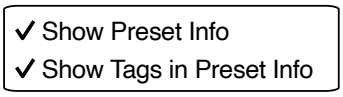
Note: Importing *.uhe-fav* files from another computer will only work 100% correctly if all preset names and locations are identical on both computers!

Note for MS Windows users

According to Microsoft, drag & drop will only work between applications with the same rights (i.e. both admin or both normal) – for security reasons. If the host was started using the “run as admin” option, drag & drop functionality will be limited: You can still drag objects between plug-ins, or from the plugin into system windows e.g. your desktop. However, attempts to drag & drop anything into the plugin from outside the host will fail. This applies to presets, folders, favourites, .uhe-soundset files or indeed anything that can be dropped onto the plug-in GUI.

Preset Info

The panel to the right displays information about the selected preset. If you can’t see this panel, click on the 'hamburger' **[≡]** button in the top right corner and tick *Show Preset Info*:



Below the preset name you should see its path (from /Local or /User), the Bank and the Author (which also appear as smart folders).

DESCRIPTION and USAGE text is entered immediately before saving a preset. CATEGORIES, FEATURES and CHARACTER are the tags for the selected preset (see Preset Tagging). You can remove or add tags directly here (see Tagging via PRESET INFO).

If you prefer to see less information, hide the tags only or the entire PRESET INFO panel.

Installing Soundsets

Any soundsets we distribute ourselves will (eventually) be available in *.uhe-soundset* format and include a text file detailing the install options.

Folders containing Zebralette presets can be manually copied or moved into the ‘User’ folder. You might have to refresh the browser (see Directory context menu) before they appear there.

Preset Tagging

Tags are elements of metadata, information added to presets so you can find them more easily.

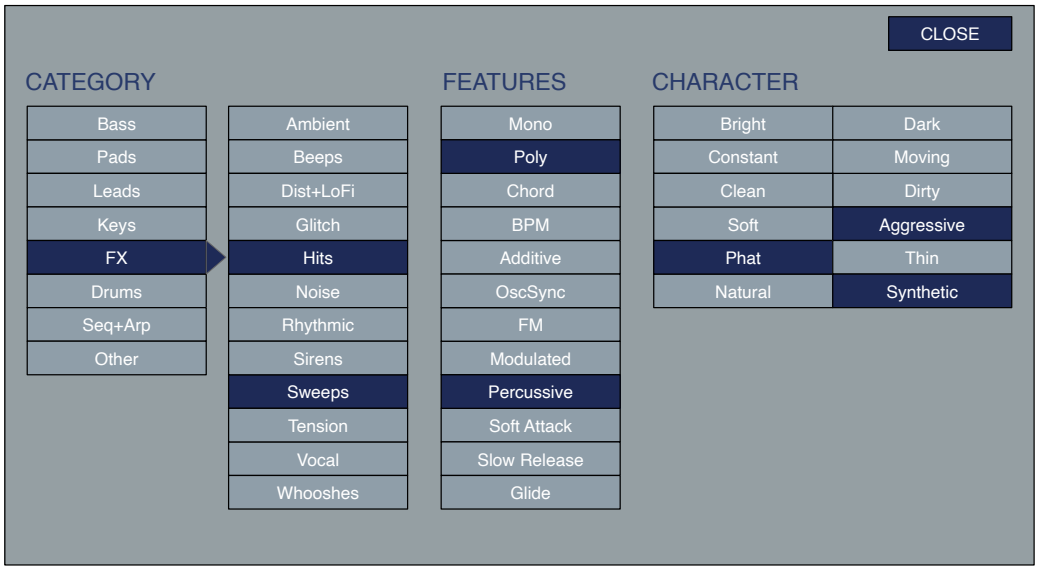
IMPORTANT

Tags are updated automatically – clicking on the **[SAVE]** button isn't required! The main advantage is that presets don't have to be saved every time you edit a tag. The main caveat is that you should only edit tags after saving your preset.

For instance, if you decide to edit tags while creating a 2nd version of an existing preset, please remember that you are actually changing the tags in the original preset!

The Tagging Window

Right-click on the **[SAVE]** button and select Tag this Patch:



CATEGORY describes a preset by analogy to instrument types or typical usage, and each one has an appropriate set of subcategories. FEATURES are technical classifications, and CHARACTER tags are pairs of opposites from which you can choose only one.

Tagging via PRESET INFO

In the PRESET INFO panel, right-click on the Category, Features or Character and select or unselect tags from the menu. Note that this method only works for individual presets. If you right-click on an existing tag, the first option in the menu becomes remove tag.

The function Create Search from Tags finds all presets with exactly the same set of Category, Features and Character tags.

Tagging via smart folder

You can tag presets by dropping ("drag & drop") any number of presets onto one of the Tags smart folders. To remove all tags, drag them onto the '[no Tags]' smart folder.

Search Functions

Search by Tags

Click on the [TAGS] tab to open this view. The buttons here let you set up search criteria according to existing tags with just a few mouse clicks:

Below the Search field are four sets of buttons (CATEGORIES, FEATURES, CHARACTER and FAVOURITES). The first three correspond to the tags in the tagging window (see the previous page), while the bottom row lets you find any presets you have tagged as Favourites.

Clicking on the **[^]** icon to the right of each heading hides the options for that set of tags.

Categories and Subcategories

Especially for Category tags, following a step-by-step tutorial (see the next page) is much easier than studying a full technical description, so here are just a few pointers:

Each Category has its own set of subcategories which appear below the main categories. Click on **[Leads]** and see them appear. Not selecting a subcategory here means “show me presets tagged with any subcategory”. Selecting the top-left subcategory (which has the same name as the category) means “show me presets tagged without any subcategory”. You should not find any of these in the factory presets!

You can select multiple categories without specifying subcategories if you hold command (Mac) or alt (Windows) while clicking on the category button. Try that with the **[Keys]** button.

Completed category+subcategory tags appear below the subcategories as buttons with ‘off’ switches **[X]** so that you can add other main categories by simply clicking on them.

So far we have actually been expanding the search, which is not very useful...

Features, Character and Favourites

Unlike multiple Category tags which expand the search, these types restrict the search. As a practical example let's find all "thin" and "moving" presets with a slow release...

Click on the TAGS tab. If any Categories are highlighted, click on them. Select [Slow Release] feature, then the [Thin] and [Moving] characters. You should now see about 10 hits in the presets panel – which is generally a good number to aim for while searching.

