

ZENITH

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Audiaire

www.audiaire.com

Congratulations on purchasing Zenith and thank you for choosing Audiaire. Our goal was to port the diverse sound design functionality of our Zone VST into as broad a range of instruments as possible.

Your comments & feedback are always welcome: support@audiaire.com

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1. Disclaimer and Legal Notices

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2. Minimum System Requirements

VST + AU compatible host software. Zenith does not currently run on Propellerhead's Reason software due to lack of MIDI routing functionality. Note also that Zenith installs as a VST2 and must be used with a VST2 compatible DAW, as VST3 does not presently allow for extensive MIDI routing.

MAC

- OS 10.10 or higher. (64 bit only)
- 2GB RAM (8GB recommended)

PC

- Windows 8 or higher.
- 2GB RAM (8GB recommended)

3.

Installing, Registering & Launching Zenith

Zenith uses account verification in order to authorise registration.

In order to log in to Zenith upon setup, please ensure that you have your Audiaire account details to hand.*

*For more details on setting up an Audiaire account, please see the next section; [creating an Audiaire account](#).

Using Zenith in Demo Mode

Zenith can be used in demo mode for 20 minute uninterrupted intervals. After 20 minutes of continuous use, you will not be able to access Zenith without logging in with a valid email (that is assigned to your purchase of Zenith, via the Audiaire website). In demo mode, presets cannot be saved and MIDI CC data will drop out momentarily.

You do not need an Audiaire account to use the demo. To install, simply download and unzip the installer from www.audiaire.com/zenith. From the .pkg (MAC) or .msi (PC) files, you will be prompted to pick and choose which components you wish to install.

Zenith installs as VST or AU.

3.

Installing, Registering & Launching Zenith

Registering and Authorising Zenith

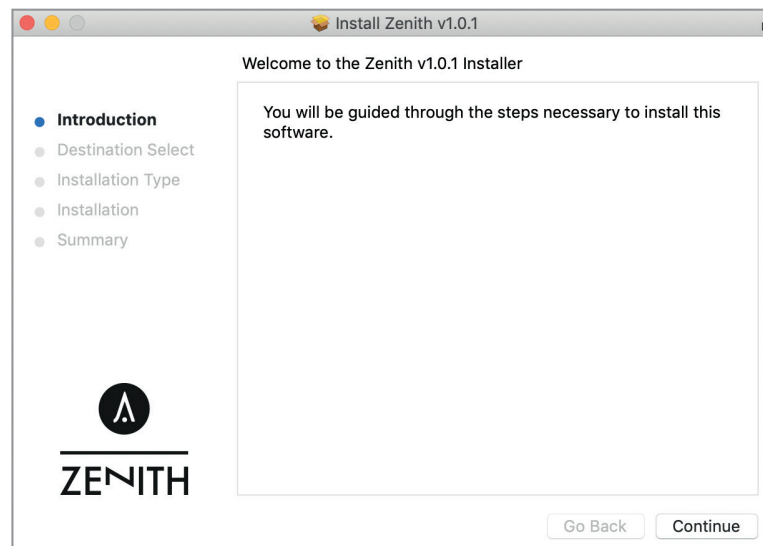
Upon purchase you will be sent an email with a download link for the plugin. Click the link to begin the download and follow the steps above to install your copy of Zenith. Please ensure that you have your Audiare account details to hand, as you will be asked to log in to Zenith when using it for the first time.

When logging in, make sure that you have a valid internet connection, as Zenith will need to verify your

credentials via Audiare's server. After successfully logging in, you will have access to the full version of Zenith.

Note:

If you have forgotten/lost your Audiare password, you can recover it by visiting https://www.audiaire.com/accounts/password_reset/ and following the steps to reset your password.



3. Installing, Registering & Launching Zenith

Uninstalling Zenith

Zenith contains an uninstaller, which you can launch to uninstall all instances of it.

Please note: upon removing Zenith, all custom presets will be removed and require restoration upon re-installation. Please make a copy of any files that you may wish to use later, as these cannot be recovered.

You can also manually uninstall Zenith, by following the steps below.

For Mac

To uninstall Zenith on Mac, you will need to remove it from the following directories:

/Users/**yourusername**/Library/Application Support/Audiaire/Zenith/

/Library/Audio/Plug-Ins/Components/Zenith.component

VST: /Library/Audio/Plug-Ins/VST/Zenith.vst

For PC

For PC users, you can uninstall Zenith by going to your Control Panel > Programs > Uninstall Programmes and selecting Zenith.

(Please note that the Library folder may be hidden. To access, click **Finder** and select the **Go** menu. Hold [alt] and **Library** location will appear under the Go menu.)

Setting up an Audiaire Account

Setting up an Audiaire account is simple. To begin, visit <https://www.audiaire.com/register/?next=> and complete the steps for account registration.

Once you have logged in, you will be able to see the licenses attached to your account as well as change your account information and download demos from the Audiaire site.

3.

Installing, Registering & Launching Zenith

Redeeming an Audiaire License

If you purchased Zenith from a vendor other than Audiaire, you will have received a unique license code with your order. Please create an account if you don't already have one, login and redeem license under the "Redeem Licenses" tab. Please ensure you use the same email that the purchase was made with.

The screenshot shows the Audiaire website interface. At the top, there is a navigation bar with the Audiaire logo and links for 'store', 'knowledge', 'insight', 'mailing list', and 'account'. Below this, a breadcrumb trail reads 'Settings Licenses Redeem license Logout'. The main heading is 'Redeem license'. Underneath, it says 'Key:' followed by a text input field containing the license key '3333-3333-3333-3333-3333-3333-33'. A 'Submit' button is located below the input field. At the bottom of the form, there is a 'mailing list' section with two input fields: 'Name' and 'Email'. To the right of the 'Email' field is a 'Send' button with a wavy icon.

4. Setting up Zenith in your DAW

a). Ableton 9 and 10

Zenith can be used as an AU or VST within Ableton but will not appear as a VST3.

Create a new Zenith Instrument track.

Create a MIDI track if using Zenith with hardware devices or an Instrument track for the software device you wish to control with it.

Ensure Monitor is set to **In** on the Zenith track and the Instrument or MIDI track to be controlled by it.

Select Zenith in the MIDI From dialogue in both MIDI From boxes.

If using a MIDI track ensure you have selected the appropriate MIDI interface in the **MIDI To** box, even if the appropriate MIDI interface has already been selected from within Zenith.



4. Setting up Zenith in your DAW

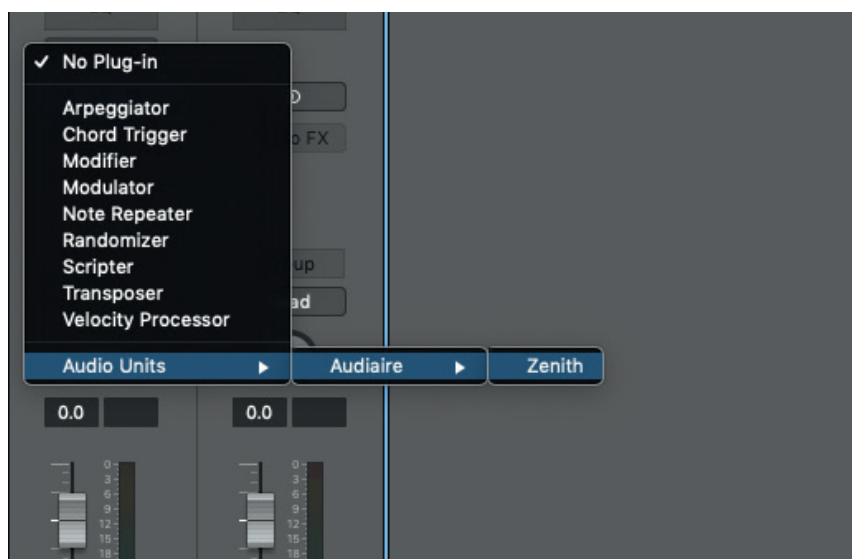
b). Apple Logic Pro X

Create a Software Instrument track or if controlling a hardware device, an External MIDI Track on first launching your new Logic project.

If controlling an external MIDI device, click the check-box. Use External Instrument plug-in and

select your audio and MIDI interface input/output where appropriate.

Select Zenith as a MIDI Insert FX within the channel strip of your Software Instrument or External MIDI track from MIDI FX > Audio Units > Audiaire > Zenith.



