NEXUS4 Reference Manual

Introduction

NEXUS4 is a flexible, high-quality hybrid virtual analog synthesizer utilizing both real-time alias-free waveform generation and high-quality sample playback of recorded synths and real acoustic instruments. NEXUS4 also incorporates a suite of quality filters, effects, arpeggiator, and modulation features to produce unique, complex sounds with minimal impact to your CPU.

NEXUS4 is designed with ease of use in mind and requires no prior knowledge of synthesis, offering detailed and rich sounds straight out of the box. Included is a comprehensive factory library which can be further expanded with an extensive library of expansions that cover all genres of production.

Dive into the world of NEXUS4 and experience a totally new dimension of sound.

Under The Hood

NEXUS4 is built on a powerful synthesis engine featuring all the oscillators, filters, modulators, and effects you would expect in a modern virtual instrument. What makes NEXUS4 different is the perfect balance it strikes between flexibility and simplicity. Instead of presenting page after page of baffling parameters, NEXUS4 makes it easy to get to the most important parameters instantly, providing a great degree of editing potential with a minimum of complexity.

If you want to become an expert at editing NEXUS4 patches, you need to understand a bit about how sounds are constructed and how the signal flows. Below you find information on the basic concepts.

Every sound starts out with at least one oscillator. An oscillator can be a generated waveform (such as sine or square) or a multisample. NEXUS4 has 64 oscillators.

An oscillator's output is routed into one or more layers where it is filtered, processed with layer effects, and shaped with envelopes. Layers are very flexible. For example, a single sawtooth wave could be routed into multiple layers for parallel processing, or a 16 oscillator patch could utilize four layers, each containing four oscillators.

Once the layers are summed together, the signal is passed through the effects block where the following chain of effects processes the signal globally: two insert effects, filter, EQ, delay, reverb,

What's New in NEXUS4?

NEXUS4 incorporates all the core features of NEXUS3, including the quality playback engine, expansive preset browser, and fast and intuitive control of every sound. NEXUS4 builds on the success of NEXUS3 with some exciting new features:

New Presets

NEXUS4 adds Rom Extension 3 with over 260 new presets.

Improved Front Panel

NEXUS4 adds five new visualizations to the plugin. Click to cycle between scope (synced), spectrum analyzer, spectrum analyzer (bars), spectrogram, vector scope and stacked spectrum analyzer. The reverb now has a shimmer effect that can be controlled from the front panel.

Improved Librarian

NEXUS4 continues the improvements to the librarian by generating previews and tags for all user presets. Folders are now easier to navigate as they can be searched by prefixing search terms with a slash e.g. /House to find all expansions with House in the name. As well, folders can be marked as favorite from the right click menu. Separators between groups of folders help keep things organized.

Improved Arpeggiator and Sequencer

In NEXUS4, the arpeggiation and sequencer have gained an overview that helps with zooming and panning. The arpeggiation and sequencer views now optionally follow the playback when zoomed in.

All mod-matrix sources have gained a shape control, allowing them to be set to linear, soft, hard, ease and square. Both main LFOs have gained visualizations.

New Effects

In NEXUS4 as fifth insert slot has been added. All inserts gain new effects: magnetic, noise and razor. Glitch and OTT compressor have been added as main effects. Effects can be reordered and the entire preset chain can be saved and recalled from presets.

Welcome to reFX Cloud

Installing your reFX products is now a simple process with the reFX Cloud App.

With reFX Cloud you can easily manage all your available products, edit the content installation location, automatically download any new updates, and check the integrity of files for troubleshooting and automatic fixes.

Installing reFX Cloud

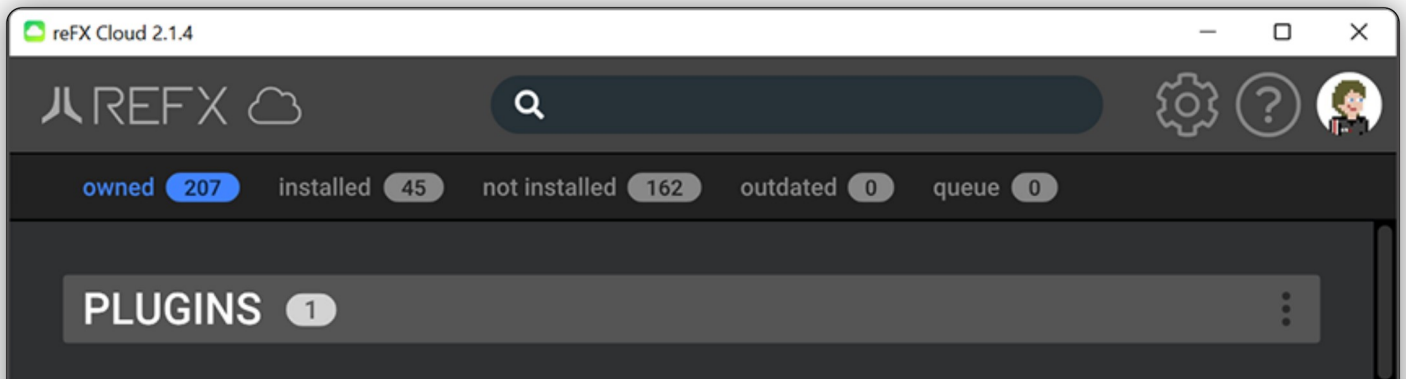
To install NEXUS4 and any expansions you need to first download and install the reFX Cloud app.

First, login with your details and visit the "Downloads" page of your account.

Download the reFX Cloud app for Mac or PC and install it to your computer.

Once installed, launch reFX Cloud and you are prompted for your reFX account details. Enter your account email and password to connect to your account.

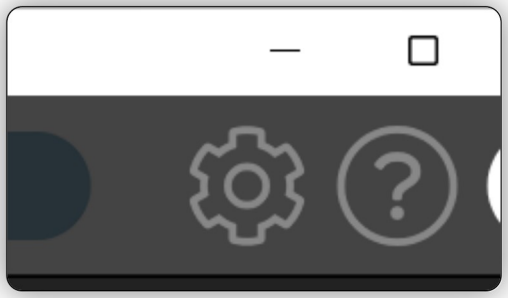
Once you have logged in, you see the products you have available for installation:



Configuring reFX Cloud Settings and Installation Paths

Before starting the installation of your content, you must first set the path where you want the large library of NEXUS4 content to be installed. This should be a location that has a suitable amount of space available for the libraries. Keep in mind that to install all available NEXUS4 libraries requires 150+ GB of HDD space.

Open the settings menu using the "gear" icon at the top of the window:



Library Folders: Set where you want the library content to be installed. This can be any available drive (including external hard drives) with enough space for the required libraries.

Options: Enable (blue toggle) and disable (gray toggle) delete and overwrite confirmations, system notifications and NKS support.

Upgrading From NEXUS2 or NEXUS3 / Using Existing Library Path

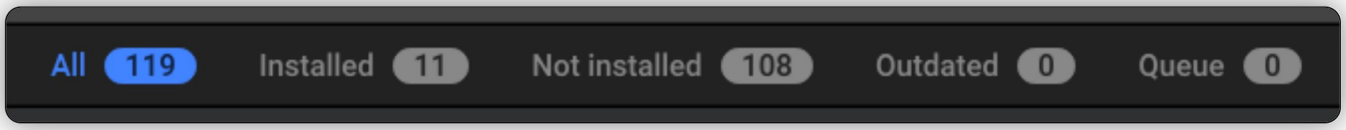
If you are upgrading from NEXUS2 or NEXUS3, then the reFX Cloud app automatically detects your existing library installation and begins to verify and update your existing libraries for a smooth transition to NEXUS4.

All libraries for NEXUS2 and NEXUS3 are compatible with NEXUS4, but require some additional updates to add some extra functionality. Libraries are scanned and updated automatically.

If you are reinstalling NEXUS4 and have an existing library or had to move the library path, simply select the existing Library Folder path in the settings and allow the app to scan and verify the files.

Managing Downloads and Updates

Along the top of the reFX Cloud app are tabs to view your installed products, available updates, and queued downloads.



Owned: The default page. It lists all reFX products currently in your account. Left-click any icon to download and install the product. If it is installed already, you can right-click the icon and select "Verify" or "Uninstall". "Verify" checks the integrity of the file and fixes it in case issues are found. "Uninstall" deletes the product from your hard drive.

Installed: Shows all content currently installed. The right-click options "Verify" and "Uninstall" are available.

Not Installed: This tab shows any products you have in your account that are not currently installed. Left-click to install them.

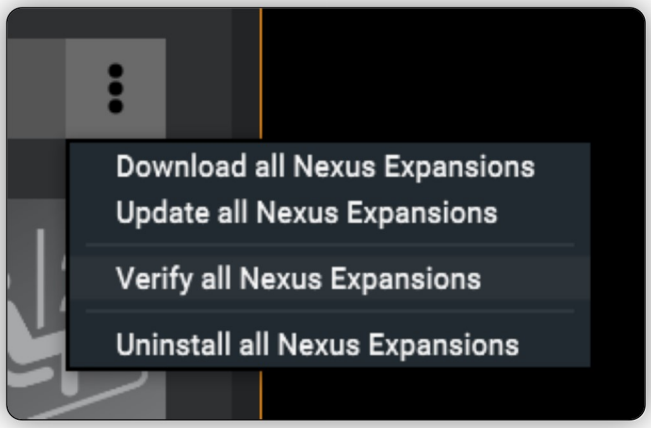
Outdated: This lists all the items that have updates available. If auto-updates are enabled in preferences, then these are updated automatically. Otherwise, you can manually choose to update each item by left-clicking it.

Queued: This shows the currently queued files and updates to be downloaded with the ability to cancel any update.

It is possible to verify the integrity of files by right-clicking any installed item in the reFX Cloud app and choosing "Verify". This scans and fixes the files if issues are found.

Batch Actions

If you wish to apply an action to all items at once, locate the 3-dot menu at the top of the section you are viewing and left-click it.



You can download, update, verify, or uninstall all items in that section with a single mouse click.

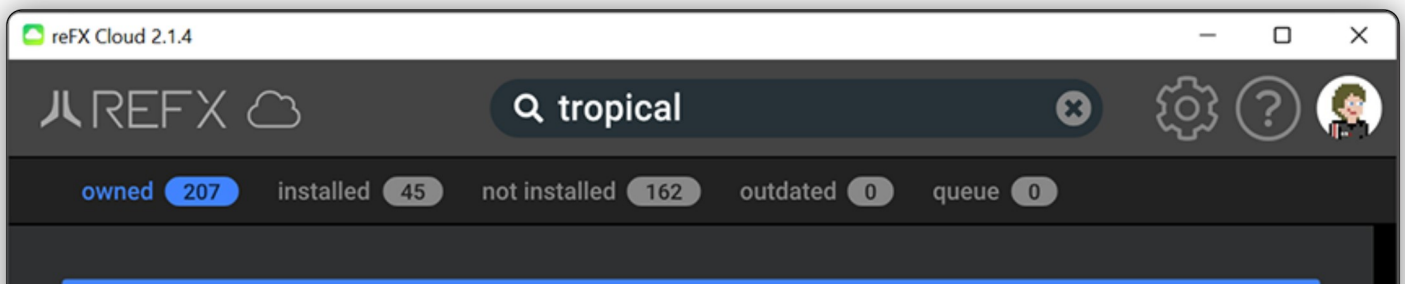
Delete / Uninstall Products

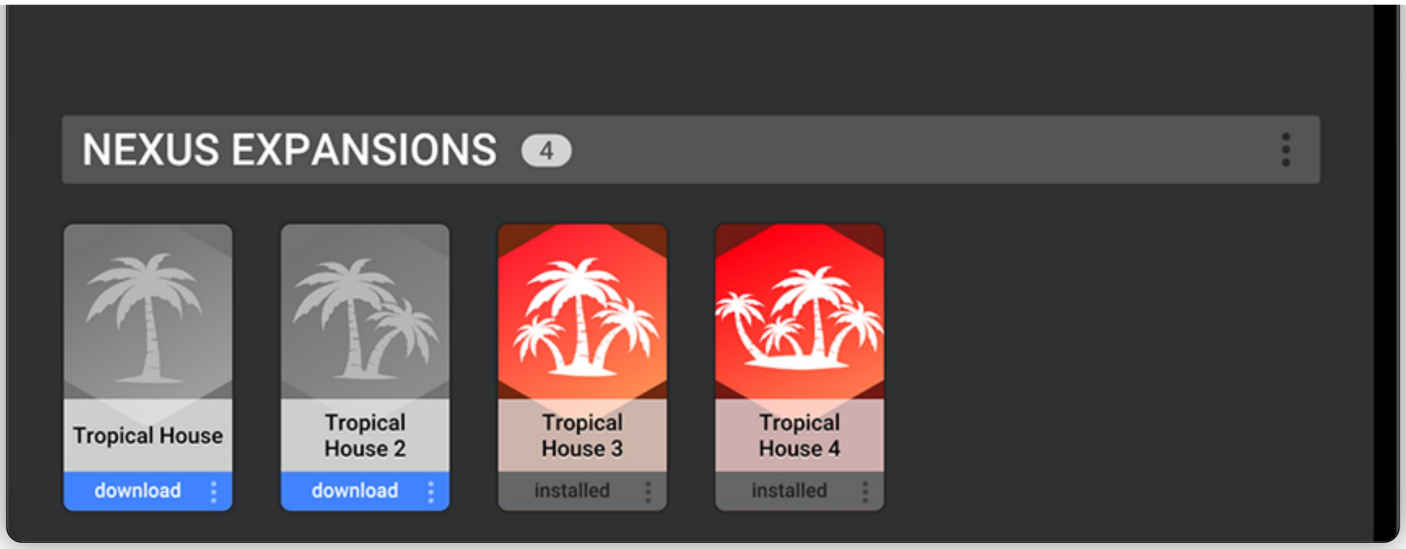
If you need to uninstall any products, just right-click on the product in the reFX Cloud app and choose "Uninstall". The files are removed from your computer and from the NEXUS4 library. The removed items are then listed under "Not Installed" for easy reinstallation.

Search Bar

If you would like to check if a specific expansion is installed, use the search bar at the top of the reFX Cloud app.

The name of the expansion does not need to begin with the search term. For instance, searching for "bass" returns the expansions "Bass" as well as "Drum and Bass" and "Future Bass".





Activating NEXUS4

NEXUS4 will be activated when it is first installed. Otherwise first time you load NEXUS4 in your DAW, you are asked for your login credentials to activate NEXUS4. Use the same email address and password you use for reFX Cloud or to log in on reFX.com.

To deactivate NEXUS4, simply load the plug-in in your DAW, click on the 3-dot menu next to your avatar in the top right corner, and select 'deactivate'.

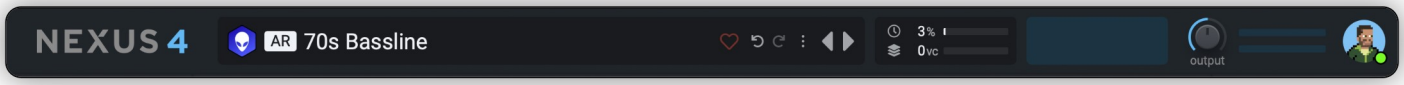
You may have NEXUS4 activated on a maximum of three computers at any time.