Summary

In the DIRECTORY panel, specify a search path via double-click. In the TAGS panel, select category tags. Add others if required to extend the search, but remember to hold down command (Mac) or alt (Windows) if you want to retain category tags that don't specify a subcategory. Select Features, Character and/or Favourites tags to refine the search.

Search by Text

The Search Field lets you find presets according to a text string. An example: If you remember that the preset you want has the word "clock" in its name or description, simply enter clock into the Search field and hit Return...

This basic search normally looks into the preset name, author, the DESCRIPTION and USAGE (see the PRESET INFO panel). Searches are not case-sensitive, and quotes are not required unless you need to include spaces.

To restrict the search to a particular path, double click the desired folder. This path will appear immediately below the Search field instead of the preset folders, and you will only see folders within the specified path (if any exist) plus the usual bunch of smart folders.

A **Search Path** appears below the Search Field: The [^] button to the left moves the search path up one level. Alternatively, you can navigate directly to any higher level by right-clicking on the path. The [X] button to the right expands the path to include all Zebralette presets (in 'Local' as well as in 'User'), and all the regular preset folders will reappear.

Try a text search: Enter three or four letters then hit Return. For instance, star would find all files containing the text string star (e.g. mustard or starters). Entering "star wars" with the quotation marks would find e.g. Battlestar Warsaw.

Syntax

You can limit the scope of the search to just the preset name or specific parts of PRESET INFO by using name (preset name), author, desc (description) or use (usage) followed by a colon. For instance, *author:the* finds all presets by sound designers whose author names contain 'the'. Similarly, *desc:space* will find all presets with the word space in the description.

Logical Operators

The following logical operators can only be used between text elements.

AND requires that presets contain both words. It can be written explicitly if you prefer, but is not necessary. For example, *star AND wars* (or simply star wars) will find presets that contain both *star* and *wars*.

OR means that presets can contain just one of the words or both. For example, *star OR ship* will find presets that contain *star* as well as presets that contain *ship*.

NOT excludes presets containing the word. To find all presets that contain *star* but don't contain *ship*, enter *star NOT ship*.

Including Tags

Tags must appear after any text items.

Regular tags can also be entered into the search field if preceded with a '#'. For example, name:"chord" #keys:* will find all presets with "chord" in the name that are tagged as *Keys* with any or no subcategory. The colon separates category and subcategory, while the star (*) means "any subcategory, even none".

Note: Between multiple tags of the same type is an implicit *OR*, while between different types is an implicit *AND*.

More example searches

You could copy/paste these into Zebralette's search field and see what they find. Note that valid tags entered into the search field will appear as active tag buttons (click on TAGS to check).

author:urs = presets by Urs

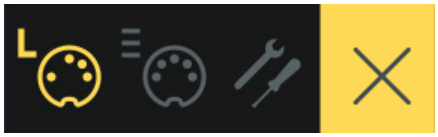
desc:fm = presets with "FM" in the the DESCRIPTION field

use:"pb =" presets with pitch bender control mentioned in USAGE field

tasm OR urs #keys:piano = piano type presets by either Tasmodia or Urs

Configuration

The cogwheel at the top right gives you access to global configuration pages where you can adjust preferences and connect Zebralette 3 parameters to MIDI continuous controllers.



The 4 buttons are MIDI Learn **[L]**, MIDI Table **[≡]**, Preferences **[tools]** and Close **[X]**:

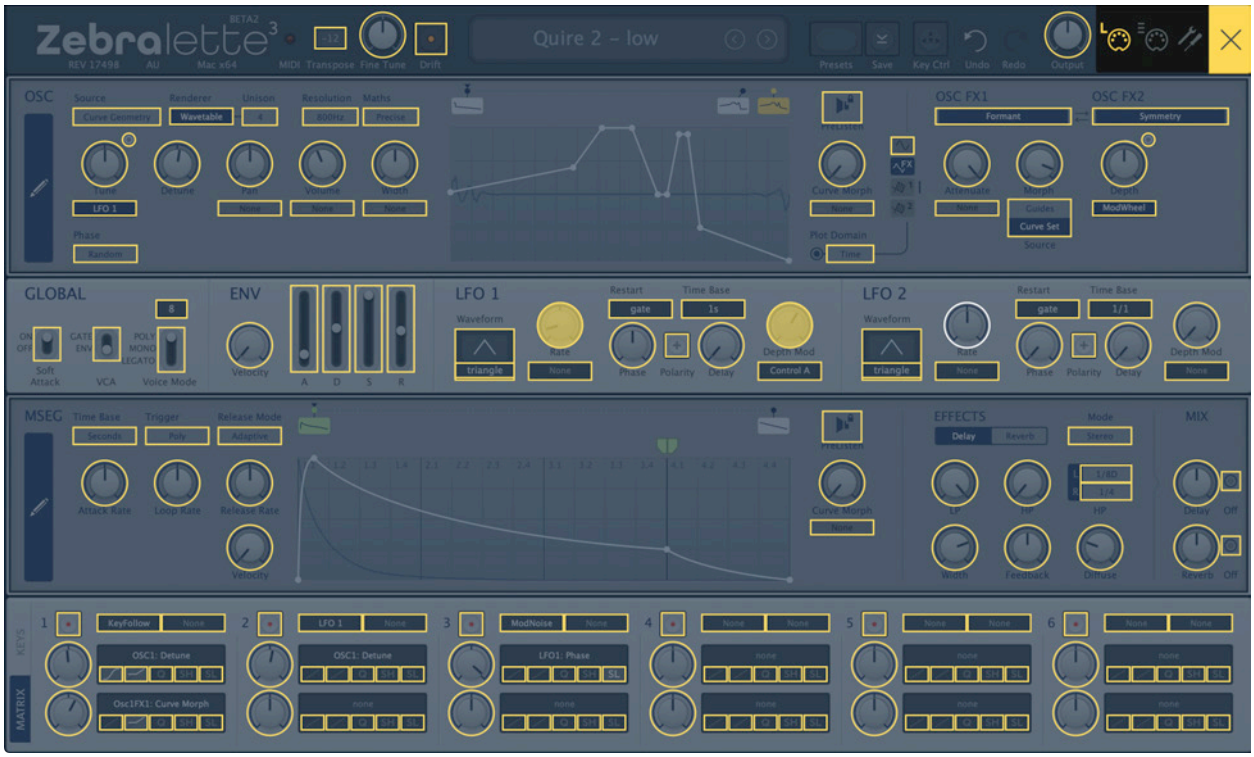
MIDI Learn

The MIDI Learn page is where you can connect MIDI CC to most parameters. But before connecting knobs and sliders on your master keyboard to Zebralette parameters it's best to know what a 'MIDI CC' is...