4. Setting up Zenith in your DAW

c). Steinberg Cubase

Zenith can be used as a VST within Ableton but will not as a VST3.

Create a new Zenith Instrument track.

Create a MIDI track if using Zenith with hardware devices or an Instrument track for the software device you wish to control with it.

Ensure the record monitor button is on in the Zenith track and the Instrument or MIDI track to be controlled by it.

Select Zenith in the MIDI In box for the receiving software Instrument or MIDI track.

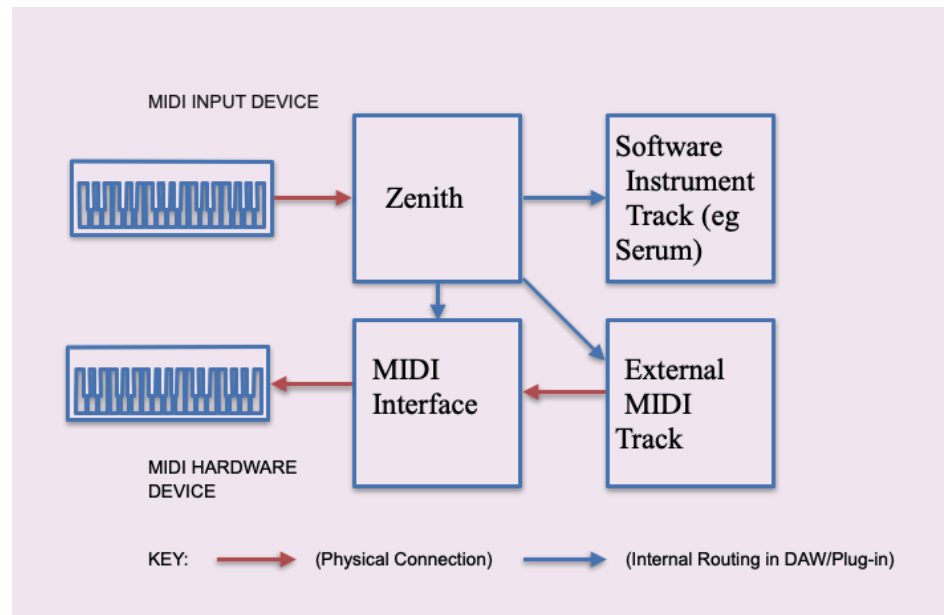
If using an external MIDI track ensure you have selected the appropriate MIDI interface in the MIDI Out box, even if the appropriate MIDI interface has already been selected from within Zenith.



5. Sending MIDI from Zenith

Zenith essentially functions as an insert between your MIDI input and output devices (see diagram below).

Zenith sends note data, SysEx and MIDI CC data.



What is MIDI CC?

In MIDI terms, a continuous controller (CC) is a MIDI message capable of transmitting a range of values, usually 0 -127. The MIDI Spec makes 128 different continuous controllers available for each MIDI channel, although some of these have been pre-assigned to other functions. CC's are commonly used for things like MIDI controlling volume (#7), pan (#10), data slider position (#6), mod wheel (#1) and other variable parameters. Use of CC's in performance and sequencing can be a major factor in adding life to MIDI music – but beware, over-use of CC messages in hardware can result in MIDI log-jam.

In order for your MIDI receiving device to correctly accept incoming CC data from Zenith, that device's CC numbers must be matched to Zenith's.

5. Sending MIDI from Zenith

MIDI Maps

Zenith ships with a number of presets for popular hardware and software devices. Once the appropriate preset has been loaded in Zenith, the receiving device may require a MIDI map to be loaded if it is a software instrument. Loading the MIDI map for that device will ensure its controls match those in the Zenith preset, even if its presets are changed. Please consult with your specific device manual to successfully load and save MIDI maps. Zenith ships with MIDI maps for all its devices where applicable.

Most hardware devices do not need pre-loaded MIDI maps and have CCs listed in the MIDI Implementation spec in their manual back pages, therefore the hardware device presets shipped with Zenith will not require MIDI map loading, but may require device specific operations such as ensuring all MIDI data is receivable and CC control is switched on. Please refer to your device manual.

Assigning Devices From Scratch

If you are assigned a device from scratch, you can set each Zenith device controller's CC by clicking on it and adjusting its CC number in the right hand menu, or if a SysEx device click the SYSEX LED on.

You must then either match the CC to that of the number of the receiving controller you are seeking to control - this can be done manually or by using the MIDI learn function in the receiving device if it has one, and moving a control in Zenith to send data appropriately to that CC.

Please make sure to save a MIDI map in the receiving device or save your work in your DAW otherwise you may lose controller assignments in the receiving device.

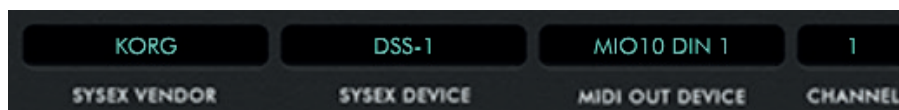


5. Sending MIDI from Zenith

SysEx Device Operation

For devices without CC control, Zenith can also send SysEx data. In order to do this, that device's SysEx data parameters must be loaded into Zenith as a text file, if it is not in the list of preset devices in the Zenith SysEx drop down menu. See Appendix A for further information on this.

For SysEx devices to successfully function with Zenith, 'switch on' SysEx mode by selecting the appropriate MIDI output and MIDI channel for the device from Zenith (see below). Once the SysEx device has been selected from within Zenith you must still load its preset.



6. Feature Overview

Congratulations on purchasing Zenith.

At the heart of Zenith's operation are a series of powerful MIDI processors which allow up to 24 different MIDI CC's to be modified in their own independent sequencer lanes. A unique customisable user interface enables the creation of knobs, faders and sliders for any device.

In addition there are 4 x CC LFOs and 3 x CC envelopes and preset templates for many popular software and hardware instruments.

Zenith also includes a comprehensive chord generator, with 22 chord types, each with three separate inversions, note scaler, velocity limiter, SysEx processor with customisable scripting, 24 slew filters, 100 sequence lane presets and an arpeggio editor.

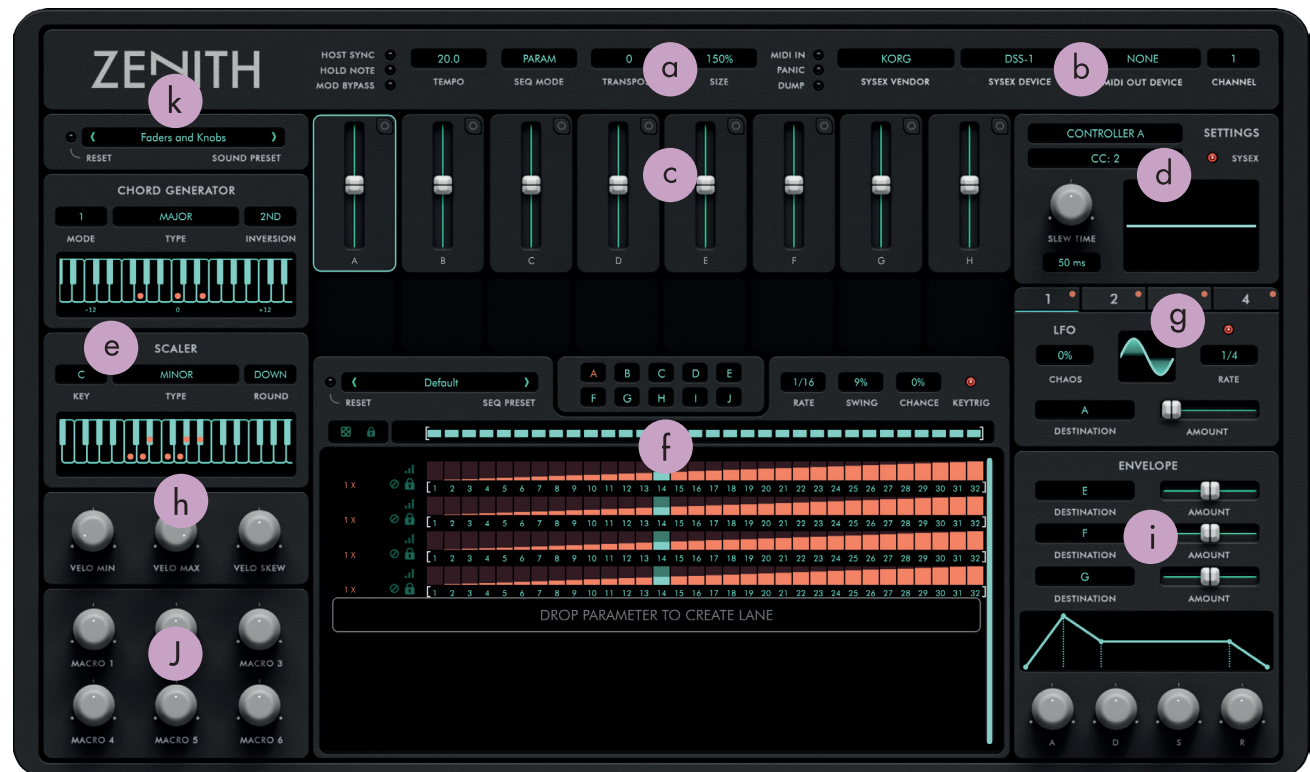
Amongst Zenith's primary features are:

- Preset maps for 100+ software and hardware synths, drum machines and other MIDI receiving devices.
- Extensive lane modification tools including increase/decrease and shift step modifiers plus 10 popular arpeggios and 13 scales per lane.

