Operation Manual

HALION SONIC 3

Premier VST Workstation

steinberg

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Introduction

Conventions

In our documentation, we use typographical and markup elements to structure information.

Typographical Elements

The following typographical elements mark the following purposes.

Prerequisite

Requires you to complete an action or to fulfill a condition before starting a procedure.

Procedure

Lists the steps that you must take to achieve a specific result.

Important

Informs you about issues that might affect the system, the connected hardware, or that might bring a risk of data loss.

Note

Informs you about issues that you should consider.

Tip

Adds further information or useful suggestions.

Example

Provides you with an example.

Result

Shows the result of the procedure.

After Completing This Task

Informs you about actions or tasks that you can perform after completing the procedure.

Related Links

Lists related topics that you can find in this documentation.

Markup

Bold text indicates the name of a menu, option, function, dialog, window, etc.

EXAMPLE

In the header of the plug-in panel, click the **Preset Management** button next to the preset name field and select **Load Preset**.

If bold text is separated by a greater-than symbol, this indicates a sequence of different menus to open.

Key Commands

Many of the default key commands, also known as keyboard shortcuts, use modifier keys, some of which are different depending on the operating system.

When key commands with modifier keys are described in this manual, they are indicated with the Windows modifier key first, followed by the macOS modifier key and the key.

EXAMPLE

Ctrl/Cmd-Z means: press **Ctrl** on Windows or **Cmd** on macOS, then press **Z**.

How You Can Reach Us

Click the Steinberg logo in the top right corner of the control panel to open a pop-up menu containing items for getting additional information and help.

- This menu contains links to various Steinberg web pages. Select a link to open the corresponding page. On the web pages, you can find support and compatibility information, answers to frequently asked questions, links for downloading new drivers, etc.

About the Documentation

The documentation is available online and most of it can be downloaded in PDF format from steinberg.help.

- To visit steinberg.help, enter **steinberg.help** in the address bar of your web browser or open HALion Sonic, click the Steinberg logo in the top right corner and select **Help** > **HALion Sonic Help**.

Setting Up

You can use HALion Sonic as a plug-in in different host applications. Depending on the host application, you might have to make additional settings, or you might be restricted to a reduced parameter set, number of outputs, etc.

NOTE

HALion Sonic can also be used as a standalone application.

Selecting Outputs

HALion Sonic loads with a stereo output configuration by default. However, you can use up to 15 additional outputs in the Steinberg DAW. This allows you to route all 16 program slots to a dedicated channel in the **MixConsole**.

PROCEDURE

1. To make the outputs available in the VST instrument, open the **VST Instruments** window.
2. Click the **Activate Outputs** button for the instrument.
3. Activate the outputs that you want to use.

RESULT

The Steinberg DAW automatically adds an output channel for each additional output to the **MixConsole**. You can now route programs or layers to these outputs for further signal processing within the DAW.

Using the Instrument in an AU-Compatible Application

The AU version of HALion Sonic is installed in your AU plug-ins folder and lets HALion Sonic work in an AU environment without any performance loss or incompatibilities.

For example, to load HALion Sonic as an AU instrument for Logic Pro, proceed as follows:

PROCEDURE

1. Open the Track Mixer and select the instrument channel that you want to use.
2. Click in the **I/O** field and select **AU Instruments** > **Steinberg** > **HALion Sonic**.
3. Select one of the available channel configurations.

Using the Instrument in an AAX-Compatible Application

The AAX version of HALion Sonic is installed in your AAX plug-ins folder and makes HALion Sonic available as AAX instrument in ProTools.

PROCEDURE

1. To use HALion Sonic as stereo multichannel plug-in, open the **Track** menu, and select **New** > **Stereo** > **Instrument Track**.
2. On the instrument track, click **Inserts** and select HALion Sonic from the **multichannel plug-in** > **Instrument** submenus.

Using the Instrument as Standalone Application

HALion Sonic can be used as a standalone application, independently of any host application. In this case, you can connect the instrument directly to your audio hardware.

RELATED LINKS

Using the Standalone Version of the Plug-In on page 292

Window Overview

The HALion Sonic window is divided into several sections.

- In the standalone version of HALion Sonic, you find a number of additional functions in an extra section at the top of the application window.
- If you use the plug-in in a host application, you find the plug-in functions section at the top of the window.
- The slot rack on the left.
- The toolbar above the edit display.
- The edit display on the right. It contains the **Load**, **Edit**, **MIDI**, **Mix**, **Effects**, **Multi**, and **Options** pages.
- The performance section at the bottom. It contains the trigger pads, the quick controls, and the performance controls.

Player View/Editor View

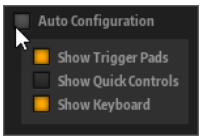
You can switch between two views for the plug-in window: the full-size editor view and the smaller, configurable player view.

- Click the **p** button on the toolbar to switch from player view to editor view. The button changes to **e** to indicate that editor view is active. Click the button again to return to player view.

In player view, the slot rack is not shown. If multiple programs are loaded in the slot rack, you can switch between them using the **Select Slot** menu at the top of the window.

Player View Configuration Options

To specify the sections that you want to be displayed in player view, click the arrow button next to the **e** button.



- If **Auto Configuration** is activated, the editor shows the sections specified by the manufacturer.
- If **Auto Configuration** is deactivated, you can specify whether you want to add the trigger pads, quick controls, and keyboard section to the player view.

NOTE

If a program does not have a macro page, the standard editor is shown.

Common Editing Methods

Dials and Sliders

Dials and sliders can be unidirectional or bidirectional. Unidirectional values, for example, level values, start at a minimum value and go up to the maximum. Bidirectional controls start from the middle position and go to the left for negative and to the right for positive values.

Most of the editing methods are the same for dials and sliders.

- To adjust a value, click a dial or a slider and drag up and down, or use the mouse wheel.
  If you press **Alt** when clicking a dial, a small slider appears, allowing you to set the parameter.
- To make fine adjustments, press **Shift** and move the dial or use the mouse wheel.
- To restore the default value for a parameter, press **Ctrl/Cmd** and click on the control.

Buttons

HALion Sonic contains two different types of buttons: **On/Off** buttons and push buttons.

On/Off Buttons

These buttons have two states: on and off. If you move the mouse over an **On/Off** button, it changes its appearance to show that you can click it.

Push Buttons

Push buttons trigger an action and then go back to their inactive state. These buttons open menus or file dialogs.

Value Fields

You can enter or edit values in the available value fields using your keyboard or mouse. To enter key ranges or the root key, for example, you can use an external MIDI keyboard.

To set a value, you have the following possibilities:

- Double-click in a value field, enter a new value, and press **Enter**.
  If the entered value exceeds the parameter range, it is automatically set to the maximum or the minimum value, respectively.
- Click in the value field and drag up or down.
- Position the mouse over a value field and use the mouse wheel.
- Click the up/down triangles next to the field.
- To set the parameter to its default value, **Ctrl/Cmd**-click the value field.
- To use a fader to adjust the value, **Alt**-click a value field.

- To enter musical values, such as key ranges or the root key, with your MIDI keyboard, double-click the value field, press a key on your MIDI keyboard, and press **Return**.
- To navigate to the next parameter, press **Tab**. To jump backwards to the previous parameter, press **Shift-Tab**.

  If no parameter is selected inside the focused view, pressing **Tab** always jumps to the first parameter.

Using Key Commands

The commands are arranged in a hierarchical folder structure on the left. When you open a category folder, the items and functions are displayed with any currently assigned key commands.

- To set up a key command, select the function in the list, enter the key command in the **Type in Key** field and click the **Assign** button to the right of the field. If this key command is already used for another function, this is displayed in the field below.
- To delete a key command, select the function in the list, select the key command in the **Keys** list and click the **Delete** button.
- To search for a specific function, enter its name in the search field at the top of the dialog and click the **Start/Continue Search** button.

NOTE

You can set up several key commands for the same function.

Presets

HALion Sonic offers two types of presets: section/module presets and VST presets. Section and module presets store and recall the setup of a specific component on the HALion Sonic panel. VST presets contain all information necessary to restore the complete state of the plug-in.

During setup, the factory presets are installed in a dedicated folder and a user folder is created for your own presets. The handling of presets is the same throughout the program.

NOTE

Factory presets are write-protected, but may be overwritten when a software update is executed. Presets in your user folder are never changed by the software update.

Handling Section and Module Presets

The preset controls can be found throughout the program. The handling is always the same.

- To save a preset, click **Save**.

  NOTE

  You cannot overwrite factory presets. If you want to save changes made to a factory preset, save the preset under a new name or in a new location.

- To load a preset, click the arrow icon and select a preset from the list.
- To delete a preset, click **Delete**.

  NOTE

  Factory presets cannot be deleted.

Handling VST Presets

Loading VST Presets

PROCEDURE

1. In the header of the plug-in panel, click the **Preset Management** button next to the preset name field and select **Load Preset**.
2. Do one of the following:
   - Select a preset to load it.
   - Double-click a preset to load it and close the preset loader.

Saving VST Presets

PROCEDURE

- In the header of the plug-in panel, click the **Preset Management** button next to the preset name field and select **Save Preset**.

Global Functions and Settings

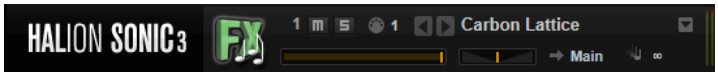
Plug-in Functions Section

The plug-in functions section at the top of the window gives you access to global functions that affect both the currently loaded programs, and the general working of the plug-in.

The plug-in functions section contains the multi slot section, the program slot section, the master section, and the performance displays.

Program Slot Section

This section contains a copy of the slot that is selected in the multi program rack, as well as the main parameters of the program.



The slot parameters are the same as in the multi program rack. In addition, the following parameters are available:

Slot Number

The number of the active slot. You can switch to another slot by clicking the slot number and selecting an entry from the list.

NOTE

Only slots that contain programs are available on the list.

Load Previous Program/Load Next Program

Loads the previous/next program.

The list of programs depends on the **MediaBay** filter that is active for the slot. For example, if you set the filter to show only bass sounds and double-click a sound to load it, you can use the **Load Previous Program/Load Next Program** buttons to step through the filtered list of bass sounds for the slot.

Load Icon

Click the **Load** icon to the right of the slot to open the program loader. Double-click a program to load it.

MIDI Activity Indicator

The MIDI symbol starts blinking when incoming MIDI data is detected.

Level

Adjusts the output level of the slot.

Pan

Adjusts the position of the slot in the stereo panorama.

Output

On the output selector, you define the output destination of the slot signal.

Polyphony

Sets the number of keys that can be played simultaneously.

NOTE

One key can trigger several layers. On the performance meter, you can see how many voices are triggered by your playing.

Program Icon

The program icon indicates the sound category to which the program belongs. It depends on the category and subcategory tags that are specified for a program in the **MediaBay**.

Master Section

The master section can be used to set volume and tuning of the plug-in.

Master Volume

Adjusts the overall volume of the plug-in.

Master Tune

You can set the **Master Tune** slider from 415.3 Hz to 466.2 Hz, which equals -100 cents to +100 cents.

Performance Displays

The meters and text displays indicate the system load of the plug-in.

CPU

This meter shows the processor load during playback. The more voices you play, the higher the processor load. If the overload indicator lights up, reduce the **Max Voices** setting on the **Options** page.

Disk

This meter shows the hard disk transfer load during the streaming of samples or when loading presets. If the overload indicator lights up, the hard disk is not supplying data fast enough. In such a case, open the **Options** page and adjust the **Disk vs. RAM** slider towards **RAM** or decrease the **Max Voices** setting.

Polyphony

This display indicates the number of samples that are currently played back, to help you trace performance problems. For example, if you have to reduce the **Max Voices** setting on the **Options** page, you can verify your settings by monitoring the number of samples that are currently playing.

Memory

This display indicates the overall amount of RAM that is currently used by the plug-in and the loaded programs. The number refers to the streaming buffer and the preloaded samples. The **MEM** display helps you trace performance problems. For example, if you need to free up memory for other applications, you can adjust the **Disk vs. RAM** slider on the **Options** page toward **Disk**. You can verify your settings by monitoring the **MEM** display.

Plug-in Name and Steinberg Logo

To get information regarding the version and build number of the plug-in, click the plug-in logo. This opens the **About** box. To close the **About** box, click it or press **Esc** on your computer keyboard.

If you click the Steinberg logo in the top right corner of the plug-in interface, a pop-up menu opens. Select one of the options to navigate to Steinberg web pages containing information on software updates, troubleshooting, etc.

Toolbar

The toolbar below the plug-in functions section contains controls for loading multi-programs on the left, the buttons to switch between the different pages, and various useful global functions.

Global insert, AUX, and FlexPhraser buttons

Use these buttons to switch off all insert effects, AUX effects, and FlexPhrasers for the whole plug-in at once. You can use this to compare sounds with and without effects or to use a preset without the FlexPhrasers, for example.

Lock button

If this button is activated, loading another program or layer does not overwrite the current FlexPhraser and trigger pad settings.

MIDI Reset

Click this button to stop playback and reset all MIDI controllers to their default values.

Undo/Redo

To undo or redo a single operation, click the **Undo** or **Redo** buttons. To undo or redo multiple operations, click the arrow next to the button to open the history and select the step to which you want to return.

Editor/Player

This button toggles between the two views: the full-size editor view (**e**) and the smaller player view (**p**).

Performance Controls

The performance controls are located in the lower part of the window.

Wheel Controls

To the left of the internal keyboard, the pitchbend wheel and the modulation wheel are located.

The modulation wheel is hardwired to MIDI controller #1, which is normally used as a source in the modulation matrix, but can be used as a quick control as well.

Keyboard

The virtual 88-note keyboard can be used to trigger MIDI notes. By clicking the keys at different vertical positions you can control the note-on velocity. Furthermore, the keyboard displays keys that are not used to trigger notes but act as key switches. The **Shift Keyboard** buttons to the left

and right of the keyboard shift the keyboard range by octaves. This allows you to display key switches that are located on lower keys, for example.

The following color scheme is used for the keys:

- Keys to which a key switch is assigned are shown in yellow.
- Keys to which a remapped key switch is assigned are shown in beige.
- Keys that are assigned to a trigger pad are shown in blue.
- Keys to which a loop trigger note is assigned are shown in green.

Sphere Control

The sphere is a two-dimensional control. It allows you to adjust two parameters simultaneously, by dragging the mouse horizontally (**Sphere H**) and vertically (**Sphere V**). Typically, two parameters that belong together are assigned to the sphere, such as cutoff and resonance.

If parameters are assigned to **Sphere H** and **Sphere V**, triangles for indicating the horizontal and vertical axis are available.

You can reset the sphere to the center position using the corresponding options on the context menu.

- If **Center Horizontal** and/or **Center Vertical** are activated, the sphere returns to the corresponding center position as soon as you release the mouse button.

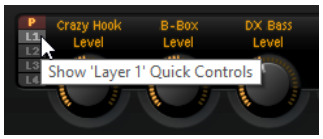
Quick Controls

Quick controls allow you to remote-control any parameter inside the program.

For each program and layer, eight quick controls are available. Furthermore, **Sphere H**, **Sphere V**, and the modulation wheel can also serve as quick controls.

If a layer contains zones, these zones are also affected by the quick controls of the layer.

- To switch between the quick controls of the program and the layers, use the buttons to the left of the potentiometer controls.



Value Tooltips

If you use quick controls, the following situations can happen:

- The actual value of a parameter and the value that is displayed in its value field differ.
- A button on the user interface is deactivated but the corresponding parameter is active.

For example, this can happen if the quick control introduces an offset or if a button is controlled by a quick control.

Therefore, parameters that are assigned to a quick control show a value tooltip. This value tooltip indicates the resulting parameter value and the name of the assigned quick control.

Value tooltips can be activated or deactivated on the **Options** page.

RELATED LINKS
Global Section on page 25

Accessing Quick Controls

PROCEDURE

1. Select the program that you want to edit in the multi program rack.
2. Use the buttons to the left of the quick controls to select whether you want to access the quick controls for the program or for one of the layers.
   The quick controls change to the settings of the program or the selected layer.

Assigning Quick Controls

PROCEDURE

1. In the editor for a program, a layer, or an insert effect, right-click the control to which you want to assign a quick control.

   NOTE

   - Parameters of a layer can only be assigned to the quick controls of this layer.
   - If you want to assign the parameters of a layer to the quick controls of a program, you must first assign the parameter to a quick control of the layer, and then assign the quick control of the layer to a quick control of the program.

2. On the **Assign Quick Control** submenu, select the quick control that you want to assign.

RESULT

The assignment is created.

NOTE

You can also assign a quick control as modulation source or modulation modifier in the modulation matrix. This allows you to combine the quick control with other modulation sources.

RELATED LINKS
Modulation Matrix Parameters on page 59

Setting the Minimum/Maximum Range

You can set the minimum and maximum range for each assignment separately. This gives you better control over the parameter change.

- Right-click a control and define the range using the **Set Minimum** and **Set Maximum** commands.
- In the **Quick Control Assignments** editor, enter the values in the **Minimum Value** and **Maximum Value** fields or click and drag the handles in the curve display.

Trimming the Range

The **Trim Range** function allows you to automatically set the best quick control range, depending on the current parameter value.

PROCEDURE

- In the **Quick Control Assignments** editor, right-click the assignment in the list on the right.
  - To trim the range of a single assignment, select **Trim Range**.
  - To trim the range of all quick controls, select **Trim Range of All Quick Controls**.

RESULT

The minimum and maximum values are set automatically.

NOTE

If you change the original parameter, you have to apply the **Trim Range** function again to guarantee the best control range.

Setting the Default Range

PROCEDURE

- In the **Quick Control Assignments** editor, right-click the assignment on the right.
  - To set the default range of a single assignment, select **Set Default Range**.
  - To set the default range of all quick controls, select **Set Default Range of All Quick Controls**.

RESULT

The quick controls are set to their maximum possible range.

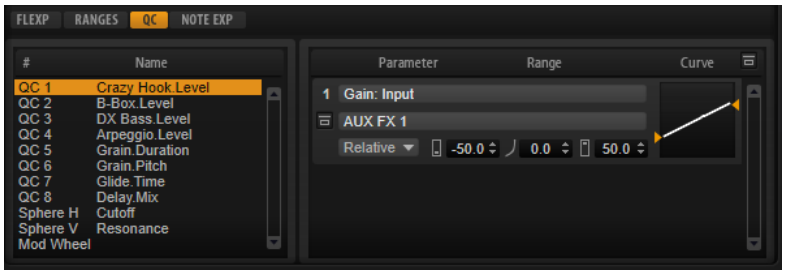
NOTE

If you change the original parameter, you must apply the **Set Default Range** function again to guarantee the best control range.

Unassigning Quick Controls

- To remove a quick control assignment, right-click the parameter in the **Quick Control Assignments** editor and select **Remove Assignment**.
- To remove all assignments of the selected quick control, open the context menu and select **Remove All Assignments**.
- To remove all quick control assignments for all 8 quick controls, select **Remove All Assignments of All Quick Controls**.

Quick Control Assignments Editor



- To open the **Quick Control Assignments** editor, right-click a quick control and select **Edit Quick Control** or open the **Edit** page for a program and select the **QC** tab in the lower part of the page.

Bypass All Quick Controls Assignments

This button on the title bar of the **Quick Control Assignments** editor allows you to bypass all quick control assignments for a program or layer. This is useful if you want to hear a sound without quick control assignments.

Quick Controls List

The eight quick controls are listed on the left. The assignments of the selected quick control are listed on the right. You can edit the parameters for each assignment separately.

Quick Control Parameter

Displays the parameter assignment for the selected quick control.

Affected Layers/Modules

Displays which program, layer, or module is affected by the quick control.

Bypass Single Quick Control Assignment

Bypasses the corresponding quick control assignment.

For example, if a quick control is assigned to several layers, this option allows you to bypass the quick control assignment for one of the layers only.

Mode

Determines the mode that is used for changing the parameter values.

Minimum Value

Sets the minimum value for the quick control assignment.

Curvature

Sets the curvature. You can also set the curvature by clicking and dragging in the curve display.

Maximum Value

Sets the maximum value for the quick control assignment.

Bypass All Quick Control Assignments

Bypasses all assignments for the selected quick control.

RELATED LINKS

Setting the Mode for the Quick Control Assignment on page 19
Adjusting the Curvature on page 19
Bypassing Quick Controls on page 20

Managing Quick Controls

The **Quick Control Assignments** editor allows you to manage and edit assigned quick controls.

- To rename a quick control, click in the **Name** column and enter a new name.
- To change the order of quick control assignments, drag an assignment between two other quick controls. When a line is shown, release the mouse button to insert the quick control assignment.
- To replace a quick control assignment, drag it onto another quick control. When a rectangle is shown, release the mouse button to replace the quick control assignment.

Adjusting the Curvature

You can adjust the curvature of each assignment in the **Quick Control Assignments** editor separately.

PROCEDURE

- To adjust the curvature, do one of the following:
  - Select the quick control that you want to edit and specify a value in the **Curvature** value field.

    Positive values change the curvature towards logarithmic behavior and negative values towards exponential behavior.
  - Click and drag the curvature in the display on the right.

Setting the Mode for the Quick Control Assignment

A quick control behaves either as continuous control or as a switch. In addition, it remote-controls a parameter either in relative or absolute mode. You can specify a mode for each assignment.

You can set the behavior in the context menu for the control itself or via the pop-up menu in the **Quick Control Assignments** editor.

Absolute

Remote-controls the parameter values continuously. Absolute mode changes the assigned parameters by overwriting them with the current quick control value, that is, parameter changes are overwritten.

Relative

Remote-controls the parameter values continuously. Relative mode changes the values of the assigned parameters without losing their relative settings, that is, parameter changes can still be heard.

Switch Relative

Switches between the minimum and maximum value. Parameter changes can still be heard.

Neutral Setting

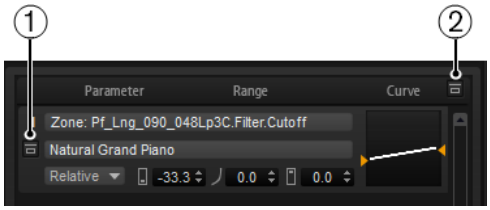
If you adjust the range of a quick control assignment, it can become necessary to change its neutral setting, to prevent the resulting sound from changing.

If you adjust the range of a quick control that has a single assignment that uses **Absolute** or **Relative** mode, HALion Sonic adjusts the setting of the quick control automatically so that the sound does not change. Likewise, if you assign multiple parameters to the same quick control, HALion Sonic sets the range of this quick control assignment automatically.

However, if a quick control has multiple assignments and you change the range of one or more assignments, the neutral setting cannot be set automatically. In this case, you can specify the neutral setting manually using the **Set Quick Control to Neutral Setting** command on the context menu for the quick control.

Bypassing Quick Controls

Bypassing quick controls allows you to hear a sound without quick control assignments.



1 To bypass a single assignment for one quick control, click **Bypass Single Quick Control Assignment** in the **Quick Control Assignments** editor.