MIDI "Control Change" is a multi-purpose message format for performing as well as editing presets. Note that CC isn't the only kind of MIDI performance data available; there are also messages for note on/off (including velocity), pitch bend and two kinds of aftertouch.

Thankfully, The MIDI Association left most of the CC numbers undefined, but two of them have meanings also recognized by Zebralette: CC#01 = modulation wheel, CC#64 = sustain pedal.

Click on the configuration button, then select the 'L' MIDI icon (resembles a 5-pin DIN socket):



The window is a translucent overlay, with all MIDI-learnable elements appearing as selectable outlines. Already connected controls are filled (like LFO1 Rate and Depth Mod in this image), and the outline of the currently active control is highlighted in white (like LFO2 Rate here).

Try it: Click on the LFO1 Rate knob and send it some MIDI CC data (wiggle a knob or slider on your MIDI controller). To remove the new CC connection, double-click on the same knob.

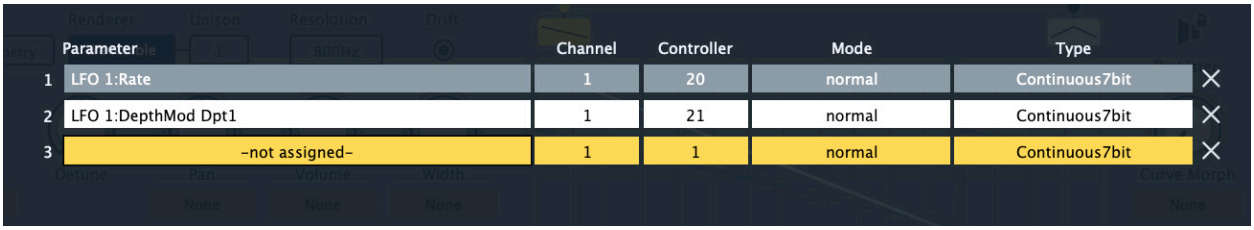
Note: Controls in currently invisible panels will not be immediately available i.e. they cannot be switched over from within the MIDI Learn page. To access them, exit the configuration pages, select e.g. KEYS, then navigate back to the MIDI Learn panel.

All assigned controls will appear as a list in the MIDI Table page...

MIDI Table

Click on the configuration button (cogwheel) and select the MIDI icon labeled '≡'.

Once a few parameters have been added, you will see a list:



Parameter

Selects one of Zebralette's many parameters, sorted into sub-menus. Click on the **[Add]** button at the bottom and experiment! Afterwards, delete the line by clicking on the **[X]** to the right.

Another experimental feature: Select *Last Clicked Control* from the bottom of the Parameter menu, enter any controller number then exit the configuration pages. Any MIDI controllable knob or switch in Zebralette will now respond to that controller – you just have to click on it first! The final option, *Last Clicked Control Fine*, is similar but with a significantly reduced range.

Channel / Controller

The next two fields are for MIDI channel and CC number.

Mode

Specifies the range / resolution of values. The last two options are for adjusting oscillator pitch.

normal .....full range, continuous
integer .....full range, whole numbers only
fine.....0.01 steps between the two integers closest to the current value
octaves .....max. 5 discrete values
semitone.....+/- 6 semitones, continuous

Type

Specifies the kind of hardware. By far the most common is *Continuous 7-bit*.

Encoder 127 ..... 'relative mode' endless rotary controls which repeatedly send the CC value 1 when turned up, or 127 (interpreted as -1) when turned down

Encoder 64 ..... 'relative mode' endless rotary controls which repeatedly send the CC value 65 when turned up, or 63 when turned down

Continuous 7-bit ..... 7-bit MIDI CC (normal resolution, common)

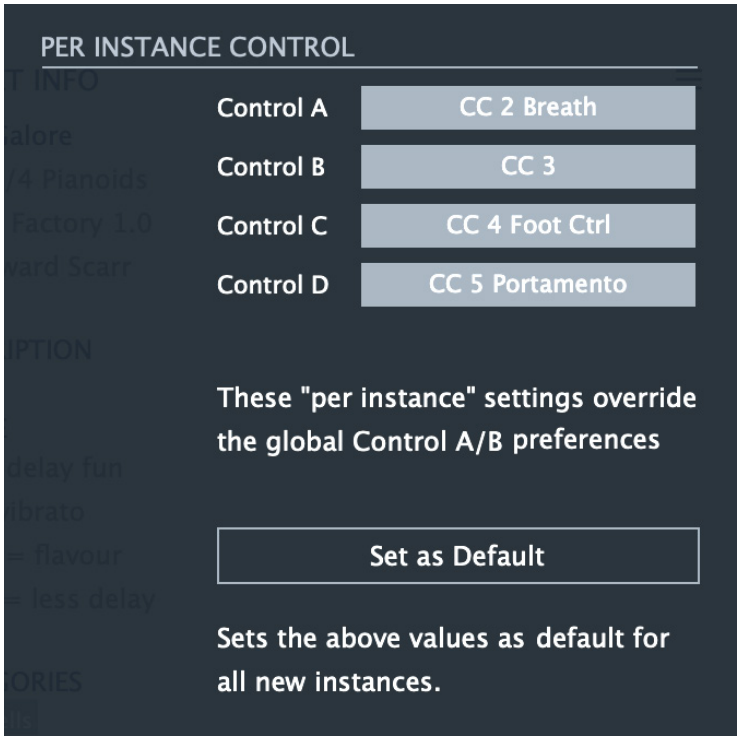
Continuous 14-bit ..... 14-bit MIDI CC (high resolution, rare)

Remove

To remove individual assignments, click on the **[x]** to the right of each line. To remove them all at once, click on the **[Delete All]** button at the bottom of the window.

Per Instance Control

Local i.e. per instance versions of the Control A/B/C/D default settings in the Preferences (see the next few pages).