- 27 lane and global sequencer speeds.
- Individual lane step mutes and independently selectable sequence lengths.
- Sequencer +/- swing and probability controls.
- Powerful SysEx processing for controlling vintage hardware synths lacking CC implementation or front panel controls.
- 3 slew filter types per CC with adjustable time.
- Adjustable MIDI latency for SysEx devices.
- Low CPU usage with no license management software to install.

7. Getting to know Zenith

Below is an overview of Zenith's user interface.



The lettered points show the basic operational features which are described on the next page.

7. Getting to know Zenith



HOST SYNC - Click this LED to toggle ON/OFF host sync to your DAW. When sync'ed to DAW, the LED will illuminate and the TEMPO value will follow that of your DAW. When not sync'ed the tempo display can be adjusted by click dragging or double clicking to enter a numeric value.

HOLD NOTE - Clicking the LED next to HOLD NOTE will sustain a MIDI note infinitely for easy editing.

MOD BYPASS - Bypasses the sequencer grid, LFOs and ENVELOPE section from modifying MIDI CC data. This function is useful when the receiving device is in MIDI learn mode and you wish to 'teach' it one CC value at a time without having the grid and LFOs send multiple CCs to one control.

TEMPO - Displays in BPM the tempo at which Zenith's internal clock will run. This value can be adjusted from 20.0 - 999.0.

SEQ MODE - Zenith operates in four distinct modes. This menu selects those modes as follows:

OFF - The note and parameter sequencers are not active. Zenith will output MIDI notes without any sequencer modification, with all controls active but the sequencer window blank.

PARAM - The parameter sequencer mode is active, with lanes ready for click-and-drag assignment. If a factory preset is loaded, the assigned parameter sequencer lanes can be activated or deactivated by selecting or deselecting this mode.

NOTE - The note sequencer mode is active. If a default blank preset is selected - pitch, velocity and gate lanes will appear, ready for programming. If a factory preset is loaded, the programmed note sequencer lanes can be activated or deactivated by selecting or deselecting this mode.

7. Getting to know Zenith

PRM&NOTE - Both parameter sequencer and note lanes are active. Note lanes are coloured orange and parameter lanes blue. All lanes are synced by default.

TRANSPOSE - Transposes the MIDI note generated by Zenith +/- 48 semitones.

SIZE - Click to change the size of Zenith's GUI from 50-200%.

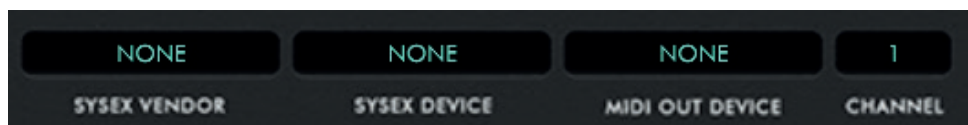
MIDI IN - LED illuminates to show MIDI activity within Zenith.

PANIC - Click this LED to temporarily cease sending of MIDI data, if for example a hardware MIDI device is glitching due to too much data or data at too high a rate.

DUMP - Clicking this LED will send a 'snapshot' of current grid controller values and output them to assigned controls in the MIDI receiving device directly. No modulation or sequence data is added. Just the position of each controller.

7. Getting to know Zenith

b



Selecting from the SYSEX panel will recall from a list of applicable data receiving device presets. From this menu you will need to select a MIDI interface from which to send SysEx data and the corresponding MIDI channel of that device.

SYSEX VENDOR - Displays the name of the hardware device.

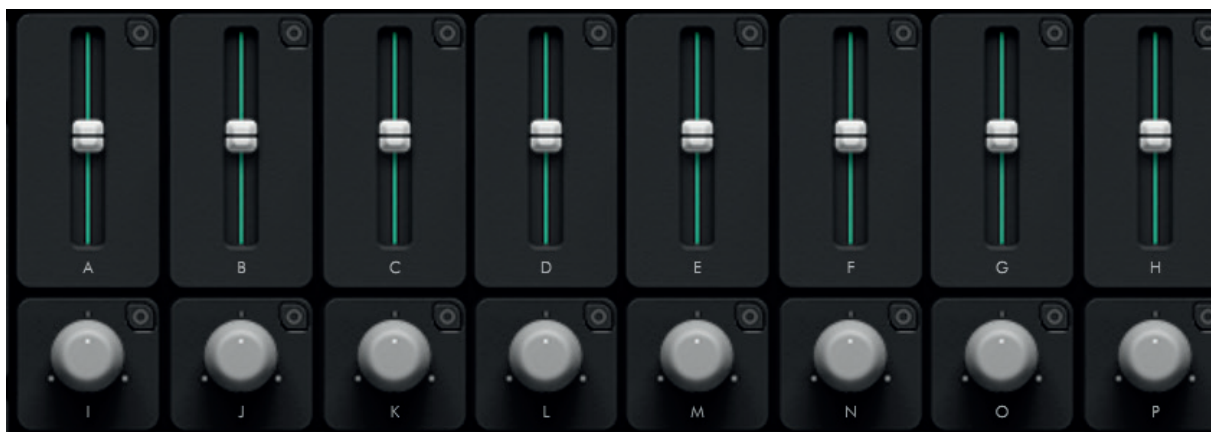
SYSEX DEVICE - Displays the precise model of the hardware device selected.

MIDI OUT DEVICE - Selects the MIDI interface from which Zenith sends MIDI or SysEx data.

CHANNEL - Sets the MIDI channel to which Zenith sends MIDI or SysEx data.

7. Getting to know Zenith

C



This is the main Zenith control environment where new knobs, faders and sliders can be created to match your receiving device CC.

Up to a maximum of 24 grid controllers can be created.

Clicking anywhere in the grid will reveal a menu allowing creation of a knob or vertical /horizontal slider.

CREATE KNOB
CREATE VERTICAL SLIDER
CREATE HORIZONTAL SLIDER

7. Getting to know Zenith



A grid controller can be selected by clicking anywhere within its enclosure, which then illuminates in green to denote selection.

Clicking the circle to the top right of a grid controller will reveal a menu enabling COPY/PASTE/BYPASS/RESET and DELETE options as follows:

COPY - Copy MIDI CC value and number from one controller to another, irrespective of shape.

PASTE - Paste MIDI CC value and number from one controller to another.

BYPASS - Stops a device from sending CC or SysEx data.

RESET - Returns a controller to its default CC number and value.

DELETE - Deletes a controller permanently.

Each time a new controller is created, its CC number will increase by one, making for quick assignment of new devices.

Double clicking on a controller letter will enable it to be renamed.

Double clicking on a controller inner shape will enable a CC value to be manually typed.

[ALT] and clicking on a controller will return its CC value to default.

7. Getting to know Zenith

d



When a grid controller is clicked, its individual SETTINGS will display accordingly.

The controller CC number can be set or adjusted here by double clicking or entering a numeric value.

If the controller is configured to send SysEx, the SYSEX LED can be clicked on/off to switch SysEx on or off.

Each controller also has its own unique SLEW FILTER and SLEW TIMING control.

The SLEW FILTER sets the manner in which the controller will respond to sequencer grid data as follows:

LINEAR: Will present a straight line time curve to reach the destination grid value.