2 To bypass all assignments for one quick control, select the quick control in the **Quick Control Assignments** editor, and click **Bypass All Quick Control Assignments** in the upper right of the parameter section.

Assigning Quick Controls in the Modulation Matrix

In addition to assigning the quick controls directly to parameter controls, you can also assign them as source or modifier in the modulation matrix. This way, you can combine the quick control with other modulation sources.

PROCEDURE

1. Open the layer editor and go to the modulation matrix.
2. On the pop-up menu in the **Source/Modifier** column, open the **Assign Quick Control** submenu and select the quick control.

   The submenu lists the quick controls of the layer.

Trigger Pads

You can use the trigger pads to trigger single notes or whole chords and to switch between FlexPhraser or arpeggiator variations.

Many of the programs that come with HALion Sonic make use of the trigger pads.

If a note or a chord is assigned to a pad, this pad turns orange. If a pad switches between variations, the line above the pad turns orange.

- To trigger a pad, click on it.

Presets

Pad presets save trigger notes and chord snapshots, but not the FlexPhraser variations. This means that you can exchange trigger notes and chords by loading presets without loosing your FlexPhraser variation settings.

Bypass

With the **Bypass Pads** button to the right of the trigger pads, you can bypass the entire pads section. This deactivates any functionality you assigned to the trigger pads.

Assigning Trigger Notes to Pads

You can assign a MIDI note to a pad and trigger the pad by playing this note.

To define the trigger note, do one of the following:

- Right-click a pad, open the **Assign Trigger Note** submenu, and from the further submenus, select the octave and note that you want to assign.
- Open the context menu for a pad, select **Learn Trigger Note**, and play the note on your MIDI keyboard or click a key on the internal keyboard.

  The name of the assigned trigger note is displayed in the top left corner of the pad.

On the internal keyboard, keys that serve as trigger notes are shown in blue. These keys do not play sounds, but trigger the corresponding pads instead.

- To remove a trigger note from a pad, right-click the pad and select **Forget Trigger Note**.

Assigning Chords or Notes to Trigger Pads

PROCEDURE

1. Right-click a pad and select **Snapshot Chord**.

   The pad starts blinking.
2. Do one of the following:
   - Play a chord or a single note and then click the pad that is blinking to assign the chord or note to the pad.
   - Drag a chord event from the chord track of your Steinberg DAW onto a trigger pad. This transfers the corresponding MIDI notes to the pad.

     If you drag a chord event onto the internal keyboard first, the corresponding chord is played back. This is useful to verify whether you selected the correct chord.

   If you define a chord that contains a key switch, you can trigger the chord with a specific instrument expression.

   If you add keys to a chord that also work as trigger notes, they trigger the underlying MIDI note instead of the trigger note.

RESULT

Triggering the pad now plays the chord or note.

Default Trigger Note Settings

Assigned trigger notes are saved with each program to allow for maximum flexibility. However, you can save a fixed set of default trigger notes to reflect an existing hardware setup, for example.

- To specify a default set of trigger notes, set up the trigger notes for all pads, right-click a pad, and select **Save Trigger Notes as Default**.
- To activate the default trigger note settings, right-click a pad and select **Use Default Trigger Notes**.

  Now, changing programs or multi-programs does not change the trigger notes anymore.

If you deactivate **Use Default Trigger Notes**, the last set of trigger notes remains active. To return to the trigger notes that were saved with the program, reload the program.

Assigning Key Switches to Trigger Pads

To use the pads for switching between expressions, assign them to the corresponding key switches.

PROCEDURE

- Right-click a pad, select **Snapshot Chord**, and play the key switch.

Removing Chords or Notes from Trigger Pads

PROCEDURE

- Right-click the trigger pad and select **Clear Chord**.

Switching between Variations

You can switch between variations using the trigger pads.

Variations are available for the FlexPhraser and the B-Box, for example.

PROCEDURE

1. Right-click the trigger pad that you want to use for switching to the selected FlexPhraser variations.
2. On the menu, select **Snapshot Variation**.
   The line above the pad turns orange to indicate that a FlexPhraser variation is assigned.

RESULT

If you trigger the pad, it switches to the variation that was selected when you made the snapshot.

NOTE

Instead of saving the variation settings themselves, the trigger pad saves only the variations that were selected when you made the snapshot. This allows you to modify variations after creating the snapshot. However, if you replace or add layers, you must first remove the assignment using the **Clear FlexPhrasers** command on the context menu and then take the FlexPhraser variation snapshot again.

RELATED LINKS

Creating FlexPhraser Variations on page 72
B-Box on page 147

Naming Pads

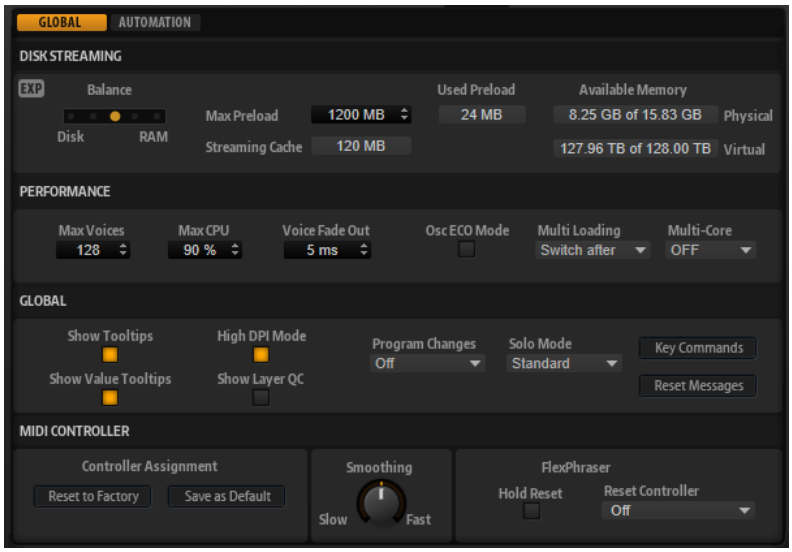
Entering names for pads allows you to get a better overview of their functionality, for example.

PROCEDURE

1. Right-click the pad to open the context menu and select **Rename Pad**.
2. Enter the new name and press **Enter**.

Options Page

The **Options** page contains global settings regarding performance optimization, global functions, and MIDI controllers.



Disk Streaming Section

Some of the programs come with up to 1 GB of samples. That is a large amount of data and your computer cannot load all samples completely into the RAM, especially if you are using all slots. Therefore, HALion Sonic loads only the initial milliseconds of each sample into RAM. You can specify how much RAM should be used and how much HALion Sonic should rely on accessing the hard-disk.

Balancing Disk vs. RAM

Use the **Balance** slider to balance the hard disk versus the RAM usage.

- If you need more RAM for other applications, drag the slider to the left towards the **Disk** setting.
- If your hard disk is not supplying data fast enough, drag the slider to the right towards the **RAM** setting.

NOTE

The Disk vs. RAM setting always applies to all plug-in instances. It is not saved with the project. You set it up only once for your computer system.

Used Preload and Available Memory

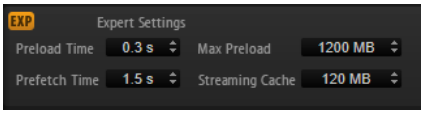
These displays provide information of the memory load in MB according to the current balance slider setting.

Max Preload

Determines the maximum amount of RAM that HALion Sonic uses for preloading samples. In most cases, the default values are sufficient. However, it may become necessary to reduce this value, for example, when working with other applications or plug-ins that require a lot of memory.

Expert Mode

Activate **Expert Mode** if you want to adjust the **Disk Streaming** settings in greater detail.



- **Preload Time** defines how much of the start of the samples is preloaded into the RAM. Larger values allow for more samples to be triggered in a short time.
- **Prefetch Time** determines the read-ahead capacity into the RAM while streaming samples for a voice that is playing. Larger values allow for better transfer rates from disk, and usually for more voices. However, this requires larger streaming cache in RAM. If you increase the **Prefetch Time**, it is recommended to also increase the **Streaming Cache**.
- **Streaming Cache** determines the amount of RAM that is reserved for prefetching. The actually needed size depends on the prefetch time, the number of simultaneously streaming voices and the audio format of the samples. For example, higher sample and bit rates need more RAM.

Performance Section

The **Performance** section contains settings to optimize the overall CPU performance of the plug-in.

Max Voices

Determines the total number of voices that a plug-in instance can play back. As soon as this limit is reached, HALion Sonic starts stealing voices.

Max CPU

To avoid clicks from CPU overloads, you can specify a maximum limit for the CPU load of the plug-in instance. HALion Sonic steals voices automatically when this limit is exceeded. At a setting of 100 %, this parameter is deactivated.

NOTE

Because of the reaction time of the plug-in, it is possible that you get CPU peaks that exceed the set limit. This can lead to artifacts, such as audio drop-outs. Therefore, it is good practice to set the **Max CPU** setting at a value a bit lower than actually needed.

Voice Fade Out

Sets the time to fade out voices that need to be stolen because the **Max Voices** setting or the **Max CPU** setting have been reached.

Osc ECO Mode

Activate this option to run the oscillators of synth layers in ECO mode. In ECO mode, the oscillators use less CPU at the cost of producing more aliasing at higher pitches. If this option is activated, you can play more voices with synth layers.

Multi Loading

Normally, when loading multi-programs, the previous multi is kept in the RAM until the new multi has been completely loaded.

- To clear a multi before loading a new one, select **Clear before** on the pop-up menu.

Multi-Core

On this pop-up menu, you can specify how many of the available CPU cores of your system can be used by the plug-in. This allows HALion Sonic to compute each program on a different core, for example. The best setting here depends on multiple factors, and varies from system to system, and project to project. A good starting point is to set this value to one core less than the available number of cores.

NOTE

If problems occur, reduce the number of cores, or set the pop-up menu to **Off** and load multiple instances of HALion Sonic instead. This way, the host application distributes the work load across the available cores.

Global Section

Here, you find common settings of HALion Sonic and the **General MIDI mode** parameter.

NOTE

The settings in this section are not saved with a project, but affect the plug-in as a whole.

Show Tooltips

If this option is activated, a tooltip is shown when you move the mouse over a control.

Show Value Tooltips

If this option is activated, parameters without a value field display their value in a tooltip when you use the corresponding control.

High DPI Mode

- If you are using a high resolution monitor, such as 4k (UHD), 5k etc., activating **High DPI Mode** results in a sharper display of HALion Sonic at a scaling of 150 % and higher. However, currently only even scaling factors are supported. For example, using a scaling of 150 % on your Windows system results in a scaling factor of 200 % in HALion Sonic.

  NOTE

  High DPI Mode may not be compatible with some combinations of software and hardware. If you experience display issues with your setup, you can deactivate **High DPI Mode**.

- If **High DPI Mode** is deactivated, the native monitor resolution is used.

NOTE

If you use HALion Sonic as a standalone application, the **High DPI Mode** option on the **Options** page is deactivated. Instead, the corresponding option in the **Preferences** dialog is used.

Show Layer QC

Allows you to show/hide the quick controls for the layers in addition to those for the program.

- If this option is deactivated, the quick control section shows only program quick controls and new quick control assignments can only be made for the program quick controls.
- If this option is activated, the quick control section can show the program quick controls or the layer quick controls. You can switch between those quick controls using the buttons on the left. New quick control assignments can be made for the program or for the layers.

Solo Mode

- In **Standard** mode, you can solo multiple programs or layers to hear them combined.
- In **Exclusive** mode, only one program or layer can be soloed at a time.

Program Changes

Determines how HALion Sonic handles incoming MIDI program change messages.

- In **GM Mode**, program change messages are used to switch programs in the slots of the multi program rack.
- In **Multi Mode**, program change messages are used to switch between the 128 multis that can be configured on the **Multi** page.
- Select **Off** to ignore incoming controller change messages.

GM Mode (General MIDI Mode)

Select **GM Mode** to play back MIDI files that have been arranged for General MIDI sound sets. **GM Mode** supports MIDI program change messages and preloads a global chorus and reverb effect on AUX FX 1 and 3 for immediate use.

If **GM Mode** is activated, all loaded programs are removed and the 16 slots are assigned to the 16 MIDI channels. As long as **GM Mode** is active, the 16 MIDI channels on the **MIDI** page cannot be changed.

The **MediaBay** sets an instrument set filter and displays only the General MIDI sounds. The MIDI program changes 0–127 refer to the corresponding GM Sound attributes of the **MediaBay**. This means that you can make any of your sounds part of the General MIDI sound set by setting the GM Sound attribute on the corresponding sound.

If you add **GM Sound** attributes to programs in the **MediaBay** and these attributes are used in the current multi, you can update the multi by right-clicking the multi loader and selecting **Update General MIDI Programs**. This exchanges those programs that use the specified **GM Sound** attribute. The other programs remain unaffected.

NOTE

The General MIDI sounds that come with HALion Sonic are optimized for fast loading times. However, larger programs take longer to load.

Key Commands

Opens the **Key Commands** dialog, where you can view and assign key commands.

Reset Messages

If you click this button, all message dialogs that have been suppressed with the **Don't Show Again** option are displayed again.

MIDI Controller Section

Controller Assignment

With the two buttons in this section, you can save your customized MIDI controller assignments as default or restore the factory MIDI controller assignments.

NOTE

Save as Default does not include any of the MIDI controller assignments of the AUX FX.

The current MIDI controller mapping is also saved with each project. This way, you can transfer your settings to other systems. The project includes the MIDI controller assignments of the AUX FX as well.

MIDI Controller Smoothing

MIDI controllers have a maximum resolution of 128 steps. This is rather low. Therefore, if you use a MIDI controller as a modulation source in the modulation matrix or to remote-control a quick control, the parameter change may occur in

audible steps, causing an effect often referred to as “zipper noise”. To avoid this, HALion Sonic provides MIDI controller smoothing, so that parameter changes occur more gradually.

- If MIDI controller changes cause audible artifacts, turn the control towards slower settings. This way, MIDI controller changes do not occur immediately, but are spaced over a period of time (in milliseconds).
- If you want more immediate MIDI controller changes, turn the control towards faster settings. Note, however, that this may introduce audible artifacts.

FlexPhraser

Hold Reset sends a global hold reset message to all FlexPhraser modules or arpeggiators that are used.

The **Reset Controller** pop-up menu allows you to assign a dedicated MIDI controller to the **Hold Reset** button for remote-controlling it.

RELATED LINKS

Automation on page 90
Preferences Dialog on page 292

Editing Programs

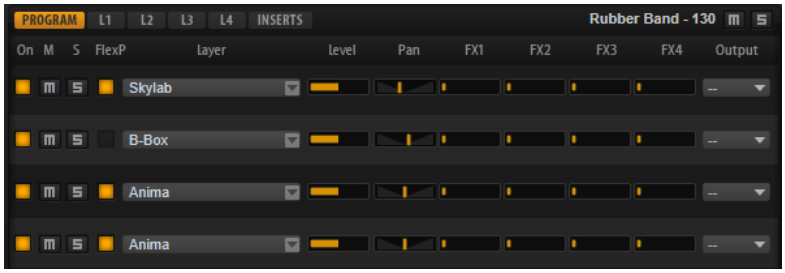
The **Edit** page is where you edit your program, load different layers for a program, and edit the layers.

A program contains up to four layers that can all be mapped to different velocity and key ranges. Each of the layers can use a FlexPhraser and can be routed freely to one of the available outputs.

To edit a program, click the **Program** button at the top of the **Edit** page.

Program Page Parameters

The **Program** page is divided into two sections. The section at the top is used to load and save layers, and to set up the mix parameters such as level, pan, and FX sends. The bottom section is used to display layer ranges, program FlexPhraser editors, quick control assignments, or Note Expression parameters.



On/Off

Activates/Deactivates the corresponding layer. If a layer is deactivated, it does not use any processing power.

Mute

Mutes the corresponding layer.

Solo

Solos the corresponding layer. You can solo multiple layers at the same time.

NOTE

The **Mute** and **Solo** buttons at the top of the page mute the entire program.

FlexPhraser On/Off

Activates/Deactivates the FlexPhraser for a layer.

You can edit the FlexPhraser on the edit page for the corresponding layer.

NOTE

This button is only available for layers that support the FlexPhraser functionality.

Layer Slots

The layer slots allow you to load up to four layers for a program.

Right-click a slot to open the context menu with the following options:

- **Load Layer** opens the **Load Layer** dialog. Select a layer and click **OK** to load it into this slot.
- **Save Layer** saves the layer in this slot with the current settings, under the same name.

  NOTE

  Write-protected content can only be saved under a new name.

- **Save Layer As** opens the **Save Layer** dialog where you can save the layer under a new name.
- **Remove Layer** removes the layer from the slot.
- **Init Layer** loads a neutral synth layer.
- **Copy Layer** copies the layer to the clipboard.
- **Paste Layer** pastes the copied layer into the current slot.

Level

Adjusts the loudness of the layer.

Pan

Sets the position of the layer in the stereo panorama.

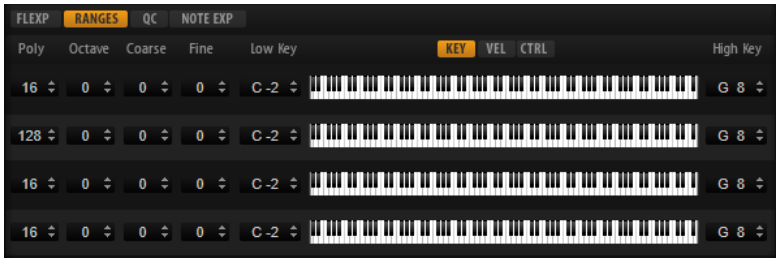
FX1–4 Send Levels

These four sliders adjust the send levels for the global AUX FX busses for each layer.

Output

Sets the output for each layer. If you do not change this setting, the signal is sent to the output that is specified for the program. But you can also select the main output or one of the plug-in outputs.

Ranges Tab



Poly

Specifies how many notes can be played at the same time.

NOTE

Polyphony is part of the layer settings and is therefore restored when you load a layer.

If a layer is monophonic, this setting has no effect.

Octave

Allows you to shift the octave of a layer by ±5 octaves.

Fine

Allows you to detune a layer by ±100 cents.

Key Range (Low Key, High Key)

Allows you to limit the key range for a slot.

Velocity Range (Low Vel, High Vel)

Allows you to limit the velocity range for a slot.

Controller Filter

Allows you to filter out the most commonly used MIDI controllers.

FlexP, QC, and NoteExp Tabs

The FlexP, QC, and NoteExp tabs are described in separate sections.

RELATED LINKS
FlexPhraser on page 67
Quick Controls on page 15
Note Expression on page 290
Editing the Key Range on page 30
Editing the Velocity Range on page 30
Filtering Controllers on page 30

Editing the Key Range

Each slot can be limited to a specific key range.

To show the key range, activate the **Key** button above the range controls.

You can set the key range in the following ways:

- Set the range with the **Low Key** and **High Key** value fields or by dragging the ends of the keyboard range control.
- To move the key range, click in the middle of the range control and drag.
- To set the range via MIDI input, double-click in a value field and play the note.

Editing the Velocity Range

Each slot can be limited to a specific velocity range.

To show the velocity range, activate the **Vel** button above the range controls.

- Set the velocity range with the **Low Vel** and **High Vel** value fields or by dragging the ends of the velocity range control.

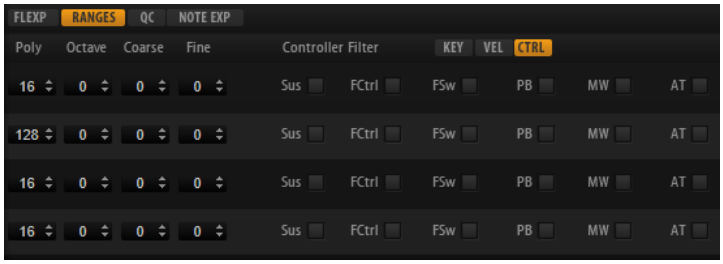
  To move the velocity range, click in the middle of the range control and drag.

Filtering Controllers

You can filter out the most commonly used MIDI controllers for each slot separately.

For example, if you set up a keyboard split with bass and piano playing on the same MIDI channel, both sounds receive the same MIDI controllers. However, you usually do not want the bass to receive the sustain pedal. To avoid that all sounds on the same MIDI channel receive the same MIDI controllers, use the controller filter.

Filtering out control change messages can also be used to avoid unwanted program changes on MIDI channel 10 (drums), for example.



PROCEDURE

1. Activate the **Ctrl** button above the range controls.
2. For each slot, activate the MIDI controllers that you want to filter out.

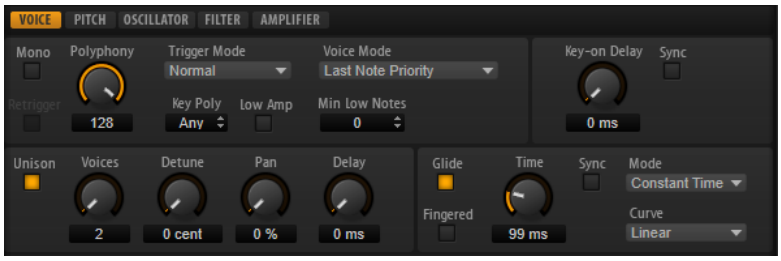
   You can filter out the following MIDI controllers: Sustain Pedal #64, Foot Controller #4, Foot Switches #65-69, Pitchbend, Modulation Wheel #1, and Aftertouch.

Editing Layers

A program contains up to four layers. Each layer can be edited separately. The available parameters and tabs vary depending on the type of layer.

On the **Edit** page, you can select which layer to edit by clicking the corresponding button at the top of the page.

Voice Tab



Mono

Allows you to switch between monophonic and polyphonic playback.

- Activate **Mono** to switch to monophonic playback. Usually, this allows a more natural sounding performance for solo instruments.
- Deactivate **Mono** to play polyphonically with the number of notes specified by the **Polyphony** control.

Retrigger

This option is only available in **Mono** mode. If **Retrigger** is activated, a note that was stolen by another note is retriggered if you still hold the stolen note when you release the new one.

This way, you can play trills by holding one note and quickly and repeatedly pressing and releasing another note, for example.

Polyphony

Sets the upper limit for the number of notes that you can play if **Mono** is deactivated.

NOTE

If the program has a lower value for polyphony than any of its layers, the maximum number of notes is determined by the program.

Trigger Mode

Defines the trigger behavior for new notes.

- **Normal** triggers a new note when the previous note gets stolen. The sample and the envelope of the new note are triggered from the start.

To minimize discontinuities, use the **Fade Out** parameter of the zone.

- **Resume** does not always trigger a new note.

  If the new note stays within the same zone, the envelope is retriggered, but resumes at the level of the stolen note. The pitch of the zone is set to the new note.

  If the new note plays in a different zone, the sample and the envelope of the new note are triggered from the start.

- **Legato** does not always trigger a new note.

  If the new note stays within the same zone, the envelope keeps running. The pitch of the zone is set to the new note.