Once activated, you can use NEXUS4 while you are offline.

Interface Overview

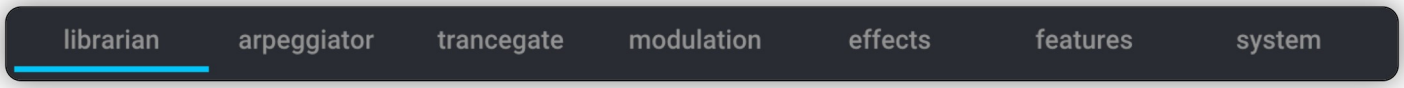
The NEXUS4 interface has been designed with a clean, modern look which is fully scalable. You can easily resize the interface by dragging the bottom right out.

The main interface is divided up into five main sections:



Top Section: The top of the interface shows the currently loaded preset along with the extended

scope (synced), spectrum analyzer, spectrum analyzer (bars), spectrogram, vector scope and stacked spectrum analyzer.



Tab Windows: Below the top section are tabs that select the different editor windows for NEXUS4 for the Librarian, Arp, Trancegate, Modulation, Effects, Features and System.

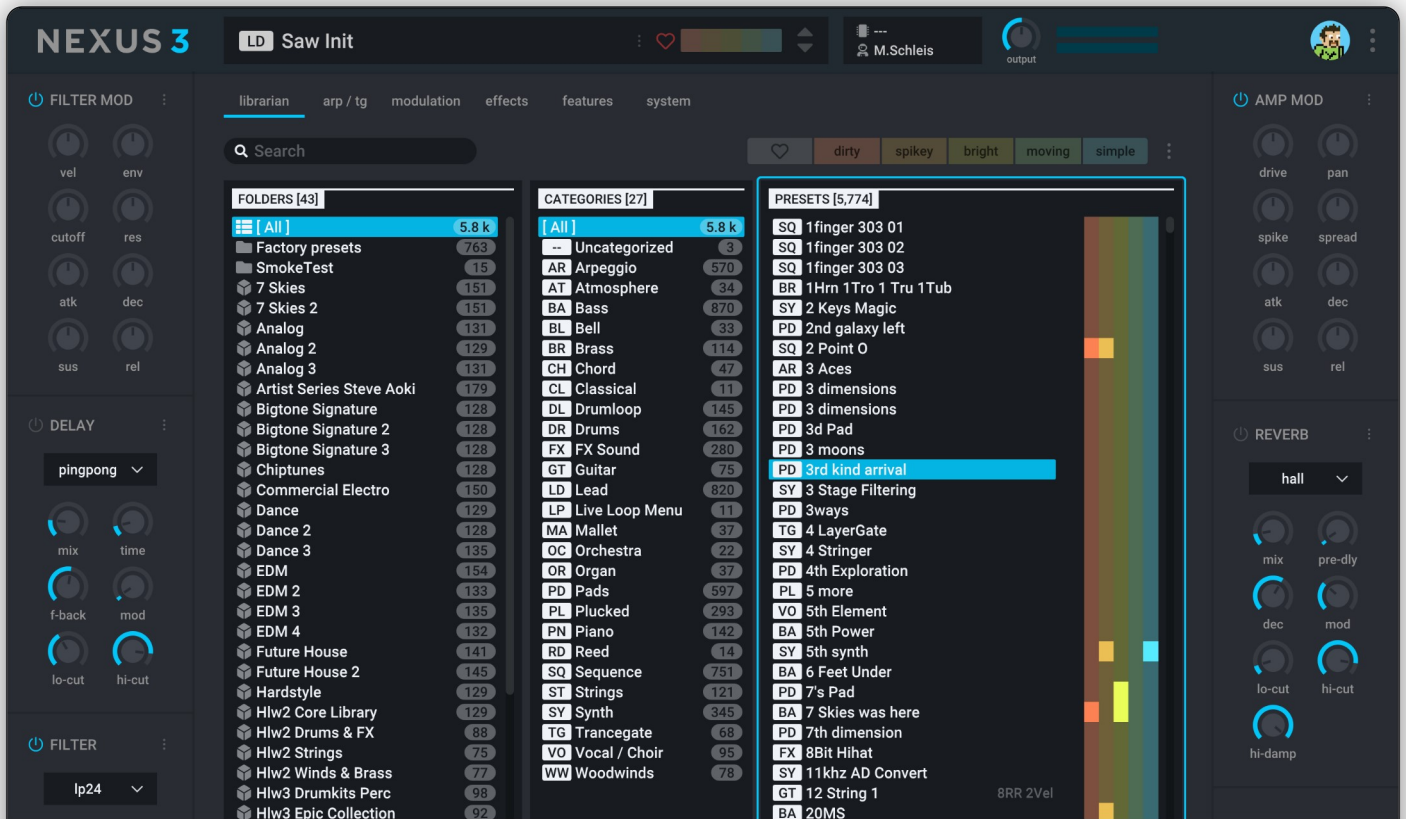
Main Section: The Librarian and tabbed windows are in the center. What is displayed in this section depends on which tabbed window is selected.

Global FX / Modulation: The control panels on the left and right of the screen are global filter and effects controls that apply to the overall sound and can be accessed throughout the instrument.

Macros and Keyboard: At the bottom of the window are the macro controls, mod / pitch wheel controls, and the virtual keyboard that can be used to play a preset with the mouse. The virtual keyboard also visualises incoming MIDI data.

Preset Librarian

The Librarian is the heart of NEXUS4 and has a host of useful features to help you find the sounds you need fast.



New in NEXUS4

- Previews are now generated for user presets.
- Tags are now generated for user presets.
- The search field now also works for folders. Prefix search terms with /.
- Folders can be added to favorites.
- Folders are separated by headers for a clearer overview.
- The librarian has a history now, so you can get back to previous searches easily.
- The results are separated by headers when sorted by category.
- The preview on/off toggle is now next to it's volume dial for quicker access.
- The tag display has been modernized.

Librarian Layout

There are three main sections to the librarian preset browser:

FOLDERS: Shows you the preset folders (expansions) that you have installed along with the total preset count of each folder. Selecting one of these folders narrows your selection to that folder.

CATEGORIES: Displays the sound categories available for the selected folder/s along with the total number of presets available.

PRESETS: Lists the available presets for the selection you have made. Presets display an abbreviated category stamp so you can instantly see what kind of sound it is even when you are not using any category filter.

TIP:

- You can select multiple folders and categories by holding CTRL(PC) / CMD(MAC) and left-clicking.
- You can select a range of folders by selecting the first entry and holding SHIFT then selecting the last.

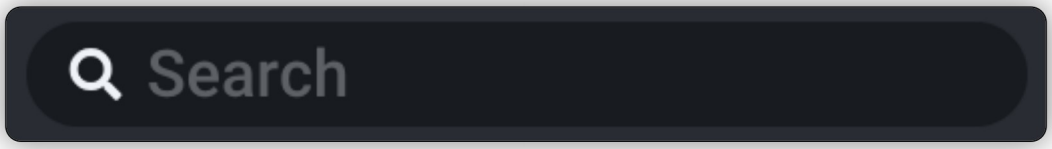
To mark a sound as a favorite simply click the "Heart" icon to the right of a preset name in the list or within the info header. Presets then appear with a favorite mark in the preset list, allowing you to use the filter controls to switch to only showing your favorite sounds.

Favorite Folders

Folders can be marked as favorites, moving them to their own section at the top of the folders list. Right click to add or remove folders from the favorites.

Search For a Preset

In addition to selecting folders and categories, you can use the search box to search for presets based on the preset name. You can use wildcards ("*") to search for just a part of a name. If you start a search term with a / it will search folders instead of presets. Folder searches can be combined with preset name searches.



TIP:

- In a list of search results, you can right-click a preset and choose "Select folder" to select the expansion folder the preset belongs to.

Filtering Results

A new filter feature allows you to filter sounds based on their character. It can filter to include or exclude the selected characteristic/s by clicking the buttons. Click once to select an attribute to filter by (the box gets highlighted), click again to exclude an attribute (the highlighted field turns red and the letters change from dark gray to white).

Sounds are characterized with the following descriptive tags if they are applicable to the sound:

- **Dark:** Bass sounds with lots of low frequencies.
- **Bright:** Sounds that are clear and "bright" and designed for mid to high registers.

- **Wide:** Sounds with lots of stereo separation.
- **Dirty:** A type of sound that contains distortion or a gritty unclean sound.

Results can also be narrowed down to your favorite results by activating the "Favorites" filter at the far left.

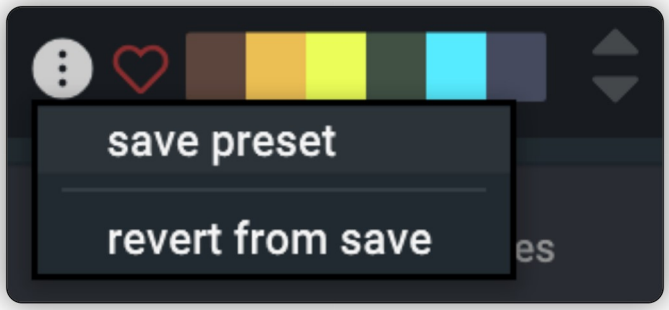
For illustration, in the example above, the search results in all "bright" sounds that do not have the tags "dark" or "active".

The 3-dot menu at the far right offers the following four options:

- **reset filters:** You can clear all search filters with one mouse-click.
- **reset font-size:** You can reset the font-size to default settings.
- **sort by name:** When enabled, the presets are listed in alphabetical order of the preset names, ignoring the category. When disabled, the presets are sorted by category in alphabetical order.

Saving Presets

You can save any preset as your own version to be recalled at any time. Simply load a preset and adjust it as you wish. In the top info bar, press the 3-dot button and select "save preset".



The preset is saved to the "User presets" folder in the browser (at the bottom of the folder list). It retains the category filter.

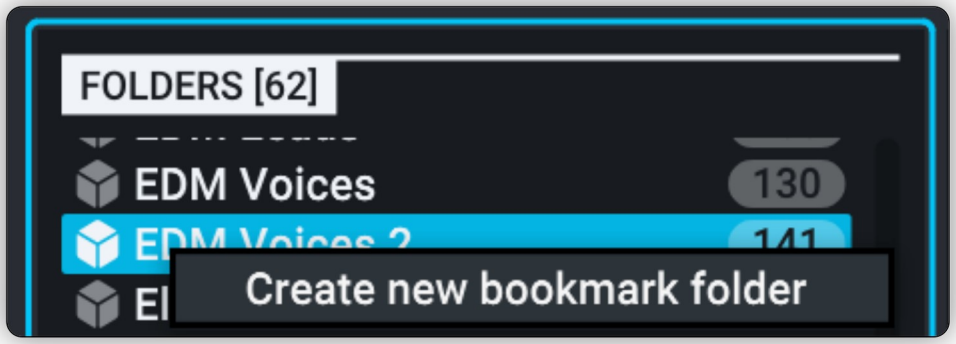
You can rename/delete a saved preset by selecting the folder "User presets" folder, right-clicking on the preset, and selecting the desired option.

A new "Bookmark" feature has been added in NEXUS4 which allows you to create your own custom folders and add presets of your choosing. This is a great way to build collections of your favorite types of sounds or for specific projects.

Creating a Bookmark Folder

Bookmark folders are simply a custom created folder where you can then add your selected presets.

In the "Folders" list, right-click and select "Create new bookmark folder". Bookmark folders are added at the end of the folder list. You can assign a name when creating the folder.



To rename or delete an existing bookmark folder, right-click the folder and choose rename / delete.

Adding Presets to Bookmark Folders

Simply drag a preset to the bookmark folder you wish to add it to. The destination folder is highlighted for easy use. If you haven't created any bookmark folders, a new folder is created.

Alternatively, right-click the preset you want to add to a bookmark folder and choose "Add to bookmarks >" and select which bookmark folder to add it to. You must have created at least one bookmark folder before the option becomes available.

Bookmarking a preset creates a shortcut to the sound and does not actually move the sound from its original location.

You can remove a preset from a bookmark folder by selecting the folder, right-clicking the preset, and selecting "Remove from bookmarks".

to "override" a presets main sound characteristics. These controls are always displayed, no matter which page of NEXUS4 you are on.

Main controls apply "modifiers" to presets and affect all layers. By default, modifiers are at a 12 o'clock setting. They can be adjusted up or down to affect the preset's settings. This means that if a layer has a low-pass filter set, then increasing the global filter does not increase past the point at which the layer's filter is set, but can decrease it further. This is used as a simple way to affect the sound without overriding the way in which it was designed to work.

Regardless of what you are doing with NEXUS4, here are a handful of interface tips that make your life easier:

TIPS:

- To reset a control to its default value, double-click it.
- To make fine adjustments, hold down the "Shift" key while dragging the control or use the right mouse button to initiate the adjustment.
- Numeric values can be changed by dragging them vertically as if they were faders, or by double-clicking on them, then typing in a value and pressing "Return".
- You can disable effects and filters globally while browsing presets by clicking the 3-dot button to the right of an effects label.

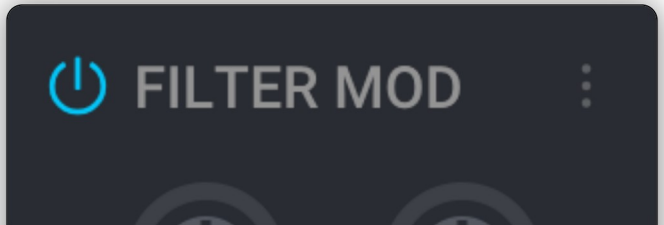
Main Controls: Modifiers

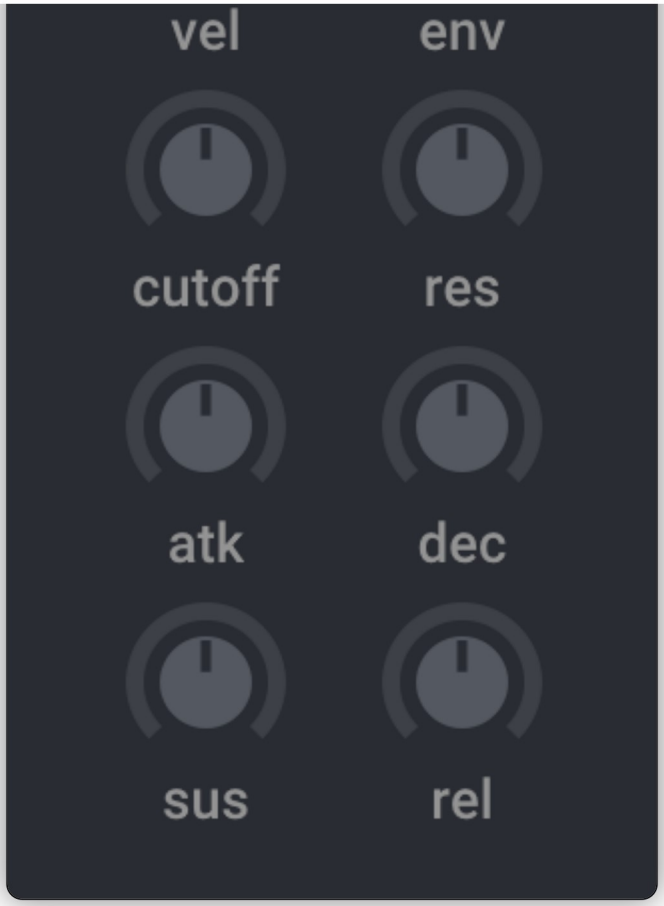
Each layer in NEXUS4 has its own independent filter and amp controls to affect the sound of that specific layer. The main modifier controls offer a global way to adjust all layer controls in parallel.