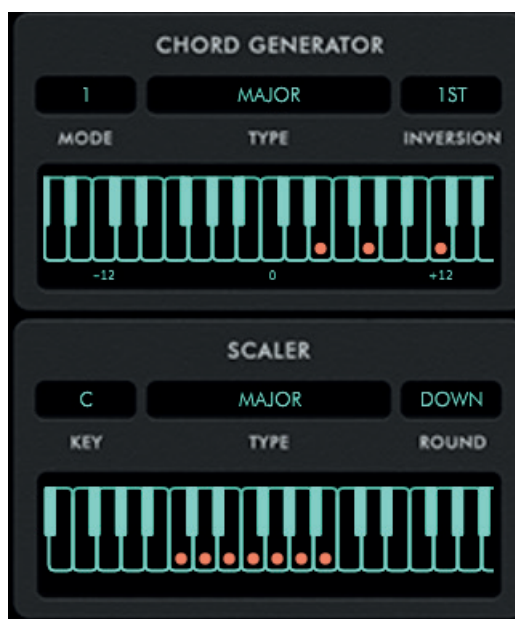
ONE POLE: Will present a non-linear curve to reach the destination grid value.

TWO POLE: Will present a smoother non-linear curve to reach the destination grid value.

The **SLEW TIME** adjusts the amount time in ms taken to reach the destination grid value.

7. Getting to know Zenith

e



The Zenith **CHORD GENERATOR** modifies MIDI note data passing through Zenith to trigger chord shapes.

Clicking and selecting **CHORD GENERATOR MODE** will operate as follows:

1: The chord **TYPE** and **INVERSION** will play across all keys according to the pitch of the MIDI note played into Zenith.

2: A different chord **TYPE** and **INVERSION** can be played across each octave from key Cx to Bx. The root range of the notes in each chord will remain constant across all octaves.

Octaves can be selected by clicking on any note within an octave in the keyboard graphic, or by playing the incoming MIDI note into Zenith. Clicking to the left or right of the keyboard graphic will reveal arrows to increase or decrease octave.

3: A different chord **TYPE** and **INVERSION** can be played across every key from C0 - B8. A key chord can be selected by clicking on any note in the keyboard graphic, or by playing the incoming MIDI note into Zenith. Clicking to the left or right of the keyboard graphic will reveal arrows to increase or decrease octave.

CHORD TYPES - Zenith contains 22 different chord types. More information on chord voicing is available in Appendix C of the manual.

CUSTOM CHORDS - In chord MODE 1, a custom chord shape can be selected by clicking the keys in the keyboard graphic which will form the notes in that chord.

7. Getting to know Zenith

CHORD INVERSIONS - Selects different voicings of each **CHORD TYPE**.

Zenith has a **SCALER** which automatically limits each inputted MIDI note to the match the pitch of the notes in a selected scale.

The **SCALER** is activated by selecting a scale type from the dropdown menu. Further information on scale types is available in Appendix C of the manual.

The **SCALER** has the following functionality:

KEY - Selects the scale key to which all notes will be limited.

TYPE - Sets the scale type

ROUND - Arranges the notes in the scale either UP or DOWN depending on selection.

7. Getting to know Zenith

f



Central to Zenith's operation is its parameter sequencer grid.

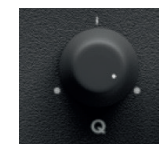
Each lane can run at its own unique rate and number of steps with a maximum of 32 steps per lane. Lanes can be assigned with a vertical scrollbar to navigate them up or down.

Once a lane assignment has been made, the lane data will override manual operation of that control. So for example if a CC knob is assigned to a lane, that knob cannot be manually tweaked or otherwise automated in your host DAW.

(i) Assigning a control

Clicking on a control label name will bring up a 'hand' icon and a box appears around that label. This marks the control ready for click and drag assignment into a new sequencer lane.

If a box does not appear around a label, that control is not assignable. There are only a few rare exceptions where a control cannot be assigned. The assignment parameter is then displayed in the lane text field in blue.



Knob, slider or fader positions do not move in response to lane data. To do so would cause unnecessary CPU load. Zenith will instead show a rectangular box around an assigned control.

7. Getting to know Zenith

(ii) Mode Selection

Arming or assigning the note sequencer requires SEQ MODE to be set to PARAM, NOTE or PRM&NOTE mode.



Upon selection of NOTE mode, three lanes will appear, labelled as PITCH, VELOCITY and GATE. A series of numbers across the bottom of the lane display the number of sequence steps. A 'playhead' denotes the current step playback position.

Upon selection of PARAM mode, empty lanes will appear ready for assignment. While the source assignment box is empty, the lane data will be defaulted to rise to a crescendo* and will display in orange.

*This action can be toggled on/off by clicking the Zenith logo in the top left of the GUI and de-selecting the check box DEFAULT PARAMETER LANE RAMP. When the checkbox is empty, new parameter lane assignments will display no preset lane data.

Upon selection of PRM&NOTE mode, both parameter and note lanes as described above will appear, with note data displayed in orange.

A new lane can also be assigned irrespective of playback mode if a control label is dragged into an empty lane slot as illustrated below:



(iii) Global Lane



The global lane menu sits at the top of the sequencer grid. Here individual sequence steps can be muted and un-muted by clicking to illuminate or disarm them.

Clicking the dice icon next to the global lane steps will randomise all lane data in every lane on each click of the icon.



Clicking the lock icon will retain all lane data and parameter assignments irrespective of the preset selected, so the grid controller section will change but not the sequencer grid.

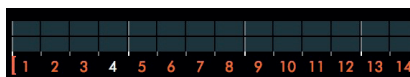
[cmd] clicking on any of the steps will randomise all values. *CTRL and click for PC users.

[alt] clicking on any of the steps will default them to a fully illuminated state.

7. Getting to know Zenith

(iv) Note and Parameter Lanes

Note and parameter lanes display sequence numbers at the bottom.

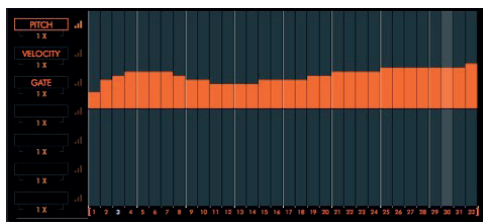


There are square brackets to either side of the numbers, which when hovered over will display an arrow icon. Each bracket can then be adjusted left or right to select the number of sequence steps that lane will play across. The sequence numbers that fall outside the brackets will grey out. Note lane steps are linked, where parameter lanes can each be assigned a unique set of left and right markers.

Clicking the numbers will grey them out rendering them inactive in sequence playback.*

*This action can be toggled on/off by clicking the Zenith logo in the top left of the GUI and de-selecting the check box CLICK STEP NUMBERS MUTES STEPS

(v) Writing Lane Data



Lane data can be written by clicking or click and dragging anywhere within a lane on either of its axes (if a unipolar lane), whether zoomed or not. Right clicking in a lane will introduce a linear write tool, enabling upward and downward fades.

Lane data is written in 0.1 to 100.0 % increments.

Where coarse pitch data is present for example in a note sequencer lane, data moves in semitone increments.

[cmd and] clicking in a lane will randomise its values (within both axes if unipolar).

[alt and] clicking in a lane will clear it.

*CTRL and click on PC

(vi) Lane Tools

To the left of the parameter lanes are the lane tools. Hovering on the sequencer lane name display on any of lanes will reveal additional tools.

These tools function as follows:

ZOOM - When clicked will illuminate and show a zoomed display of lane data.

Clicking again will grey out the ZOOM icon and display global sequencer lanes again.

7. Getting to know Zenith



LOCK - A lane can be locked by clicking and illuminating the 'lock' icon to the right of its speed. Locking a lane will mean its data cannot be altered by way of writing or changing preset. Lane data can be bypassed by clicking the 'no entry' icon to the left of the 'padlock' icon.



CONTROL BYPASS - Clicking this icon will toggle ON/OFF the ability to effect MIDI CC parameter data on that lane.



LANE SPEED - Each lane can run at up to 27 different rates (from an eighth of to 1/128 x speed) relative to the global RATE, which itself is a division of the master tempo. If the global RATE is set at 1/16, each of the 32 steps will represent a 16th note value. A lane speed

selection of 1X will play that speed within a lane. A lane selection of 2X will play twice as fast and so on.



ASSIGNMENT DELETE - Clicking the X icon will un-assign the parameter in that current lane.



ERASER - Clicking this will erase all sequencer data within the lane.