  If the new note plays in a different zone, the sample and the envelope of the new note are triggered from the start.

- **Resume Keeps Zone** does not trigger a new note upon note stealing. The envelope resumes at the level of the stolen note and the pitch of the zone is set to the new note, even if the new note plays in a different zone.
- **Legato Keeps Zone** does not trigger a new note upon note stealing. The envelope keeps running and the pitch of the zone is set to the new note, even if the new note plays in a different zone.

Voice Mode

Determines which notes are stolen during playback and whether new notes are triggered when the **Polyphony** setting is exceeded.

- **Last Note Priority** – New notes have playback priority over the notes that were played before them.

  If you exceed the maximum number of notes, the notes that were played first are stolen in chronological order (First in/First Out) and the new notes are triggered.

- **First Note Priority** – Older notes have playback priority over newer notes.

  If you exceed the maximum number of notes while older notes are still being held, no notes are stolen. New notes are only triggered if a free voice is available.

- **Low Note Priority** – Low notes have playback priority over higher notes.

  If you exceed the maximum number of notes by playing a lower note than the ones that are held, the highest note is stolen and the new note is triggered.

  If you exceed the maximum number of notes by playing a higher note than the ones that are held, no note is stolen and no new note is triggered.

- **High Note Priority** – High notes have playback priority over lower notes.

  If you exceed the maximum number of notes by playing a higher note than the ones that are held, the lowest note is stolen and the new note is triggered.

  If you exceed the maximum number of notes by playing a lower note than the ones that are held, no note is stolen and no new note is triggered.

- **Steal Lowest Amplitude** – New notes have playback priority over notes with a low amplitude.

  If you exceed the maximum number of notes, the note with the lowest amplitude is stolen and the newest note is triggered.

- **Steal Released Notes** – New notes have priority over notes that enter the release phase.

  If you exceed the maximum number of notes, the oldest note that is in its release phase is stolen and the new note is triggered.

  If no note is playing in release and you exceed the maximum number of notes, the first played notes are stolen in chronological order and the new notes are triggered.

Key Poly

With this parameter, you can specify an upper limit for the number of notes that can be played for a key. The notes that were played last have priority. For this parameter to have an effect, the **Mono** button must be deactivated.

NOTE

Key Poly is limited by the **Polyphony** setting.

Low Amp

By default, the oldest note is removed first when notes are stolen due to a **Key Poly** limitation. If you want the note with the lowest amplitude to be removed instead, activate **Low Amp**.

Min Low Notes

Defines the number of low notes that cannot be stolen, regardless of the **Voice Mode** setting.

Make sure that the polyphony of the program is high enough for your specific **Min Low Notes** setting and allows to play additional higher notes.

Key On Delay

With this parameter, you can delay the playback of the layer by a specified time or a note value.

If **Sync** is deactivated, the delay is specified in milliseconds. If **Sync** is activated, the delay is specified in fractions of beats.

To synchronize the delay time to the host tempo, activate the **Sync** button and select a note value from the pop-up menu. To change the selected note value to a triplet, activate the **T** button.

Unison

Allows you to trigger multiple voices simultaneously with each note that you play. If you activate **Unison**, the following parameters become available:

- **Voices** determines the number of voices that are triggered simultaneously (max. 8).
- **Detune** detunes the pitch of each unison voice in cents. This produces a fatter sound.
- **Pan** spreads the unison voices across the stereo panorama. The higher the value, the broader the stereo image.
- **Delay** allows you to introduce a small random delay for each unison voice.

  With a value of 0 %, all unison voices are triggered at the same time. Values from 1 % to 100 % add a random delay to each unison voice. The higher the value, the more random the delay. This is especially useful to avoid comb filter effects with two or more slightly detuned samples.

Glide

Allows you to bend the pitch between notes that follow each other. You achieve the best results in **Mono** mode. If you activate **Glide**, the following parameters become available:

- **Time** specifies the time needed to bend the pitch from one note to the other.
- Activate **Sync** to synchronize the delay time to the host tempo. Select a note value from the pop-up menu. To change the selected note value to a triplet, activate the **T** button.
- **Mode** determines the glide time.

  Set this parameter to **Constant Time** to keep the glide time constant and independent from the note interval.

Set this parameter to **Constant Speed** to change the glide time with the note interval. Larger intervals result in longer glide times.

- **Curve** allows you to select one of three curve types to define the glide behavior.

  With the **Linear** curve, the pitch glides at continuous speed from the start to the end pitch.

  With the **Exponential** curve, the pitch starts gliding at higher speed and decelerates towards the end pitch. This behavior is similar to the natural pitch glide produced by a singer.

  With the **Quantized** curve, the pitch glides in semitones from the start to the end pitch.

- **Fingered** allows you to glide the pitch only between notes that are played legato.

NOTE

If you use **Cutoff Key Follow**, **Level Key Follow**, and **Pan Key Follow**, the corresponding parameters also change with the **Glide** effect.

Pitch Tab

Pitchbend Up/Pitchbend Down

Determines the range for the modulation that is applied when you move the pitchbend wheel.

Coarse

Allows you to shift the pitch of a layer by ±12 semitones.

Fine

Allows you to detune a layer by ±100 cents.

Pitch Envelope Amount

Determines how much the pitch is affected by the pitch envelope.

Random Pitch

Allows you to randomly offset the pitch with each played note. Higher values cause stronger variations. At a setting of 100 %, the random offsets can vary from -6 to +6 semitones.

Pitch Key Follow

Allows you to adjust the pitch modulation by MIDI note number. Set this parameter to positive values in order to raise the pitch the higher you play. Use negative values to lower the pitch the higher you play. At a setting of +100 %, the pitch follows the played note exactly.

Center Key

Specifies the MIDI note that is used as the central position for the **Pitch Key Follow** function.

Oscillator Tab

The **Oscillator** tab offers six sound sources: three main oscillators, the sub oscillator, the ring modulation, and the noise generator. To create interesting electronic spectra, you can mix any of these sound sources. The resulting signal is sent to the **Filter** and **Amplifier** tabs for further sound shaping.

The three main oscillators (**OSC 1**, **OSC 2**, and **OSC 3**) offer several wave shapes and algorithms.

- To activate an oscillator, click its **On/Off** button.

OSC 1/2/3 Type

The oscillator type defines the basic sound character of the oscillator. This pop-up menu lists the waveforms **Sine**, **Triangle**, **Saw**, and **Square**, followed by the algorithms **PWM**, **Sync**, **CM** and **XOR**. The combination of waveform and algorithm controls the sound of the oscillator.

The following algorithms are available:

- **PWM** (pulse width modulation) is only supported by the square waveform. The **Waveform** parameter sets the ratio between the high and low value of the square wave. A setting of 50 % produces a pure square wave. With settings below or above 50 %, the oscillator produces rectangular waves.
- **Sync** provides different hard-sync oscillators, where each is a combination of a master and slave oscillator. The wave shape of the slave oscillator is reset with each full wave cycle of the master oscillator. This means that a single oscillator can produce a rich sync-sound without using other oscillators as slave or master. The **Waveform** parameter adjusts the pitch of the slave oscillator, producing the typical sync sound.
- **CM** (cross modulation) provides a combination of two oscillators where a master oscillator is modulating the pitch of a slave oscillator at the rate of the audio sample. The **Waveform** parameter adjusts the pitch ratio between slave and master oscillator, resulting in a sound close to frequency modulation.
- **XOR** (exclusive OR) compares two square waveforms with an **XOR** operation. Depending on the outcome of the **XOR** operation, the wave shape of a third oscillator is reset. The **Waveform** parameter adjusts the pitch ratio of the square oscillators resulting in a sound close to ring modulation of the third oscillator.

Osc 1/2/3 Waveform

Modifies the sound of the oscillator algorithm. Its effect depends on the selected oscillator type.

NOTE

- Except for **PWM**, all algorithms support the **Sine**, **Triangle**, **Saw**, and **Square** wave shapes. **PWM** only supports the **Square** wave shape.
- The **Waveform** parameter for the three main oscillators can be assigned as modulation destination in the modulation matrix.

OSC 1/2/3 Octave

Adjusts the pitch in octave steps.

OSC 1/2/3 Coarse

Adjusts the pitch in semitone steps.

OSC 1/2/3 Fine

Adjusts the pitch in cent steps. This allows you to fine-tune the oscillator sound.

OSC 1/2/3 Level

Adjusts the output level of the oscillator.

NOTE

Waveform, pitch, and level of oscillator 1, 2, and 3 can be modulated separately in the modulation matrix.

Multi-Oscillator Mode

For the three main oscillators, you can activate **Multi-Oscillator** mode. This allows you to create a richer sound by producing up to eight oscillators simultaneously.

- To activate **Multi-Oscillator** mode, activate the **MO** button.

If **Multi-Oscillator** mode is activated, you can click the edit button to show the corresponding parameters.

NOTE

If **Multi-Oscillator** mode is active for an oscillator, you can modulate the corresponding parameters in the modulation matrix.

Multi Oscillator Number, Detune, and Spread

- **Number** determines the number of oscillators that play back simultaneously. You can also set fractions of numbers. For example, with a setting of 2.5, you hear two oscillators at full level and a third one at half level.
- **Detune** detunes the oscillators.
- **Spread** narrows or widens the stereo panorama. With a setting of 0 %, you create a mono signal, and with 100 %, you create a stereo signal.

Sub Oscillator

The pitch of the sub oscillator is always one octave lower than the overall pitch. The overall pitch is determined by the **Octave** setting.

On/Off

Activates/Deactivates the sub oscillator.

Type

The wave shape of the sub oscillator. You can choose between **Sine**, **Triangle**, **Saw**, **Square**, **Pulse Wide**, and **Pulse Narrow**.

Level

Adjusts the output level of the sub oscillator.

Ring Modulator

Ring modulation produces sums and differences between the frequencies of two signals.

Ring Modulation Source 1/Ring Modulation Source 2

Determines the sources to be ring modulated. You can select **OSC 1** or **Sub** as **Source 1**, and **OSC 2** or **OSC 3** as **Source 2**.

NOTE

Make sure that the corresponding oscillators are activated when you select them. Otherwise, no sound is heard.

Ring Modulation Level

Adjusts the output level of the ring modulation.

Noise Generator

The **Noise** parameter is used for non-pitched sounds. In addition to standard white and pink noise, there are also band-pass filtered versions of white and pink noise.

Noise Type

The sound color of the noise. You can choose between standard and band-pass filtered (**BPF**) versions of white and pink noise.

Noise Level

Adjusts the output level of the noise generator.

Filter Tab

Filter Mode

The buttons on the left determine the overall filter structure.

- **Single Filter** uses one filter with one selectable filter shape.
- **Dual Filter Serial** uses two separate filters connected in series.

  You can select the filter shapes for each filter independently. The parameters **Cutoff** and **Resonance** control both filters simultaneously. However, you can offset these parameters for the second filter with the parameters **CF Offset** and **Res Offset**.
- **Dual Filter Parallel** uses two separate filters connected in parallel.

  You can select the filter shapes for each filter independently. The parameters **Cutoff** and **Resonance** control both filters simultaneously. However, you can offset these parameters for the second filter with the parameters **CF Offset** and **Res Offset**.
- **Morph 2** morphs between filter shape **A** and **B**.

  Adjust the morphing with the **Morph Y** parameter.
- **Morph 4** morphs sequentially from filter shape **A** to **D**.

  Adjust the morphing with the **Morph Y** parameter.
- **Morph XY** morphs freely between the filter shapes **A**, **B**, **C**, and **D**.

  Adjust the morphing with the **Morph X** and **Morph Y** parameters.

Filter Type

Specifies the basic sound character of the filter.

- **Off** deactivates the filter section.
- **Classic** offers 24 filter shapes with resonance.
- **Tube Drive** adds warm, tube-like distortion. You can set the amount of tube drive with the **Distortion** parameter.
- **Hard Clip** adds bright, transistor-like distortion. You can set the amount of hard clipping with the **Distortion** parameter.
- **Bit Red** (Bit Reduction) adds digital distortion by means of quantization noise. You can adjust the bit reduction with the **Distortion** parameter.
- **Rate Red** adds digital distortion by means of aliasing. You can adjust the rate reduction with the **Distortion** parameter.
- **Rate Red KF** adds digital distortion by means of aliasing. In addition, **Key Follow** is used. The rate reduction follows the keyboard, so the higher you play, the higher the sample rate.
- **HALion 3** offers the five legacy filter shapes from HALion 3.
- **Waldorf** offers 13 filter shapes, including two comb filters.
- **Eco** is a performance-optimized low-pass filter without **Resonance** or **Distortion** parameters. It allows you to adapt the brilliance of samples for different velocity layers of the same key, for example.

NOTE

Filters without distortion use less processing power.

Filter Shape

- LP 24, 18, 12, and 6 are low-pass filters with 24, 18, 12, and 6 dB/oct. Frequencies above the cutoff are attenuated.
- BP 12 and BP 24 are band-pass filters with 12 and 24 dB/oct. Frequencies below and above the cutoff are attenuated.
- HP 6+LP 18 and HP 6+LP 12 are combinations of a high-pass filter with 6 dB/oct and a low-pass filter with 18 and 12 dB/oct, respectively (asymmetric band-pass filter). Frequencies below and above the cutoff are attenuated. Attenuation is more pronounced for the frequencies above the cutoff.
- HP 12+LP 6 and HP 18+LP 6 are combinations of a high-pass filter with 12 and 18 dB/oct and a low-pass filter with 6 dB/oct (asymmetric band-pass filter). Frequencies below and above the cutoff are attenuated. Attenuation is more pronounced for the frequencies below the cutoff.
- HP 24, 18, 12, and 6 are high-pass filters with 24, 18, 12, and 6 dB/oct. Frequencies below the cutoff are attenuated.
- BR 12 and BR 24 are band-reject filters with 12 and 24 dB/oct. Frequencies around the cutoff are attenuated.
- BR 12+LP 6 and BR 12+LP 12 are combinations of a band-reject filter with 12 dB/oct and a low-pass filter with 6 and 12 dB/oct, respectively. Frequencies around and above the cutoff are attenuated.
- BP 12+BR 12 is a band-pass filter with 12 dB/oct plus a band-reject filter with 12 dB/oct. Frequencies below, above, and around the cutoff are attenuated.
- HP 6+BR 12 and HP 12+BR 12 are combinations of a high-pass filter with 6 and 12 dB/oct and a band-reject filter with 12 dB/oct. Frequencies below and around the cutoff are attenuated.

- AP is an all-pass filter with 18 dB/oct. Frequencies around the cutoff are attenuated.
- AP+LP 6 is an all-pass filter with 18 dB/oct plus a low-pass filter with 6 dB/oct. Frequencies around and above the cutoff are attenuated.
- HP 6+AP is a high-pass filter with 6 dB/oct plus an all-pass filter with 18 dB/oct. Frequencies around and below the cutoff are attenuated.

X/Y Control

Allows you to adjust two parameters simultaneously.

- For the filter types **Single**, **Dual Serial**, and **Dual Parallel**, the X/Y control adjusts the cutoff frequency on the horizontal axis and the resonance on the vertical axis.
- For the filter types **Morph 2** and **Morph 4**, the X/Y control adjusts the morphing between the filter shapes on the vertical axis. The horizontal axis adjusts the cutoff frequency.
- For **Morph XY**, the X/Y control adjusts the morphing between the filter shapes **AD** and **BC** on the horizontal axis, and **AB** and **DC** on the vertical axis.

Cutoff

Controls the cutoff frequency of the filter.

Resonance

Emphasizes the frequencies around the cutoff. At higher settings, the filter self-oscillates, which results in a ringing tone.

Distortion

Adds distortion to the signal. The effect depends largely on the selected filter type. At higher settings, it creates a very intense distortion effect.

NOTE

This parameter is only available for the filter types **Tube Drive**, **Hard Clip**, **Bit Red**, **Rate Red**, and **Rate Red KF**.

CF Offset

For the dual filters, this parameter allows you to offset the cutoff frequency of the second filter, that is, of filter shape B.

Res Offset

For the dual filters, this parameter allows you to offset the resonance of the second filter, that is, of filter shape B.

Cutoff Velocity

Controls the cutoff modulation from velocity.

Envelope Amount

Controls the cutoff modulation from the filter envelope.

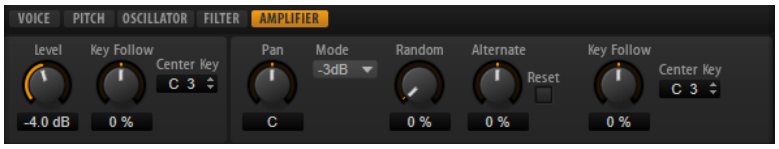
Cutoff Key Follow

Adjusts the cutoff modulation using the note number. Increase this parameter to raise the cutoff with higher notes. At 100 %, the cutoff follows the played pitch exactly.

Center Key

Specifies the MIDI note that is used as the central position for the **Key Follow** function.

Amplifier Tab



Level

Controls the overall volume of the sound.

Level Key Follow

Allows you to control the volume depending on the note pitch. Positive values mean that the volume is higher the higher the notes you play. With negative values, the volume decreases the higher the notes you play.

Center Key

Specifies the MIDI note that is used as the center position for **Level Key Follow**.

Pan

Determines the position of the sound in the stereo panorama. At a setting of -100 %, the sound is panned hard left, and at +100 %, it is panned hard right.

Mode

With this option you can specify how the loudness changes across the stereo panorama.

- If this parameter is set to **0 dB**, it works like a balance control.

  Setting the pan control towards the left fades out the right channel and vice versa. At the center position, the loudness is not cut.
- If this parameter is set to **-3 dB**, the option uses the cosine/sine pan law.

  The loudness is cut by -3 dB at the center position, but the energy is preserved when moving the source signal across the stereo panorama. The **-3 dB** option sounds more natural. The transition from hard left to hard right sounds much smoother than with the **0 dB** or the **-6 dB** setting.
- If this parameter is set to **-6 dB**, this option uses the linear pan law.

  The loudness is cut by -6 dB at the center position, and the energy is not preserved when moving the source signal across the stereo panorama. The **-6 dB** option sounds more synthetic. The transition from hard left to hard right sounds more abrupt than with the **-3 dB** setting.
- If this parameter is set to **Off**, no panning is applied.

Random Pan

Allows you to offset the pan position randomly with each played note. Higher values cause stronger variations. At a setting of 100 %, the random offsets can vary from fully left to fully right.

Alternate Pan

Allows you to alternate the pan position each time that you play a note. To start panning on the left, use negative values. Use positive values to begin on the right. At a setting of +100 %, the first note plays hard right, the second note hard left, and so on.

Reset

The initial pan position is set once when HALion Sonic is loaded. After that, each note that you play is counted to determine the next pan position. To reset this counter, click the **Reset** button.

Pan Key Follow

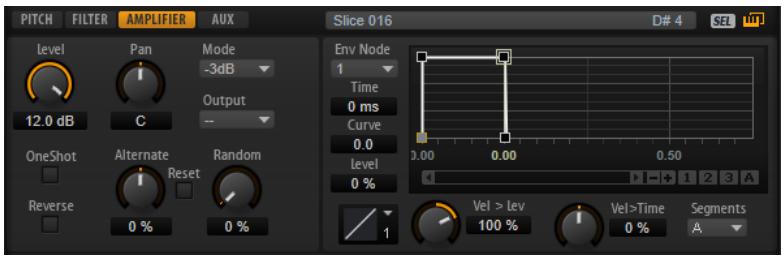
Allows you to adjust the pan modulation via the MIDI note number. Set this parameter to positive values to offset the pan position towards the right for notes above, and towards the left for notes below the center key. Use negative values to offset the pan position towards the left for notes above, and towards the right for notes below the center key.

At the maximum setting of +200 %, the pan position moves from hard left to hard right within two octaves: Fully left is reached one octave below and fully right is reached one octave above the center key.

Center Key

Specifies the MIDI note that is used as the center position for **Pan Key Follow**.

Additional Parameters for Drum and Loop Layers



One Shot

If this button is activated, any MIDI note-off messages are ignored. The release segments of the envelopes is not played. Instead, the envelopes play until the sustain is reached and remain on that level for as long as the sample plays back. Any loop settings of the sample are ignored.

Reverse

If this button is activated, the sample is played in reverse. Any loop settings the sample may contain are ignored.

Envelopes

On the **Edit** page, you can edit the pitch (**P**), filter (**F**), amp (**A**), and user (**U**) envelopes. Each of these is a multi-segment envelope with up to 128 nodes. The nodes specify the overall shape of the envelope. The amp, filter, and pitch envelopes are pre-assigned to the amplitude, the filter cutoff frequency, and the pitch of the layer. The user envelope is freely assignable.

All envelopes can be used as sources in the modulation matrix.

- Click **P** to display the parameters of the pitch envelope.

  The pitch envelope modulates the pitch over time. The pitch envelope is bipolar, which means it allows for negative and positive values to bend the pitch.
- Click **F** to display the parameters of the filter envelope.

  The filter envelope controls the cutoff frequency to shape the harmonic content over time.
- Click **A** to display the parameters of the amplifier envelope.

  The amplifier envelope shapes the volume over time.
- Click **U** to display the parameters of the freely assignable user envelope.

  The user envelope is bipolar, which means it allows for negative and positive values, for example, to modulate the pan from left to right.

Mode

Determines how the envelope is played back when it is triggered.

- Select **Sustain** to play the envelope from the first node to the sustain node. The sustain level is held for as long as you play the note. When you release the note, the envelope continues with the stages following the sustain. This mode is ideal for looped samples.
- Select **Loop** to play back the envelope from the first node to the loop nodes. Then, the loop is repeated for as long as the key is held. When you release the note, the envelope continues playing the stages that follow the sustain. This mode is ideal for adding motion to the sustain of the envelope.
- Select **One Shot** to play the envelope from the first to the last node, even if you release the key. The envelope has no sustain stage. This mode is ideal for drum samples.
- Select **Sample Loop** to preserve the natural attack of the sample. The decay of the envelope does not start until the sample has reached the sample loop start.

  If you set the second node to the maximum level and use the following nodes to shape the decay during the loop phase of the sample, the envelope only affects the loop phase. The attack of the envelope is still executed.

  NOTE

  Sample Loop mode is only available for sample layers.

Sync

Allows you to synchronize the envelopes to the tempo of your host application.

Snap

If **Snap** is activated and you change the position of nodes, they snap to the nodes of the guide envelope that is shown in the background.

NOTE

Pitch envelope nodes also snap to semitone positions.

Fill

Allows you to add multiple envelope nodes after the selected nodes.

Fixed

- If **Fixed** is activated and you move selected nodes on the time axis, only the selected nodes are moved.
- If **Fixed** is deactivated, all nodes that follow the edited nodes are also moved.

Env Node

Displays the focused envelope node.

Time

Specifies the period of time between two nodes. Depending on the **Sync** mode, the **Time** parameter is displayed in milliseconds and seconds, or in fractions of beats.