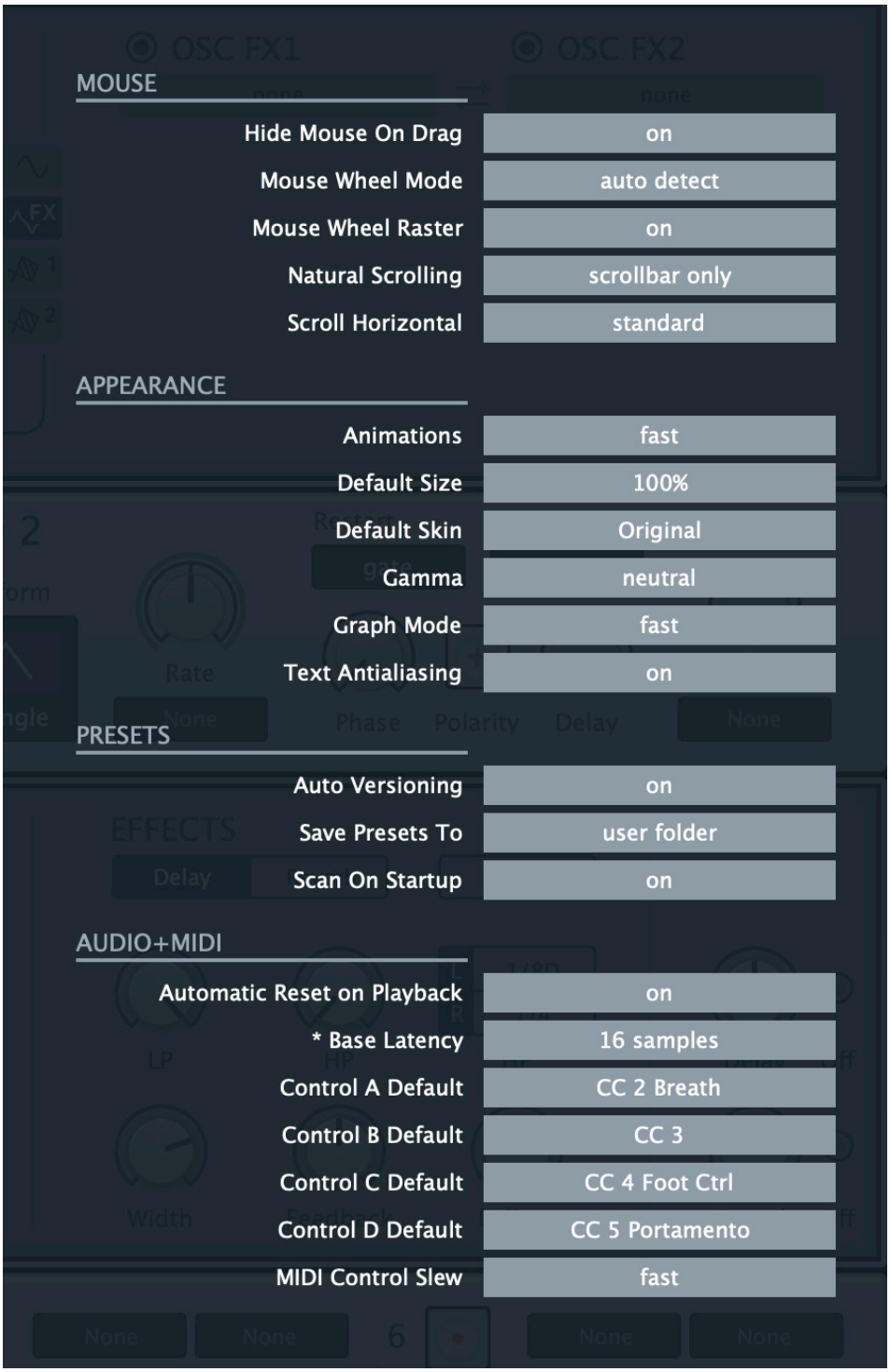


Note: Unlike the equivalent options in the Preferences page (see below), clicking on these fields does not open a menu (at least not in the current version), but act just like the rotary controls: To set a different CC either drag up and down or hover over the field and roll your mouse wheel.

Click on the **[Set as Default]** button to copy these settings to the AUDIO/MIDI section of the global Preferences...

Preferences

Click on the ‘tools’ icon to access the global options...



MOUSE

Hide Mouse on Drag

If **on**, the pointer disappears while a knob or slider is adjusted, then reappears in the same spot.

Mouse Wheel Mode

How the scrollbars and filter palette react to 3D mouse wheel or the touchpad scrolling gestures. This can usually be left on *auto detect*. The *vertical only* option means that only vertical scrolling will affect the controls, while *vertical & horizontal* means that vertical scrollbars react to vertical scrolling and horizontal scrollbars react to horizontal scrolling only.

Mouse Wheel Raster

If your mouse wheel is rastered (you can feel it clicking slightly as you roll the wheel), set this option to ‘on’ so that each little click increments the value in sensible steps.

Natural Scrolling

This setting defines how the inverted scroll direction on Windows or Natural Scrolling on macOS affects scrollbars and controls. If unused, keep the default setting to ensure correct behaviour.

macOS

scrollbar only .....(default) Inverts the scrolling for scrollbars only. Knobs, sliders and other controls use the standard direction.

scrollbar & values .....Inverts scrolling for all controls — scrollbars, knobs, sliders etc..

Windows

off.....(default) Uses the direction provided by the system or by the device itself for scrollbars and controls.

on.....inverts scrolling for scrollbars only—knobs, sliders and other controls use the standard direction.

Scroll Horizontal

Sets the direction of horizontal scrolling using vertical motion of the mouse wheel / touchpad

standard.....upward motion translates to rightward motion

inverted.....upward motion translates to leftward motion

APPEARANCE

Curve Plot

A choice of visual effects for the plot – *eco*, *fast* or *glow*. Note: The latter is quite CPU-intensive!

Default Skin

Sets a skin (overall design) as the global default. At the time of writing there is a choice of two options only, *Original* or *Dark Mode...*

Default Size

GUI size for each new instance. You can temporarily change the size without opening the Preferences page by right-clicking anywhere in the background.

Gamma

Overall brightness.

Text Antialiasing

Smoothing of labels and values. Normally left on – only in rare special cases will switching this off improve readability.

PRESETS

Auto Versioning

If switched on, an index is appended to the preset name and automatically incremented each time you save it. For instance, saving ‘Space’ three times in a row would give you three files: ‘Space’, ‘Space 2’ and ‘Space 3’.

Save Presets To

The user folder option prevents Zebralette from saving presets into the Local folder. Instead, they will land in the User folder (or a subfolder if selected).