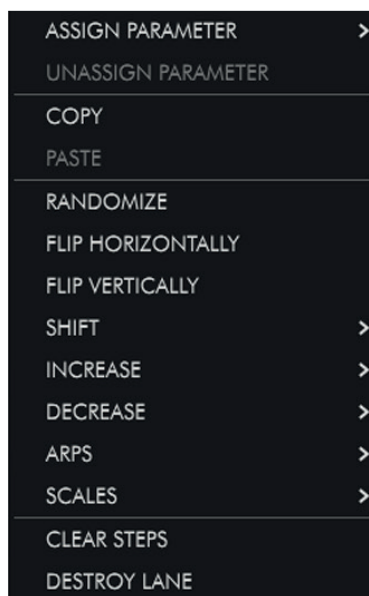


OPTIONS MENU - Clicking this icon will reveal a lane options menu with selections as follows:



7. Getting to know Zenith

ASSIGN/UNASSIGN PARAMETER - Assigns or unassigns the parameter in that current lane. This is an alternative to dragging text labels, as some features such as un-synced LFO rate cannot be dragged into the sequencer grid.



COPY - Copy lane data.

PASTE - Paste lane data.

RANDOMIZE - Randomize individual lane data with each click.

FLIP HORIZONTALLY - Rotate lane data horizontally.

FLIP VERTICALLY - Flip lane data vertically.

SHIFT - Shift data within a parameter lane forward or backward on the grid from 1 to 16 steps.

INCREASE - Increase data value by 10 - 100% of its original value.

DECREASE - Decrease data value by 10 - 100% of its original value.

ARPS - Select from MAJOR, MINOR, SUSPENDED 2/4, MAJOR 7, MINOR 7, DOMINANT 7, MAJOR 6, MIN MAJ 6 or MINOR 6 arpeggio types. Arpeggios play across 4 repeating steps.

SCALES - Select from MAJOR, MINOR, HARMONIC MINOR, MELODIC MINOR, DORIAN, PHRYGIAN, LYDIAN, MIXOLYDIAN, LOCRIAN, PENTATONIC MAJOR/MINOR, PENTATONIC YO and OKINAWAN scales. Scales play between 4 and 8 repeating steps.

CLEAR STEPS - Clears lane data (with the exclusion of note parameter assignment).

DESTROY LANE - Removes the lane and all of its present data.

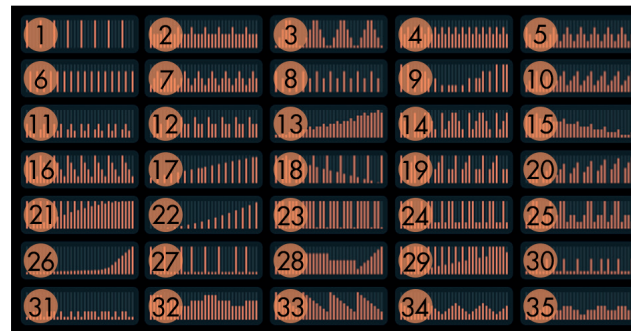
7. Getting to know Zenith

(vii) Lane Presets

Clicking this icon will reveal sequence lane presets as follows. These can be selected by clicking their revealed graphical representation icon.



Unipolar Lane Preset List



1. **'Four to the floor'** - Every fourth step is filled to its maximum range starting on step 1.
2. **'Accented Sixteenths 1'** - Every fourth step is filled to 75% of its maximum range starting on step 1, with the remaining steps filled to half of their maximum range.
3. **'Up & Down 1'** - Rising every four steps and falling uniformly on the following four steps. Repeating to the

end of the pattern.

4. **'Accented Sixteenths 2'** - Every odd step is filled to 75% of its maximum range starting with step one, with every even step filled to 50% of its maximum range.

5. **'Down & Up'** - A fall and rise by 25% every four steps.

6. **'Eighths'** - Every other step is filled to 75% of its maximum range starting on step two.

7. **'Up & Down 2'** - Rising every two steps and falling on the following two steps. Repeating to the end of the pattern.

8. **'Eighths 2'** - Every other step is filled alternately to 75% and 50% of its maximum range starting on step one.

9. **'Symmetry-X'** - A sixteen step symmetrical pattern where values gradually rise and fall.

10. **'Sawtooth'** - A rising pattern every four steps.

11. **'Teeth'** - Repeating every eight steps, a sequence resembling teeth, with a break every three steps.

12. **'Frontchain'** - Repeating every four steps with a rest every first step, steps three and four are at a 25% lower data value than step two.

7. Getting to know Zenith

13. 'Analogue Riser' - An upward crescendo with a peak every third step.

14. 'Fall & Rise' - A falling and rising sequence repeating every eight steps.

15. 'Shaky Fade' - A gradual fade with a peak on every fourth step.

16. 'Downchain' - A falling pattern, repeating every four steps.

17. 'Altered Rise' - A crescendo on alternate steps with an added step on every sixteenth.

18. '4x4 Fade' - A fade with full values on every fourth step and a skipped value on every step starting from step two.

19. 'Second Step Shuffle' - An upward fade on the first four steps, with second step at minimum value a 'sidechain' pattern on the second set of four steps. Pattern repeats twice.

20. 'Sidechain Crescendo' - A gradual crescendo, with every four steps rising, and a minimum value on every four steps starting at step one.

21. 'Eighths Crescendo' - A steady crescendo with every other step at full value starting at step one.

22. 'Alternate Exponential' - An exponential

crescendo with alternate steps at minimum value.

23. 'Full House' - All steps at maximum value with a dip every fourth step.

24. 'The Gap' - An eight step repeating pattern with maximum values dotted with smaller values around 22.5%.

25. 'Skyscrapers' - A sixteen step recurring pattern shaped like a city skyline.

26. 'Sudden crescendo' - A crescendo peaking in the final steps of the pattern.

27. 'Shuffle' - Maximum values perpetuated by drops in level every four, three and two steps.

28. 'Waveshapes' - Various popular waveforms, changing every eight steps.

29. 'Tall Trees' - A crescendo peppered with maximum value steps.

30. 'Uneven Flow' - Lower value steps mixed with higher value steps at odd and even intervals, repeating twice.

31. 'Pitter Patter' - Lower value steps at 10% interspersed with higher value steps at 30%, in a complex pattern that repeats twice.

7. Getting to know Zenith

32. 'Cityscape' - A sixteen step recurring pattern shaped like a city skyline.

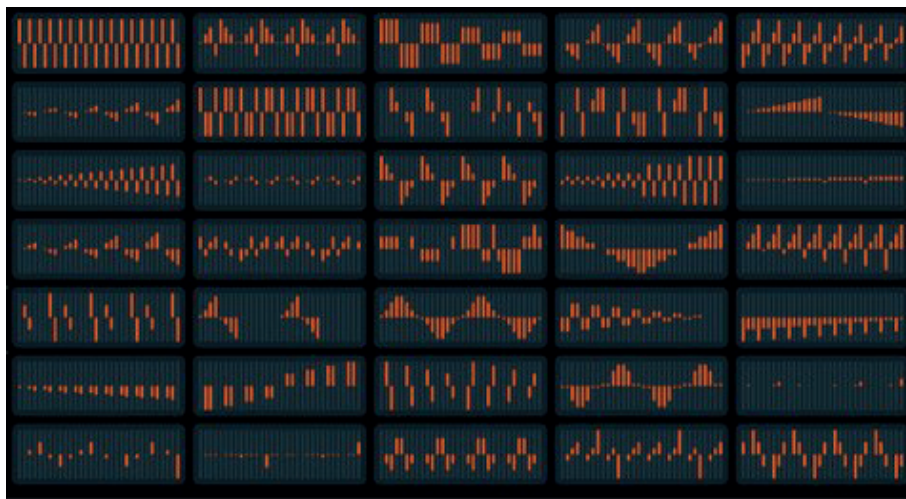
33. 'Inverted Saw' - An inverted saw pattern repeating every eight steps.

34. 'Digi-sine' - A digitised sine wave starting in the middle of a period.

35. 'Rise and Fall' - A pattern that rises and falls in even and uneven sets of steps repeating twice.

7. Getting to know Zenith

Bipolar Lane Preset List (PITCH, ENVELOPE AMOUNT, ETC)



Lanes are described from left to right, top to bottom, in numeric order as follows:

1. **'Alternating Sixteenths'** - All steps are filled to their maximum range, with the axis alternating at every step.
2. **'Pyramid Notch'** - A rise and fall pattern with every eighth step starting at step four, falling into the negative axis.
3. **'Descending Axis'** - Alternating sets of four steps, gradually fading.
4. **'Contrary Pan'** - Varying gradients of rising and falling steps across both axes. Great for panning!
5. **'Jagged Fall'** - Rapid rises and falls across two steps with a short fade.
6. **'Subtle Crescendo'** - A subtle rise, with gradients gradually getting steeper toward the end of the pattern.
7. **'Imperfect Harmony'** - All steps at maximum and minimum values, alternating and mirroring the behaviour of their preceding steps.