Curve

Allows you to adjust the curvature of the envelope curve between two nodes from linear to logarithmic or exponential behavior.

Level

Specifies the amplitude of the envelope at the position set by the **Time** parameter.

Level Velocity Curve

You can select the curve type to specify how the incoming velocity translates to the level of the envelope. The characteristic of each curve is displayed by a small icon.

Level Velocity (Vel>Lev)

Determines how the velocity affects the level of the envelope.

The level of the envelope depends on two factors: the setting of this parameter and how hard you hit a key. Positive values increase the level of the envelope the harder you hit a key. Negative values decrease the level of the envelope the harder you hit a key.

Time Velocity (Vel>Time)

Adjusts the influence of velocity on the phases of the envelope. Positive values decrease the length of the phases for higher velocity values. Negative values increase the length of the phases for higher velocity values.

Segments

Here, you can select which phases of the envelope are affected by the **Time Velocity** parameter.

- **Attack** – The velocity affects the attack only.
- **Attack + Decay** – The velocity affects all phases until the sustain.
- **Decay** – The velocity affects all phases until the sustain but without the attack.
- **Attack + Release** – The velocity affects the attack and the release phases.
- **All** – The velocity affects all phases.

Time Key Follow, Center Key, and KeyF Rel (Key Follow Release)

With the **Time Key Follow** and **KeyF Rel** parameters, you can scale the envelope phases across the keyboard.

- **Time Key Follow** scales all times before the sustain node.
- **KeyF Rel** scales all times after the sustain node, that is, the release phase of the envelope.

The value that you specify for **Center Key** is used as the central position for the **Time Key Follow** and **KeyF Rel** functions.

The envelope phases depend on the keyboard range in which the note is played and on the corresponding **Time Key Follow** setting:

- Positive values decrease the phase lengths for notes above and increase the phase lengths for notes below the set **Center Key**, that is, the envelope becomes faster the higher the note you play.
- Negative values increase the phase lengths for notes above and decrease the phase lengths for notes below the **Center Key**, that is, the envelope becomes slower the higher the note you play.

Zooming

The vertical axis of the graphical envelope editor displays the level. The horizontal axis displays the time.

- To zoom in or out, click the **+** or **-** buttons to the right of the scrollbar below the graphical editor.
- To zoom in or out at the current position, click in the timeline and drag up or down.
- To toggle between full zoom and the previous zoom setting, click the **A** button to the right of the horizontal zoom slider.
- To zoom to a specific region, hold **Alt**, click and drag the mouse over the region.

Zoom Snapshots

Zoom snapshots save the zoom factor and scroll position of the editor. These are restored when you load the snapshot.

To the right of the scrollbar, you can find three numbered buttons that allow you to save and load zoom snapshots.

- To save the current state of the editor as a snapshot, **Shift**-click one of the numbered buttons to the right of the scrollbar.
- To load a zoom snapshot, click the corresponding button. The button color changes if a snapshot is active.

NOTE

If you perform any manual zooming or scrolling, the zoom snapshot is deactivated.

Selecting Nodes

- To select a node, click on it in the graphical editor.

  The focused node is indicated by a frame. The value fields to the left of the graphical envelope editor display the parameters of the focused node.
- If multiple nodes are selected, you can use the **Env Node** pop-up menu to set the focus to a different node without losing the current selection.
- To add a node to a selection, **Shift**-click the node. Selected nodes are edited together.
- You can select multiple nodes by drawing a rectangle around the nodes with the mouse.
- If the graphical editor has the focus, you can select the next or the previous node with the left and right arrow keys.

Adjusting the Time between Nodes

The **Time** parameter specifies the period of time between two nodes. Depending on the **Sync** mode, the **Time** parameter is displayed in milliseconds and seconds or in fractions of beats.

To specify the time between two nodes, do one of the following:

- Select two adjacent nodes and enter a new value in the **Time** field.
- Drag a node to the left or the right in the graphical envelope editor.
- For a higher resolution, hold **Shift** while moving the nodes.

  To limit the movement to the time axis, that is, to change only the horizontal position of a node, hold down **Ctrl/Cmd** while dragging.

Adjusting the Level of the Nodes

The **Level** parameter specifies the amplitude of the selected envelope node.

To set the level of a node, do one of the following:

- Select a node and enter a new value in the **Level** field.
- Drag one or multiple selected notes up or down in the graphical editor.

  For a higher resolution, hold **Shift** while moving the nodes.

  To limit the movement to the level axis, that is, to change only the vertical position of a node, hold down **Alt** while dragging.

Adjusting the Curve between Nodes

The **Curve** parameter allows you to adjust the curvature between two nodes from linear to logarithmic or exponential behavior.

To adjust the curve, do one of the following:

- Select the node or nodes that you want to adjust and enter a value in the **Curve** field. Positive values change the curvature towards logarithmic and negative values towards exponential behavior.
- Click on the curve between two nodes in the graphical envelope editor and drag up or down.

  Ctrl/Cmd-click a curve to reset it to linear.

Adding and Removing Nodes

- To add a node, double-click at the position where you want to add the node.
- To remove a node, double-click it.
- To delete several selected nodes, press **Delete**.

NOTE

- You cannot remove the first, the last, or the sustain node.
- All nodes added after the sustain node always affect the release phase of the envelope.

Adding Nodes Using the Fill Function

The **Fill** function allows you to add multiple envelope nodes after the selected nodes.

PROCEDURE

1. On the pop-up menu to the right of the **Fill** button, select the number of nodes that you want to add.
2. In the graphical envelope editor, select the node after which you want to add nodes.

   If several nodes are selected, the new nodes are inserted after the last selected node.

   If **Fixed** is deactivated, the added nodes are placed with the interval specified by the **Time** parameter of the selected node. If multiple nodes are selected, the interval is specified by the focused node.

   By activating **Sync**, you can specify the interval with the **Sync** note value. For example, if 1/4 is selected, new nodes are added at exact quarter note intervals.

   If **Fixed** is activated, the added nodes fill the space between the last selected node and the following one.
3. Click the **Fill** button.

Synchronizing Envelopes to the Host Application

You can synchronize the envelopes to the tempo of your host application. This allows you to set envelope times that relate to musical time intervals, regardless of any tempo changes.

PROCEDURE

1. Click **Sync** to activate sync mode for the envelope.

   Sync mode is active if the button is highlighted. A grid spaced in fractions of beats is displayed in the graphical envelope editor.
2. On the pop-up menu located to the right of the **Sync** button, select a note value.

This sets the resolution of the grid.

NOTE

The **Time** field of a node displays times in fractions of beats. The fraction is always reduced to the smallest possible value. 2/16 is displayed as 1/8, for example.

3. To use triplet note values, activate the **T** button.

NOTE

- Envelope nodes that do not exactly match a note value display the closest note value.
- Nodes that exactly match a note value are indicated by a red dot inside the handle of the node. This is useful if you switch the grid between triplets and normal note values, for example. The triplet nodes still indicate that they match a note value, even if the grid shows normal note values.

You can also enter note values and triplets manually in the value field.

Setting Up the Loop

You can set up the envelope to repeat its playback between the selected nodes.

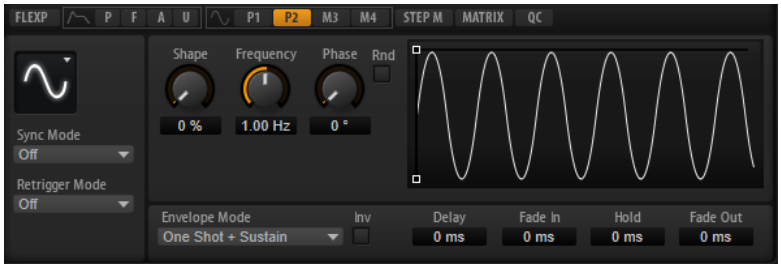
PROCEDURE

1. Set the envelope mode to **Loop**.
2. The loop is indicated by the green region in the graphical envelope editor. Specify the loop start and end by dragging the borders of the region.
   The loop region can only be set up in the decay phase of the envelope.

LFOs

HALion Sonic offers two polyphonic and two monophonic LFOs. Polyphonic means the LFOs are calculated per voice, allowing for independent modulations with each triggered note. You can use this to create a richer sound, for example, with an independent pitch modulation per note. Monophonic means the LFOs are calculated only once per layer. The same modulation is sent to all voices simultaneously. The LFOs can be assigned freely in the modulation matrix.

- Click **P1** or **P2** to show the settings for the corresponding polyphonic LFO.
- Click **M1** or **M2** to show the settings for the corresponding monophonic LFO.



You can adjust the times of the envelope in the graphical editor by dragging nodes left or right.

NOTE

How many nodes are available in the graphical editor depends on the selected **Envelope Mode**.

- The first node adjusts the **Delay** time.
- The second node adjusts the **Fade In** time.
- The third node adjusts the **Hold** time.
- The fourth node adjusts the **Fade Out** time.

Parameters for Monophonic and Polyphonic LFOs

LFO Waveform and Shape

- **Sine** produces smooth modulation, suitable for vibrato or tremolo. **Shape** adds additional harmonics to the waveform.
- **Triangle** is similar to **Sine**. **Shape** continuously changes the triangle waveform to a trapezoid.
- **Saw** produces a ramp cycle. **Shape** continuously changes the waveform from ramp down to triangle to ramp up.
- **Pulse** produces stepped modulation, where the modulation switches abruptly between two values. **Shape** continuously changes the ratio between the high and low state of the waveform. If **Shape** is set to 50 %, a square wave is produced.
- **Ramp** is similar to the **Saw** waveform. **Shape** increasingly puts silence before the sawtooth ramp up begins.
- **Log** produces a logarithmic modulation. **Shape** continuously changes the logarithmic curvature from negative to positive.
- **S & H 1** produces randomly stepped modulation, where each step is different. **Shape** puts ramps between the steps and changes the **S & H** into a smooth random signal when fully turned right.
- **S & H 2** is similar to **S & H 1**. The steps alternate between random high and low values. **Shape** puts ramps between the steps and changes the **S & H** into a smooth random signal when fully turned right.

Sync Mode

The Sync Mode is used to match the LFO to the tempo of the host application.

- Select **Off** to adjust the speed of the modulation in Hertz.
- Select **Tempo + Retrig** to adjust the speed of the modulation in fractions of beats. You can also set dotted and triplet note values. The restart behavior of the LFO depends on the **Retrigger Mode**.
- Select **Tempo + Beat** to adjust the speed of the modulation in fractions of beats. You can also set dotted and triplet note values. The LFO restarts with the transport of the host and lines up to the beats of the project. The **Retrigger Mode** setting is not taken into account.

NOTE

The behavior of the **Frequency** parameter changes with the selected option.

Retrigger Mode (Monophonic LFOs)

Determines whether the LFO is restarted when a note is triggered. If this is set to **First Note** or **Each Note**, the waveform starts at the position specified by the **Phase** parameter.

- If this is set to **Off**, the LFO runs freely.
- If this is set to **First Note**, the LFO restarts when a note is triggered and no other notes are held.
- If this is set to **Each Note**, the LFO restarts each time a note is triggered.

Frequency

Controls the frequency of the modulation, that is, the speed of the LFO.

Phase

Sets the initial phase of the waveform when the LFO is retriggered.

Rnd (Random Phase)

If this button is activated, each note starts with a randomized start phase.

NOTE

The **Phase** control cannot be used if **Rnd** is activated.

Additional Parameters for Polyphonic LFOs

Retrigger Mode

Determines whether the LFO is restarted when a note is triggered. The waveform restarts at the position set with the **Phase** parameter.

The polyphonic LFOs can switch between **On** and **Off**.

- If this parameter is set to **Off**, the LFO runs freely.
- If this parameter is set to **On**, the LFO starts with each triggered note.

Envelope Mode

Allows you to specify how the LFO envelope reacts to your playing on the keyboard. The **One Shot** modes do not react to note-off events.

- Select **One Shot** to play the envelope from start to end in the time specified by the **Delay**, **Fade In**, **Hold**, and **Fade Out** parameters.
- **One Shot + Sustain** is similar to **One Shot**. The **Delay** and **Fade In** parameters are always applied when you play a note. The **Hold** and **Fade Out** parameters are not available.
- If **Hold + Fade Out** is selected and you play a note, the **Delay** and **Fade In** parameters are applied. The envelope fades out after the time specified by the **Hold** parameter or when a key is released. Releasing a key during the fade in starts the fade out from the current level.
- If **Sustain + Fade Out** is selected and you play a note, the **Delay** and **Fade In** parameters are applied. The **Hold** parameter is not available. The fade out is applied when releasing the key. Releasing a key during the fade in starts the fade out from the current level.
- If **Sustain** is selected and you play a note, the **Delay** and **Fade In** parameters are applied. The **Hold** and **Fade Out** parameters are not available. Releasing a key during the fade in sustains the current level. This prevents a change in modulation when a key is released.

Inv (Invert Envelope)

If this parameter is activated, the behavior of the LFO envelope is inverted, that is, the LFO modulation starts at its maximum level and decreases to zero in the time specified by the **Fade In** parameter. After the **Hold** time has elapsed, or when the key is released, the modulation increases to its maximum level in the time specified by the **Fade Out** parameter.

Delay

Determines the delay time between the moment you play a note and the moment the LFO comes into effect.

Fade In

Determines how long the LFO takes to fade in after the note was triggered and the **Delay** time has elapsed.

Hold

Determines the amount of time the LFO is running before the fade out begins.

NOTE

Hold is only available for the envelope modes **One Shot** and **Hold + Fade Out**.

Fade Out

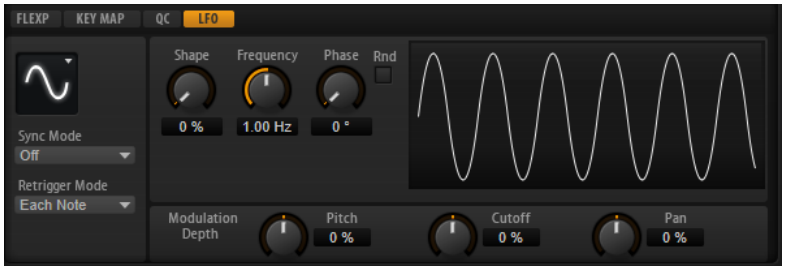
Determines how long the LFO takes to fade out after the hold time has elapsed or a note has been released.

NOTE

To deactivate the fade out, use the envelope modes **One Shot + Sustain** or **Sustain**. This ensures that the modulation does not change when a note is released.

LFO Tab for Loop Layers

Loop layers offer a monophonic LFO with adjustable depth for **Pitch**, **Cutoff**, and **Pan**.



For loop layers, the following additional parameters are available:

Pitch

Adjusts how much the LFO affects the pitch of the slices.

Cutoff

Adjusts how much the LFO affects the cutoff of the slices.

Pan

Adjusts how much the LFO affects the pan of the slices.

When using the LFO of loop layers, the following applies:

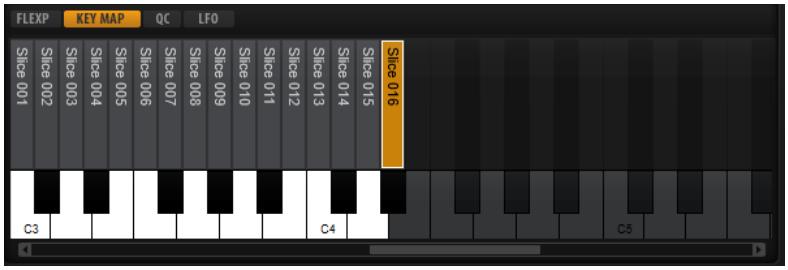
- The modulation of **Pitch**, **Cutoff**, and **Pan** goes to all slices simultaneously. The modulation depth cannot be set separately per slice.
- The filter must be activated to hear the modulation of the Cutoff.

NOTE

With a Resonance of 100 %, you might hear clicks because the slice ends abruptly, but the filter still produces a sound from self-oscillation. In this case, go to the corresponding FlexPhraser and reduce the **Gate Scale** until the clicks are gone. In addition, you can adjust the amplifier envelope of the slices, for example, to increase the release of the envelopes. Apart from the **Pitch**, **Cutoff**, and **Pan** parameters, all other parameters correspond to the parameters on the LFO pages for sample and synth layers.

Using the Keymap

In the key map at the bottom of the editor, you see the drum instruments or loop slices that are part of the drum or loop layer, and how they are mapped across the keyboard.



- Keys with a drum instrument or loop slice assigned display in normal white and black.
- The names of the drum instruments or loop slices are displayed vertically above the keys.
- Keys with nothing assigned are deactivated and displayed in gray.
- For loop layers, the pitched part of the keyboard is displayed in orange.
- Clicking a key plays and selects the corresponding drum instrument or loop slice.

NOTE

The key map is used for indication and selection only. The mapping of the drum instruments and loop slices cannot be changed.

To edit a drum instrument or loop slice, you must select it first. You can select drum instruments or loop slices by clicking the corresponding keys on the key map or by using your MIDI keyboard.

To select a drum instrument or loop slice with your MIDI keyboard, activate **Select Zones via MIDI** in the top section of the layer editor and press the key that plays the drum instrument or loop slice that you want to adjust.

You can edit the selected drum instrument or loop slice using the parameters on the **Pitch**, **Filter**, **Amplifier**, and **AUX** tabs.

AUX Tab

Each drum instrument and loop slice has individual send levels that feed the four global AUX FX busses. This allows you to add more reverb to the snare drum and less effect to the bass drum, for example.

AUX FX1 – 4

These dials adjust the send levels for the four global AUX FX busses for each drum instrument or loop slice separately.

Expression Controls for Instrument Layers

Instrument layers contain expressions. Typically, an expression is a particular playing style of the instrument. In some cases, it can also be a part of the sound that can be turned on or off, for example, to add realism or to maximize the performance.

The list of expressions is displayed on the left and on the right and in the lower section, you can find the pitch, filter and amplifier settings of the selected expression.

- To load an expression, activate its **On** button.
- To mute an expression, activate its **Mute** button.
- If you want the editor to follow incoming MIDI key switches or MIDI controller values, activate **Select Expression via MIDI**.

The parameters on the **Pitch**, **Filter**, and **Amplifier** sections are the same as on the corresponding tabs for the other layer types.

Filter Env Modifier Section

This section offers parameters to modify the filter envelope of the expression.

Envelope Amount

Controls the cutoff modulation from the filter envelope.

Velocity

Determines how the velocity affects the level of the filter envelope.

The level of the envelope depends on two factors: the setting of this parameter and how hard you hit a key. Positive values increase the level of the envelope the harder you hit a key. Negative values decrease the level of the envelope the harder you hit a key.

Attack

Controls the attack time of the filter envelope.

Decay

Controls the decay time of the filter envelope.

Sustain

Controls the sustain level of the filter envelope.

Release

Controls the release time of the filter envelope.

Amplifier Env Modifier Section

This section offers parameters to modify the amplifier envelope of the expression.

Velocity

Use this parameter to adjust how velocity affects the level of the amplifier envelope.

The level of the envelope depends on two factors: the setting of this parameter and how hard you hit a key. Positive values increase the level of the envelope the harder you hit a key. Negative values decrease the level of the envelope the harder you hit a key.

Attack

Controls the attack time of the amplifier envelope.

Decay

Controls the decay time of the amplifier envelope.

Sustain

Controls the sustain level of the amplifier envelope.

Release

Controls the release time of the amplifier envelope.

RELATED LINKS
Pitch Tab on page 35
Filter Tab on page 38
Amplifier Tab on page 41

Expression Maps

For more realistic performances, many instrument layers use key switches to switch between different expressions, that is, between different articulations and playing styles of the same instrument. These key switches are set to low keys to maximize the playable range and they cannot be changed internally to ensure that performances played by FlexPhrasers always sound the same.

However, in some cases you need to shift the key switches into the playable keyboard range to get access to them. You may also want to select the expression using a MIDI controller. You can use so-called expression maps to customize the internal setting.

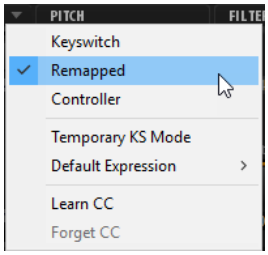
- To specify the expressions that you want to use in your expression map, activate them in the expressions list.

NOTE

Some instrument layers consist of multiple expressions that are not switchable via a key switch. For example, instrument noises typically do not have a key switch assigned. In this case, you can select the individual expressions and edit them, but you cannot apply any key switch functionality.

Expression Map Options Menu

You can define whether you want to use the internal key switches, remap them to other keys, or use a MIDI controller by selecting a mode from the pop-up menu above the expression list.



- Select **Keyswitch** to use the internal key switches to switch to an expression.
- Select **Remapped** if you want to remap the original key switches to other keys.
- Select **Controller** to use a MIDI controller to remotely control the internal key switches.

  To assign a MIDI controller, open the menu, select **Learn CC**, and use the controller on your MIDI hardware.
- If you activate **Temporary KS Mode**, expressions other than the default expression are only active for as long as the corresponding key switch is held. This allows you to enter notes with other expressions by pressing a key switch temporarily.
- **Default Expression** sets the default expression for **Temporary KS Mode**. This is also the expression that is active after loading the program or layer.

Insert Effects

The **Inserts** tab offers you up to four insert effects for each of the layers and for the program itself. The insert effects you assign to a layer affect only that layer. The insert effects you assign to the program affect all layers. Typically, you assign effects like EQ or distortion to separate layers, but effects like delay or reverb to the entire program.

Each layer and the program have four slots for assigning insert effects. The handling is the same for all slots and corresponds to the global effect handling.

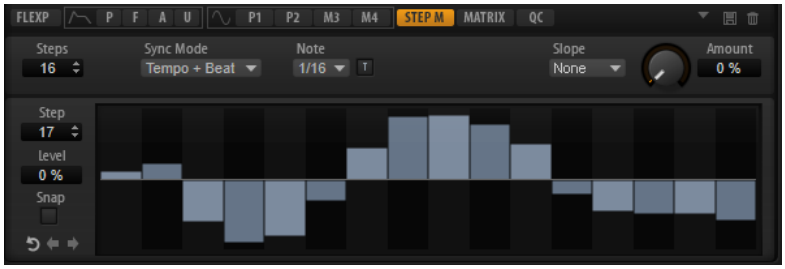
To the right of the insert slots, you find faders for adjusting the output levels of the program and layers.

RELATED LINKS
Using the Insert Effect Slots on page 97

Step Modulator

Synth and sample layers feature a polyphonic step modulator for creating rhythmic control sequences.

The step modulator can be freely assigned in the modulation matrix.



Steps

Sets the number of steps in the sequence. The maximum number of steps is 32.

Sync Mode

- If **Off** is selected, you can adjust the speed at which the sequence repeats.

  Whether the sequence restarts when you play a note depends on the **Retrigger Mode**.
- If **Tempo + Retrig** is selected, you can adjust the length of the steps in fractions of beats. The speed of the modulation depends on the number of steps, the note value, and the tempo you set in your host application. To use triplet note values, activate **Triplet**.