Filter Modifier

The filter modifier adjusts the filter and envelope for each layer globally.

The filter modifier settings are stored with the preset. To prevent settings from being loaded with the preset, click on the context menu option to the right of the filter mod label and select "locked". You can completely disable the filter mod by selecting "global off".





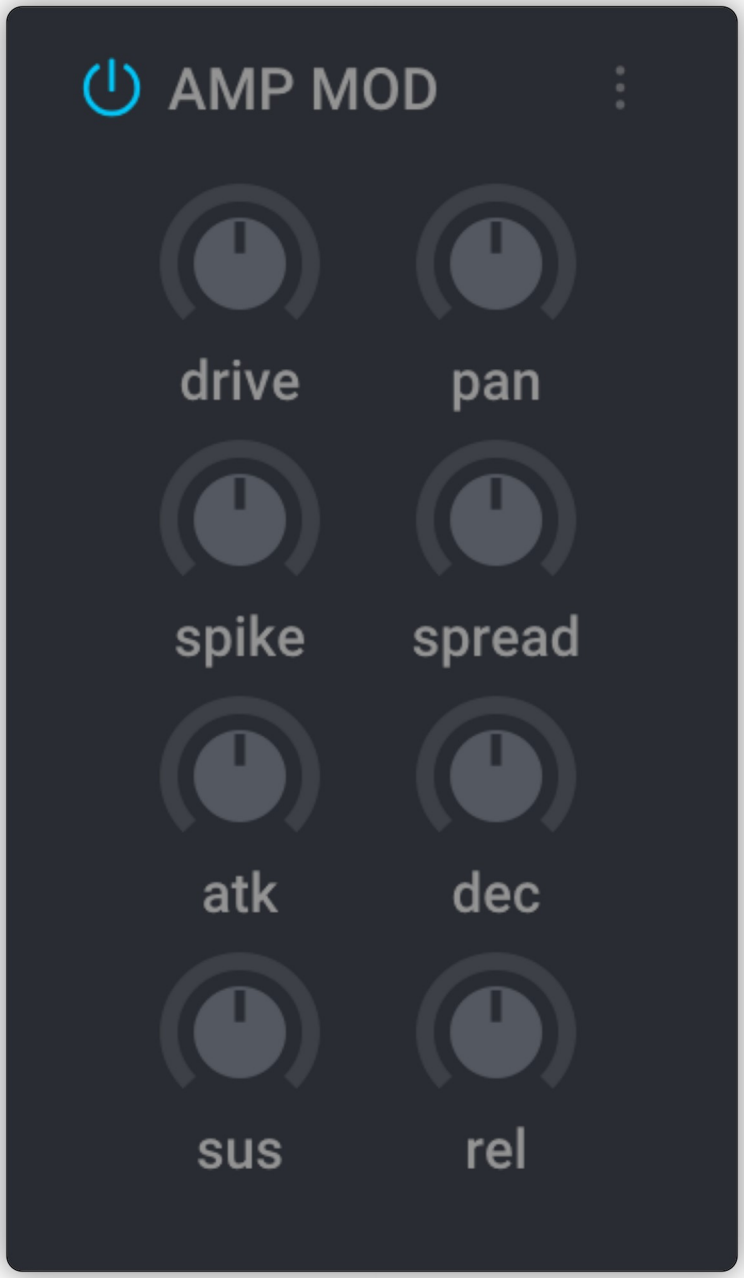
The controls explained, from the top left to the bottom right:

- **on/off toggle:** Enable / disable the delay effect.
- **3-dot menu:** Context menu options; "locked" and "global off".
- **vel:** You can adjust the amount of modifier based on key velocity.
- **env:** Set the amount of filter envelope modulation applied to the cutoff frequency. At the far left position, filter envelope modulation is disabled, and the following controls (attack, decay, sustain, release) have no effect.
- **cutoff:** Adjust the filter cutoff of each layer's filter stage.
- **res:** Adjust how much the frequencies around the cutoff are boosted. Especially with a high slope setting, high values can result in an intense "whistling" or "ringing" sound.
- **atk:** You can modify the attack time of each layer's filter envelope. Move to the right to increase the attack time and left to decrease it.
- **dec:** Modify the decay time of each layer's filter envelope. Move to the right to increase the decay time, move left to decrease it.
- **sus:** Modify the sustain level of each layer's filter envelope. Move to the right to increase the sustain level, move left to decrease it.

Amp Modifier

The amp modifier adjusts panning and basic amp volume envelope settings that affect the volume characteristics of the sound.

The amp modifier settings are stored with the preset. To prevent settings from being loaded with the preset, click on the context menu option to the right of the amp mod label and select "locked". You can completely disable the amp mod by selecting "global off".



The controls explained, from the top left to the bottom right:

- **on/off toggle:** Enable / disable the delay effect.
- **3-dot menu:** Context menu options; "locked" and "global off".

- **spike:** Increase the initial volume of the attack of a sound to produce an audible "spike" at the start of the sound. Good for use on hits.
- **spread:** You can switch the pan position from one note to the next. Turn the dial to the right to increase the width of the alternating panning. If spread has been programmed into the sound, move the dial to the left to decrease the width.
- **atk:** Adjust the speed at which the attack (initial hit) of the sound occurs. Turn to the left to make the sound immediately louder when played, turn to the right to increase the fade-in time of the sound.
- **dec:** Adjust the speed at which the sound moves from the attack level to the sustain level (level at which the sound rests while the note is held). Whether the sound increases or decreases as the key is held depends on the setting of the sustain control.
- **sus:** Set the level at which the sound rests while the note is held. Increase to the right to have the sound rest at its max level, decrease to the left to have the sound rest at a lower level. The decay control adjusts the transition speed from attack to sustain level.
- **rel:** You can adjust the speed at which the sound releases (fades out).

Main Controls: Effects

NEXUS4 contains two commonly used and high quality Reverb and Delay effects modules that are simple to use and offer high quality processing to the sound.

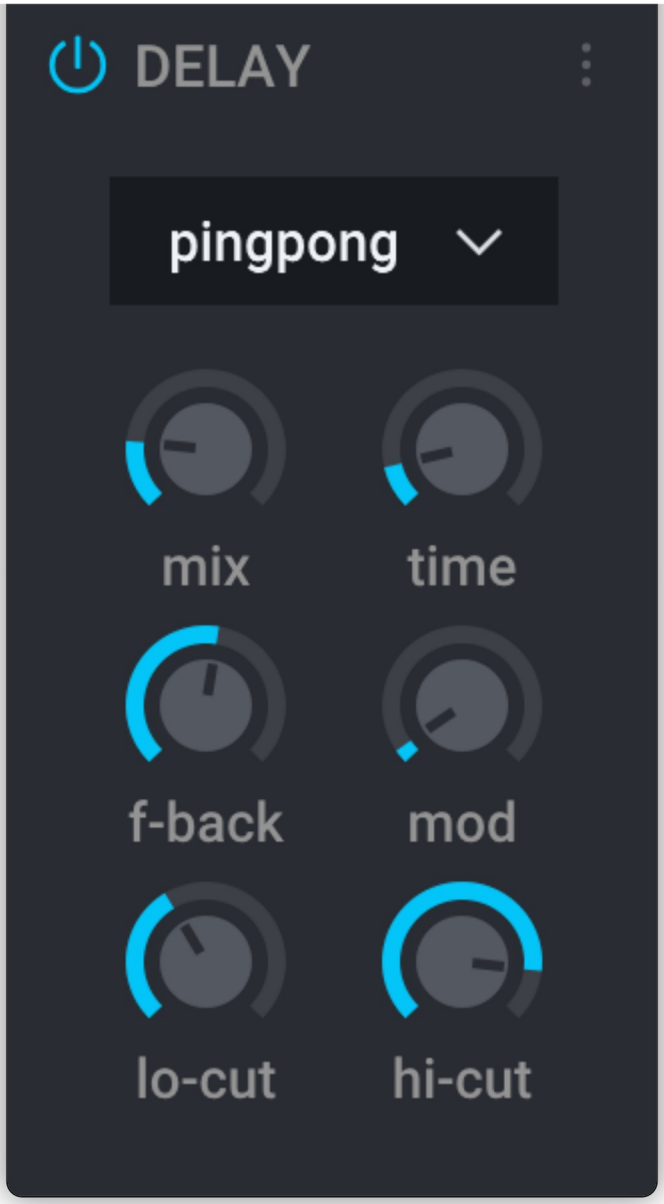
Delay

The Front Panel Delay has multiple modes for different types of delay, and offers modulation and filtering for adding movement and vibe to the repeats.

Front Panel Delay settings are stored with the preset. To prevent delay settings from being loaded with the preset, click on the context menu option to the right of the delay label and select "locked". You can completely disable the delay by selecting "global off".

Note:

If the Front Panel Delay is activated, all layer delays are deactivated. Front Panel Delay and layer



The controls explained, from the top left to the bottom right:

- **on/off toggle:** Enable / disable the delay effect.
- **3-dot menu:** Context menu options; "locked" and "global off".
- **drop-down menu:** You can set the delay type to one of the following four different modes.
  - **mono:** A simple mono delay which mixes left and right together.
  - **stereo:** A simple stereo delay. Both channels are processed independently.
  - **cross:** Left and right channels are swapped at each repeat. This type is most useful for presets which produce audibly different output in the left and right channels.
  - **pingpong:** The repeats alternate between the left and right channels. This type produces the widest and most obvious stereo effect.
- **mix:** You can adjust how much of the delay effect to mix with the original sound. Adjust to the

synchronized to your host application, and range from 1/32 notes to dotted whole notes. As you adjust the delay time, watch the Data Area in the display to see the exact value:

  - Standard durations are notated as simple fraction (1/8).
  - Triplet durations include a "T" after the fraction (1/8T).
  - Dotted durations include a "D" after the fraction (1/8D).

- **f-back:** Adjust the feedback amount. In practice, this determines the number of repeats before the delay fades to silence.
- **mod:** Adjust the amount that the delay time is modulated by the delay's built-in LFO. As the delay time is modulated, the pitch of the repeats changes. Use low values for subtle warmth and high values for vibrato and chorus-type effects.
- **lo-cut:** The cutoff frequency of a high-pass filter that processes the repeats. When set to a position other than the default (far left), each repeat gets progressively thinner as the signal is repeatedly passed through the filter.
- **hi-cut:** The cutoff frequency of a low-pass filter that processes the repeats. When set to a position other than the default (far right), each repeat gets progressively darker (similar to an analog or tape delay) as the signal is repeatedly passed through the filter.

Reverb

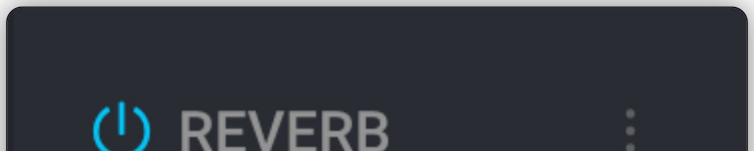
NEXUS4 includes seven high-end reverb effects, three of which are licensed from Arts Acoustic. They are unsurpassed in the world of virtual instruments - you cannot find a better quality built-in reverb anywhere.

The Front Panel Reverb processes the signal after the Front Panel Delay. It features all seven reverb types, and is highly customizable with a simple set of controls.

Front Panel Reverb settings are stored with the preset. To prevent reverb settings from being loaded with the preset, click on the context menu option to the right of the reverb label and select "locked". You can completely disable the reverb by selecting "global off".

Note:

If the Front Panel Reverb is activated, all layer reverbs are deactivated. Front Panel Reverb and layer reverb cannot be used simultaneously.



The controls explained, from the top left to the bottom right:

- **on/off toggle:** Enable / disable the reverb effect.
- **3-dot menu:** Context menu options; "locked" and "global off".
- **drop-down menu:** Select one of seven reverb types. **room**, **hall**, and **arena** may be familiar to you from NEXUS2. **nuclear**, **solar**, **nova**, and **space** are new reverb types introduced in NEXUS4.
- **mix:** Adjust how much of the reverb effect to mix with the original sound. Adjust to the right to increase the reverb mix, adjust to the left to decrease.
- **pre-dly:** Adjust the amount of time before the reverb signal is heard. Longer pre-delay settings create the perception of a larger space and can help preserve the clarity of the original signal when long decay times are used.

subtle pitch changes, creating additional movement and depth.

- **lo-cut:** You can remove low frequencies from the reverb tail. As the dial is turned clockwise from its default position (at the far left), it raises the cutoff frequency of a high-pass filter that processes the reverb signal.
- **hi-cut:** You can removes high frequencies from the reverb tail. As the dial is turned counterclockwise from its default position (at the far right), it lowers the cutoff frequency of a low-pass filter that processes the reverb signal.

Reverb Shimmer

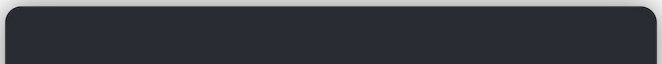
The Shimmer effect makes a reverberated sound even more dense by either adding a bright shimmer or a dark atmosphere or both at the same time. This effect is achieved by mixing a pitch shifted reverb tail onto the regular reverb tail.

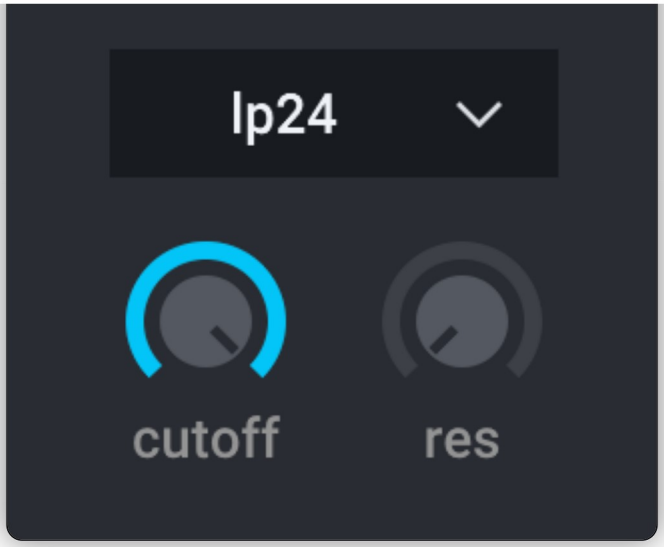
- **shimmer on/off:** Enabled or disables the shimmer effect for the current reverb.
- **shim-fb:** The amount of feedback for the shimmer effect. The higher the feedback the more pronounced and longer-lasting the shimmer will be.
- **shim-shift:** The number of semitones the regular reverb tail will be shifted up or down to create the shimmer effect. Positive values will result in an upwards bright sound, negative values will produce a downward darker sound.
- **split on/off:** If activated, the some parts of the shimmer effect will be shifted upwards and some will be shifted downwards at the same time.