Scan On Startup

Whether the preset library should be scanned and the database recreated when the first instance of Zebralette is started, e.g. when you reopen a project.

AUDIO & MIDI

Automatic Reset on Playback

Whenever playback is started in the DAW / sequencer, all notes still playing are ended, all reverb and delay memory is cleared, and all controllers are reset back to their default positions.

Base Latency

If you are sure that your audio system – hardware and software – uses buffers that are a multiple of 16 samples (please refer to the appropriate documentation), you can safely disable base latency. Otherwise it is best to leave it set to the default 16 samples to avoid crackles. Note: Base Latency setting will only be updated when the host allows – on playback, after switching the sample rate or upon reloading Zebralette.

ABOUT THOSE BUFFERS

Internally, Zebralette processes audio in chunks of n x 16 samples. This 'block processing' significantly reduces the CPU load and memory usage of all our plug-ins.

If the number of samples to be processed is 41, Zebralette processes the first 32 and keeps the remaining 9 in a small buffer (16 samples is enough). Those 9 samples are then processed at the start of the next call... and so on.

The extra buffer is only necessary if the host or audio driver processes 'unusual' buffer sizes. In host apps that process buffers of e.g. 64, 128, 256 or 512 samples (multiples of 16), try switching it off so that Zebralette can process latency-free.

Control A/B Default

Two user definable MIDI controls alongside pitch wheel and modulation wheel. Set these to the same MIDI CC values as your hardware controller sends, for instance *CC 14* and *CC 15*.

MIDI Control Slew

The strength of parameter smoothing for PitchWheel, ModWheel, Control A, Control B and Pressure. With MIDI Control Slew set to 'off', Zebralette is more responsive to modulation wheel data (for instance), but performance control can sound rather grainy. The default setting ('Fast') is a good compromise between responsiveness and smoothness.

The 'Slow' option is adaptive: Whenever the incoming control data jumps suddenly between values that are further apart, no slew is applied.

Tips & Tricks

Initialize the preset before each experiment: Right-click on the data display and select *init*.

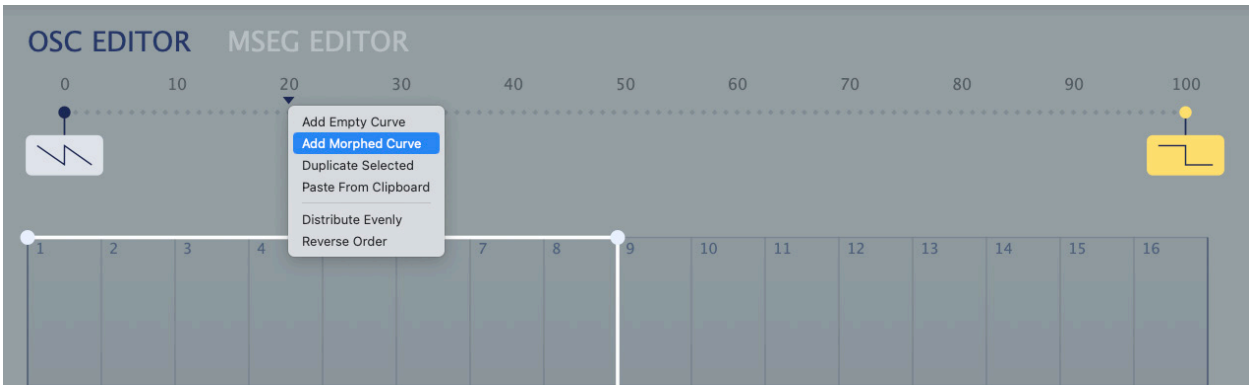
Curve editing

Removing Points

Either double-click on a point, or (while Key Control is active) select it and press the backspace key. Also, dragging a point to the far left or right will replace the existing edge point – once you release the mouse button, any points which have disappeared will be lost (Tip: UNDO).

Capturing Intermediate Curves

If you particularly like the sound of an intermediate between two Curves, you can 'freeze' it by applying Add Morphed Curve at that position (indicated by the small triangle):



For a typical analogue sawtooth + square sub-oscillator, crossfade between a double sawtooth and a single square wave, as shown here. You can remove the original curves afterwards as long as two or more curves remain.

Creating Chords

It's quite easy to create a major third, despite Zebralette only having a single oscillator...

- Load *init*, set Unison to 2. Make sure Drift is off.
- Turn Detune up to maximum (or 96.6 for a more static 3rd).
- Set Tune to +2 to compensate for the overall shift in pitch.
- For a minor 3rd, set Detune to 75.00 and Tune to 1.50.

A more flexible method

- Starting from 'init', create a 4-tooth saw and a 5-tooth saw as follows: Set the Grid's X value accordingly, draw a single falling saw then use the Multiply tool to repeat it. Transpose an octave or even two down to compensate for the multiple teeth.
- Set the Morph between the two Curves to *crossfade*, then adjust Curve Morph to taste.
- Once you have found a good balance between the Curves, select Add Morphed Curve from the context menu at that position.
- Finally, copy/paste that new curve anywhere you like. Try crossfading your new curve with a 6-peak sawtooth for a complete triad, including the 5th! Try other combinations...
- Note that this won't work well for pure sounds e.g. sine waves – the crossfade is **not a mix**.

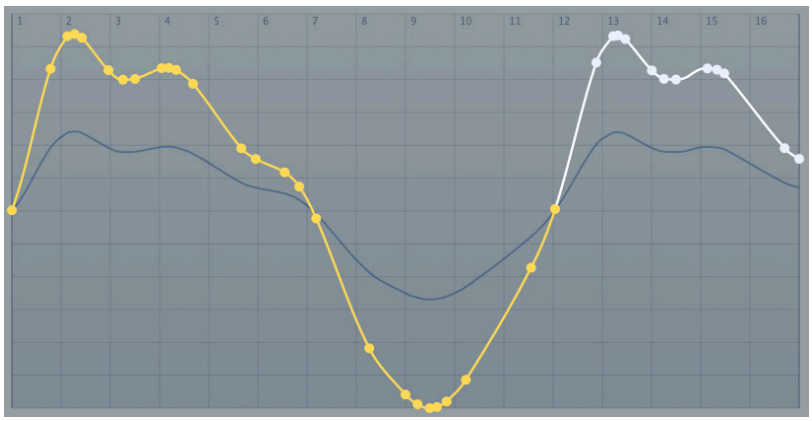
Avoiding Buzz

If you are aiming for a soft waveform, take special care with the very **first** and **last** segments. Even a slight misalignment can create a sharp knee or jump which will add high frequencies. Tip: try rotating the Curve i.e. shifting its phase to see how those segments appear together.