  Whether the sequence restarts when you play a note depends on the selected **Retrigger Mode**.
- If **Tempo + Beat** is selected, you can adjust the length of the steps in fractions of beats. The speed of the modulation depends on the number of steps, the note value, and the tempo you set in your host application. To use triplet note values, activate **Triplet**.

  The sequence restarts with the transport of the host application and lines up to the beats of the project. The **Retrigger Mode** is not taken into account.

Frequency

If **Sync Mode** is set to **Off**, this controls the speed at which the sequence is repeated.

Note

If **Sync Mode** is set to one of the **Tempo** settings, this adjusts the length of the steps in fractions of beats. You can also select triplet values.

Triplet

Activate this button to use triplet note values.

Retrigger Mode

Determines whether the sequence restarts when you play a note. This parameter is only available if **Sync Mode** is set to **Off** or **Tempo + Retrig**.

- If this parameter is set to **Off**, the sequence is not restarted. Instead, it resumes playback at the position at which you released the key.
- If this parameter is set to **First Note**, the sequence restarts when a note is triggered and no other notes are held.
- If this parameter is set to **Each Note**, the sequence restarts each time a note is triggered.

Slope

Determines whether the step modulator jumps from step to step or creates ramps between the steps.

- **No Slope** produces hard steps.
- **Slope on Rising Edges** creates ramps only for rising edges.
- **Slope on Falling Edges** creates ramps only for falling edges.
- **Slope on All Edges** creates ramps for all edges.

Amount

If **Slope** is set to **Slope on Rising Edges**, **Slope on Falling Edges**, or **Slope on All Edges**, this parameter determines the time of the ramp between two steps. The higher the setting, the smoother the transitions between steps.

Step

Allows you to select a specific step.

Level

Shows the level of the selected step.

Snap

If **Snap** is activated, the level of each step can only be adjusted in steps of 1/12th.

Shift Pattern Right/Shift Pattern Left

These commands shift all the steps to the right/left. If you shift the pattern to the left, the first step is moved to the end. If you shift the pattern to the right, the last step is moved to the beginning.

Reverse Pattern

Reverses the pattern, that is, inverts the order of all steps.

Editing Steps

You can adjust the steps separately, but you can also use modifier keys to enter or edit multiple steps simultaneously.

- To set the level of a step, click at the corresponding position in the graphical editor.
- To change the value of a step, drag the step up or down or enter a new value in the **Level** value field.
- To reset the level of a step to 0 %, **Ctrl/Cmd**-click the step.
- To reset all steps, hold **Shift**-**Ctrl/Cmd** and click in the graphical editor.
- To adjust all steps at the same time, **Shift**-click and drag a step.
- To draw a ramp with steps, hold down **Alt** and draw a line.
- To draw symmetric ramps at the beginning and the end of the sequence, hold down **Shift**-**Alt** and draw a line.
- To gradually raise or lower the value of the selected step, use the **Up Arrow** and **Down Arrow** keys.

  By default, the value changes in increments of 1 %. Hold **Shift** to use increments of 0.1 % instead.
- If the graphical editor has the keyboard focus, you can use the left and right arrow keys to select the previous or next step.

Producing Modulations in Steps of Semitones

PROCEDURE

1. Activate **Snap**.
2. In the modulation matrix, assign the **Step Modulator** to **Pitch**.
3. Set the **Modulation Depth** to +12.

   Now, the levels of the steps represent semitone intervals.
4. In the **Step Modulator**, adjust each step to the interval that you want to use.

Modulation Matrix

The concept of controlling one parameter by another is called modulation. HALion Sonic offers many fixed assigned modulations, such as the amplitude and filter envelopes, or pitch key follow. In the modulation matrix, you can assign additional modulations.

Assigning modulations means interconnecting modulation sources, like LFOs and envelopes, with modulation destinations, like pitch, cutoff, amplitude, etc.

The modulation matrix offers you up to 32 freely assignable modulations, each with a source, an offset parameter, a modifier, and a destination with adjustable depth. All modulation sources and destinations can be assigned several times. The polarity of each source can be switched between unipolar and bipolar. An additional modifier and user-definable curves and ranges give you further control over the modulation.

The modulation matrix is divided into two sections. On the left, you can assign modulation sources to destinations and adjust the modulation depth. The section on the right contains settings for the curve and range editor, where you can make further settings for the selected modulation source.

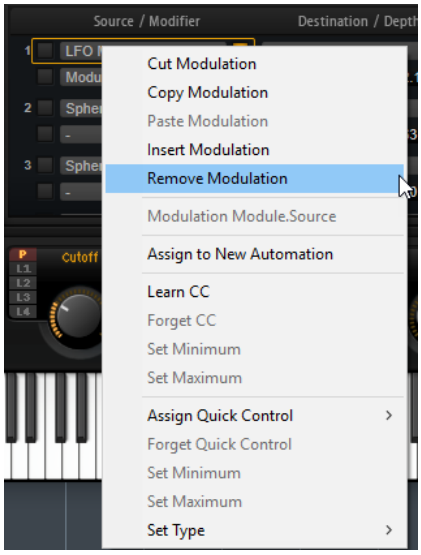
Creating Modulations

PROCEDURE

1. Select the synth or sample layer that you want to adjust.
2. Click **Show Modulation Matrix**.
3. Select a modulation source and a modulation destination, for example, **LFO1** as source and **Pitch** as destination.
4. Use the horizontal fader below the destination to adjust the modulation depth.
5. Optional: Click the **Source 2** field and select a modifier or change the polarity of the source.

   For example, select **Pitch Bend** as modifier and set it to unipolar.
6. Optional: Use the curve and range settings on the right to limit the modulation range or to adjust the characteristics of the modulation.

Modulation Matrix Context Menu



Cut Modulation

Cuts the modulation data from the current slot.

Copy Modulation

Copies the modulation data from the current slot to the clipboard.

Paste Modulation

Pastes the modulation data from the clipboard to the current modulation slot.

NOTE

You can copy modulation rows between different programs and between different plug-in instances.

Insert Modulation

Inserts an empty modulation slot.

Remove Modulation

Removes the modulation slot.

Name of the Assigned Source/Modulator/Destination

Depending on where you click, the assigned modulation source, the modulator, or the modulation destination is shown on the context menu.

Assign to New Automation

Assigns this modulation source as automation parameter.

Learn CC

Allows you to assign a MIDI controller to the modulation slot.

Forget CC

Removes the MIDI controller assignment for the current slot.

Set Minimum

Allows you to set the minimum value for the MIDI controller that is assigned to the modulation slot.

Set Maximum

Allows you to set the maximum value for the MIDI controller that is assigned to the modulation slot.

Assign Quick Control

Allows you to assign a quick control to the modulation slot.

Forget Quick Control

Removes the quick control assignment of the modulation slot.

Set Minimum

Allows you to set the minimum value for the quick control that is assigned to the modulation slot.

Set Maximum

Allows you to set the maximum value for the quick control that is assigned to the modulation slot.

Set Type

- **Absolute** remote-controls the parameter values continuously.

  Absolute mode changes the assigned parameters by overwriting them with the current quick control value, that is, parameter changes are overwritten.

- **Relative** remote-controls the parameter values continuously.

  Relative mode changes the values of the assigned parameters without losing their relative settings, that is, parameter changes can still be heard.
- **Switch Absolute** switches between the minimum and maximum value. Parameter changes are overwritten.
- **Switch Relative** switches between the minimum and maximum value. Parameter changes can still be heard.

RELATED LINKS
Setting Up Automation on page 90

Modulation Matrix Parameters

Modulation Sources

LFO P1/P2

The LFOs 1 and 2 produce cyclic modulation signals.

These LFOs are polyphonic, that is, a new LFO signal is created with each new note.

LFO M3/M4

The LFOs 3 and 4 produce cyclic modulation signals.

These LFOs are monophonic, that is, a single signal is used for all notes.

Amp Envelope

The amplifier envelope. This modulation source is unipolar. The shape of the envelope determines the modulation signal.

Filter Envelope

The filter envelope. This modulation source is unipolar. The shape of the envelope determines the modulation signal.

Pitch Envelope

The pitch envelope. This modulation source is bipolar. The shape of the envelope determines the modulation signal.

User Envelope

The user envelope. This modulation source is bipolar. The shape of the envelope determines the modulation signal.

Step Modulator

The step modulator of the layer. This modulation source is bipolar. It produces cyclic, rhythmically stepped modulation signals.

Glide

The glide signal of the source. This modulation source is unipolar.

Key Follow

This produces an exponential modulation signal derived from the MIDI note number. Exponential means this source works with destinations such as **Pitch** or **Cutoff**. This modulation source is bipolar.

Note-on Velocity

Note-on velocity can be used as modulation signal. This modulation source is unipolar.

Note-on Vel Squared

The squared version of **Note-on Velocity**. The harder you press the key, the higher the modulation values.

Note-on Vel Normalized

The note-on velocity is normalized according to the velocity range of the corresponding sample zone. At the lowest velocity of the zone, the modulation is 0, at the highest velocity, the modulation is 1.

Note-off Velocity

Note-off velocity can be used as modulation signal. This modulation source is unipolar. Most MIDI keyboards cannot send note-off velocity messages. However, most sequencer software is able to produce such messages.

Pitchbend

The position of the pitchbend wheel can be used as modulation signal. This modulation source is bipolar.

Modulation Wheel

The position of the modulation wheel can be used as modulation signal. This modulation source is unipolar.

Aftertouch

Aftertouch can be used as modulation signal. This modulation source is unipolar. Some MIDI keyboards cannot send aftertouch messages. However, most sequencer software is able to produce such messages.

MIDI Controller

Any of the 127 available MIDI controllers can be used as modulation signal. You can select the MIDI controller from the corresponding submenu.

In addition, you can select the eight global MIDI controllers **Contr. A**-**Contr. H** that can be used as placeholders in the modulation matrix. These controllers allow you to remap specific MIDI controllers to the placeholder controllers, for example, using the CC Mapper. This way, you can use the global controllers in several places, and set up the assignment only once.

Quick Control

The quick controls of the layer can be used as modulation signal. You can select the quick control from the corresponding submenu.

Note Expression

This submenu lists the eight Note Expression parameters that can be used as modulation signals.

Noise

Produces a random modulation signal. This modulation source is bipolar.

Output

The audio output of the layer can be used as modulation signal. This modulation source is unipolar.

Bus 1–16

Modulations that are sent to one of the 16 busses can be reused as sources. This way, you can combine several modulations to produce more complex signals.

Modulation Modifiers

All modulation sources can also be used as modifiers. A modifier is used to scale the output of the modulation source. A typical example is an LFO as a source and the modulation wheel as the modifier. This allows you to control the intensity of the LFO modulation using the wheel.

The **Sample & Hold** modifier is only available on the **Source 2** pop-up menu. It takes a sample of the modulation source whenever it receives a trigger signal. It holds the sampled value until it receives a new trigger. This way, you can quantize a continuous modulation signal.

The following **Sample & Hold** options are available:

Trigger on Note-on

Triggers the **Sample & Hold** modifier manually each time that you hit a key.

Trigger on LFO 1

Triggers the **Sample & Hold** modifier each time that the waveform of LFO 1 crosses the zero line from below.

Trigger on LFO 2

Triggers the **Sample & Hold** modifier each time that the waveform of LFO 2 crosses the zero line from below.

Trigger on Modulation Wheel

Triggers the **Sample & Hold** modifier each time that the modulation wheel passes the center position.

Trigger on Sustain

Triggers the **Sample & Hold** modifier each time that you press the sustain pedal.

Sample until Release

Triggers the **Sample & Hold** modifier each time that you release a key.

Unipolar vs. Bipolar Sources

The polarity of a modulation source specifies the value range that it produces. Unipolar sources modulate between 0 and +1. Bipolar sources modulate between -1 and +1.

- To change the polarity of a modulation source, click its **Polarity** button.

Modulation Depth

The horizontal fader below the destination adjusts the modulation depth.

Bypass Modulation

Click the **Bypass** button on the left of the **Modulation Depth** fader to bypass the modulation.

Modulation Destinations

Depending on the selected type of layer, the available modulation destinations vary.

Pitch

Modulates the pitch. For example, assign one of the LFOs to create a vibrato effect. If **Pitch** is selected, the modulation depth is set in semitones (-60 to +60).

Cutoff

Modulates the filter cutoff.

For example, to create rhythmic patterns in the spectral timbre, assign the **Step Modulator**.

Resonance

Modulates the filter resonance. Resonance changes the character of the filter.

For example, to accent the filter the harder you hit a key, assign **Velocity** to **Resonance**.

Distortion

Modulates the filter distortion.

This has no effect on the **Classic**, **HALion 3**, and **Waldorf** filters.

Morph X

Modulates the x-axis of the filter in **Morph XY** mode. Use this to morph between the filter shapes **AD** and **BC**.

Morph Y

Modulates the y-axis of the filter in **Morph 2**, **Morph 4**, or **Morph XY** mode. Use this to morph between the filter shapes **AB** and **DC**, for example.

Cutoff Offset

Modulates the cutoff offset of the second filter in **Dual Filter Serial** or **Dual Filter Parallel** mode. For example, to lower or raise the cutoff of the second filter while you play, assign the modulation wheel.

Resonance Offset

Modulates the resonance offset of the second filter in **Dual Filter Serial** or **Dual Filter Parallel** mode. For example, to lower or raise the resonance of the second filter while you play, assign the modulation wheel.

Level

This modulation adds to the level setting. It can be used to create level offsets using the mod wheel, for example.

Volume 1

Modulates the gain. This modulation multiplies with the level.

It is ideal for crossfades between layers.

Volume 2

As **Volume 1**. **Volume 1** is multiplied with **Volume 2**. This way, you can build more complex modulations.

Pan

Modulates the position of the layer in the panorama. For example, to move the layer around freely, assign the **User Envelope**.

Sample Start

Modulates the start position of the sample playback. For example, assign **Note-on Velocity** to play back more of the attack of a sample the harder you hit a key. This modulation destination cannot be modulated continuously. The parameter is updated only when you hit a key.

Speed Factor

Modulates the speed factor of the sample.

Formant Shift

Modulates the formant shifting.

Osc 1/2/3 Pitch

Modulates the pitch of the corresponding oscillator.

For example, to detune an oscillator cyclically, assign one of the LFOs.

Osc 1/2/3 Level

Modulates the level of the corresponding oscillator.

For example, to fade an oscillator in and out while you play, assign the modulation wheel.

Osc 1/2/3 Waveform

Modulates the shape and character of the corresponding oscillator.

For example, to change the character of an oscillator over time, assign one of the envelopes.

Osc 1/2/3 Multi Detune

Modulates the **Detune** parameter of the individual oscillator voices that are produced by multi-oscillator mode.

Osc 1/2/3 Multi Pan

Modulates the pan position of the individual oscillator voices that are produced by multi-oscillator mode.

Osc 1/2/3 Multi Voices

Modulates the number of oscillator voices that are produced by multi-oscillator mode.

Sub Osc Level

Modulates the level of the sub oscillator. For example, to fade in the oscillator while you play, assign the modulation wheel.

Ring Mod Level

Modulates the level of the ring modulation effect. For example, to fade in the ring modulation while you play, assign the modulation wheel.

Noise Level

Modulates the level of the noise generator. For example, to fade in the noise generator while you play, assign the modulation wheel.

LFO 1/2 Frequency

Modulates the speed of the corresponding LFO.

For example, to control the speed of a vibrato effect while you play, assign **Aftertouch**.

LFO 1/2 Shape

Modulates the waveform of the corresponding LFO.

For example, to vary the waveform with the playing position on the keyboard, assign **Key Follow**.

Step Mod Frequency

Modulates the speed of the step modulator. For example, assign an LFO to increase or decrease the speed cyclically.

Step Mod Slope

Modulates the shape of the edges of the step modulator if the **Slope** parameter is active. For example, assign the modulation wheel to blend from hard to smooth edges.

Amp Env Attack Time

Modulates the attack time of the amplitude envelope. This modulation destination cannot be modulated continuously. The time is updated only when the segment starts.

Amp Env Decay Time

Modulates the decay time of the amplitude envelope. This modulation destination cannot be modulated continuously. The time is updated only when the segment starts.

Amp Env Sustain Level

Modulates the sustain level of the amplitude envelope. This modulation destination cannot be modulated continuously. The level is updated only when the segment starts.

Amp Env Release Time

Modulates the release time of the amplitude envelope. This modulation destination cannot be modulated continuously. The time is updated only when the segment starts.

Filter Env Attack Time

Modulates the attack time of the filter envelope. This modulation destination cannot be modulated continuously. The time is updated only when the segment starts.

Filter Env Decay Time

Modulates the decay time of the filter envelope. This modulation destination cannot be modulated continuously. The time is updated only when the segment starts.

Filter Env Sustain Level

Modulates the sustain level of the filter envelope. This modulation destination cannot be modulated continuously. The level is updated only when the segment starts.

Filter Env Release Time

Modulates the release time of the filter envelope. This modulation destination cannot be modulated continuously. The time is updated only when the segment starts.

Pitch Env Start Level

Modulates the level of the first pitch envelope node. This modulation destination cannot be modulated continuously. The level is updated only when the segment starts.

Pitch Env Attack Time

Modulates the attack time of the pitch envelope. This modulation destination cannot be modulated continuously. The time is updated only when the segment starts.

Pitch Env Attack Level

Modulates the level of the second pitch envelope node. This modulation destination cannot be modulated continuously. The level is updated only when the segment starts.

Pitch Env Decay Time

Modulates the decay time of the pitch envelope. This modulation destination cannot be modulated continuously. The time is updated only when the segment starts.

Pitch Env Sustain Level

Modulates the sustain level of the pitch envelope. This modulation destination cannot be modulated continuously. The level is updated only when the segment starts.

Pitch Env Release Time

Modulates the release time of the pitch envelope. This modulation destination cannot be modulated continuously. The time is updated only when the segment starts.

Pitch Env Release Level

Modulates the level of the last pitch envelope node. This modulation destination cannot be modulated continuously. The level is updated only when the segment starts.

User Env Start Level

Modulates the level of the first user envelope node. This modulation destination cannot be modulated continuously. The level is updated only when the segment starts.

User Env Attack Time

Modulates the attack time of the user envelope. This modulation destination cannot be modulated continuously. The time is updated only when the segment starts.

User Env Attack Level

Modulates the level of the second user envelope node. This modulation destination cannot be modulated continuously. The level is updated only when the segment starts.

User Env Decay Time

Modulates the decay time of the user envelope. This modulation destination cannot be modulated continuously. The time is updated only when the segment starts.

User Env Sustain Level

Modulates the sustain level of the user envelope. This modulation destination cannot be modulated continuously. The level is updated only when the segment starts.

User Env Release Time

Modulates the release time of the user envelope. This modulation destination cannot be modulated continuously. The time is updated only when the segment starts.

User Env Release Level

Modulates the level of the last user envelope node. This modulation destination cannot be modulated continuously. The level is updated only when the segment starts.

Bus 1-16

You can send any modulation to one of the 16 busses, for example, to produce more complex modulation signals. Select the bus that you want to send the signals to as a destination. To use the modulation that was sent to a bus, assign the corresponding bus as a modulation source.

Curve and Range Editor

You can set up a curve and range for each modulation source.

- The curve editor allows you to change the characteristics of a modulation. The displayed curve is superimposed on the modulation source.

  This way, you can change the modulation from linear to exponential or logarithmic, for example.
- By setting the minimum and maximum values, you limit the modulation to a specific range only. In addition, you can specify an offset and a range for the modulation.

  For example, with an offset and range of +50 %, only the second half of the displayed curve is superimposed on the modulation.
- If a MIDI or Note Expression controller is selected as modulation source, the **Smoothing** parameter is available. This allows for parameter changes to occur more gradually. Set this to **Default** to use the global **Smoothing** parameter set up on the **Options** page or enter a value in the value field.

The curve editor offers different presets that you can select from the **Shape** pop-up menu above the curve. To set up your own curve, select the **Custom** preset.

You can edit the custom curve in the following way:

- To insert a new node, double-click in the editor.

- To delete a node, double-click it.
- To adjust the basic shape of the curve, drag the nodes to new positions.
- To change the curvature, drag the lines between the nodes up or down.

FlexPhraser

The FlexPhraser is an arpeggio and phrase player.

Each program features up to five FlexPhrasers: one for each layer and one for the program. While the program FlexPhrasers always work with phrases, the functionality of layer FlexPhrasers changes with the layer type. For synth, sample, instrument, or drum layers, a FlexPhraser can play back anything from basic synth arpeggios over dynamic drum phrases to realistic accompaniment phrases for guitar, bass, piano, etc.

You can select from a great variety of phrases that suit a wide range of musical instruments and styles. Depending on the selected phrase, the FlexPhraser uses your live playing to modify the phrase in real-time. This allows you to re-harmonize phrases by playing different chords, for example.

If you are working with loop layers, the FlexPhraser triggers the slices of the loop with their original timing and order. You can trigger a transposed version of the loop, playing higher or lower in pitch. In addition, you can vary the order with a random function and export the slice sequence to your host sequencer via drag and drop.

NOTE

You can play the individual slices or the entire loop. The lower half of the key range triggers the loop and the upper half is used to play single slices. The loop keys are displayed in green on the keyboard.

Presets

FlexPhraser presets contain the selected phrase, as well as the performance settings of the FlexPhraser, such as **Tempo**, **Tempo Scale**, **Loop**, **Swing**, etc.

NOTE

Presets can only be saved and loaded for phrases, not for sliced loops.

RELATED LINKS
Handling Section and Module Presets on page 10

Loading Phrases

Phrases are sorted into subfolders, according to the type of instrument. Each instrument subfolder contains phrases of different musical styles.

NOTE

Some FlexPhrases make extensive use of key switches to switch between multiple playing styles of an instrument while playing. These phrases can be found on the **Construction Sets** submenu. They work best with the corresponding instrument layers.

PROCEDURE

1. At the top of the FlexPhraser, click in the **Phrase** field.
2. On the pop-up menu, open the submenu for the instrument, and select the phrase that you want to load.

   In general, you can apply any phrase to any type of instrument. However, a phrase for guitar might not be suitable for use with a piano, for example.

FlexPhraser Parameters

Act

Activates the FlexPhraser.

User

Activates the user phrase.

If this button is activated, the **Show Editor Page** button becomes available. Click it to open the user phrase editor.

Phrase

Allows you to select a phrase.

KSOff (Key Switches Off)

Phrases that make use of key switches and noises, such as fret noises for guitar phrases, for example, usually work only with programs for the same type of instrument. Programs without key switches and noises interpret these events as regular notes and include them during playback, which yields unexpected results. To avoid the playback of key switches and noises, activate **KSOff**.

NOTE

KSOff filters out any note events that do not transpose with your playing. Therefore, it is not recommended for use with drum phrases.

NOTE

KSOff is not available for user phrases.

Record Output

Allows you to record the MIDI output of the arpeggiator.

Variations

Click the variation buttons to switch between the available variations.