Main Controls: Main Filter

The Main Filter processes the signal before it enters into the EQ, reverb, and delay effects, so high frequency tails can still be processed when a filter sweep is performed.

This filter is useful for shaping of the overall sound, and for automating filter sweeps. It is completely independent of the Filter Modifier section, and very easy to use. If you are looking for the quickest way to apply a filter tweak to a NEXUS4 preset, the Main Filter is a great place to begin.



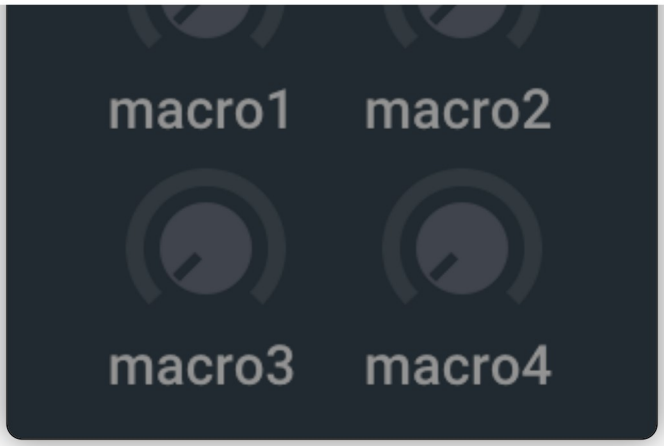


The controls explained, from the top left to the bottom right:

- **on/off toggle:** Enable / disable the reverb effect.
- **3-dot menu:** Context menu options; "locked" and "global off".
- **drop-down menu:** The Main Filter can be set to one of four different filter types using the selector. Note that each filter type has three different slope settings to set the level of filter applied (6 / 12 / 24).
    - **LP (low-pass):** Frequencies above the cutoff frequency are attenuated.
    - **HP (high-pass):** Frequencies below the cutoff frequency are attenuated.
    - **BP (band-pass):** Frequencies above and below the cutoff frequency are attenuated.
    - **NTCH (notch):** The cutoff frequency and the frequencies immediately around it are attenuated.
- **cutoff:** You can set the filter's cutoff (the frequency at which it begins to attenuate frequencies).
- **res:** You can adjust how much the frequencies around the cutoff are boosted. Especially with a high Slope setting, high values can result in an intense "whistling" or "ringing" sound.

Main Controls: Macros

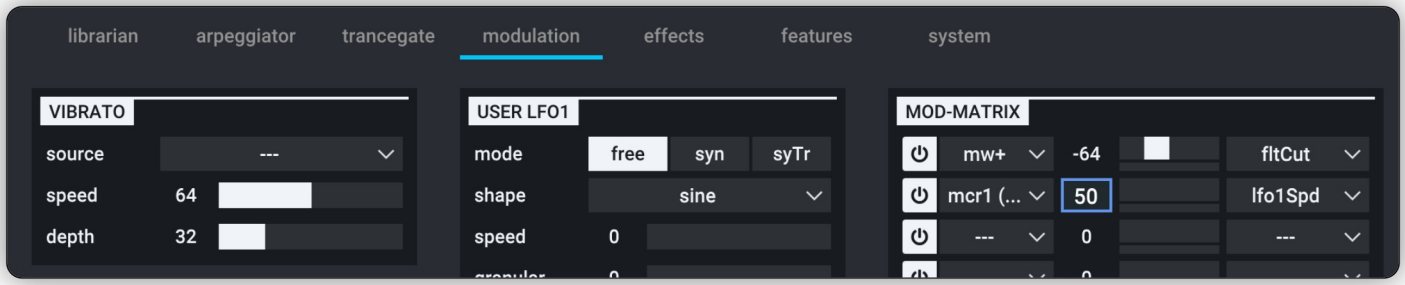
NEXUS4 includes four quick access macro controls that can be mapped to parameters within NEXUS4 using the Modulation Matrix section.



This allows a Macro control to be used as a quick access or "limited range" control based on the matrix setting and the original parameters set position. This can be useful to limit an envelope or filter sweep to a very specific range.

Mapping Macros

To map a macro control to a function open the Modulation tab.



1. In "MOD-MATRIX" on the right-hand side, select the macro control (mcr1-mcr4) and ensure the active button is ON.
2. Select the desired destination parameter.
3. Set the modulation amount that increases / decreases the destination parameter.

Note:

The modulation amount allows the macro control to increase or decrease the destination parameter by a set amount from the destination's current setting. This means you can set it to affect a parameter in either a positive way (increase parameter) or negative way (decrease parameter).

If you wish to apply a full range of control for the macro, you should set the destination control to zero (or the lowest point you want the destination to reach), then increase the bias to +127.

An orange activity indicator shows the macro effect on a control when used.

patterns from sustained notes. You can create patterns from scratch or load one of the many Arpeggiator presets and adjust it to your taste.

New In NEXUS4

- An overview has been added to assist in zooming and panning
- A follow mode causes the view to scroll with playback

Layer vs Main Arpeggiator

Layer Arpeggiators

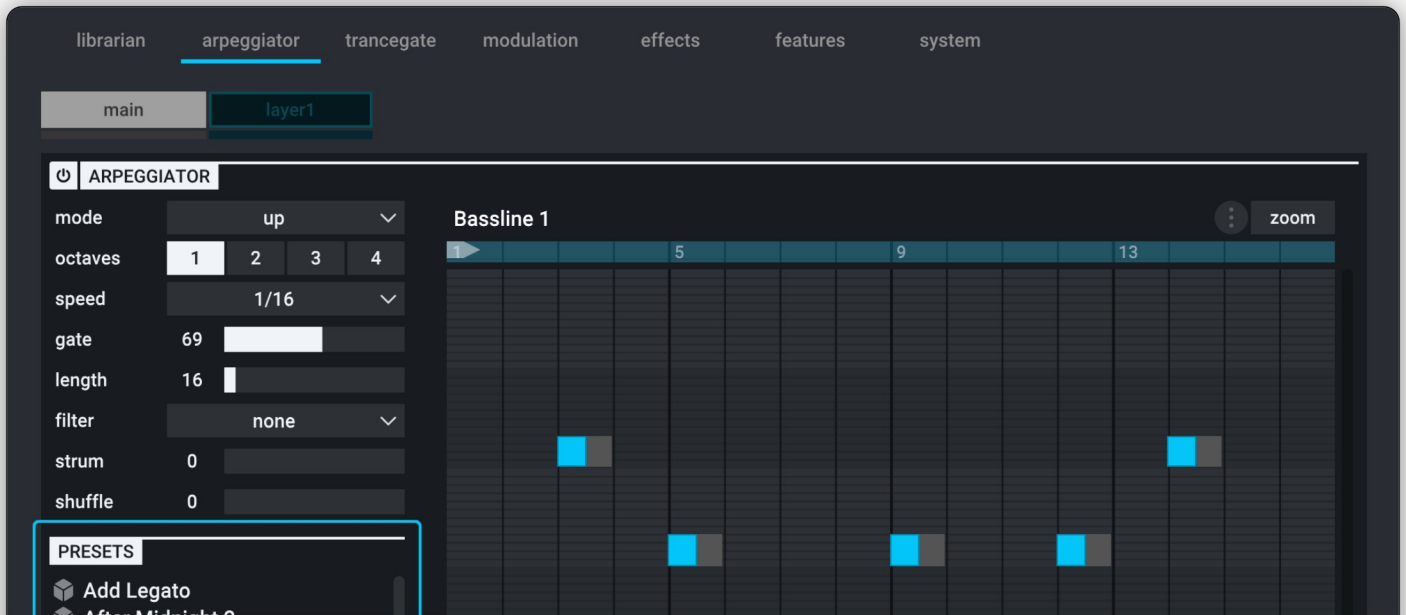
Each layer in a preset sound can have a separate arpeggiator enabled and NEXUS4 now offers user access to each layer's arpeggiator for manipulation. You see tabbed buttons at the top of the arp window for each available layer along with "main". Each layer's arpeggiator is completely separate but they all play together when the sound is played.

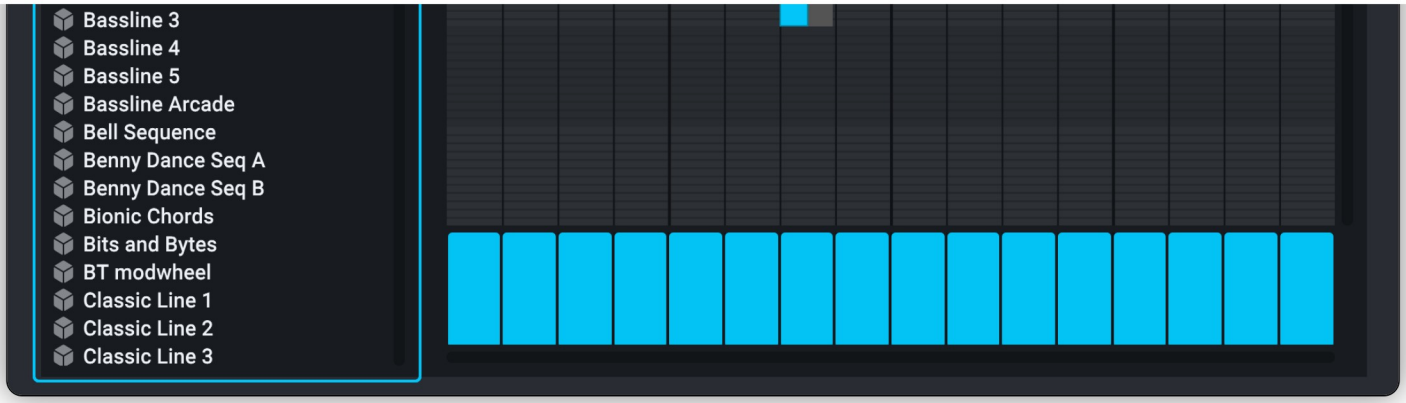
Main Arpeggiator

The main arpeggiator applies to the whole preset (all layers). When enabled, it overrides all layer arps and changes their settings to "disabled".

All arpeggiator features are the same for all layers.

Arpeggiator Options





The controls explained, from the top left to the bottom right:

- **on/off toggle:** To enable the arp for a layer, activate the toggle above the "mode" setting. Enabling the main arp causes all layer arps to become disabled.
- **mode:** The Mode determines the order in which sustained notes are played. In the menu, select one of the following options:
  - **up:** Notes are played from lowest to highest.
  - **down:** Notes are played from highest to lowest.
  - **alter:** Notes are played from lowest to highest, and then from highest to lowest.
  - **order:** Notes are played in the same order they are triggered via MIDI.
  - **random:** Notes are randomly selected from the notes being sustained.
  - **poly (polyphonic):** All notes are played simultaneously in a rhythmic pattern. Strictly speaking, this mode does not generate arpeggios - it is useful for playing chords in a repeating rhythm.
  - **seq (sequence):** New sequencer mode allows patterns to be created with multiple notes per step. This allows chords and drum patterns to be easily created.
- **octaves:** The number of octaves over which the arpeggio is transposed. The transposition occurs after each full iteration of the arpeggiator pattern. For example, if mode is set to "up" and octaves is set to 2, the arpeggiator plays all sustained notes from lowest to highest, then repeats them again one octave up.
- **speed:** The rate at which notes are played. The arpeggiator's speed is synchronized to the host tempo, and is set in standard note durations, ranging from 64th notes (1/64) to dotted whole notes (1/1D).
- **gate:** The duration of notes generated by the arpeggiator. At 0, each note is a short blip, while at 127 each note sustains until the next one plays. When legato portamento is enabled (see port-mode), note glides are only triggered within an arpeggio when gate is set to 127 and notes in the pattern editor are contiguous.

programmed using the pattern editor section of the arpeggiator which is simple to use.

- **filter:** Filters incoming notes before they are passed to the arpeggiator. This feature forces the arpeggiator to play a pattern based on single-note input, even if a chord is being played. Select one of the following modes to enable filtering:
  - **first:** Only the first note played is passed to the arpeggiator.
  - **last:** Only the last note played is passed to the arpeggiator.
  - **lowest:** Only the lowest note played is passed to the arpeggiator.
  - **highest:** Only the highest note played is passed to the arpeggiator.
  - **fixed (c0-c4):** The note C is passed to the arpeggiator regardless of the notes played. Use the transpose function of the pattern editor to alter this fixed pitch.
- **strum:** Strum can be used when using "poly" mode to create a staggered playback when multiple notes are pressed at the same time. Lower notes play first, followed by higher notes. The time between each note is adjusted by the "strum" setting.
- **shuffle:** Applies 16th note shuffle (sometimes called "swing") to the arpeggiated pattern. As this value is increased, every other 16th note step (starting with the second) is delayed more.

Arpeggiator Presets

Below those options is a preset selector section where you can select from dozens of factory arpeggiator patterns. Use your mouse or the arrow keys to step through and try different presets.

Arpeggiator Pattern Editor

The arpeggiator pattern editor enables the customization of arpeggiator patterns. You can extend, remove, transpose notes, and alter their velocity. This feature can create subtle variations or be used as a powerful built-in step sequencer to create new melodies.

The editor section is divided into columns for each step, and rows for each octave.

Editing Tools

Pencil: The pencil tool can be selected from the toolbar or by pressing "1" on the keyboard. Left-clicking the pencil tool in an empty area creates new notes one at a time. Left-clicking in an empty area and dragging creates a new note and allows it to be moved. Click and dragging on an existing

clicking and dragging the paint tool will create a series of notes al with the same pitch. Holding down shift allows notes of different pitches to be created. Like the pencil tool, the paint tool can move and re-size notes.

Select: The select tool can be selected from the toolbar or by pressing "3" on the keyboard. Left-clicking and dragging will select all notes in the marquee rectangle. Holding shift will add the newly selected notes to the already selected notes. Like the pencil tool, the select tool can move and re-size notes.

Eraser: The eraser tool can be selected from the toolbar or by pressing "4" on the keyboard. Left clicking any note will erase it.

All Tools: With all tools, holding CTRL (PC) / CMD (MAC) and left dragging will select notes. Right-clicking in an empty area will clear the selection. Right-click on any notes will erase them.

Editing Notes

Add Note: While using the pencil or paint tool, left-click on the cell where you wish to place a note. If a note exists in that column (step), it moves to where you clicked (unless sequence mode is set).

Remove Note: With the eraser tool, left-click and note to remove it. With any other tool right-click on a note to remove it. Or, notes can be selected with select tool and then deleted by pressing the delete key.