Similar care is required adjusting the level(s) of low frequencies when using the Curve Filter oscillator effect. It's often best to trust your ears first, then learn what to look out for in future.

Trimming waveforms

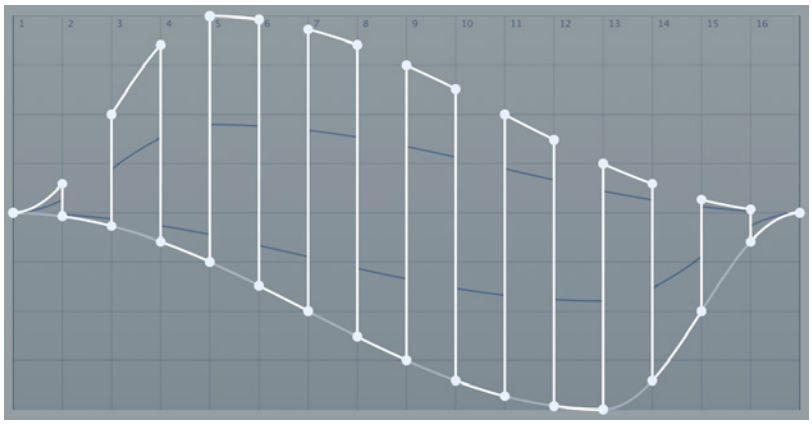
After importing a .WAV it might be obviously longer than a single cycle, as in this example. Fix: Carefully select one complete cycle, right-click and *Copy*. Then *Select All*, *Paste*.



Uses for Guides

Contours

Guides can impose a simpler contour (or 'window') onto a more complex curve, for instance to give it a stronger fundamental:

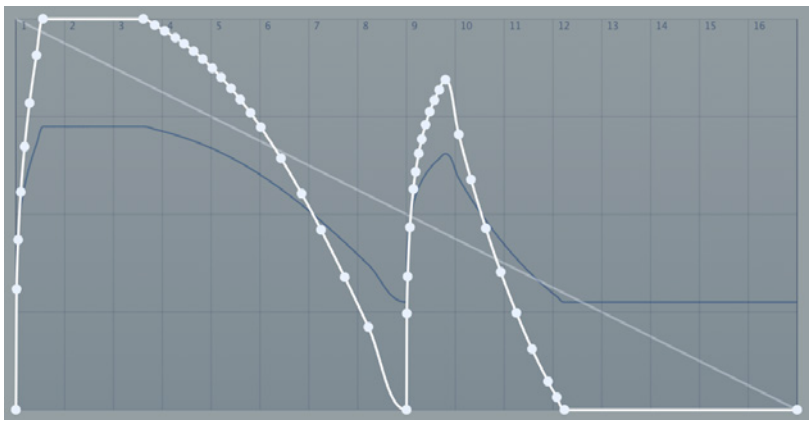


Steps to recreate the above waveform:

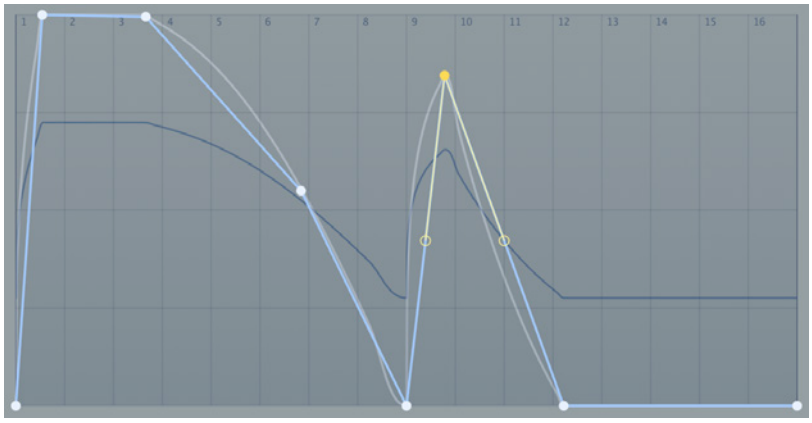
- Draw 8 columns using the GridStep shape (one swipe and 8 clicks is all it takes) and/or the Multiply tool (create a single column and repeat it). Check out both methods!
- Draw a positive-only triangular Guide. Apply SinOMatic then move the peak to the left...
- Right-click and apply CutAbove.
- Apply FlipX, FlipY, then CutBelow.

Tracing imported WAVs

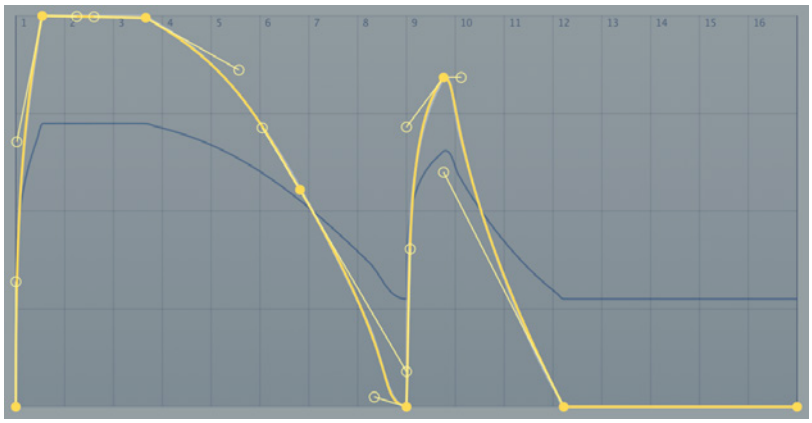
Although using Simplify and removing points can pare down an imported .WAV to its essence (which can be useful e.g. for removing unwanted fizz), it is sometimes easier to trace it with a Guide then apply the function **PrintTo**, which transfers the Guide to the Curve.