Loop

If this option is activated, the phrase plays in a loop.

Sync

Synchronizes the phrase to the tempo of your host application.

NOTE

In addition, you can set **Restart Mode** to **Sync to Host**. This aligns the phrase with the beats and measures of your host application.

Mute

Mutes the FlexPhraser. The phrase still plays in the background. If you deactivate **Mute**, playback resumes immediately.

Hold

Allows you to prevent the phrase from stopping or changing when the keys are released.

- If **Off** is selected, the phrase changes as soon as you release a key. The phrase stops immediately when you release all keys.
- If **On** is selected, the phrase plays to the end, even if the keys are released. If **Loop** is activated, the phrase repeats continuously.
- If **Gated** is selected, the phrase starts to play when the first key is played. It plays silently in the background, even if the keys are released, and resumes playback at the current position when you press any of the keys again. This way, you can gate the playback of the phrase.

Trigger Mode

Determines at which moment the FlexPhraser scans for new notes that you play on the keyboard.

- If this is set to **Immediately**, the FlexPhraser scans for new notes all the time. The phrase changes immediately in reaction to your playing.
- If this is set to **Next Beat**, the FlexPhraser scans for new notes at every new beat. The phrase changes in reaction to your playing on each new beat.
- If this is set to **Next Measure**, the FlexPhraser scans for new notes at the start of new measures. The phrase changes in reaction to your playing on each new measure.

Restart Mode

- If this is set to **Off**, the phrase runs continuously and does not restart at chord or note changes.
- **New Chord** restarts the phrase on new chords.

  NOTE

  The phrase does not restart upon notes that are played legato.

- **New Note** restarts the phrase with each new note that you play.
- **Sync to Host** aligns the phrase with the beats and measures of your host application each time that you start the transport.

RstVar (Restart on Variation Change)

This option is available for new chords and new notes. If this button is activated, changing a variation restarts the FlexPhraser, even if no new notes or chords were triggered.

Key Mode

Defines whether the order in which the notes are played on the keyboard affects the playback of the phrase.

- If **Sort** is selected, the notes are played in the order of the selected phrase. The chronological order does not have any influence.
- If **As Played** is selected, the notes are played in the order in which you play them on the keyboard.
- If **Direct** is selected, the phrase creates controller events instead of notes. You hear the notes that you play plus any controller events of the phrase, such as pitch bend, volume, pan, etc.

Vel Mode

- If **Original** is selected, the notes of the phrase play with the velocity that is saved in the phrase.
- If **Vel Controller** is selected, you can choose a velocity controller that is used to generate or modulate the velocities of the notes.
- If **Original + Vel Controller** is selected, the phrase velocity is determined by the combination of the velocity saved in the phrase and the velocity derived from the velocity controller.

Vel Controller

If the **Vel Mode** pop-up menu is set to **Vel Controller** or **Original + Vel Ctrl.**, the **Vel Controller** pop-up menu is available. It allows you to generate or modulate the velocities of the notes using the incoming controller values.

- If **Velocity** is selected, the triggered notes get the velocity of the note that you play.
- If **Aftertouch** is selected, the triggered notes get their velocity from the aftertouch controller.
- If **Poly Pressure** is selected, the triggered notes get their velocity from the poly pressure controller. This allows you to control the velocity per key.
- Select **MIDI Controller** to open a submenu where you can select a MIDI controller.

  The value of this MIDI controller is used as velocity for the triggered notes.

Fetch

If the **Vel Controller** pop-up menu is set to **Aftertouch**, **Poly Pressure**, or a MIDI controller, the **Fetch** option can be used to change the way that the notes are generated.

- If **Fetch** is activated, the first note that you play defines the initial velocity. As soon as the controller value exceeds this velocity, new notes get their velocity from the controller.
- If **Fetch** is deactivated, the generated notes get their velocity from the current controller value.

NOTE

Fetch is not available if the **Vel Controller** pop-up menu is set to **Velocity**.

Tempo

If **Sync** is deactivated, you can use the **Tempo** control to set the internal playback speed of the FlexPhraser. The playback speed of the phrase is specified in BPM.

If **Sync** is activated, the **Tempo** parameter is not available.

Tempo Scale

Defines the rate at which notes are triggered, that is, the speed at which the phrase is running. In addition to the **Tempo** parameter, this gives you further control over

the playback speed. You can specify a value in fractions of beats. You can also set dotted and triplet note values.

For example, if you change the **Tempo Scale** setting from 1/16 to 1/8, the speed is cut in half. If you set it to 1/32, the speed is doubled.

Swing

Shifts the timing of notes on even-numbered beats. This way, the phrase gets a swing feeling. Negative values shift the timing backward and the notes are played earlier. Positive values shift the timing forward and the notes are played later.

Gate Scale

Allows you to shorten or lengthen the notes of the phrase. At a value of 100 %, the notes play with their original gate length.

Vel Scale

Allows you to raise or lower the note-on velocities of the phrase. At a value of 100 %, the notes are played with their original velocity.

Octaves

Extends the phrase playback to include higher or lower octaves. Positive settings extend the playback to higher and negative settings to lower octaves. For example, a value of +1 first plays the phrase in the octave range that you originally played. Then, it repeats the phrase one octave higher.

Key Range

The **Low Key** and **High Key** parameters determine the key range that is used to trigger phrase playback.

Velocity Range

The **Low Vel** and **High Vel** parameters determine the velocity range that is used to trigger phrase playback.

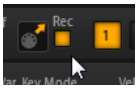
Recording the MIDI Output of the FlexPhraser

The phrases played by the FlexPhraser depend on the notes that are played and can therefore not be exported directly. However, it is possible to generate exportable phrases by recording the MIDI output of the FlexPhraser.

PROCEDURE

1. Click **Record FlexPhraser MIDI Output**.

   The arrow in the **Drag MIDI** field starts blinking to indicate record mode.

2. Play some notes.
3. When you are done, click **Record FlexPhraser MIDI Output** again.

   Recording stops. In the **Drag MIDI** field, the arrow remains lit to indicate that a MIDI phrase can be exported.
4. Click the **Drag MIDI** field and drag the phrase on a MIDI track in your host sequencer application.

Phrase Playback Types

HALion Sonic features a huge amount of phrase types, organized in submenus and categorized according to functional descriptions or musical styles, such as **Classic Arp**, **Synth Seq**, **Chord Seq**, **Bass**, etc.

The **Construction Sets** submenu contains phrases made for instrument layers. These phrases use key switches to switch between different playing styles, to increase the realism of your performance. The phrases that can be found in the various other categories use a number of different playback types to allow phrase-specific user interaction while playing.

For example, with drum patterns, pressing any note triggers the same rhythm pattern. Other phrases are played back using only the played note and its octave notes. And if you play back a programmed sequence according to the played chord, the following applies:

- If you press a single key, the phrase is played back using the programmed sequence, which means that notes other than the ones you play are triggered.
- If you are adding notes to those already held, the sequence changes accordingly, for example, the phrase plays back according to the chord you play.

Variations

For each FlexPhraser, you can set up 8 different variations of phrases. You can switch between them with the variation buttons at the top right.

You can remote-control the variation buttons using the trigger pads, which gives you the possibility to switch between variations by playing the trigger keys that are assigned to the trigger pads.

NOTE

To avoid that the variation switches in the middle of a beat or measure, use the trigger modes **Next Beat** or **Next Measure.**

Creating FlexPhraser Variations

PROCEDURE

1. Click one of the variation buttons at the top right of the FlexPhraser.
2. You can either start from scratch or base the new variation on an existing variation.
   - To start from scratch, assign a phrase and edit the FlexPhraser settings.
   - To use an existing variation as base, use the context menu commands **Copy FlexPhraser Variation** and **Paste FlexPhraser Variation**.

RESULT

The variation can now be recalled by clicking the corresponding variation button.

NOTE

The parameters **Loop**, **Sync**, **Hold**, **Trigger Mode**, **Restart Mode**, **Key Mode**, **Vel Mode**, **Low/High Key**, and **Low/High Vel** are not part of the variations. You set them up only once for each inserted FlexPhraser module.

RELATED LINKS

Switching between Variations on page 22

User Phrases

The user pattern of the FlexPhraser has up to 32 steps. Each step has an adjustable velocity, gate length, and transpose value. By setting the steps, adjusting their length, or leaving pauses, you define the rhythm of the user pattern.

You can combine consecutive steps to create longer notes. By selecting a mode, you define how the notes play back. In addition, there are two MIDI control sequences, that is, each step can send two modulation signals.In addition, there are three MIDI control sequences, that is, each step can send three modulation signals.

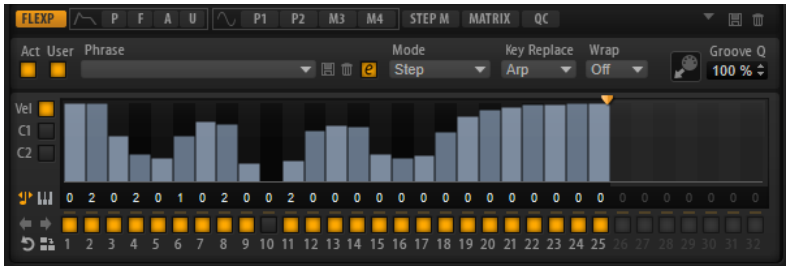
To create your own phrases, activate **User** and **Show Editor Page**.

For user phrases, the regular FlexPhraser parameters are available, except for the **KSOff** button.

User Phrase Editor

In the user phrase editor, you can set up your user phrases.

To open the user phrase editor, click **Show Editor Page** .



You can display the velocity curve or two MIDI controller sequences for the phrase.

Phrase

To load a phrase, select it from the **Phrase** pop-up menu.

NOTE

Saved phrases include the **Mode**, **Key Replace**, and **Wrap** parameters, as well as the steps with their **Level**, **Length**, and **Legato** settings. The selected MIDI controllers or any settings on the main FlexPhraser page are not saved.

Mode

Determines how the notes are played back.

- If **Step** is selected, the last note that is received triggers a monophonic sequence.
- If **Chord** is selected, the notes are triggered as chords.
- If **Up** is selected, the notes are arpeggiated in ascending order.
- If **Down** is selected, the notes are arpeggiated in descending order.
- If **Up/Down 1** is selected, the notes are arpeggiated first in ascending, then in descending order.
- If **Up/Down 2** is selected, the notes are arpeggiated first in ascending, then in descending order. This mode depends on the set **Key Mode**.

  If **Key Mode** is set to **Sort**, the highest and the lowest note are repeated.

  If **Key Mode** is set to **As Played**, the first and the last note are repeated.
- If **Down/Up 1** is selected, the notes are arpeggiated first in descending, then in ascending order.

- If **Down/Up 2** is selected, the notes are arpeggiated first in descending, then in ascending order. This mode depends on the set **Key Mode**.

  If **Key Mode** is set to **Sort**, the highest and the lowest note are repeated.

  If **Key Mode** is set to **As Played**, the first and the last note are repeated.
- If **Random** is selected, the notes are arpeggiated in random order.

Groove Q

To adapt the timing of a phrase to an external MIDI file, you can drop this MIDI file on the **Groove Quantize** drop field. You can quantize the playback of the user phrase to the timing of a sliced loop by dragging its MIDI file from the **MIDI export** drag field to the **Groove Quantize** drop field.

The **Groove Quantize Depth** parameter to the right of the drop field determines how accurately the phrase follows the timing of the MIDI file.

Key Select

The FlexPhraser scans the keyboard and writes the keys that are pressed into a note buffer.

Depending on the selected **Key Mode**, this note buffer is sorted either by pitch or in the order in which you play the keys.

Key Select allows you to play back a defined key from the note buffer. You can set up **Key Select** for each step separately, which allows you to create very elaborate phrases.

NOTE

Key Select cannot be used in **Step** or **Chord** mode.

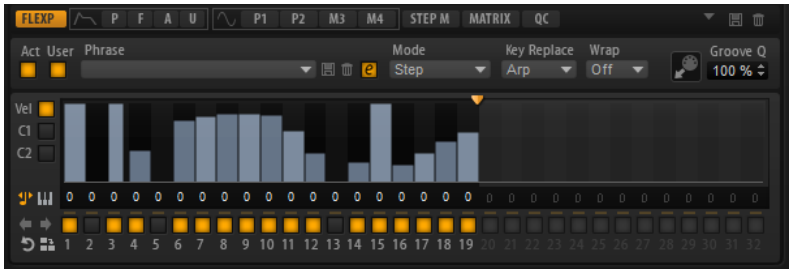
- To access the **Key Select** values of the steps, click **Show Key Values** to the left of the editor.
- To switch between the available **Key Select** values for a step, click the value and drag up/down or use the scroll wheel.

  The following options are available:

  - **P** (Phrase) plays the note of the user phrase, according to the selected mode, for example, **Up**, **Down**, **Up/Down 1**, etc.
  - The settings **1 - 8** play the corresponding keys from the note list. Which key is played depends on the **Key Mode** setting. For example, if **Key Mode** is set to **Sort**, the setting **1** plays the lowest key.
  - **L** (Last) always plays the last key from the note buffer. Depending on the **Key Mode**, this is the highest note or the last note in the note buffer.
  - **A** (All) plays all keys from the note buffer as a chord.

Velocity Curve

- To display the velocity curve, activate the **Vel** button on the left.



Key Replace

With this parameter, you can deactivate the **Key Select** function or specify how missing keys are replaced.

For example, if **Key Select** is set to 1 - 2 - 3 - 4 and you play a chord with 3 notes, key 4 is considered missing.

- **Off** deactivates **Key Replace** and **Key Select**. The selected arpeggio plays back normally.
- **Arp** replaces the missing keys with the note that the arpeggio would normally play.
- **Rest** does not replace any missing keys. The arpeggio plays a rest instead.
- **1st** replaces the missing keys with the first note in the note buffer.
- **Last** replaces the missing keys with the last note in the note buffer.
- **All** replaces the missing keys with all notes in the note buffer. The notes are played as a chord.

NOTE

Key Replace can be set separately for each variation.

Wrap

For all modes except **Step** and **Chord**, you can use this parameter to restart the arpeggio after a specified number of steps.

NOTE

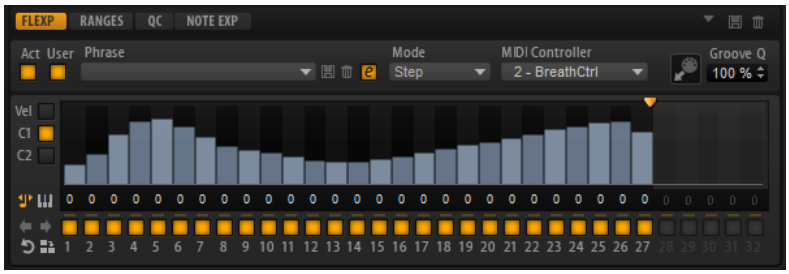
Deactivated steps are taken into account.

In **Step** and **Chord** mode, this parameter only affects the **Octaves** setting.

If the **Octaves** parameter is active, the arpeggio traverses the octaves and restarts from the original octave after the specified number of steps.

Controller Curve

To show a controller curve, click one of the controller buttons on the left.



MIDI Controller

Allows you to select the MIDI controller that you want to use.

Editing User Phrases

You can make detailed settings for the user phrase in the editor for the user phrases.

To set up the phrase, activate the **Vel** button to the left of the step display.

To set up a controller curve for the phrase, activate one of the controller buttons to the left of the step display.

- To specify the number of steps for the pattern, drag the **Number of Steps** handle to the right or left.

Activating Steps

A phrase can contain up to 32 steps. Only the steps that are activated are played.

- To activate a step, click its **On/Off** button below the display.

  This can be necessary if you change the gate length of one step so that it overlaps the following step, thereby deactivating it.

  NOTE

  If you activate a step that was inactive because of an overlapping previous step, the previous step is shortened.

- To activate all steps, right-click in the step display and select **Enable All Steps** from the context menu.

Editing Steps

The height of a step represents its value. You can edit the steps in the following way:

- To activate all steps, select **Enable All Steps** from the context menu.
- To adjust a value, click a step and drag up or down.
- To adjust multiple steps, click and draw a curve.
- To adjust the velocity of all steps relatively, **Shift**-click and drag.
- To draw a ramp with steps, hold down **Alt** and draw a line.
- To draw symmetric ramps at the beginning and the end of the sequence, hold down **Shift**-**Alt** and draw a line.
- To transpose a step, click in the field below it and enter the number of semitones for the transposition.

  NOTE

  You can only transpose steps if **Show Transpose or Key Select** shows a note icon, not a keyboard icon.

- To reset the velocity of a step to 127, **Ctrl/Cmd**-click the step.
- To reset the velocity of all steps to 127, hold **Shift**-**Ctrl/Cmd** and click a step.
- To introduce a legato between two steps, click the number below the first of these steps, so that a small arrow is shown.

  If **Legato** is activated, the **Gate Scale** parameter is not taken into account.

For velocity steps, the width of a step represents its gate length.

- To adjust the gate length of a step, drag its right border.
- To adjust the gate length of all steps, hold down **Shift** and drag the right border of a step.

  You can only adjust the length this way until a step reaches the next step. If you increase the gate length of a step so that it overlaps the following step, this following step is deactivated.
- To reset the length of a step to 1, **Ctrl/Cmd**-click its highlighted right border.
- To reset the length of all steps, hold down **Shift**-**Ctrl/Cmd** and click on a highlighted right border.

- To fill the gaps between consecutive steps, select **Fill Gap** or **Fill All Gaps** from the context menu.

Each MIDI controller lane can send a MIDI controller. By selecting the same MIDI controller as source in the Modulation Matrix, you can modulate any of the destinations with the MIDI controller sequence.

Adjusting the Phrase

- To shift the rhythm of the phrase, click **Shift Phrase Right** or **Shift Phrase Left** .

  If you shift the rhythm of the phrase to the left, the first step is moved to the end. If you shift the phrase to the right, the last step is moved to the beginning.
- To reverse the phrase, click **Reverse Phrase** .
- To duplicate short phrases, click **Duplicate Phrase** .

NOTE

The maximum number of steps is 32. Therefore, phrases that contain more than 16 steps cannot be duplicated entirely.

Managing Your Sounds

The following sections describe how to load, save, and manage the different kinds of sound files in HALion Sonic.

Programs, Layers, Multis, Macro Pages, and Presets

Programs

A program is a complex instrument or sound that can consist of up to 4 layers. Often, a program contains a single layer that comes with all necessary components, such as the synthesis part or insert effects. Programs add the possibility of combining different layers to build up more complex sounds or to create combinations of sounds that you want to load as a unit. A typical example is a bass/piano split sound or a piano/string layer sound.

Because of the various layer types that come with HALion Sonic, these combinations can do a lot more. For example, think of combining a pulsating synthesizer sequence with a sliced loop completed by a bass on the lower keys, and so on. Finally, add some effects to individual layers or to the whole program and you get a unique sound experience.

Layers

Programs are combinations of up to 4 layers. HALion Sonic offers 5 different layer types. You can choose between synth, sample, instrument, drum, and sliced loop layers. Each layer type is based on an individual sound architecture and has a dedicated editor.

Synth and Sample Layers

For synth and sample layers, you get access to a synthesizer editor with components such as a highly flexible filter section, powerful multi-stage envelopes, LFOs, a step modulator, and a modulation matrix. These layer types differ in their basic sound source. While a synth layer provides an oscillator section with three main oscillators, a sub oscillator, a noise generator, and a ring modulation stage, the sample layer loads a specific multi-sample instead.

Drum Layers

The drum layers load a multi-sampled drum set, for which you can individually adjust the most important parameters of each drum instrument. Each drum instrument can be set to a specific pan position or an individual output, or it can be filtered, reversed, and so on.

Loop Layers

Loop layers load a sliced loop, that is, a combination of a loop-specific MIDI phrase and the individual slices mapped across the keyboard. You can either play the original loop or a transposed version of it, or trigger single slices manually. Each slice can be modified with the same parameters as the drum instruments.

Instrument Layers

Instrument layers contain several multi-samples of an instrument that can be parts of single sounds or different articulations. These sublayers are called expressions.

You can modify expression parameters. By switching off an expression, you can shorten the load time of a sound.

Multis

HALion Sonic is a multitimbral plug-in that can load up to 16 sounds (or programs) and combine them. This combination is called a multi-program, or multi for short. You can use multis to layer several programs or to create split sounds by setting several programs to the same MIDI input channel, for example. However, the most common usage is to create sound sets with different instruments set to individual MIDI channels.

VST Sound Instrument Sets and Macro Pages

VST Sound Instrument Sets from Steinberg provide additional content for VST instruments based on the HALion technology. They come with their own edit pages, called macro pages, that feature a customized look and a collection of controls that match the functions of the VST Sound Instrument Set. When you edit a program or layer of a certain VST Sound Instrument Set, the accompanying macro page opens. For details on the functions and controls of a particular macro page, refer to the documentation that comes with the corresponding VST Sound Instrument Set.

Presets

You can save and load all types of sounds as presets, that is, you can create presets for single programs, for layers, and for multis.

Content Files and Folder Structure

HALion Sonic comes with a large amount of ready-to-use sound content, made up of hundreds of multis, programs, and layers. This content is write-protected. You can edit files while they are loaded, but you cannot overwrite the factory content files.

To save edits to the factory content, save the files under a new name. These files get the file name extension `.vstpreset` and are referred to as user content. They can be searched and categorized in the same way as factory content.

User content is saved in a predefined folder structure on your hard disk. You can create subfolders within this structure to facilitate moving or exchanging content.

Loading Programs

There are several ways to load programs:

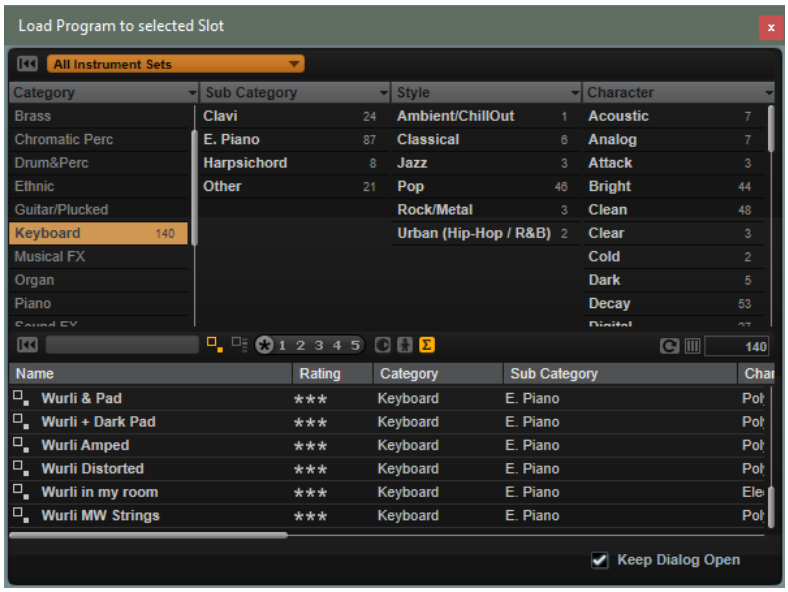
- Via drag and drop from the File Explorer/macOS Finder
- Via the slot context menu
- By clicking the **Load Program** button at the right of the slot

NOTE

Programs containing lots of sample data may take some time to load.