7. Getting to know Zenith

8. **'Doodle'** - With interesting shifts between axes, no pattern is presented, but a creative preset for pitch control.

9. **'Bounce to the Ounce'** - Shifting from alternate positions on both axes, revealing an interesting pattern, repeated twice in the phrase.

10. **'Mirrored Crescendo'** - A subtle upward fade in the positive axis, mirrored in the opposite axis in the second half of the pattern.

11. **'Contrary Crescendo' 1** - A crescendo with alternate steps rising across both axes.

12. **'Lemmings'** - Repeating every eight steps, a pattern that mirrors itself in the opposite axis every four steps.

13. **'Saw Mirror'** - Basic saw shapes mirrored in each axis, repeating every eight steps.

14. **'Square Riser'** - A crescendo characterised by the uniform shifting of axis every eight steps.

15. **'Crescendo Dip'** - Gradually rising every eight steps, the first step dips into the opposite axis every eight steps.

16. **'Contrary Crescendo' 2'** - A crescendo with alternate steps rising across both axes.

17. **'Pitch Pong'** - A varied pattern dipping into both axes, repeating twice.

18. **'Puddles'** - Making use of the full range of both axes, an interesting linear pattern.

19. **'Sine Waves'** - A digitised sine wave, starting in the middle of a cycle.

20. **'Contrary Sidechain'** - A 'sidechain' pattern with the first step of every four dipping into the opposing axis, and gradually decreasing in value.

21. **'Big Dipper'** - Repeating every eight steps, this pattern reaches the mid point and maximum /minimum value of each axis.

22. **'To and Fro'** - Rising and falling over eight steps, then breaking for another eight steps and repeating again.

23. **'Fast Sine'** - A digitised sine wave that rises and falls twice.

24. **'Arrowhead'** - A long fade alternating across both axes.

25. **'Negative Riser'** - A crescendo across the negative axis with a dip on alternate steps.

7. Getting to know Zenith

26. 'Negative Fade' - A fade across the negative axis with a break on alternate steps.

27. 'Binary Wave' - Rising from the minimum value of the negative axis to the maximum value of the positive axis with breaks on the first and fourth of every four steps.

28. 'Speaker Freaker' - With steps mirrored in alternate axes, a falling pattern across sixteen steps, with a mirrored sequence across the remaining sixteen steps.

29. 'Sine Distortion' - A popular digitised waveform with 'background noise' steps.

30. 'Blips 1' - Minor 'disturbances' across the positive axis, repeating every sixteen steps. Great for pitch lanes.

31. 'Blips 2' - Minor 'disturbances' across the positive and negative axes.

32. 'Melody Maker' - A minor leaning pattern

which works well for pitch and tuning lanes.

33. 'Crab Feet' - An eight step pattern which rises and falls across both axes.

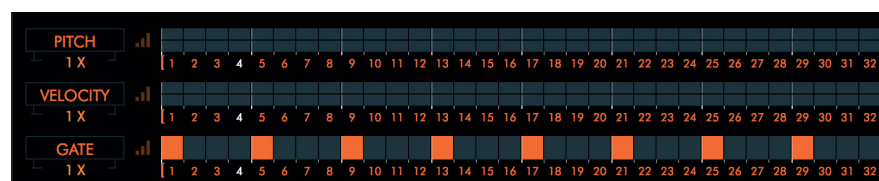
34. 'Top and Tail' - Rising to the top of the positive axis and dipping into the negative, repeating every sixteen steps.

35. 'Broken Waves' - A 'broken' saw wave pattern repeating every eight steps across both axes.

7. Getting to know Zenith

(viii) Note Sequencer Lanes

The note sequencer lanes have permanent assignments. Step sequence L&R locators and lane speeds are also linked.



These lanes function as follows:

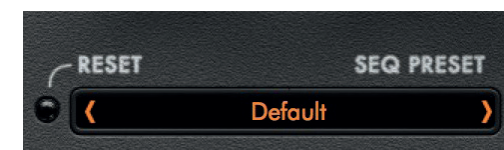
PITCH - Displays pitch data across two axes in +/- 24 semitone increments.

VELOCITY - Displays velocity data across two axes in +/- 127 increments.

GATE - Displays data in a unipolar lane from 0 -101% where lower values are shorter notes and higher values longer notes.

These lanes have only some of the LANE TOOLS options of parameter lanes.

(ix) Global Lane Presets



30 global lane presets are provided, which give a range of data values across multiple lanes.

Some presets have parameter assignments while others simply provide data for control assignment, for example alternating steps on/off across empty lanes.

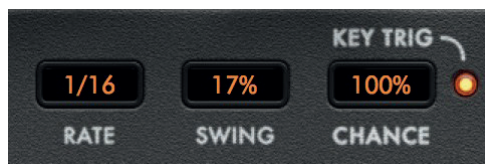
Clicking the RESET LED will clear ALL lane and parameter assignments.

The full list of GLOBAL SEQ PRESETS are available in the manual in Appendix B.

A current snapshot of your global lane layout can be saved to the desktop by clicking SAVE PRESET in the dropdown menu and loaded back in by clicking LOAD PRESET.

7. Getting to know Zenith

(x) Master Grid Controls



The sequencer grid has the following master controls:

RATE Sets the rate to which all lane speeds are relative. This rate is a division of the timing of the Zone global master tempo. This value can be click and dragged giving up to 27 different speeds.

SWING Adjusts the sequencer rate swing +/- 100%. A negative swing plays 'behind' the beat, while a positive swing plays ahead of the beat.

CHANCE Adjusts the probability of note lane sequence step playback. A high probability plays all steps, while a low probability plays no steps.

KEY TRIG Clicking this LED toggles the MIDI note triggering of all sequence lanes.

(xi) Pattern Sequencer



Zenith's pattern sequencer allows up to 10 different pattern snapshots, each of which holds its own unique sequence lane data to be toggled by clicking the letter relevant to the pattern selection.

'Chaining' patterns via DAW plugin automation enables Zenith to create entire tracks with plenty of variation through a song.

7. Getting to know Zenith

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Zenith has four LFO slots, each of which can control its own CC.

When a slot is labelled with an orange dot it has a destination assigned and is ready for operation.



CHAOS - The LFO CHAOS amount is displayed in %. Clicking and dragging this value adjusts the amount of random variations in the wave shape amplitude with each cycle of the LFO. When the S&H waveform is selected, the value adjusts the probability of the next step not being a new value but a retained previous value, thus extending the time length to an extra cycle. When set at 100% the S&H waveform will effectively 'freeze' at the last generated value perpetually until the amount is decreased.

DESTINATION - Clicking in the DESTINATION box selects the function to be controlled by the LFO from a dropdown menu.

AMOUNT - Dragging the AMOUNT slider adjusts the degree to which the LFO controls the DESTINATION.

RATE - When the SYNC LED is clicked it will illuminate and the LFOs will synchronise with the master tempo, running at 27 different speed increments - precisely the same increments as the parameter and note sequencer. At their slowest speed the LFOs will run at (8) bars or an eighth of the DAW synced / master tempo. At their fastest they will run at (1/128), or 128 times the tempo.

When the SYNC LED is not illuminated, the LFOs will run at a free rate, displayed in Hertz (Hz). This range is from 0.1 to 100Hz.

The LFO wave shapes can be selected by clicking on the waveform display and choosing from the drop down menu.

7. Getting to know Zenith

The shapes are as follows:

Basic shapes:

SINE, TRIANGLE, SAW, SQUARE, PULSE, TRAPEZOID.

Advanced shapes:

NOTCH - A constant output waveform with a narrow triangular dip once per cycle.

BROKEN TRIANGLE - Produces an 'M' shaped waveform.

BROKEN SAW - The first half of the saw waveform is offset slightly upwards, with the second half period shifted slightly downward.