Transpose Note: Select a note using left-click. Use the Up / Down arrow keys to move an octave at a time or drag the note using the mouse to move by semitone. When notes are set by semitone, you see a number on the note indicating + or - how many semitones it is from the closest octave.

Stretch Note: You can stretch a note over multiple steps to create a sustain. First, you need to remove any notes in the adjacent step/s, then position the mouse at the side edge of the note until you see a resize icon. Click and drag the edge of the note to the desired step. Notes do not drag past a step that already contains a note (unless in sequence mode).

Move notes: You can move notes by selecting and dragging them. Or you can select notes and then use shift + mouse wheel to move the notes forward and backwards.

Importing MIDI: Existing MIDI sequences can be imported by dragging the MIDI file from Windows Explorer / macOS Finder and dropping the MIDI file onto the pattern (sequencer only)

Below each note at the bottom of the pattern editor is the note velocity setting. This sets the velocity (volume) of each note. Click in any spot of the velocity section to set the velocity to that point or click and drag up / down to adjust the notes velocity. Velocity can also be edited by holding "Alt" and using the scroll wheel.

Zoom / Scroll Pattern

To zoom in on a pattern horizontally hold CTRL (PC) / CMD (MAC) and use the mouse wheel to zoom in / out. To zoom vertically, hold SHIFT + CTRL (PC) / CMD (MAC) and use the mouse wheel to zoom. Press the "Zoom" button in the top right of the pattern editor to return the zoom view to the full pattern view. Pressing "G" & "H" will zoom in and out horizontally, while SHIFT + "G" & "H" will zoom vertically.

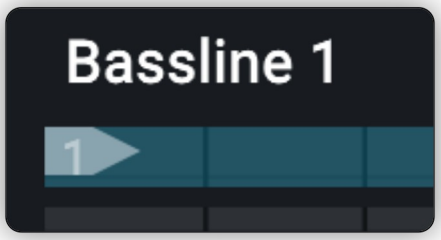
The pattern can be scrolled by using the horizontal and vertical scroll wheels or by pressing "S" and then left-clicking and dragging the pattern into position.

The pattern can also be zoomed and scrolled using the overview. Click and drag the overview to scroll. Click and drag the edge of the overview to adjust the zoom.

Enabling **follow** will cause the pattern to scroll with playback. This can be disabled either by manually scrolling or by disabling the follow button.

Loop Region

It is possible to create an arp pattern that has a lead-in section (only plays a single time) and a loop section (loops while the note is sustained). This can be handy to create buildups and fade ins.



Above the note editor is the pattern timeline where you find a position head (right facing triangle icon). This sets the start of a loop where the pattern returns to when the end of the pattern is reached. Drag this with the mouse left or right to position the loop marker. The loop is set from this point to the end of the pattern.

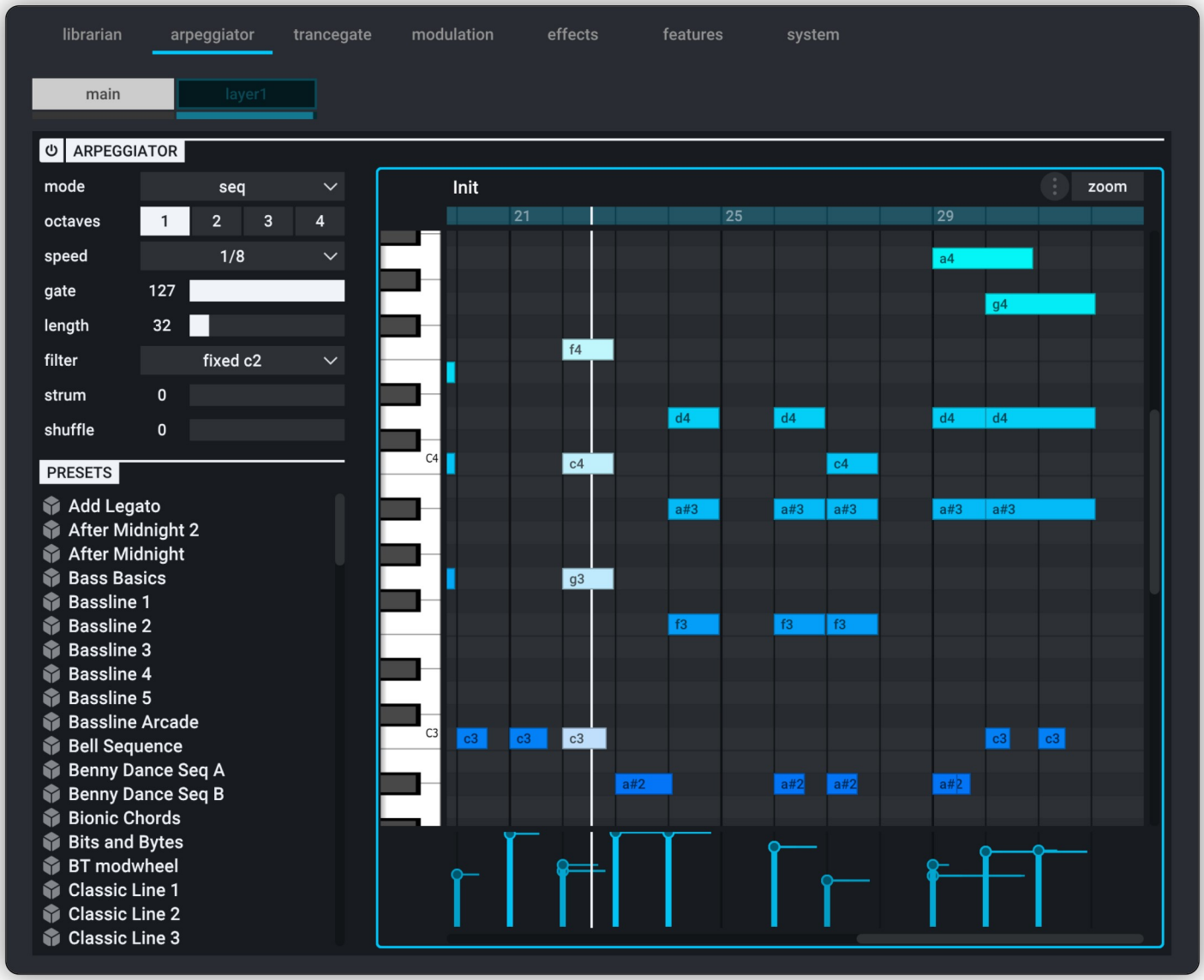
- **Shift + Down**: Move selected notes down octave
- **Up**: Move selected notes up semitone
- **Down**: Move selected notes down semitone
- **Left**: Move selected notes one beat left
- **Right**: Move selected notes one beat right
- **H**: Zoom in
- **G**: Zoom out
- **Shift + H**: Zoom in vertical
- **Shift + G**: Zoom out vertical
- **Ctrl + Z**: Undo
- **Ctrl + Y**: Redo (PC)
- **Command + Shift + Z**: Redo (MAC)
- **Ctrl + D**: Duplicate selected notes
- **Delete**: Delete selected notes
- **Backspace**: Delete selected notes
- **Ctrl + A**: Select all notes
- **Ctrl + Shift + A**: Deselect all notes
- **Ctrl + I**: Invert note selection
- **Q**: Quantize note positions
- **1**: Select pencil tool
- **2**: Select paint tool
- **3**: Select select tool
- **4**: Select eraser tool
- **S + mouse drag**: Scroll pattern area

Note: On macOS, use Command key instead of Control key.

TIPS:

- You can select multiple notes by using the select tool and holding SHIFT and clicking notes.
- You can select a range of notes by holding CTRL (PC) / CMD (MAC) with and tool and click-dragging over a note selection with the mouse.
- When multiple notes are selected, you can transpose / resize all at once.

Setting the arp mode to "seq" opens the sequencer editor, allowing you to create complex patterns, such as chords. In sequencer mode, you can set multiple notes per step and edit the starting point of each note.



For easy editing, zoom in and out on the x-axis using crtl + mousewheel, or crtl + shift + mousewheel to zoom in and out on the y-axis. Click the "zoom" button in the top right to reset the view.

Trance Gate

NEXUS4 features a powerful sequenced audio gate which is useful for turning sustained notes into rhythmic patterns. Unlike the arpeggiator, which generates patterns of MIDI notes, the Trance Gate works by rhythmically lowering and raising the volume of the audio signal.

Layer Trance Gate

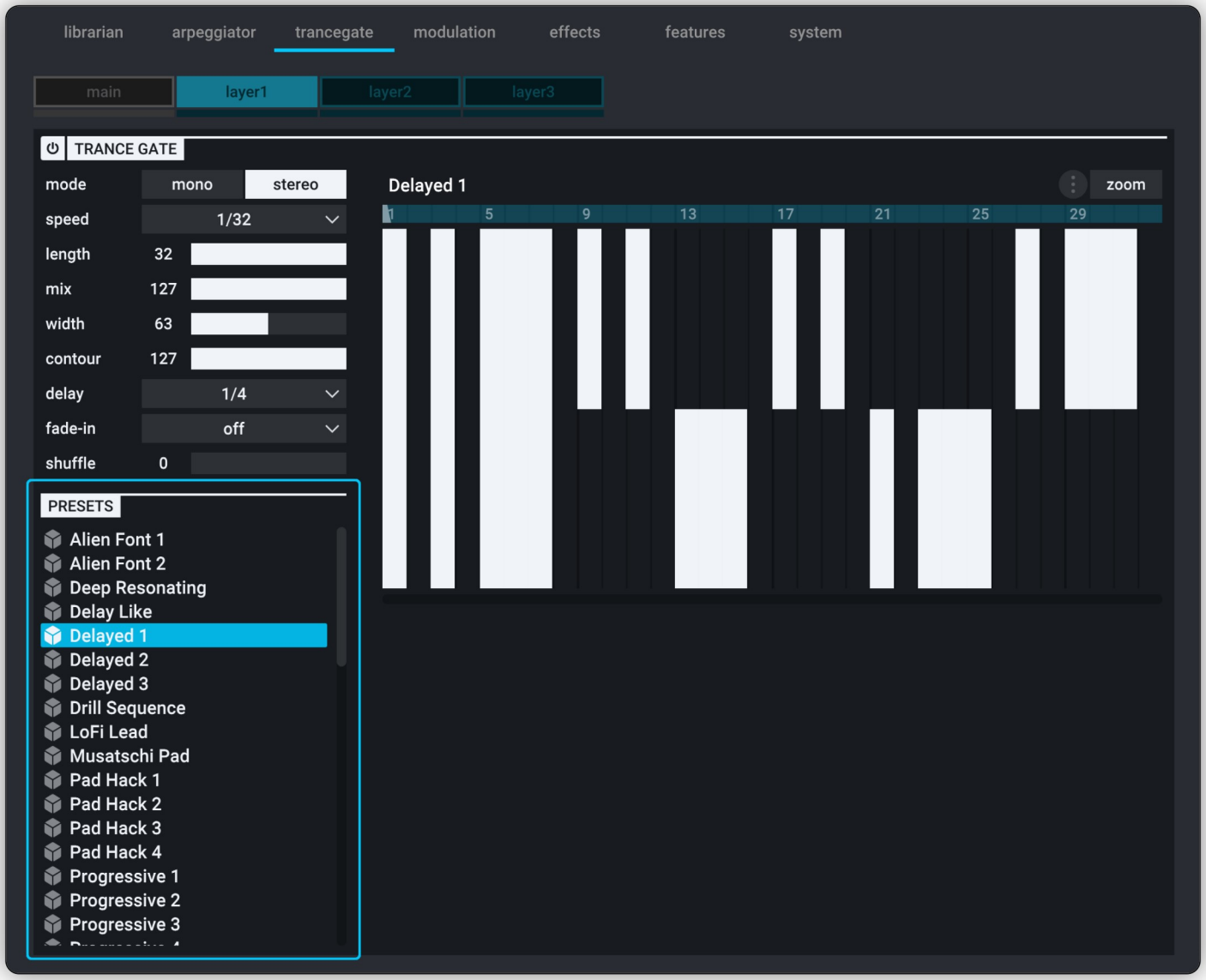
Each layer in a preset sound can have a separate trance gate enabled and NEXUS4 now offers user access to each layer's trance gate for manipulation. You see tabbed buttons at the top of the trance gate window for each available layer along with "main". Each layer's trance gate can be edited separately but all layers play together when the sound is played.

Main Trance Gate

The main trance gate applies to the whole preset (all layers). When enabled, it overrides and, thus, disables all layer trance gates.

All trance gate features are the same for all layers.

Trance Gate Options



The controls explained, from the top left to the bottom right:

- **mode:** In "mono" mode, the left and right channels are gated simultaneously. In "stereo" mode, there are independant gates for the left and right channels.
- **speed:** The rate at which the trance gate pattern plays. Speed is synchronized to the host tempo, and can be adjusted from 64th notes (1/16) to dotted whole notes (1/1D).
- **length:** The number of steps in the trance gate pattern. Adjustable from a minimum of two steps up to a maximum of 32 steps.
- **mix:** Adjusts the level of the gated signal. At 127, the signal is muted when the gate is active. As the value is decreased, the effect of the trance gate becomes more subtle - the volume of the signal is reduced instead of muted. At zero, no effect is heard.
- **width:** The stereo width of the trance gate ("stereo" mode only - in "mono" mode, this parameter has no effect). As the value is decreased from 127, the stereo effect becomes more subtle until zero is reached, at which point the gate functions in mono.
- **contour:** The gate's fade time. As the value is decreased, the gating effect becomes less choppy as the fade time in and out of every gated step is increased. At the lowest values, the trance gate produces effects less like gating and more like tremolo.
- **delay:** The amount of time that elapses between a note being played and the trance gate becoming active. Delay is synchronized to the host tempo, and can be adjusted from 16th notes (1/16) to four bars (4/1).
- **fade-in:** The amount of time that elapses between a note being played and the trance gate's mix value reaching its specified value. When a "fade-in" value is specified, the mix value starts at zero when a note is played, then fades up to its programmed value over the length of time specified in the "fade-in" menu. "fade-in" is synchronized to the host tempo, and can be adjusted from 16th notes (1/16) to four bars (4/1).
- **shuffle:** Applies 16th note shuffle (sometimes called "swing") to the trance gate pattern. As this value is increased, every other 16th note step (starting with the second) is delayed more.

Trance Gate Presets

Below those options is a preset selector section where you can select from dozens of factory trance gate patterns. Select a preset with your mouse or use the arrow keys to try different presets.

The trance gate pattern editor is divided into steps based on the length setting. A step is either "on: white" (allowing sound to pass) or "off: dark" (blocking or lowering the sound depending on the mix setting).

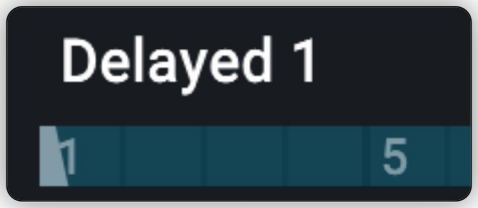
Editing Steps

Clicking on a step with the left mouse button toggles the step. The level of the note can be adjusted by clicking and dragging the colored bar at the top / bottom of each step.