RELATED LINKS
Slot Context Menu on page 80

Load Dialog

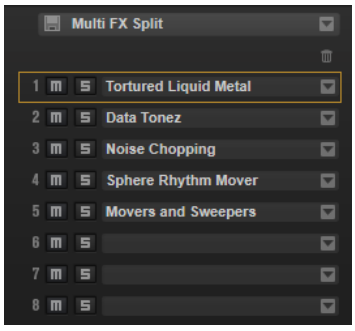


The **Load** dialog contains many of the **MediaBay** functions, allowing for very sophisticated search criteria.

RELATED LINKS
Filtering the Results on page 84
File Management in the MediaBay on page 83
Results List on page 84

Slot Rack

The **Slot Rack** has 16 slots. Each slot can hold a program, that is, you can work with 16 programs at the same time.



Once a program is loaded in the **Slot Rack**, it can be played and edited.

Slot Context Menu

The context menu provides a number of functions for managing programs.

Load Program

Opens the program loader. Double-click a program or layer to load it into this slot.

Save Program

Saves the program. If you try to overwrite write-protected factory content, a dialog opens that allows you to save the edited program under a new name.

Save Program As

Allows you to save the program under a new name.

Save All Programs

Allows you to save all programs as a VST preset.

Export Program

Allows you to change the attributes for your program and save it in a new location.

Export All Programs

Allows you to set up attributes for all programs at the same time and save them in a new location.

NOTE

- Existing attribute values are kept, that is, if a program already contains an attribute value for an attribute that you set up for all programs, this value is not overwritten.
- The preset format of the programs is not modified, that is, if a program contains HALion presets and HALion Sonic presets, for example, these are saved keeping their respective formats.

Remove Program

Removes the program from the slot.

Init Program

Loads the **Init** program. This contains a neutral synth layer.

Revert to Last Saved Program

Discards any changes that you made to the program since the last time it was saved.

Cut Program

Copies the program and removes it from the slot.

Copy Program

Copies the program.

Paste Program

Pastes the copied program into the slot. If the slot already contains a program, it is replaced.

Rename Program

Allows you to rename the program.

Reset Slot

Resets the slot to the default values.

Reset All Slots

Resets all slots to the default values.

NOTE

You can also cut, copy, and paste programs from one plug-in instance to another.

Managing and Loading Files

You can use the **MediaBay** to manage, navigate to, and load different file types.

Managing Multis

Multis can load multiple sounds or programs and combine them.

You can use multis to layer several programs or to create split sounds by setting several programs to the same MIDI input channel, for example. However, the most common usage is to create sound sets with different instruments set to individual MIDI channels.

A multi-program contains all plug-in parameters. If you use HALion Sonic as a plug-in in a Steinberg DAW, these multis are listed in the **Preset Management** pop-up menu of the host application. You can drag multis and programs from the **MediaBay** to a slot in HALion Sonic.

If you use HALion Sonic as a plug-in in a different host application, you can use the preset functionality from the host application or the multi management features provided by HALion Sonic.

Loading Multis

You can load multis in the following ways:

- Open the **MediaBay** and double-click a multi or drag a multi onto the multi slot.
- Click the **Load Multi-Program** button in the multi slot to open the **Load Multi-Program** dialog, select a multi, and click **OK**.

Renaming Multis

PROCEDURE

- To rename a multi, click in the name field, enter a new name, and press **Return**.

Removing Multis

- To remove all programs of the current multi, click the **Remove All Programs** button on the toolbar of the multi program rack.

  This also resets all slot parameters and removes effects from the slot busses. However, AUX and Master effects are not removed.

Clearing the Plug-In Instance

- To reset the entire plug-in instance to an empty state, right-click the multi loader and select **Clear Plug-in Instance** from the context menu.

Saving Multis

PROCEDURE

1. Click the **Save Multi-Program** button.
2. Enter the name of the multi.
3. Assign any attributes that you want to use and click **OK**.

   If the entered name already exists, a message opens. Click **Make Unique Name** to add a number suffix to the name of the new multi.

Saving a Multi as Default

- To specify a default multi to be loaded with HALion Sonic, use the **Save as Default** command on the context menu for the multi loader.

Creating Subfolders for User-Defined Multis

You can create subfolders inside the user preset folder to organize presets.

- To create a new folder, click the **Create New Folder** icon at the top left of the **Save Multi-Program** dialog.

Navigating Through the Folder Hierarchy

You can move through the folder hierarchy using the three navigation buttons at the top left of the dialog.

These buttons allow you to navigate to the previous or next browse location, or browse the containing folder.

Editing Attributes

You can edit the attribute values that are assigned to the preset.

PROCEDURE

1. Open the **Save Multi-Program** dialog and navigate to the **New Preset Tags** section.
2. To edit an attribute, click on a value field and enter the new name or value.
3. Click **OK** to save the preset.

File Management in the MediaBay

The **MediaBay** functionality can be found on the **Load** page. The **MediaBay** gives access to presets, such as multis, programs, and layers.

In the top section of the page, you specify which sounds to look for. The lower section presents the corresponding results.

- To adjust the size of the two sections, drag the divider at the top of the results list.

Browsing for Files

The **Load** page allows you to browse for and load files. You can restrict the amount of files that are searched by filtering the results list or entering a search text.

PROCEDURE

1. On the **Select Content Set** menu, select the content set from which you want to load a program or layer. To browse the entire content, select **All**.
2. On the toolbar of the results list, specify whether you want to browse through the available programs or layers.
3. Optional: In the upper section of the page, click on an attribute to display only those files containing the attribute, for example, percussion, or a specific musical style, etc.

   You can activate several attribute filters simultaneously.
4. If you are looking for a specific file, enter its name in the text search field on the toolbar.

   You can also enter text that is part of the file name or the file attributes in the search field.
5. In the results list, double-click a file to load it in the selected slot.
6. Play a note on your keyboard or use the internal keyboard to listen to the selected file.

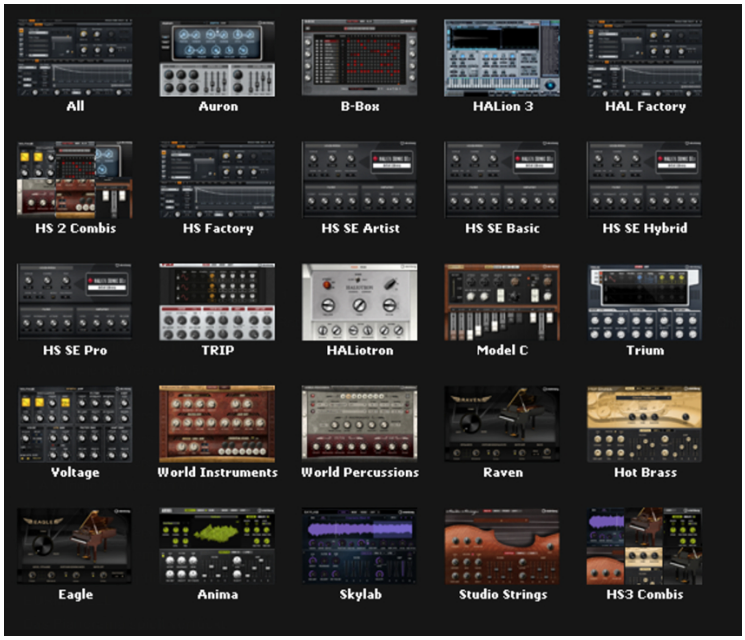
   If the file is not what you were looking for, step through the files in the results list and listen to them until you found the file that you want to use.

Filtering the Results

You can filter the results list using the configurable attribute columns at the top or by restricting the search to a specific content set.

Content Set Filter

Use the **Select Content Set** pop-up menu to restrict the search to a specific content set. By default, the search is performed in all installed content sets.



Attribute Filter

- To set up the filter, click on specific values in the columns.
- To select different filter criteria, click the column header and select a different attribute from the submenu.

Only the files that match the set filter are displayed in the results list.

Results List

The results list shows all files that have been found according to the category filter.

Text Search

In the text search field on the results list toolbar, you can enter text contained in the name or any of the attributes of a preset that you are looking for. The results list is updated immediately and the category search section above shows all categories that contain presets matching the text search.

To reset the text-based result filter, click **Clear Search Text** next to the search field.

To restrict the search to the names only, activate **Search Names Only** N. This way, other attributes are not taken into account.

View Filters

The toolbar has three filter buttons that allow you to define which preset types to display: multis, programs, or layers. In the results list, the corresponding icon is shown to the left of the preset name.

Rating Filter

You can limit the results list according to the rating of the presets. Use the rating slider to define the minimum rating.

Content Filters

The content filter buttons allow you to define whether to show the entire content, only the factory content, or only your user content.

Rescan Disk

Rescans the disk for files that match the search criteria. Click this button if you added or removed files on your hard disk, for example.

Set Up Result Columns

Allows you to select which attribute columns to display on the toolbar.

Results Counter

Displays the number of files that match the filter criteria. To stop an active scanning process, click in the value field.

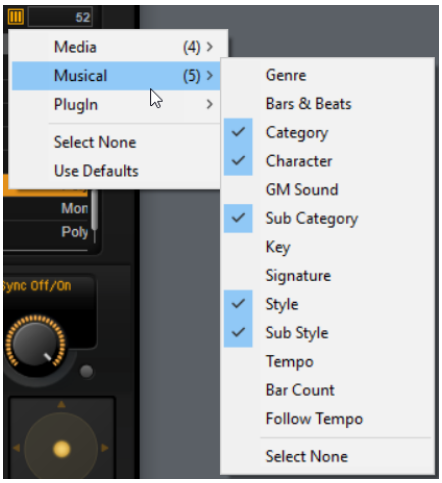
RELATED LINKS

Configuring the Results List on page 85

Configuring the Results List

You can specify which file attributes you want to be displayed in the results list and set up the column order so that this attribute is visible without scrolling. This allows you to find the files that have a particular attribute more quickly.

- To configure which attributes are shown in the results list, click **Set up Result Columns** in the upper right corner of the results list and activate the corresponding entries. New attributes are added at the right of the list.



- To reorder the columns in the results list, drag the column headers to another position.
- To change the sorting of the list entries, click the column header. The triangle in the column header shows the sorting direction.

Assigning General MIDI Program Change Numbers to Sounds

Assigning General MIDI program change numbers to sounds allows you to use MIDI program change messages to load the sounds into the slot of the corresponding MIDI channel.

PROCEDURE

1. In the **MediaBay**, click **Set up Result Columns** on the title bar of the lower section.

2. Select **Musical** > **GM Sound**.
3. Select the sound to which you want to apply the GM program change number.
4. In the **GM Sound** column for the sound, select the General MIDI program change number that you want to use.

   You can assign the same GM Sound program number several times. If a program number is used more than once, the **Rating** attribute can be used to decide which program to load.

   NOTE

   Slot 10 ignores any program change messages and keeps the loaded drum set.

   NOTE

   If you add **GM Sound** attributes to programs in the **MediaBay** and these attributes are used in the current multi, you can update the multi by right-clicking the multi loader and selecting **Update General MIDI Programs**. This exchanges those programs that use the specified **GM Sound** attribute. The other programs remain unaffected.

Loading Programs into Slots

To load a program into one of the slots of the **Slot Rack**, you have the following possibilities:

- Select the slot into which you want to load the program, and double-click the program in the results list.
- Drag a program from the results list to an empty space in the **Slot Rack** to create a new slot.

  If you drag it to an existing slot, the current program is replaced.
- Right-click the program and select **Load Program into selected Slot** from the context menu.

Importing Presets

You can import program presets from any file location using the File Explorer/macOS Finder.

PROCEDURE

1. Select the preset in the File Explorer/macOS Finder.
2. Drag it to the **MediaBay**.

RESULT

The imported presets are copied to your user folder.

Editing Attributes

Presets can be described by using a predefined set of attributes.

PROCEDURE

1. In the **New Preset Attributes** section of the **Save** dialog, click in the field of the attribute value that you want to set.

   Depending on the attribute, a menu or a dialog opens.
2. Select a value.

   Attribute values are written into the corresponding preset files.

NOTE

If you change the attributes for write-protected factory content files, these changes are only saved in the **MediaBay** database, not in the file.

Deleting User Presets

- To delete a user preset, right-click it and select **Delete** from the context menu.

NOTE

Factory presets cannot be deleted.

Multi Chains

On the **Multi** page, you can combine up to 128 multis as a multi chain.

You can step through the multis manually or via MIDI control change messages. This feature is particularly useful when performing live on stage. It allows you to set up a list of sounds that follows the order of their appearance during your performance, for example.

NOTE

- To use a hardware controller to switch between the multis, add MIDI controllers to the **Load Previous Multi**/**Load Next Multi** buttons.
- If **Multi Mode** is selected on the **Program Change** pop-up menu on the **Options** page, you can use program change messages to switch between the multis.

Setting Up a Multi Chain

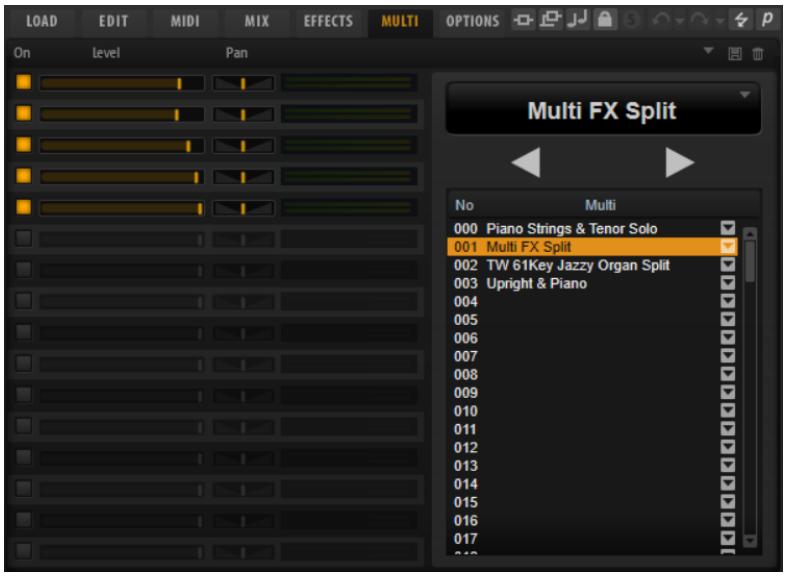
PROCEDURE

1. On the **Multi** page, click the down arrow button for a list entry to open the **Load Multi-Program** dialog.
2. Select a multi and click **OK**.
3. Select the next slot in the list and repeat the procedure.
4. Continue until all multis that you want to add are part of the chain.

AFTER COMPLETING THIS TASK

You can rearrange the order of a chain by dragging an entry to a new position in the list.

Multi Page



The list of multis in your chain is displayed on the right. If you select a multi in this list, its name is displayed in the field above the list, and the corresponding programs are displayed on the left.

- To load the next or the previous multi, use the **Load Previous Multi**/**Load Next Multi** buttons above the list.
- To load a specific multi, select it in the list.

On

Activates/Deactivates the corresponding program.

Level

Sets the level of the corresponding program.

Pan

Sets the pan of the corresponding program.

Active Multi Display

The field at the top op the multi list shows the selected multi.

Click the arrow button on the right to open a pop-up menu with the following options:

- **Clear Multi Chain** removes all multis from all slots in the list.
- **Remove Selected Multi** removes the selected multi from its slot in the list.

Load Previous Multi/Load Next Multi

Use these buttons to step through the multi list.

- To assign a MIDI controller to a button, right-click it, select **Learn CC**, and use a control on your hardware controller.
- To remove an assigned MIDI controller, right-click the button and select **Forget CC**.

Multi List

The multi list contains 128 slots.

To load a multi in a slot, click the arrow button and select a multi.

Assigning MIDI Controllers to the Previous/Next Buttons

For switching through the multi chain, you can also use MIDI controllers, such as a potentiometer, a fader, or the modulation wheel.

You can use the same MIDI controller for **Load Previous Multi** and **Load Next Multi**, or select a different controller for each function.

NOTE

- If the same MIDI controller is assigned to both buttons, the **Load Next Multi** command is triggered by the transition from the center position to the upper range of the control, and the **Load Previous Multi** command by the transition from the center position to the lower range of the control.
- If different MIDI controllers are assigned, any transition from the lower to the upper range of the control triggers the **Load Previous Multi**/**Load Next Multi** command.

PROCEDURE

1. Right-click the **Load Previous Multi** button and select **Learn CC**.
2. On your hardware controller, use the control that you want to assign.
3. Right-click the **Load Next Multi** button and select **Learn CC**.
4. On your hardware controller, use the control that you want to assign.

Automation

You can automate most of the HALion Sonic parameters from within your host application, whether these are parameters of a program or global parameters such as AUX effects.

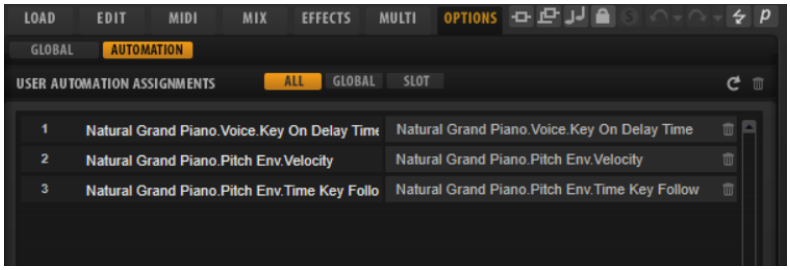
NOTE

- To automate parameters of multiple layers relatively, use quick controls and automate these instead.
- Not all parameters can be automated.

Automation Page

All assigned automation parameters are shown on the **Automation** page.

To access this page, open the **Options** page and activate the **Automation** tab at the top.



With the tabs at the top, you can specify whether you want to show the automation parameters for the slot, the global parameters, or all automation parameters.

On the left, the name of the automation parameter is shown, and on the right, the name of the assigned HALion Sonic parameter. If multiple HALion Sonic parameters are assigned to one automation parameter, these are listed below each other on the right.

- To remove an automation parameter, click the trash icon to the right of the parameter name.
- To remove all automation parameters, click **Delete All Parameters** at the top of the page.
- To rename an automation parameter, double-click the parameter name and enter the new name. This name is then used in your host application.

Setting Up Automation

Creating Automation Parameters

- To assign a parameter to an automation parameter, right-click the parameter control and select **Assign to New Automation**. The automation parameter is created on the first free automation parameter.

- To add a parameter to an existing automation parameter, right-click the control, select **Add to Automation** and select the automation parameter.
- To remove a parameter from the automation, right-click an automated control and select **Forget Automation**.
- To assign a parameter to an automation parameter automatically while working in your host application, activate **Automation Read/Write**, start playback, and use the controls on the HALion Sonic interface.

NOTE

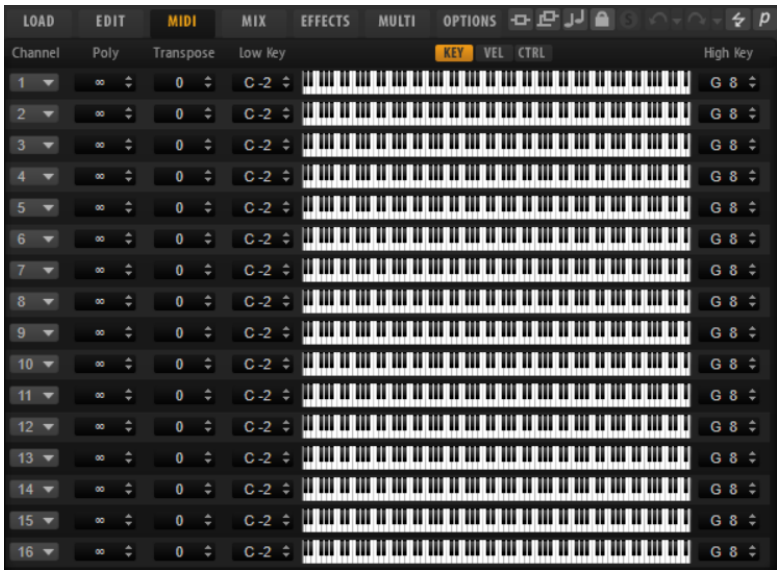
If you have assigned automation parameters for a program and then load another program into this slot, it can become necessary to verify the automation settings.

If the new program has the same structure as the previous program, for example if you exchange a Voltage preset with another Voltage preset, HALion Sonic reconnects the automation parameters correctly and no manual modifications are necessary. However, if you load a preset with a different structure, for example a Model C preset, the automation parameters cannot be reconnected. In this case, the disconnected automation parameters are still displayed in the automation list.

MIDI Editing and Controllers

MIDI Page

The **MIDI** page gives you access to the MIDI slot parameters of HALion Sonic.



Parameters

Channel

The slot receives MIDI signals on the MIDI port and channel that are specified here. You can set multiple slots to the same MIDI channel and trigger them simultaneously with the same note events.

Polyphony

Specifies how many notes can be played at the same time.

NOTE

Programs can contain various layers, therefore, the resulting number of voices can be much higher than the value that is specified here.

Transpose

Allows you to shift the incoming MIDI notes by ±64 semitones before they are sent to the loaded program.

Key Range (Low Key, High Key)

Allows you to limit the key range for a slot.

Velocity Range (Low Vel, High Vel)

Allows you to limit the velocity range for a slot.

Controller Filter

Allows you to filter out the most commonly used MIDI controllers.

Editing the Key Range

Each slot can be limited to a specific key range.

To show the key range, activate the **Key** button above the range controls.

You can set the key range in the following ways:

- Set the range with the **Low Key** and **High Key** value fields or by dragging the ends of the keyboard range control.
- To move the key range, click in the middle of the range control and drag.
- To set the range via MIDI input, double-click in a value field and play the note.

Editing the Velocity Range

Each slot can be limited to a specific velocity range.

To show the velocity range, activate the **Vel** button above the range controls.

- Set the velocity range with the **Low Vel** and **High Vel** value fields or by dragging the ends of the velocity range control.

  To move the velocity range, click in the middle of the range control and drag.

MIDI Controllers

You can assign the parameters volume, pan, mute, solo, send FX 1–4, and the quick controls of each slot to a MIDI controller. In addition to the slot parameters, you can also assign the parameters of the AUX FX and most of the edit parameters.

By default, volume, pan, send FX 1–4, and the program quick controls are already assigned. You can customize this factory MIDI controller mapping by assigning your own MIDI controllers. This way, you can adapt the mapping to your MIDI keyboard or controller.

To provide more control, you can set the minimum and maximum range for each assignment separately.

Assigning MIDI Controllers

To assign a MIDI controller to a parameter, proceed as follows:

PROCEDURE

1. Right-click the control that you want to control remotely and select **Learn CC**.
2. On your MIDI keyboard or controller, use the potentiometer, fader, or button.