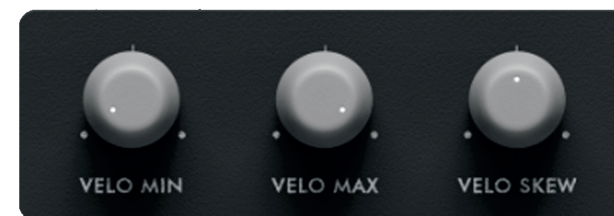
STAIRCASE 3x - This waveform consists of 3 small step changes in level, hence the term staircase. The height of each step will be made constant as is the period of time over which the waveform resides at a given level.

STAIRCASE 4x - As above but with 4 small step changes.

S&H (SAMPLE & HOLD) - Produces a randomly generated value and holds it constant for the duration of the cycle.



Zenith allows MIDI data to be 'clamped' according to the following controls.



VELO MIN - This control sets the minimum MIDI note velocity which Zenith will output.

VELO MAX - This control sets the maximum MIDI note velocity which Zenith will output.

VELO SKEW - Skews the value between the VELO MIN and VELO MAX.

7. Getting to know Zenith



Zenith has an ENVELOPE GENERATOR for up to 3 CCs.

A CC can be selected from a dropdown menu for each envelope slot by clicking in its **DESTINATION** box.



The **AMOUNT** sliders will adjust the envelope amount for each CC, negatively to the left and positively to the right.

An ADSR envelope is at the bottom of the module with the following controls:

Adjusts the amount (in seconds) of attack, decay, sustain or release as follows:

A - The attack time of the envelope. The higher the setting, the slower the attack time and the longer it takes for the CC to open from the level set with the CC knob to the level set by the envelope amount.

D - The decay time of the envelope. The higher the setting, the longer the decay.

S - The CC value for for the sustained portion of the sound. The sound will stay at this CC for as long as a note is held on the keyboard.

R - The release time of the envelope. This controls how quickly the CC closes off after a note is released.



MACROS - Each of Zenith's 6 macro knobs can have up to 10 parameters assigned to it. A Macro can be assigned either by dragging a controller or parameter label onto a Macro knob (a box will appear around

7. Getting to know Zenith

the Macro marking it ready for assignment) or by right clicking on the knob and manually selecting the assignment from a list in the ATTACH menu.

Please note some assignments such as LFO FREQUENCY.* can only be assigned from menus.

*LFO FREQUENCY. can only be assigned if the value is un-synced to tempo.

Values can be unassigned individually by right clicking a Macro and selecting the parameter under the DETACH menu, or outright by clicking DETACH ALL. Please note that when Macros are assigned to the parameter sequence grid they will automatically be assigned to a unipolar lane, regardless of the parameters assigned to them.

NAMING MACROS - Each macro can be named by double clicking the text below the dial. Once you have updated a macro name, its sequencer lane name will also update to reflect this change.

MACRO COLOURING - When a Macro is assigned to the sequencer grid, a blue rectangular box will appear around its label name. When a control or parameter is assigned to a Macro, an orange dot appears in the middle of the knob as shown. The CC or parameter assigned to the macro will have an orange label around its name field. If that CC or parameter is also assigned to the grid, it's text label will turn grey



MACRO ASSIGNMENT - When a Macro has an assignment, moving the Macro knob will take priority over the original parameter control. So for example, if a CC is assigned to a Macro, the CC knob will no longer function unless that value is detached. If the same parameter is attached to two different Macros, the Macro with the higher number takes exclusive control of that parameter.

7. Getting to know Zenith

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Options and Preset Menu



RESET LED - Clicking the RESET LED will return all parameters in Zenith to their default state. There is an option to cancel this command if clicked in error.

PRESET BROWSER - Clicking inside the SOUND PRESET bar launches the preset browser. Presets are divided by banks on the left and selections on the right. Selections can be browsed using the scrollbar on the right or re-ordered using the white arrow icon at the top of the right hand menu.

To save a new preset click on SAVE AS NEW. The preset will appear in the USER menu, be coloured yellow and located at -

MAC: /Users/yourusername/Library/Application Support/Audiaire/Zenith/Presets

(Please note Library folder may be hidden. To access, click Finder and select the Go menu. Hold [alt] and Library location will appear under the Go menu.

PC: C:\Users\yourusername\AppData\Roaming\Audiaire\Zenith\Presets

To revert to default preset, clearing all data - select LOAD DEFAULT.



USER BANK - Within the USER bank, clicking on the icon below will open a menu allowing OVERWRITE, RENAME, DELETE, SHOW ON DISK and COPY TO options.

7. Getting to know Zenith

OVERWRITE - Upon selecting a patch, clicking the icon will overwrite that patch with the current displayed settings.

RENAME - Opens a cursor box to rename the selected patch name.

DELETE - Permanently deletes a selected user patch from memory. *Please note that there is no UNDO function.

SHOW ON DISK - Shows the location of the patch on your local drive. Should you wish to add folders or directories within Zenith for easy storage of your patches, you can do so by adding new folders within the Presets folder, where the User and other banks from Zenith are located.

(i) Zenith Logo

- Click to access additional options for Zenith along with the credits and PDF manual.

Additional Options are as follows:

CLICK STEP NUMBERS MUTE STEPS Toggles on/off the ability to mute steps by clicking on them and greying them out during sequence playback.

DEFAULT PARAMETER LANE RAMP - Selecting this option changes the defaulted sequencer lane data shape.

MIDI LATENCY - Adjusts the latency in ms (from 0-100) at which Zenith sends MIDI data to SysEx devices.

8. Troubleshooting / FAQ

Q. Zenith is requesting to log in before I could use it, what credentials am I supposed to input?

A. You will need to sign up for an account at: www.audiaire.com/account, once you have done this and can see the Zenith license in your account, you will be able to use your account credentials to sign-in.

Q. How can I make sure that my version of Zenith is up to date?

A. You can download the latest version of Zenith, at: www.audiaire.com/Zenith or by logging into your Audiaire account and selecting the update button.

Q. I am offline and Zenith is failing to launch. Why?

A. Zenith has a 'call home' period where it may connect to our servers to check whether a valid license is present. Sometimes if offline, this process cannot be completed and Zenith may revert back to demo mode. In this instance, please connect to the internet, if only temporarily and reload it.

Q. My DAW can't see Zenith, what should I do?

A. Please ensure your computer and software meet Zenith's minimum specifications. Also check you have installed Zenith correctly, by checking in the following directories

MAC

/Users/yourusername/Library/Application Support/Audiaire/Zenith/

/Library/Audio/Plug-Ins/Components/Zenith.component

VST: /Library/Audio/Plug-Ins/VST/Nuxx.vst

PC:

C:\Program Files\Steinberg\VstPlugins\Audiaire\Zenith

(Please note that the Library folder may be hidden. To access, click Finder and select the Go menu. Hold [alt] and Library location will appear under the Go menu.)

If you can't see Zenith, try rescanning your DAW for plugins. This option can often be found under preferences, or audio settings.

If Zenith is 'blacklisted' or not showing in Logic, please try the following steps prescribed by Apple.

<https://support.apple.com/en-us/HT201199>

8. Troubleshooting / FAQ

Q. My device is not responding to Zenith's MIDI sequencer. Help!?

A.

1. Check your device is receiving 'MIDI In' from Zenith under your DAW's routing options as described in the manual under the section "Setting up Zenith in your DAW".
2. Ensure your device can receive MIDI CC or SysEx data. If it is a very old hardware device, it is possible it only receives MIDI note data but not CC or SysEx.
3. If your receiving device is software, please be sure the relevant MIDI map or controller assignments have been set as described earlier in the manual under the section 'Sending MIDI From Zenith'.
4. Ensure the software device you are controlling is not a VST3 as this protocol has limited MIDI routing options within DAWs.
5. If your device is hardware, check the MIDI channel on which it is set to receive (some drum machines only receive on MIDI channel 10, and some modified vintage synths on channels 14 or 15). Please also check it is set to receive MIDI CC and/or SysEx data (this is usually selected via a switch or within the options menu in newer devices)

6. Check your synth's firmware or OS is up-to-date. In some devices older firmware may not include CC control.

You can find some additional information on specific hardware device setup in Appendix A at the end of the manual.

Q. My device responds to Zenith but the preset grid controllers are not properly assigned to the correct knobs and faders in my receiving device. Why?

A. Please check that your receiving device has the correct MIDI map loaded and/or saved. Zenith ships with MIDI maps for all device presets which require them.

If using hardware, please check your device firmware or OS is up-to-date.