the imported .WAV



Guide 1 with inflection points set



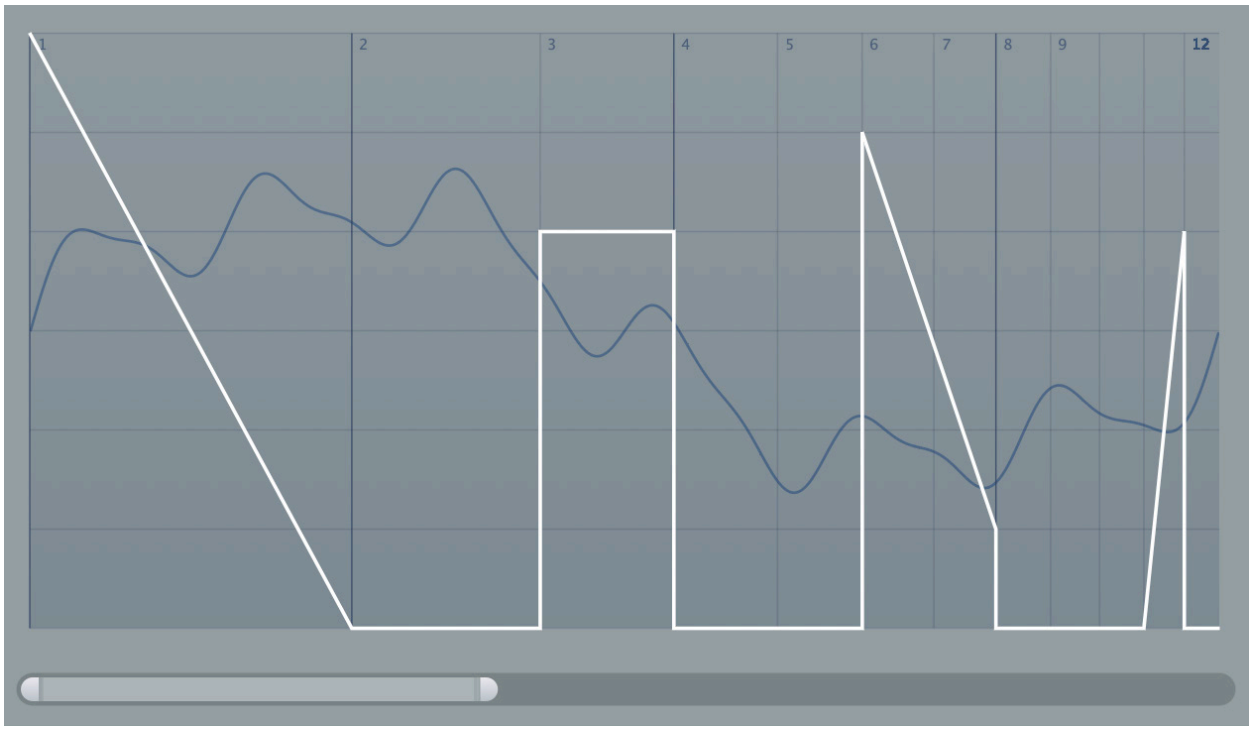
all splines adjusted so that the curves match

Tracing curves is also good practice for using splines in general. See also .WAV import tips.

Additive synthesis

Note: This has little to do with the Renderer option currently called "Additive"!

Change the oscillator Source to *Curve Spectrum*, go into the full editor, select the Shapes tools, activate the Harmonic Grid and use mostly a falling line (top left shape) to draw the levels of individual harmonics. Remember to Zoom in e.g. roll your mouse wheel to create the higher harmonics. Only use a bar if you want to set adjacent harmonics to the same level...



In the above example harmonics 3 and 4 share the same level, while 6, 7 and 8 have different levels. The level of harmonic 12 is set by a rising line from harmonic 11, which is inaudible.

Work in progress! Zebra 3 might include a more comfortable method for the first 32 harmonics. In the meantime, here's a handy table borrowed from the Bazille Cookbook:

harmonics	interval	semitones	cents
1, 2, 4, 8, 16, 32	prime	0	0
9, 18	major 2nd	2	+4
5, 10, 20	major 3rd	4	-14
11, 22	tritone	6	-49
3, 6, 12, 24	5th	7	+2
13, 26	minor 6th	8	+41
7, 14, 28	minor 7th	10	-31
15, 30	major 7th	11	-12

Tip for creating bright, complex spectra: The Paint tool is probably your best choice.

PWM

Multiple flavours of this ever-popular effect are possible:

Via Curve Morphing

Morph (Point By Point or Peaks & Valleys) between a pair of opposite-extreme pulse waves.

Via Symmetry

Create a Square, select *Symmetry* in OSC FX1, and modulate Depth.

Via Dual Wave

This one sounds very different, and can work with any waveform: Create e.g. a Square, select Dual Wave om OSC FX1, set its Source to Curve Set and modulate Depth.

Tip for any kind of cyclic PWM: Try a Sine LFO instead of the default Triangle, as the latter tends to alternate between two distinct pitches when modulating phase.

Tip for narrow pulses: If the area above zero (the centre) is much larger that the area below it you are likely to get unwanted pops. Try moving the larger area closer to zero.

MSEG editing

Envelope vs LFO

The MSEG curves can be completely different from each other and still morph smoothly. For instance, you can move seamlessly between a typical ADSR and a typical LFO.

Markers

SetLoopEnd for a point before the current loop, and both markers will move to the new point. If you want to move them to the right, use SetLoopStart.

You can detach a close pair of markers without having to hold option (Mac) / ctrl (Win): Simply drag the left marker to the right or the right marker to the left.

Extra envelopes

Using slewed Constant

In the matrix, set Constant as modulation source and e.g. Tune as the target. Set SL to *Slow* and turn up the modulation depth; also adjust the target parameter to compensate. This works because Constant is retriggered – it is is essentially a Gate with an infinite release time.

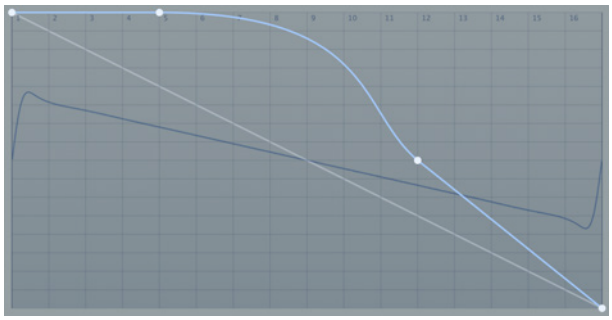
Using LFO Delay

If you have an LFO to spare and need longer decay than slewed Constant, try this: Set the LFO Waveform to *sqr hi-lo*, Time Base to *10s*, Rate to minimum, enable positive Polarity and set a short delay e.g. 10.00. Test by modulating the Tune parameter.