When mode is set to "stereo", a thin line runs horizontally across the center of the pattern editor, dividing it into two channels (shown above). The left channel runs along the top and the right channel runs along the bottom.

Loop Region

It is possible to create a Trance Gate pattern that has a lead-in section (only plays a single time) and a loop section (loops while the note is sustained). This can be handy to create buildups and fade ins.



Above the step editor is the pattern timeline where you find a position head (right facing triangle icon). This sets the start of a loop where the pattern returns to when the end of the pattern is reached. Drag this with the mouse left or right to position the loop marker. The loop is set from this point to the end of the pattern.

Modulation

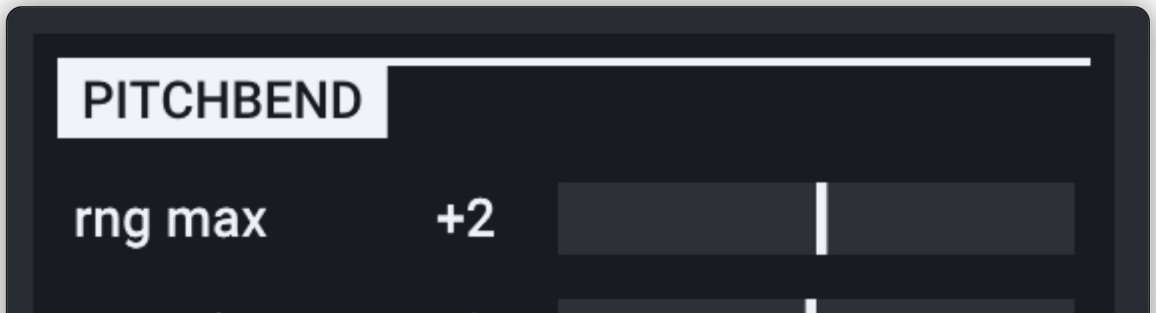
The modulation section allows routing of macros, hardware controls, and LFOs to parameters within NEXUS4.

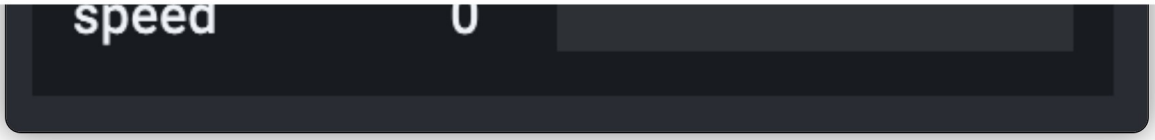
NEXUS4 has a few simple settings that allow you to enable vibrato (pitch modulation) for any sound.

- **source:** The vibrato's depth is controlled by the modulation wheel, aftertouch, or both. If no vibrato "source" is selected, no vibrato is heard. Choose one of the following options:
  - **modwheel:** Modulation wheel messages (MIDI CC# 1) control vibrato depth.
  - **aftertouch:** Aftertouch controls vibrato depth.
  - **mw + at:** Modulation wheel and aftertouch control vibrato depth.
- **speed:** Adjust the rate of the pitch modulation.
- **depth:** Set the maximum amount of pitch modulation that occurs when the vibrato "source" is at its maximum.

Pitch Bend

Pitch bend range allows the bend range limits to be set for the pitch bend control of a keyboard. Unlike traditional pitch bend ranges that simply limit the up or down pitch ranges, NEXUS4 allows a positive or negative range to be applied to either direction of the pitch bend control. This makes it possible, for instance, to invert the pitch bend control or even cause an upward movement to do a fine bend down while a downward movement can do a course bend down.





- **rng max:** Range Max. Sets the range in semitones of pitch bend up. A positive value causes the note to bend up when the wheel is moved upward (normal) while a negative value causes a pitch bend down when the wheel is moved up (inverted).
- **rng min:** Range Min. Sets the range in semitones of pitch bend down. A negative value causes the note to bend down when the wheel is moved downward (normal) while a positive value causes a pitch bend up when the wheel is moved down (inverted).
- **speed:** The amount of smoothing that is applied to coarse pitch bend data (sent by certain controllers). At zero (the default), maximum smoothing is applied. This works well for most cases. As the value is increased, less smoothing is applied. At 127, the pitch bend data from the controller is used as-is, without any smoothing.

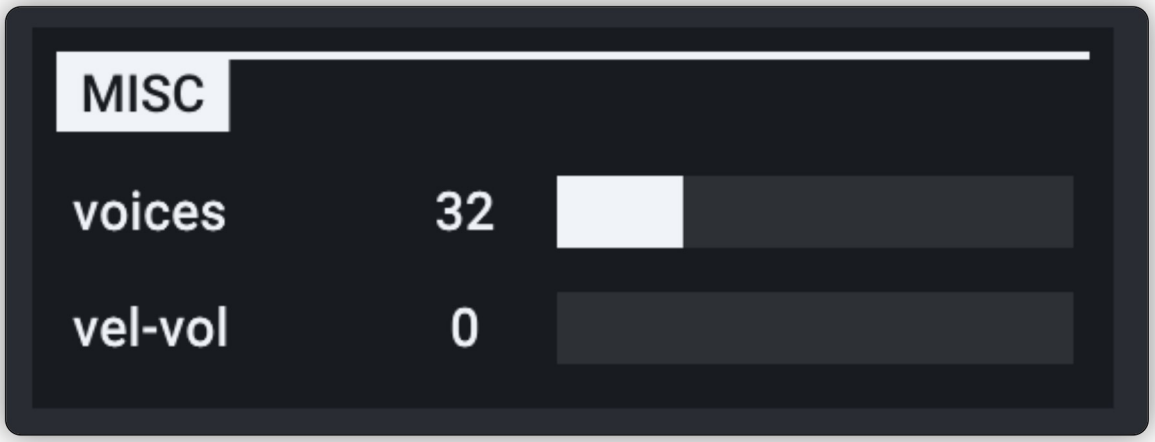
Portamento

When portamento (sometimes called "glide") is enabled, the pitch of each note slides into the next.

- **mode:** To enable portamento, select one of the three portamento modes. Select "off" to disable portamento.
  - **ply:** Polyphonic portamento.
  - **trg:** Monophonic portamento. Pitch glide only occurs for overlapping notes. Envelopes are re-triggered for each note that is played.
  - **lgt:** Legato monophonic portamento. Pitch glide only occurs for overlapping notes. Envelopes are not re-triggered for overlapping notes. This is the mode to use for classic

enabled. Portamento speed can be synchronized to the host tempo, from 64th notes (1/16) to dotted whole notes (1/1D), or set to instant which provides the fastest pitch glides regardless of tempo.

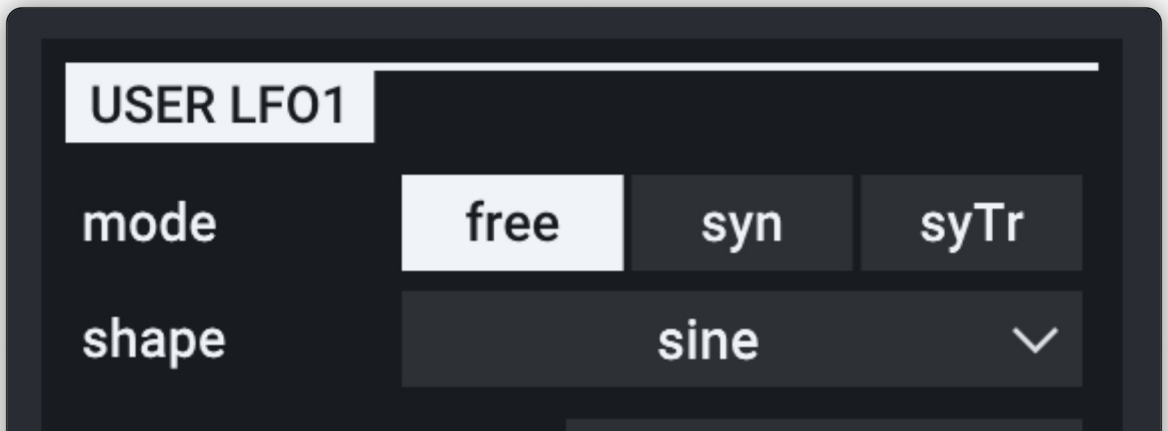
Misc

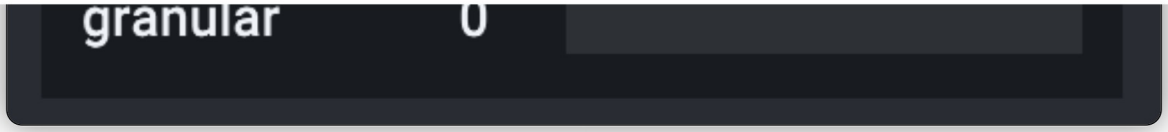


- **voices:** You can set how many synth voices are played back through the sound engine (128 max). The more voices, the more notes can be sustained at once but more CPU is required.
- **vel-vol:** Velocity - Volume. Much like the "Modifier" dials on the front panel, this parameter makes relative changes to a preset's programmed settings. At zero, the preset plays exactly as programmed. When moved to the right (positive values) the sound's volume becomes increasingly sensitive to velocity. When moved to the left (negative values), the relationship of velocity to volume is inverted, with lower velocity notes becoming louder than high velocity notes.

User LFOs

NEXUS4 has two assignable LFOs: "User LFO1" and "User LFO2". The LFOs are assigned to destinations using the Modulation Matrix.

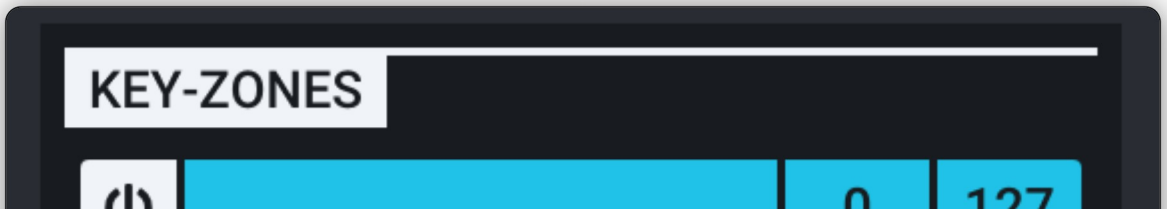




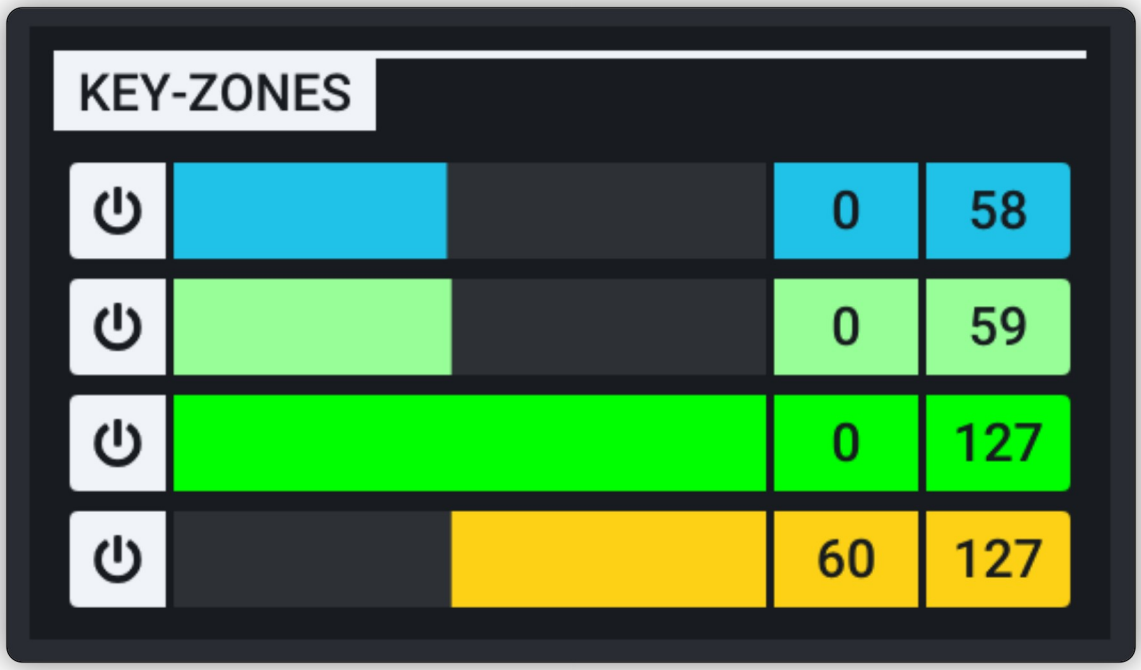
- **mode:** This setting determines whether or not the LFO is synchronized to the host tempo, and if it is re-triggered.
  - **free:** The LFO speed is not synchronized to the host tempo.
  - **syn (Sync):** The LFO speed is synchronized to the host tempo.
  - **syTr (Sync Re-trigger):** The LFO speed is synchronized to the host tempo. The LFO is restarted whenever a new note is played.
- **shape:** Sets the waveform of the LFO to one of the following shapes.
  - **sine:** Sine wave.
  - **triangle:** Triangle wave.
  - **sawtooth:** Sawtooth (falling) wave.
  - **ramp:** A ramp (rising) wave.
  - **square:** Square wave.
  - **chaos:** A random value is generated every cycle (sometimes called sample and hold).
- **speed:** Sets the speed of the LFO. In "free" mode, the speed is represented as a numeral between 0 and 127. In either of the synced modes, speed is set to a note duration ranging from 16th note (1/16) to four bars (4/1).
- **granular:** You can lower the resolution of the LFO's waveform to make it more coarse. This "granularity" adds an interesting twist to typically smooth LFO modulations, such as sine and triangle. At higher values, the modulated parameter audibly jumps from one value to the next instead of shifting continuously.

Key Zones

This allows you to set the active key range/s of the instrument/s in the preset.



SINGLE ZONE presets have a single key zone which normally takes up the entire keyboard range. However, the bottom and top shelves can be adjusted to limit the range of the presets. This can be useful to layer with other instruments.



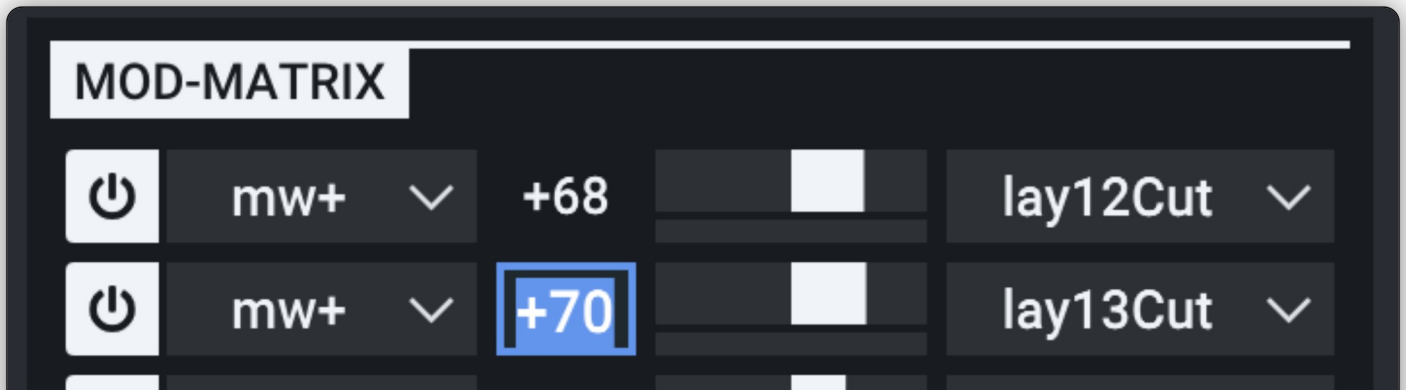
MULTI ZONE presets have multiple key zones for different instruments. They are split over the range of the keyboard. You can adjust each zone individually and even overlap the ranges.