If using a SysEx receiving device, ensure you have selected your SYSEX Vendor, Device, MIDI interface and Channel from within Zenith,

8. Troubleshooting / FAQ

Q. My hardware device stops responding when I use the Zenith LFO at high speeds! Why?

A. MIDI CC data, when sent in bulk, can cause ‘log-jams’ in hardware, particularly older synths. There isn’t much that can be done since MIDI is essentially serial data used to communicate, in some cases, with very primitive hardware. Please try clicking the PANIC LED. However, in this instance, the only remedy is usually to restart your hardware device.

Q. When I load a Zenith preset, my receiving device preset sounds different. Why?

A. This may happen because even though Zenith controllers are by default set to a neutral position, your receiving device preset may not have all its controls set to a default position. You can usually remedy this mismatch by reloading your receiver preset, while retaining the preset in Zenith.

Q. My new SysEx device is still not showing, even after I’ve added my custom .sysex file to the relevant file location. Why?

A. Restart your DAW and relaunch Zenith in order for it to properly ‘see’ your newly added SysEx vendor or device.

Q. My SysEx device is experiencing latency. What should I do?

A. Try clicking the Zenith logo and access the MIDI Latency settings. The exact latency can be adjusted in ms.

Q. Zenith has crashed and is not working, what should I do?

A. Please make sure that you are running the latest update of Zenith. To patch a crash, try closing and relaunching your DAW and/or restarting your computer. If Zenith continues to crash, contact us at support@audiaire.zendesk.com with your computer specs, including; format (PC/Mac), OS (High Sierra, Windows 10, etc), which DAW you were using (including version number, i.e. Ableton 10.0.4) and any other information that you think may be important.

Q. I really like your plugin, but I have some requests for improvements. What is the best way to get in contact with you?

A. We take all requests/ideas into consideration for future updates. The best way to convey these, is to post them on our Facebook page <https://www.facebook.com/audiaire> which is actively monitored by the Audiaire Team, or by using the contact pages on our site.

9. Credits

Zenith is brought to you by Audiāire
www.audiaire.com

Concept, Executive Production,
Presets & Manual:
Sharooz Raoofi

Development & DSP:
Milan van der Meer

UI Graphics:
Luis Burdallo

Product Management & Testing:
Ulas Koca

Logo & Graphic Design:
Laura Price-Bates

10. Appendix A.

Adding SysEx Devices

Should you wish to add to the list of SysEx devices in Zenith, you will need to create an .xml file and place in the below location, along with the other SysEx device files.

In Windows, customer user SysEx files are found at:
%APPDATA%\Audiare\Zenith\SysEx Devices\Vendor\synth.sysex

On Mac OS, customer user SysEx files are found at:
~/Library/Application Support/Audiare\Zenith\SysEx Devices\Vendor\synth.sysex

E.g. C:\Users\username\AppData\Roaming\Audiare\Zenith\SysEx Devices\Roland\Juno-106.sysex

SysEx files uses an XML structure. Below is an example for the Roland Juno -106:

```
<?xml version="1.0" encoding="UTF-8"?>
<payload>
<byte>0x41</byte>
<byte>0x32</byte>
<byte x="0x00">xc</byte>
<byte>pp</byte>
<byte>vv</byte>
</payload>
```

The SysEx message is encoded in the format XML .
The filename must have the extension .sysex.

The file name without an extension will be displayed in the Sysex Menu.

The 'SysEx' directory may contain one layer (or level) of sub directories. The installed SysEx files use this to discriminate between different vendors. Within each sub directory, you can find the SysEx files.

example of directories: [SysEx]
[Roland]
<juno.sysex>
<...>
[Yamaha]
<dx7.sysex>

[] = directory
<> = file

```
<?xml version="1.0" encoding="UTF-8"?>
<payload>
...
</payload>
```

This is the basic format of a SysEx message.
It should always contain a header followed by the element 'payload'.

10. Appendix A.

The payload element contains the byte messages that will form the midi message. The number of byte messages can be of variable length. The value of a byte is represented in the hexadecimal format and starts with the prefix '0x' followed by the hexadecimal value (e.g. 0x4C). A SysEx message always starts and ends with the values F0 and F7. No need to fill in these bytes as they are wrapped around the payload automatically.

Each byte message is placed in the sub element 'byte' in the payload. Here's an example of a SysEx message containing two bytes.

```
<?xml version="1.0" encoding="UTF-8"?>
<payload>
<byte>0x41</byte>
<byte>0x32</byte>
</payload>
```

Zenith allows 3 bytes to be variable within each message, namely the MIDI channel, CC controller number and CC value.

Instead of filling in a static value (e.g. 0x41), placeholders are used to indicate the variable.

The placeholder 'cc' denotes the MIDI channel.
The placeholder 'pp' denotes the cc controller number (parameter).
The placeholder 'vv' denotes the cc value.

To compare, here is the Juno-106's SysEx parameter change message:

byte		description
a	1111 0000	#F0 Exclusive
b	0100 0001	#41 Roland ID
c	0011 0001	#32 function type
d	0000 nnnn	#0N N+1 = MIDI channel. N = 0 - 15
e	0yyy yyyv	parameter number 0 - 17
f	0zzz zzzz	value 0 - 127
g	1111 0111	#F7 EOX

Here's an example of a SysEx message with two static bytes followed by three variable bytes, respectively MIDI channel, controller number and controller value

```
<?xml version="1.0" encoding="UTF-8"?>
<payload>
<byte>0x41</byte>
<byte>0x32</byte>
<byte>cc</byte>
<byte>pp</byte>
<byte>vv</byte>
</payload>
```

In some occasions, one half of the byte, the nibble, is used to store a value. In these cases, we can introduce the special placeholder 'x' to indicate that value.

The 'x' value must be implemented as a hexadecimal attribute of the byte element. For example:
<byte x="0x10">xc</byte>

10.

Appendix A.

The right nibble contains the MIDI channel value.

The left nibble contains the 'x' value.

If the channel value is described in the left nibble we can have the following situation.

`<byte x="0x01">cx</byte>`

The 'x' value will be masked on a bitwise 'OR' operation with the channel value.

10.

Appendix B.

Chord Preset List

MODE	DESCRIPTION
Major	1st, 3rd and 5th note of scale
Minor	1st, flattened 3rd and 5th note of scale
Diminished	1st, flattened 3rd and flattened 5th note of scale
Augmented	1st, 3rd and sharpened 5th note of scale
Major 7th	1st, 3rd, 5th and 7th note of scale
Minor 7th	1st, flattened 3rd, 5th and flattened 7th note of scale
Dominant 7th	1st, 3rd, 5th and flattened 7th note of scale
Diminished 7th	1st, flattened 3rd, flattened 5th and 7th note of scale
Half diminished	1st, flattened 3rd, flattened 5th and flattened 7th note of scale
Sus 2	1st, 2nd and 5th note of scale
Sus 4	1st, 4th and 5th note of scale
Power	1st and 5th note of scale
Major 6th	1st, 3rd, 5th and 6th note of scale
Minor 6th	1st, flattened 3rd, 5th and 6th note of scale
Major 9th	1st, 3rd, 5th, 7th and 2nd(+8ve) note of scale
Minor 9th	1st, flattened 3rd, 5th, flattened 7th and 2nd(+8ve) note of scale
Dominant 9th	1st, 3rd, 5th, flattened 7th and flattened 2nd(+8ve) note of scale
Major add 9th	1st, 3rd, 5th and 2nd(+8ve) note of scale
Minor add 9th	1st, flattened 3rd, 5th, 2nd(+8ve) note of scale
Dom 7 #9	1st, 3rd, 5th, flattened 7th and flattened 3rd(+8ve) of scale
Dom 7 b5	1st, 3rd, flattened 5th and flattened 7th note of scale

10.

Appendix B.

Scaler Preset List

SCALE	ACCIDENTALS
Major	*All natural
Minor	*Flattened 3rd, 6th and 7th
Harm. Min	*Flattened 3rd and 6th
Mel. Min	*Flattened 3rd
Dorian	*Flattened 3rd and 7th
Phrygian	*Flattened 2nd, 3rd, 6th and 7th
Lydian	*Sharpened 4th
Mixolydian	*Flattened 7th
Locrian	*Flattened 2nd, 3rd (NATURAL 3rd ALSO PLAYED) 5th, 6th, 7th
Pentatonic maj	All Natural - 1st, 2nd, 3rd, 5th and 6th
Pentatonic min	1st, flattened 3rd, 4th, 5th and flattened 7th
Pentatonic yo	1st, flattened second, 4th, 5th an flattened 6th
Okinawan	Full scale - Omit 2nd and 6th note