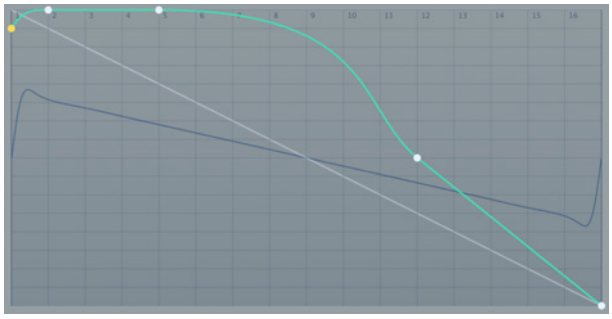
Curve Filters

To recap: Either the Guides or part of the Curve Set define the frequency response of a filter within a range of 10 octaves. The levels of frequencies below or above this range is set by the vertical position of the left and right end points. The Frequency knob shifts that curve for the full range of about 20 Hz to 20 kHz. Includes about 50% key follow (slightly less for higher notes).

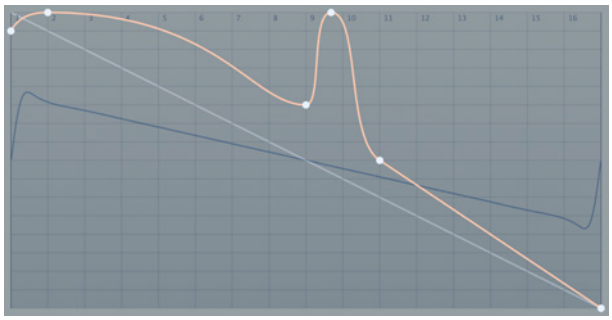
A simple lowpass filter curve could look something like this:



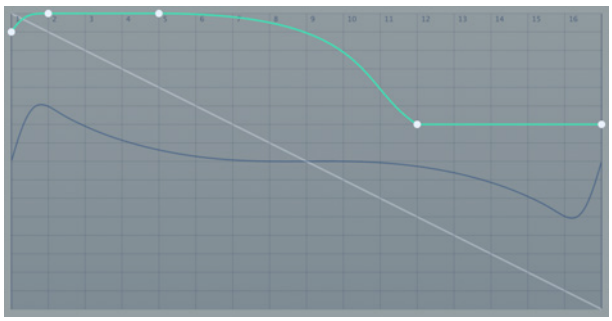
Removing low frequencies without making a cutoff sweep too thin can be tricky. In this example, the selected point (highlighted yellow) is certainly low enough to be noticeable:



Finally, 'resonance' could look something like this (depending on how you want it to sound):



Try moving the final slope way up to emulate "bleed-through" of high frequencies:



It's worth spending some time experimenting with much "wilder" shapes than these!

OSC FX tips

Posterize

The Posterize oscillator effect can be used to "sample and hold" the current waveform i.e. freeze it until the next trigger. Set Depth to minimum and the Trigger Source to either MSEG (looped) or an LFO.

Scrambler

For something close to white noise, use Scrambler with lots of Depth, and modulate that from anything that moves e.g. ModNoise (or an LFO or MSEG). A modulation depth of 0.01 is enough, and high values are likely to negatively affect the noise.

Combinations

Experiment with the following first:

Sync + Window for a smoother sweep. Set the Guide to a trapezoid or a sine "hill".

Spectral Decay + Sparse for various electric piano type sounds.

Dissociate + either Delta X or Wrap & Zap for gnarly sounds with motion.

Matrix

Multiple random values

The 'Random' modulation source normally gives you a single value per note. If a preset needs several **different** random values, use SH set to *Gate*. Test this claim by setting up the following:

The assignments in matrix unit 1 cancel each other out, while those in unit 2 do not.

Direct vs Matrix

The range of the modulation Depth in the matrix is always -100.00 to +100.00, whatever the target parameter. As **Oscillator Tune** as well as the **LFO** and **MSEG** rates are scaled differently, you will need to convert values wherever you need presicion. The formula is simple:

100 / highest target value = 1 step

So for each semitone of oscillator modulation you will need to set a Depth of 2.08 in the matrix (note: 100/48 is more precisely 2.0833…). Similarly, for each division or multiplication of an LFO rate, which locally only requires a step of 1.00, you will need to set a modulation depth of 20.00 in the matrix. Finally, for MSEG rates the factor is 25.00 per division / multiplication.

Note: For technical reasons the local LFO modulation menus have certain restrictions. If you want to modulate either LFO from the MSEG, or LFO1 from LFO2, use the matrix instead!

.WAV import tips

Watch this space (as soon as wave file import is no longer "work in progress")!

More uses for Delay / Reverb

Delay 'Time Scale' modulation

You can not only make wild delay effects by modulating *Time Scale*, but you can use the Delay as an extra room simulator or even a chorus. Some experiments:

- Set [L] and [R] to 1/32 and 1/16T. Turn the Delay on and set DryWetMix to 50
- Set Feedback to 25 or less (after checking out higher values!), and Diffuse up to maximum
- In the matrix, select *Constant* as source and *Delay: Time Scale* as target. Listen to the effect of negative modulation depths between 0 and -50. Leave the Depth set to -40...
- Set *Delay: Wow* as the lower target and check out positive as well as negative Depth values.
- Use a second matrix slot to modulate the upper Depth of the first one (drag & drop!) from a 'Single' mode LFO or MSEG with SL set to *slow.*

Phasing via Reverb Size modulation

Zebralette's Reverb unit can also be (mis)used for a variety of phasing effects.

Load the preset *9 Templates / Reverb Phaser,* play a chord and listen to the slow phasing effect. Check Reverb parameters as well as the modulation matrix:

- The Size of the reverb is only 3:00, there's plenty of Decay (resonance!), zero Damping and zero dry mix i.e. you can only hear the reverb signal.
- The cyclic modulator (LFO2) is set to sync so that the effect doesn't glitch every time you play a new note. The Depth is only 1.00, and even that is too much if you make the LFO faster...
- In matrix unit 2 the modulation wheel speeds up the LFO while at the same time **reducing** the depth of modulation by **increasing** LFO2's Depth Mod parameter (*None* as source there is effectively a value of 100). Try disabling matrix unit 2 and enabling unit 3 to check why that was necessary. "Resonance" i.e. Reverb Decay is adjusted via Control A which also compensated for the level boost by negatively modulating oscillator Volume.