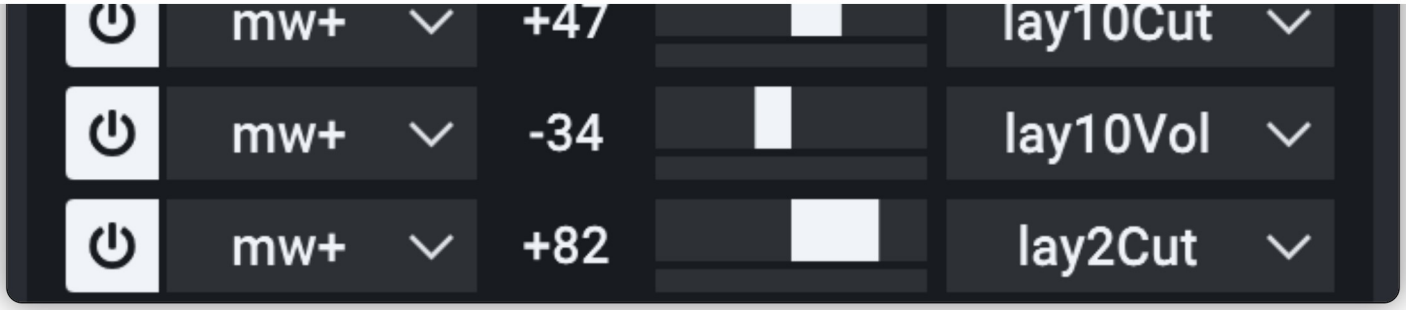
Keyzone ranges are reflected by the led indicators above the keyboard in NEXUS4. For NKS attached keyboards that have lightguide, this is also reflected by the LEDs on the physical keyboard.

You can turn individual key zones on and off using the toggle on the left-hand side.

Mod Matrix

The modulation matrix includes 20 modulation slots to connect source inputs to destination parameters. This allows functions in NEXUS4 to be connected to pitch/mod wheel, CC control, aftertouch, LFO and macro control inputs.





- **on/off toggle:** Toggles the individual modulation slots on and off.
- **source:** Set the source input for the modulation, such as MIDI control message, host automation, Macro control, or LFO.
- **shape:** Set the shape to linear, soft, hard, ease or square.
- **amount:** A bipolar value indicating how much modulation should be applied to the modulation destination.
- **destination:** A NEXUS4 parameter, such as filter cutoff, oscillator pitch, or reverb decay.

NOTE: Modulated parameters display an orange ring around the control to indicate the level/range of modulation being applied to the parameter.

Mod Sources

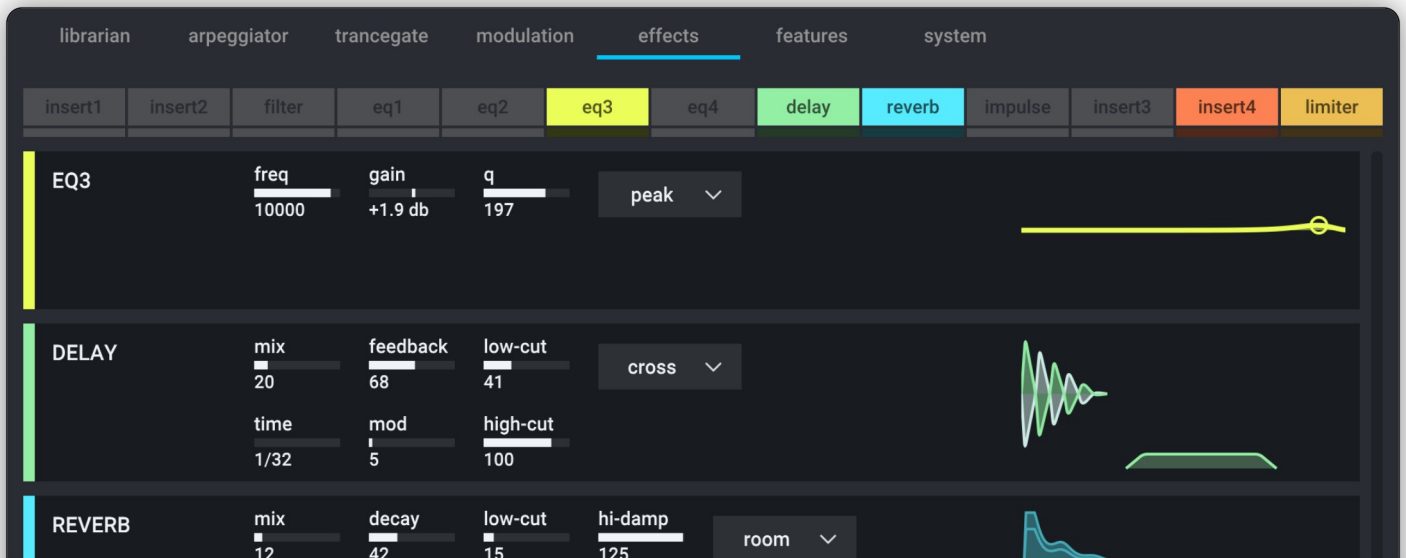
Available modulation sources are: Modwheel (mw+/ -mw), Aftertouch (at+/ -at), Pitch Bend (pb), Midi CC (cc), Host-Automation (au), the two LFOs (LFO) and the four Macro Controls (mcr).

Source	Description
"---"	No source selected
mw+	Mod-Wheel
-mw	Inverted Mod-Wheel
at+	Aftertouch
-at	Inverted Aftertouch
pb	Pitch Bend
cc16	MIDI CC #16
cc17	MIDI CC #17
cc18	MIDI CC #18
cc19	MIDI CC #19

cc21	MIDI CC #21
cc22	MIDI CC #22
cc23	MIDI CC #23
au1	Host Automation Source 1
au2	Host Automation Source 1
au3	Host Automation Source 1
au4	Host Automation Source 1
au5	Host Automation Source 1
au6	Host Automation Source 1
au7	Host Automation Source 1
au8	Host Automation Source 1
LFO1	User LFO 1
LFO2	User LFO 2
mcr1	Macro Control 1
mcr2	Macro Control 2
mcr3	Macro Control 3
mcr4	Macro Control 4

Effects

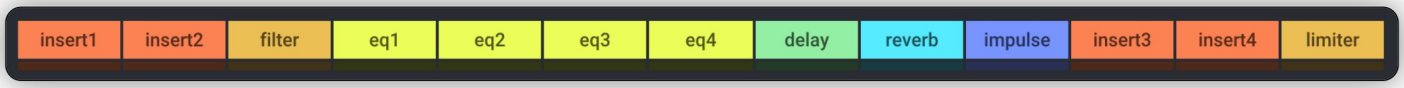
The Effects section in NEXUS4 is a powerful and easy to navigate FX chain that allows quick and easy adjustment of a loaded sound in a single editor window. The Effects section has been vastly improved from NEXUS2 and introduces a whole new display mode for editing effects.



New in NEXUS4

- Effects can now be re-arranged by drag and drop.
- Number of insert effects has been increased from 4 to 5. The limiter has been changed to an insert effect.
- OTT compressor and glitch have been added to the effects.
- Magnetic, noise and razor have been added as insert effects.
- The whole FX chain can be saved and loaded.
- Each effect has a small set of presets, serving as starting points.

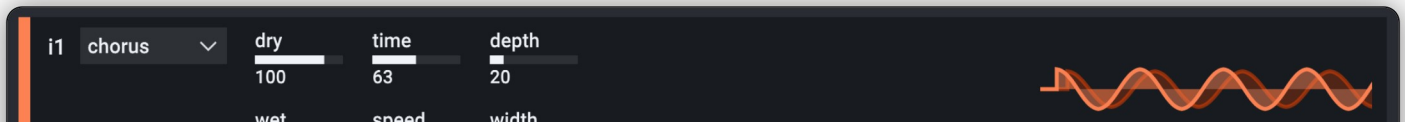
Effects are applied in series, in the order displayed on screen:



The audio signal flows from left to right through each effect. Clicking an effect block bypasses the effect (turning it grey). Below each effect is a signal meter to show signal activity in the chain.

Effect Editor

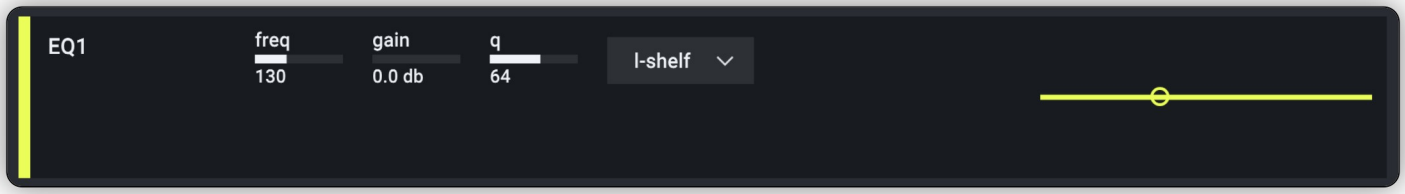
Each effect has a graphical editor that appears in the edit window when the effect is enabled in the chain. Effects appear in order of processing from input (top) to output (bottom). Effects can be reordered by dragging their names to the desired order. The entire effect chain can be saved and restored using the preset menu.



Each effect has a set of dedicated parameters and options on the left and a graphical overview of the effect on the right.

As parameters are adjusted, the graphical overview is affected accordingly.

Effects such as EQ and Impulse allow adjustment of the effects parameters using handles on the graphical overview:



Insert Effects

There are five custom insert FX slots that are identical in operation but provided at different ends of the audio chain. There are 17 different types of insert effects that can be selected.

Insert Effects Types

There are 17 different effects that can be selected for the insert effects devices. Use the dropdown menu to select one of the following effects.

Analog Phaser (analog phsr)

A smoother-sounding, more customizable version of the phaser effect.

- **dry:** Adjust the dry signal level output.
- **wet:** Adjust the wet (effect) signal output level.
- **pre-filter:** Set a high-cut filter position. This is visualised by the filter graphic under the effect display and can also be adjusted by mouse.
- **stages:** Set how many phase stages are created. More stages equal a stronger effect.
- **low-freq:** Set how much of the low frequencies to affect.
- **upper-fre:** Set how much of the upper frequencies to affect.
- **LFO:** Set the speed of the phaser LFO.
- **feedback:** Adjust how much of the output is fed back into the input.

Adds thickness and width to the sound by adding very short time-modulated delays.

- **dry:** Adjust the dry signal level output.
- **wet:** Adjust the wet (effect) signal output level.
- **time:** Set the offset time for the chorus effect.
- **speed:** Set the speed of the effect.
- **depth:** Adjust how deep the sound is affected.
- **width:** Adjust the stereo spread amount of the chorus delay.

Compressor

Reduces the gain of any audio that rises above an adjustable threshold.

- **threshold:** Set the upper volume level where the signal is affected when it is reached.
- **attack:** Set how fast the compressor acts on the signal. Increase to create a longer delay before the compressor reacts to the signal.
- **release:** Set how long the compressor waits for another peak signal before releasing compressor. Increasing this causes the compressor to latch after a peak signal for longer.
- **gain:** Increase the gain output after compression.
- **ratio:** Set how much of the signal is compressed when the limit is reached. Increase to cause a greater level of compression.
- **low-freq:** Low-cut filter that trims lower frequencies from the signal path. Increase to adjust the amount of low frequency affected.
- **high-freq:** High-cut filter that trims higher frequencies from the signal path. Increase to adjust the amount of high frequency affected.

A visual overview of the low/high frequency trim settings is displayed in the graphical overview and can be adjusted using the mouse.

Degrader

A bit-depth and sample-rate reduction effect with an additional distortion option.

- **dry:** Adjust the dry signal level output.
- **wet:** Adjust the wet (effect) signal output level.

- **rate:** Adjust the rate at which the bits are sampled. The lower the rate, the more digital the sound.
- **dist:** Add distortion and fuzz to the sound.
- **high-cut:** High-cut filter to trim high frequencies.

Distortion

Creates non-linear distortion around an adjustable center frequency.

- **dry:** Adjust the dry signal level output.
- **wet:** Adjust the wet (effect) signal output level.
- **freq:** Set the center frequency of the distortion tone.
- **drive:** Adjust the amount of drive for the distortion effect.
- **gain:** Increase the distortion output level.

Ensemble

A more complex chorus effect, with a greater number of delays and more modulation.

- **dry:** Adjust the dry signal level output.
- **wet:** Adjust the wet (effect) signal output level.
- **time:** Set the offset time for the ensemble effect.
- **speed:** Set the speed of the effect.
- **depth:** Adjust how deep the sound is affected.
- **width:** Adjust the stereo spread amount of the ensemble delay.

Flanger

Similar to Chorus, but a portion of the delayed signal is mixed back into the input, creating complex resonance.

- **dry:** You can adjust the dry signal level output.
- **wet:** Adjust the wet (effect) signal output level.
- **time:** Set the offset time for the flanger effect which delays the effect.
- **speed:** Set the speed of the flanger effect.

Gate

Reduces the gain of any audio that falls below an adjustable threshold.

- **open:** Set the level the signal must reach to open the gate and pass to the output.
- **close:** Set the level the signal must fall to to close the gate and cut the signal output.
- **floor:** Set the "rest" level of the signal when it is cut. This is the level of the signal when the gate is "closed". Set to 0 to have the gate shut off completely
- **attack:** The speed at which the gate triggers from the incoming signal. Increase attack to cause a slower gate reaction.
- **hold:** The time the gate is held open when triggered. Increase to hold signal for longer.
- **release:** The speed of the gate's release when a note has been released. Increase to create a longer delay after release.
- **gain:** Increase the output of the gate effect.
- **invert:** Invert the operation of the gate.

Limiter

Provides a more extreme form of compression in which the signal is never allowed to rise above a given threshold.

- **gain:** Adjust the signal level into the effect.
- **threshold:** Set the level where the signal is limited when it is reached. Increase to cause the signal to be limited at a lower level.
- **attack:** The speed at which the limiter reacts to a signal that reaches the threshold level. Increase to cause a slower attack.
- **release:** The time the limiter waits before resetting after the signal falls from the threshold. Increase to create a longer release time.

Magnetic

The Magnetic effect simulates some effects of magnetic tape wear such as inconsistent playback speed and volume drops. It can add a lo-fi quality to the sound.

- **wow:** The rate of the slow playback speed variation.
- **w-depth:** The depth of the slow playback speed variation.

- **drops:** The rate at which the volume drops happen.
- **d-depth:** The depth of the volume drops.
- **d-smooth:** How fast the volume changes to to the drops.
- **d-stereo:** If enabled, the left and the right channel will have volume drops at different times.

Noise

The Noise effect adds crackles and white noise to the audio signal. It can be used to add texture and grit to sound or to add more static noises.

- **crackle:** The volume of the crackle added.
- **cr-rate:** The rate at which the crackles happen.
- **noise:** The volume of the white noise that is added.
- **follow:** Sets how closely the overall noise volume follows the volume of the incoming audio signal.
- **tail:** How long the noise will still be audible after no note is played anymore.
- **damping:** Applies a high cut filter to soften the noise.

Overdrive

The Overdrive effect shapes the audio signal with one of the five non-linear overdrive algorithms. It boosts the signal and adds harmonics.

- **in gain:** Adjusts the input gain before the signal gets boosted.
- **out gain:** Adjust the output gain after the signal was boosted.
- **drive:** The amount of overdrive applied to the audio signal.
- **mod:** Changes the coloring of the boosted audio signal.
- **asymmetric/tortoise/neptune/orange/metal:** The overdrive algorithm that is used to boost the signal.

Phaser

Creates sweeping phase cancellation effects with LFO-modulated notch filters.

- **dry:** Adjust the dry signal level output.

- **depth:** Adjust how deep the sound is affected.
- **feedback:** Adjust the amount of output signal that is fed back to the input to drive the phaser.

Razor

The Razor effect is a harsh and unconventional effect working on the bitstream of the signal. It combines the bitstream of the left and the right channel into a new mono signal. That new signal is used as-is for the left channel and delayed for a short time on the right channel giving it a haas or stereo widening effect.

- **haas:** Set the amount of the haas / stereo widening effect.
- **selfosc:** Set the amount of self-oscillation applied. This is especially useful for mono source signals where Razor would otherwise have no effect.
- **damping:** Apply a high frequency damping to soften the sound. alpha/beta/gamma/delta: Select one of the four patterns by which the left and the right source bitstreams are combined

Ringmod

A modulation effect which only preserves the sum and difference of the original signal and the modulator. It produces unusual, inharmonic results.

- **depth:** Adjust how deep the ring modulation affects the sound.
- **freq:** Set the frequency of the ring modulation.
- **width:** Increase the stereo width of the effect by offsetting the modulation waveform between left and right channels.
- **timbre:** Adjust the timbre characteristic of the ring modulation. When increased, the result is a harsher sound.

Stereo Enhancer (st enhcr)

Widens or narrows the stereo field across an adjustable frequency range.

- **width:** Increase to create a wider sound, decrease to create a narrower sound. When set to 0 there is no change to the signal.
- **gain:** Adjust the output gain of the signal.
- **low-freq:** Used to trim low frequencies from being affected. Increase to adjust the low frequency range.

A visual overview of the low/high frequency trim settings is displayed in the graphical overview and can be adjusted using the mouse.

Talkbox

A vowel filter with LFO modulation.

- **dry:** Adjust the dry signal level output.
- **wet:** Adjust the wet (effect) signal output level.
- **speed:** Set the speed of the talkbox phase effect.
- **offset:** Offset the phase of the waveforms which adjusts the character of the effect.
- **formant:** Adjust the formant value which affects the voweling of the effect. This parameter can be modulated to create classic talkbox effects.

Filter Effect

The filter effect block is tied to the main Main Filter controls and mirrors the settings of these controls. It is provided as a convenient way of visualizing and manipulating the signal flow. When adjusting the main filter controls, you see it change in the filter effect block.

See the "Main Controls: Filter" section for an overview of parameters.

EQ Effects

There are four single band EQ effects blocks that are identical in operation. These EQ blocks can be combined to form a four band parametric EQ to filter and shape the EQ characteristics of the signal.

- **freq:** Set the working frequency of the EQ in Hz.
- **gain:** Adjust the gain of trim of the EQ.
- **q:** Set the bandwidth of the frequency to affect. Lower values set a narrower frequency good for surgical cuts, while higher values set a greater bandwidth good for larger range boosts.
- **type (drop-down menu):** The EQ type. Select one of the following:
    - **l-pass (lowpass):** Frequencies above the freq setting are attenuated.

- **band2 (narrow bandpass):** Frequencies above and below the freq setting are attenuated more severely than bpass.
- **notch:** Frequencies at and around the specified freq setting are cut severely.
- **peak:** Frequencies at and around the specified freq setting are cut or boosted.
- **l-shelf:** Frequencies below the specified freq setting are cut or boosted.
- **h-shelf:** Frequencies above the specified freq setting are cut or boosted.
- **all-pass:** Alter the phase of the signal.

Delay / Reverb Effects

The delay and reverb effects blocks are both tied to the main Main Delay / Reverb controls and mirror the settings of these controls. It is provided as a convenient way of visualising and manipulating the signal flow. When adjusting the main controls, you see the changes in the effect blocks.

See the "Main Controls: Effects" section for an overview of parameters.

Impulse Reverb Effect

This type of reverb is sometimes called "convolution reverb". It uses samples of real spaces and classic gear, called "impulse responses". This extremely powerful method of generating reverberation allows for a wide range of reverb types that go far beyond typical halls and rooms.

- **dry:** Adjust the dry signal level output.
- **wet:** Adjust the wet (effect) signal output level.
- **pre-delay:** The length of time before the reverb sounds.
- **pitch:** Act as a tone control for the reverb tail. Positive values make the reverb brighter, while negative values make it darker.
- **mid-boost:** The amount of midrange (X kHz[24]) cut or boost.
- **high-boost:** The amount of high frequency (X kHz[25]) cut or boost.
- **stereo:** The stereo width of the reverb. At 0%, the reverb is mono.

increase the amount of low frequency cut.

- **high-cut:** The cutoff frequency of a low-pass filter for the reverb. Decrease the value to increase the amount of high frequency cut.
- **type (drop-down menu):** Determine the reverb type. In this menu, you find long decays, subtle ambiences, and some unusual effects such as reversed reverb. Each of these reverb types is based on a different impulse response, which you see an image of in the Envelope Editor.
- **env:** You can enable the Envelope Editor which allows you to reshape the reverb to your taste. It is possible to make simple adjustments, such as changing the length of the reverb tail, or unusual adjustments, such as having the reverb fade in slowly. Drag the circular handles to adjust the attack, decay, sustain, and release of the envelope. The diamond-shaped handles are used to to create exponential (curved) volume changes for any of the envelope's stages.

Over The Top Compressor Effect (Otter)

The Otter effect is a multiband upwards/downwards compressor tailored to bring audio details to the front and to keep the audio signal at a consistent loud level.

- **threshold:** Adjusts the threshold of all internal compressors. A lower threshold will make Otter change even lower signals.
- **ratio:** Adjusts the compression ratio of all internal compressors. The higher the ratio the more aggressive the signal will be compressed.
- **low-split:** The frequency at which the low/mid bands are split.
- **high-split:** The frequency at which the mid/high bands are split.
- **env-scale:** Adjusts the attack and release times of all internal compressors.
- **low-gain:** Output gain for the low band.
- **mid-gain:** Output gain for the mid band.
- **high-gain:** Output gain for the high band.

Glitch Effect

The Glitch effect allows to manipulate the playback time within a looping audio buffer which can generate halftime, reverse, tapestop, stutter and similar effects.

On the grid the x-axis from left to right represents the current playback position just as in the Arpeggiator or the Trance Gate. However what is heard as output signal is determined by the y-axis from top to bottom. The further away from the top, from the further back in the looping buffer the signal will be used. At the very top whatever just came into the looping buffer will be played back with no delay. At the very bottom the oldest part of the looping buffer, e.g. 1 bar in the past, will be played back.

The time manipulation shape is created by placing control points into the time grid. There are three types of control points that can be toggled through by double-clicking a control point.

- **length:** Sets the length of the looping buffer.
- **shift:** Shifts the whole shape down.
- **depth:** Scales the whole shape.
- **midi-trg on/off:** If enabled the current time manipulation shape can be switched by playing the twelve lowest midi notes.

Features (Layer Mixer)

The "Mix" screen from Nexus2 has now been renamed "Features" and includes all the same functionality as the previous mixer with a cleaner display that is easier to understand:

sound so you know which layers are playing a sound for a given key range.

On this screen, you can enable and disable individual layers, oscillators, and effects as well as adjust the level, panning, and tuning of oscillators.

Presets can contain just a single layer or a maximum of 16 layers which can be used in different ways to form layered sounds, drum kits, or split keyranged instruments. It is worth experimenting with preset layers and discovering some new sounds that you can create with just a few clicks.

Enable \ disable Layers

At the top of the display are the layer switches. Click on these to toggle a layer on and off. When a layer is disabled, its switch is dimmed and the layer is removed from the editor window.

Layer Oscillators and Effects

A layer shows the complete signal flow from input to output.

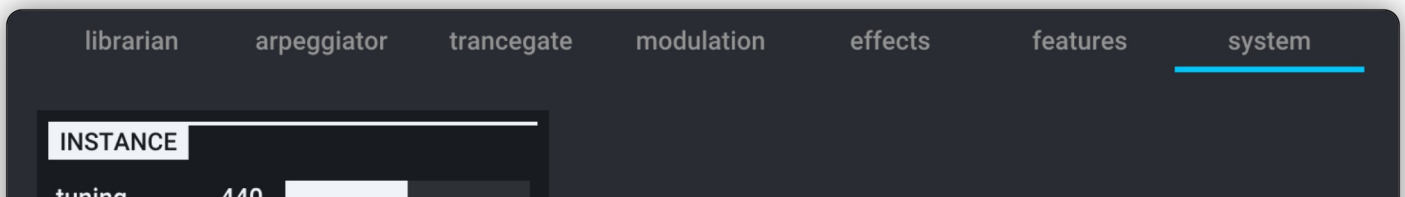
Next, you see the oscillators for the layer labeled as "osc". Clicking on an osc label toggles that oscillator on and off.

The controls (red) available for adjustment for each oscillator are: Volume, Pan, Transpose and Detune. Some presets may have multiple layers to an oscillator where you see two independent volume controls for a single oscillator.

The signal flows out the oscillators and through any effects loaded for the layer. You cannot adjust the layer effects as they are designed with a complete sound in mind, but you can disable the effects by clicking the label for the effect to toggle it on and off.

System

The system menu holds options that affect the display and global functionality of NEXUS4 on your system.



Instance

Instance settings affect that specific instance of the plugin. These settings are not saved as global settings for the plugin, but only for the instance loaded.

- **tuning:** You can adjust the fine tuning of NEXUS4 in steps of 1Hz. Default value is 440Hz.
- **transpose:** Transpose NEXUS4 up or down in octaves.
- **vel-curve:** Adjust how NEXUS4 responds to MIDI velocity. When moved further into negative values, NEXUS4 interprets an increasingly wider range of high- and medium-velocity notes as if they were low velocity. When moved further into positive values, NEXUS4 increases the range of low- and medium-velocity notes that it interprets as high velocity.
- **out-gain:** Boost or trim the signal output from the plugin by 6dB. By default no boost/trim is set.
- **tempo-sync:** Set the sync resolution of NEXUS4 to half / normal / double the speed of the host.
- **arp-vel-src:** You can set how the velocity of notes affects arp playback.
    - **First:** This causes velocity of the first note played to be stored and used for all subsequent notes, regardless of how hard or soft the notes are played.

- **arp sync:** You can set how the arp is re-triggered.
  - **Hard**: Arp position is re-triggered every time the first key is pressed.
  - **Soft**: Arp position is re-triggered every time the first key is pressed and no other key has been pressed recently. This mode makes it easier to play melodies without re-triggering the arp.
- **microtuning**: Use a built in microtuning or load a custom microtuning from an .scl file.

Preferences

- **midi preset-select:** Set to "yes" to allow presets to be cycled using MIDI CC controls.
- **midi volume / expression:** Set to "yes" to allow MIDI CC Expression and Volume control.
- **confirm file operation:** Set to "yes" to display warnings when overwriting existing files when saving or deleting files.
- **split meta-data:** Split some meta-data (such as BPM) from preset names.
- **keyboard mode**: Set to "yes" to have full set of keyboard shortcuts. Set to "no" to pass more keyboard shortcuts to your DAW.
- **unbounded mouse:** Set to "yes" to allow mouse to move endlessly when adjusting dials. Set to "no" if you are using a touch screen or a stylus instead of a mouse.
- **accessible keyboard:** Enable additional keyboard navigation for visually impaired users.

Appendices

Appendix A - MIDI implementation chart

Function		Txd	Rxd	Remarks
Basic Channel	Default:	x	1-16	Messages are always
	Change:	x	1-16	received on all channels
Mode	Default	x	Mode 1	OMNI Mode is always on
	messages	x	x	

Velocity	Note On:	x	o
	Note Off:	x	o
Aftertouch	Key:	x	x
	Channels:	x	o
Pitchbend		x	o
Control Change		o	o
Program Change	Actual No.	x	x
System Exclusive		x	x
System Common	Song Pos:	x	x
	Song Sel:	x	x
	Tune:	x	x
System Realtime	Clock:	x	x
	Commands:	x	x
Aux Messages	Local On/Off	x	x
	All Sound Off	x	o
	All Notes Off	x	o
	Act. Sensing	x	x
	Reset:	x	x

Appendix B - MIDI continuous controller support

In addition to the messages specified in the MIDI implementation chart, the following MIDI continuous controller messages are recognized, affecting the parameters listed below. By sending MIDI-CC messages from your host application, you can change or even automate these parameters at any time.

CC#	Name
7	Channel Volume
8	AMP Spread
9	Output volume
10	AMP Pan
11	Expression
24	AMP Sustain
25	Delay Feedback
26	Delay Highcut

28	FLT Attack
29	FLT Decay
30	FLT Sustain
31	FLT Release
44	FLT Envelope
45	FLT Cutoff
46	FLT Resonance
71	Main Filter Resonance
72	AMP Release
73	AMP Attack
74	Main Filter Cutoff
75	AMP Decay
91	Reverb Mix
94	Delay Mix
96	Previous preset
97	Next preset
98	Previous category
99	Next category
120	All Sound Off
123	All Notes Off

Appendix C - category prefixes

This is a list of prefixes used by us to categorize the factory content and expansions:

Prefix	**Name**
AR	Arpeggio
AT	Atmosphere
BA	Bass
BR	Brass
CL	Classical Instrument
DL	Drumloop
DR	Drum
FX	FX Sound
GT	Guitar

LL	Live Loop
LP	Live Loop Menu
MA	Mallet
OC	Orchestra
OR	Organ
PD	Pads
PL	Plucked
PN	Piano
SQ	Sequence
ST	Strings
SY	Synth
TG	Trancegate
VO	Vocal / Choir
WW	Woodwinds

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