   The next time you right-click the control, the menu shows the assigned MIDI controller.

NOTE

You can assign the same MIDI controller several times to different parameters. However, you cannot assign different MIDI controllers to the same parameter.

RELATED LINKS
MIDI Controller Section on page 26

Unassigning MIDI Controllers

PROCEDURE

- To remove a MIDI controller assignment, right-click the control and select **Forget CC**.

Restoring the Factory MIDI Controller Assignment

To restore the factory MIDI controller assignments, open the **Options** page and click **Reset to Factory** in the **MIDI Controller** section.

Setting the Parameter Range

You can set the minimum and maximum values for the parameter for each assignment separately. This gives you more control over the parameter, for example, when you are performing live on stage.

PROCEDURE

1. Set the parameter to the minimum value.
2. Right-click the control and select **Set Minimum** from the context menu.
3. Set the parameter to the maximum value.
4. Right-click the control and select **Set Maximum**.

MIDI Controllers and AUX FX

You can assign the parameters of the AUX FX to MIDI controllers.

Unlike the slots, the AUX FX do not have a MIDI port and channel of their own. Instead, they listen to any incoming MIDI controller message, regardless of the MIDI channel. Therefore, if you assign a parameter to a MIDI controller, you should use a controller number that is not already in use by any of the assignments that you made for the slots.

NOTE

If you unload or replace the effect, the MIDI controller assignment of this effect is lost.

Saving a MIDI Controller Mapping as Default

After customizing the factory MIDI controller assignments, you can save them as default.

PROCEDURE

- Open the **Options Editor** and, in the **MIDI Controller** section, click **Save as Default**.

RESULT

Now, each time that you load a new instance of the plug-in, your customized MIDI controller mapping is available as default.

NOTE

- Saving the controller mapping as default does not include the MIDI controller assignments of the AUX FX.
- The MIDI controller mapping is saved with each project. This way, you can transfer your settings to other systems. The project also includes the MIDI controller assignments of the AUX FX.

Automation and Factory MIDI Controller Assignment

Several parameters on the plug-in interface are available for automation from your host software and can be assigned to an external MIDI controller.

The table shows the controller numbers and names of the default factory MIDI controller assignment. The assigned MIDI controller numbers are the same for all slots. However, the MIDI controllers listen only to the MIDI channels of the corresponding slot.

Parameter	Controller Number	Name
Volume	#7	Volume
Pan	#10	Pan
Send FX 1	#91	Effect 1 Depth
Send FX 2	#92	Effect 2 Depth
Send FX 3	#93	Effect 3 Depth
Send FX 4	#94	Effect 4 Depth
Program QC 1	#74	Brightness
Program QC 2	#71	Harmonic Content
Program QC 3	#73	Attack Time
Program QC 4	#72	Release Time
Program QC 5	#75	Sound Controller #6
Program QC 6	#76	Sound Controller #7
Program QC 7	#77	Sound Controller #8
Program QC 8	#78	Sound Controller #9

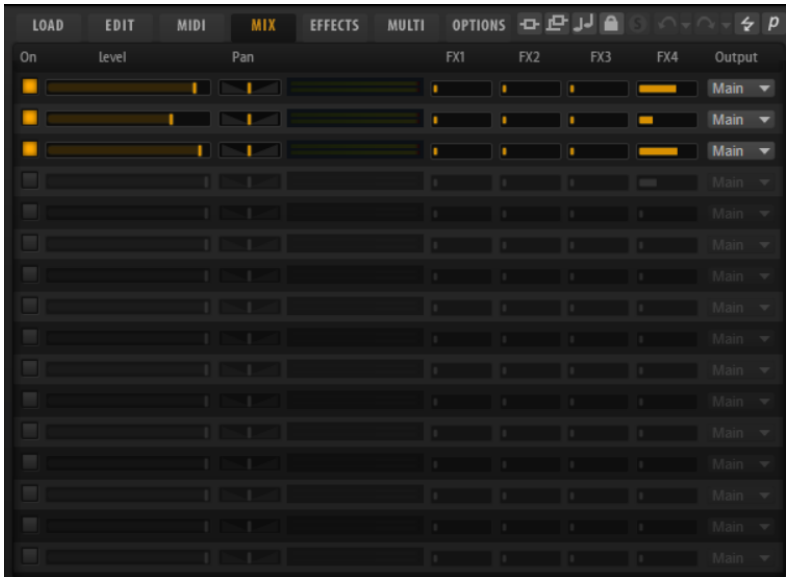
NOTE

- Send FX 1-4 are only available if the corresponding AUX send effects are loaded.
- You can remotely control any other parameter by assigning the parameter first to a quick control and then to a MIDI controller.
- You can use MIDI controllers inside the modulation matrix of a synth or sample layer to control the cutoff, for example.

Mixing and Effect Handling

Mix Page

The **Mix** page gives you access to the audio parameters of HALion Sonic. This comprises the level and pan settings, as well as the AUX effect sends and the output selector. To monitor the output levels, each slot also features a level meter.



Mix Page Parameters

On

Activates/Deactivates MIDI input of the slot. If you deactivate a slot, its MIDI communication is interrupted and sounds are no longer processed in the background.

Level

Sets the output level of the slot.

Pan

Sets the position in the stereo panorama.

Meter

Indicates the output level of the slot.

FX 1–4

These controls specify the amount of signal that is sent to the four auxiliary busses that host up to four effects each.

Output

Specifies to which of the 16 plug-in outputs the slot is routed.

Effect Handling

The busses can be routed to the main plug-in output or to one of the individual outputs.

The **Effects** page also provides access to the main output bus which also features four inserts. These can be used to add a global EQ or compressor to the signal chain, for example.

Default Effect Settings

Each effect comes with factory default settings. However, you can save your own default settings for each effect as a preset.

- Set up the effect.
- Click the **Save Preset** button in the title bar of the effect section and save the preset under the name “--Default--”.

The preset is saved in the presets folder of the effect and is loaded each time you load the effect.

- To return to the factory default settings, delete your default preset.

Using the Insert Effect Slots

On the **Effects** page, you can set up insert effects for AUX busses.

Each bus provides four slots for insert effects.

- To assign an insert effect, click the effect slot and select the effect from the menu.
- To remove an insert effect including its current settings, click the effect slot and select **None** from the menu.
- To deactivate an effect without removing it, click its **On/Off** button above the slot. This way, you can switch off the effect without losing its settings.
- To bypass an effect, activate the **Bypass** button of the slot. Bypass is active when the button lights up.
- To edit an insert effect, click the **e** button of the corresponding slot. You can edit only one effect at a time. The parameters of the insert effect are displayed in the bottom section.
- To move an effect to another slot, click its drag icon and drag it to another slot. This replaces any effect loaded in this slot.
- To change the order of the effects, drag them by their drag icon to a new position between two slots.
- To copy an effect into another slot, **Alt**-click its drag icon and drag it onto the new slot. This replaces any effect loaded in this slot.

NOTE

You can also copy effects between the different mixers. First drag an effect to the corresponding mixer tab. Then drag it to the position where you want to insert it.

- To copy an effect and insert it between two effect slots, **Alt**-click its drag icon and drag it between two slots.

NOTE

You can also copy effects between the different mixers. First drag an effect to the corresponding mixer tab. Then drag it to the position where you want to insert it.

Included Instruments

HALion Sonic comes with a factory library containing powerful instruments. For each instrument, an intuitive macro page is available, offering a rich palette of presets.

Auron

The Auron synth uses granular synthesis with up to 8 grain streams to produce oscillator waveforms. With the integrated arpeggiator and step sequencer, you can create anything from sequencer lines to stepped chords.

The granular oscillator is followed by a multi-mode filter that offers a large number of different filter shapes. The filter can be modulated by modulation sources like the keyboard, velocity, and LFO, but also by the controller lanes of the step sequencer, for example.

Auron includes 2 LFOs. The first LFO can be synchronized to the tempo of the host application and allows for modulations of grain position, formant and duration, as well as filter cutoff. The second LFO is controlled by the modulation wheel and is used to create a vibrato.

For the grain synthesizer, three pages are available: **Osc**, **Mod**, and **Voice**. To open a page, click the corresponding button in the upper left of the Auron panel.

Selecting Samples

You can select samples on the sample selector that is opened by clicking the little triangle in the upper left of the page.

Osc Page

On this page, you can make settings for the grain oscillator.

Position

You can set the playback position of the grains manually. For example, at a setting of 50 %, the playback position is in the middle of the sample. The playback position is updated with every new grain.

Random Position

Selects a random playback position within a specific range around the current position. At a setting of 100 %, the playback position jumps to a random position between the start and the end of the sample. The random playback position is calculated separately for each channel of the sample, at the start of a new grain. This can be used to widen the panorama of the sound.

Duration

Increases the grain period by a factor ranging from 1 to 1000.

For very short grains, the sound gets the pitch of the frequency at which the grains repeat. For grains longer than 30 ms, the sound gets the pitch of the original sample. This is the case for **Center Key** C3 if the **Duration** is set to a value above 10, for example.

Random Duration

Sets the random grain duration. This duration is calculated at the start of a new grain.

Duration Key Follow

Determines how the grain duration changes with the notes you play. It is mostly used with short durations. Longer durations sound with the original pitch of the sample and therefore do not need to follow the keyboard.

With a **Duration** of 1 and a **Duration Key Follow** setting of 100 %, the difference in pitch between two keys is one semitone, which corresponds to the standard keyboard tuning. Longer durations lead to an audible volume modulation that is different for the different keys. To apply the same volume modulation with each key, set **Duration Key Follow** to 0 %.

NOTE

The volume modulation is only audible if the grain is long and if you only use a few grains.

Pitch Interval

Allows you to specify an interval between -12 and +12 semitones. The grains are played randomly at their original pitch, or are transposed according to the pitch interval. This parameter is suitable for longer grain durations.

Pitch Random

Sets the random pitch range in semitones and cents. At a setting of +12, the random pitch values lie between -12 and +12 semitones. The random pitch is calculated separately for each channel of the sample, at the start of a new grain. This parameter can be used to enrich the sound.

Level

Adjusts the overall level of the grain oscillator. When you increase the number of grains, it might become necessary to lower the oscillator level. When you play back a very quiet portion of a sample, you can use this control to raise the level.

Random Level

Sets a random level for each new grain. At a setting of 100 %, the level varies between a factor of 0 and 2 of the original level. The random level is calculated separately for each channel of the sample, at the start of a new grain. This can be used to randomize the panorama of the sound.

Width

Narrows the stereo width of the grain oscillator. It is applied after the grain oscillator and does not affect the stereo width of the actual sample. At a setting of 0 %, the output of the grain oscillator is monophonic.

Auto Gain

Allows you to automatically adjust the level of grains using quieter sample parts. This way, you get a more homogeneous signal and you can use a quiet part of a sample as source.

Grains

Allows you to specify the number of grains, from 1 to 8. For example, with a setting of 4, you get 4 grains per period of the grain duration.

To hear the effect of this setting, you have to play a new note.

Mod Page

The **Mod** page contains the LFO settings in the upper section and the mod wheel, or vibrato, settings in the lower section.

LFO Settings

LFO Waveform and Shape

- **Sine** produces smooth modulation, suitable for vibrato or tremolo. **Shape** adds additional harmonics to the waveform.
- **Triangle** is similar to **Sine**. **Shape** continuously changes the triangle waveform to a trapezoid.
- **Saw** produces a ramp cycle. **Shape** continuously changes the waveform from ramp down to triangle to ramp up.
- **Pulse** produces stepped modulation, where the modulation switches abruptly between two values. **Shape** continuously changes the ratio between the high and low state of the waveform. If **Shape** is set to 50 %, a square wave is produced.
- **Ramp** is similar to the **Saw** waveform. **Shape** increasingly puts silence before the sawtooth ramp up begins.
- **Log** produces a logarithmic modulation. **Shape** continuously changes the logarithmic curvature from negative to positive.
- **S & H 1** produces randomly stepped modulation, where each step is different. **Shape** puts ramps between the steps and changes the **S & H** into a smooth random signal when fully turned right.
- **S & H 2** is similar to **S & H 1**. The steps alternate between random high and low values. **Shape** puts ramps between the steps and changes the **S & H** into a smooth random signal when fully turned right.

Freq

Controls the frequency of the modulation, that is, the speed of the LFO.

Sync

If **Sync** is activated, the frequency is set in fractions of beats.

Position

Controls the modulation depth of the grain position modulation.

Formant

Controls the modulation depth of the grain formant modulation.

Duration

Controls the modulation depth of the grain duration modulation.

Cutoff

Controls the modulation depth of the filter cutoff modulation.

Mod Wheel Settings

Vib Freq

Controls the frequency of the second LFO that is used for pitch modulation (vibrato).

Vib Depth

Controls the depth of the pitch modulation (vibrato).

Position

Controls the influence of the mod wheel on the grain position.

Formant

Controls the influence of the mod wheel on the grain formant.

Duration

Controls the influence of the mod wheel on the grain duration.

Cutoff

Controls the influence of the mod wheel on the filter cutoff.

Voice Page

Polyphony

If **Mono** mode is deactivated, you can use this parameter to specify how many notes can be played simultaneously.

Octave

Adjusts the pitch in octave steps.

Coarse

Adjusts the pitch in semitone steps.

Fine

Allows you to fine-tune the pitch in cent steps.

Fixed Pitch

Activate this option if you do not want the sample to be transposed over the keyboard. If you work with short grain durations and **Duration Key Follow** is activated on the **Osc** page, the pitch of the played key still follows the keyboard, and only the frequency response changes.

Pitchbend Up/Pitchbend Down

Determines the range for the modulation that is applied when you move the pitchbend wheel.

Glide

Allows you to bend the pitch between notes that follow each other. You achieve the best results in **Mono** mode.

Glide Time

Sets the glide time, that is, the time it takes to bend the pitch from one note to the next.

Fingered

Activate this parameter to glide the pitch only between notes that are played legato.

Mono

Activates monophonic playback.

Retrigger

If this option is activated, a note that was stolen is retriggered if you still hold the stolen note when releasing the newer note. This lets you play trills by holding one note and quickly and repeatedly pressing and releasing another note, for example.

Trigger Mode

Defines the trigger behavior for new notes.

- **Normal** triggers a new note when the previous note gets stolen. The sample and the envelope of the new note are triggered from the start.

  To minimize discontinuities, use the **Fade Out** parameter of the zone.
- **Resume** does not always trigger a new note.

  If the new note stays within the same zone, the envelope is retriggered, but resumes at the level of the stolen note. The pitch of the zone is set to the new note.

  If the new note plays in a different zone, the sample and the envelope of the new note are triggered from the start.
- **Legato** does not always trigger a new note.

  If the new note stays within the same zone, the envelope keeps running. The pitch of the zone is set to the new note.

  If the new note plays in a different zone, the sample and the envelope of the new note are triggered from the start.
- **Resume Keeps Zone** does not trigger a new note upon note stealing. The envelope resumes at the level of the stolen note and the pitch of the zone is set to the new note, even if the new note plays in a different zone.

- **Legato Keeps Zone** does not trigger a new note upon note stealing. The envelope keeps running and the pitch of the zone is set to the new note, even if the new note plays in a different zone.

Filter Section

Filter Shape

- LP 24, 18, 12, and 6 are low-pass filters with 24, 18, 12, and 6 dB/oct. Frequencies above the cutoff are attenuated.
- BP 12 and BP 24 are band-pass filters with 12 and 24 dB/oct. Frequencies below and above the cutoff are attenuated.
- HP 6+LP 18 and HP 6+LP 12 are combinations of a high-pass filter with 6 dB/oct and a low-pass filter with 18 and 12 dB/oct, respectively (asymmetric band-pass filter). Frequencies below and above the cutoff are attenuated. Attenuation is more pronounced for the frequencies above the cutoff.
- HP 12+LP 6 and HP 18+LP 6 are combinations of a high-pass filter with 12 and 18 dB/oct and a low-pass filter with 6 dB/oct (asymmetric band-pass filter). Frequencies below and above the cutoff are attenuated. Attenuation is more pronounced for the frequencies below the cutoff.
- HP 24, 18, 12, and 6 are high-pass filters with 24, 18, 12, and 6 dB/oct. Frequencies below the cutoff are attenuated.
- BR 12 and BR 24 are band-reject filters with 12 and 24 dB/oct. Frequencies around the cutoff are attenuated.
- BR 12+LP 6 and BR 12+LP 12 are combinations of a band-reject filter with 12 dB/oct and a low-pass filter with 6 and 12 dB/oct, respectively. Frequencies around and above the cutoff are attenuated.
- BP 12+BR 12 is a band-pass filter with 12 dB/oct plus a band-reject filter with 12 dB/oct. Frequencies below, above, and around the cutoff are attenuated.
- HP 6+BR 12 and HP 12+BR 12 are combinations of a high-pass filter with 6 and 12 dB/oct and a band-reject filter with 12 dB/oct. Frequencies below and around the cutoff are attenuated.
- AP is an all-pass filter with 18 dB/oct. Frequencies around the cutoff are attenuated.
- AP+LP 6 is an all-pass filter with 18 dB/oct plus a low-pass filter with 6 dB/oct. Frequencies around and above the cutoff are attenuated.
- HP 6+AP is a high-pass filter with 6 dB/oct plus an all-pass filter with 18 dB/oct. Frequencies around and below the cutoff are attenuated.

Cutoff

Controls the cutoff frequency of the filter.

Resonance

Emphasizes the frequencies around the cutoff. At higher settings, the filter self-oscillates, which results in a ringing tone.

Distortion

Adds distortion to the signal. The following distortion types are available:

- **Tube** adds warm, tube-like distortion.
- **Hard Clip** adds bright, transistor-like distortion.
- **Bit Reduction** adds digital distortion by means of quantization noise.
- **Rate Reduction** adds digital distortion by means of aliasing.

- **Rate Reduction Key Follow** adds digital distortion by means of aliasing, but with **Key Follow**. The rate reduction follows the keyboard, so the higher you play, the higher the sample rate.

Envelope Amount

Controls the cutoff modulation from the filter envelope.

Cutoff Velocity

Controls the cutoff modulation from velocity.

Cutoff Key Follow

Adjusts the cutoff modulation using the note number. Increase this parameter to raise the cutoff with higher notes. At 100 %, the cutoff follows the played pitch exactly.

Filter Envelope Section

Attack

Controls the attack time of the filter envelope.

Decay

Controls the decay time of the filter envelope.

Sustain

Controls the sustain level of the filter envelope.

Release

Controls the release time of the filter envelope.

Amplifier Section

Level

Controls the overall volume of the sound.

Velocity

Controls the level modulation from velocity. At 0, all notes are played with the same level.

Amplifier Envelope Section

Attack

Controls the attack time of the amplifier envelope.

Decay

Controls the decay time of the amplifier envelope.

Sustain

Controls the sustain level of the amplifier envelope.

Release

Controls the release time of the amplifier envelope.

Arp Page

This page contains the integrated arpeggiator.

Arpeggiator On/Off

Activates/Deactivates the arpeggiator.

User Mode On/Off

Activates/Deactivates the user phrase and the user phrase editor.

Variations

Click the variation buttons to switch between the available variations.

Phrase

Allows you to select a phrase.

KSOff (Key Switches Off)

Phrases that make use of key switches and noises, such as fret noises for guitar phrases, for example, usually work only with programs for the same type of instrument. Programs without key switches and noises interpret these events as regular notes and include them during playback, which yields unexpected results. To avoid the playback of key switches and noises, activate **KSOff**.

NOTE

KSOff filters out any note events that do not transpose with your playing. Therefore, it is not recommended for use with drum phrases.

NOTE

KSOff is not available for user phrases.

Drag Recorded MIDI to Sequencer

Allows you to drag the recorded MIDI phrase to your host sequencer.

Record Output

Allows you to record the MIDI output of the arpeggiator.

Loop

If this option is activated, the phrase plays in a loop.

Sync

Synchronizes the phrase to the tempo of your host application.

NOTE

In addition, you can set **Restart Mode** to **Sync to Host**. This aligns the phrase with the beats and measures of your host application.

Mute

Mutes playback. The phrase still plays in the background. If you deactivate **Mute**, playback resumes immediately.

Hold

Allows you to prevent the phrase from stopping or changing when the keys are released.

- If **Off** is selected, the phrase changes as soon as you release a key. The phrase stops immediately when you release all keys.
- If **On** is selected, the phrase plays to the end, even if the keys are released. If **Loop** is activated, the phrase repeats continuously.
- If **Gated** is selected, the phrase starts to play when the first key is played. It plays silently in the background, even if the keys are released, and resumes playback at the current position when you press any of the keys again. This way, you can gate the playback of the phrase.

Tempo

If **Sync** is deactivated, you can use the **Tempo** control to set the internal playback speed of the arpeggiator. The playback speed of the phrase is specified in BPM.

If **Sync** is activated, the **Tempo** parameter is not available.

Tempo Scale

Defines the rate at which notes are triggered, that is, the speed at which the phrase is running. In addition to the **Tempo** parameter, this gives you further control over the playback speed. You can specify a value in fractions of beats. You can also set dotted and triplet note values.

For example, if you change the **Tempo Scale** setting from 1/16 to 1/8, the speed is cut in half. If you set it to 1/32, the speed is doubled.

Trigger Mode

Determines at which moment the arpeggiator scans for new notes that you play on the keyboard.

- If **Immediately** is selected, the arpeggiator continuously scans for new notes. The phrase changes immediately in reaction to your playing.
- If **Next Beat** is selected, the arpeggiator scans for new notes at every new beat. The phrase changes in reaction to your playing on each new beat.
- If **Next Measure** is selected, the arpeggiator scans for new notes at the start of new measures. The phrase changes in reaction to your playing on each new measure.

Restart Mode

- If this is set to **Off**, the phrase runs continuously and does not restart at chord or note changes.
- **New Chord** restarts the phrase on new chords.

  NOTE

  The phrase does not restart upon notes that are played legato.

- **New Note** restarts the phrase with each new note that you play.
- **Sync to Host** aligns the phrase with the beats and measures of your host application each time that you start the transport.

Key Mode

Defines whether the order in which the notes are played on the keyboard affects the playback of the phrase.

- If **Sort** is selected, the notes are played in the order of the selected phrase. The chronological order does not have any influence.
- If **As Played** is selected, the notes are played in the order in which you play them on the keyboard.
- If **Direct** is selected, the phrase creates controller events instead of notes. You hear the notes that you play plus any controller events of the phrase, such as pitch bend, volume, pan, etc.

Vel Mode

- If **Original** is selected, the notes of the phrase play with the velocity that is saved in the phrase.
- If **Vel Controller** is selected, you can choose a velocity controller that is used to generate or modulate the velocities of the notes.
- If **Original + Vel Controller** is selected, the phrase velocity is determined by the combination of the velocity saved in the phrase and the velocity derived from the velocity controller.

Swing

Shifts the timing of notes on even-numbered beats. This way, the phrase gets a swing feeling. Negative values shift the timing backward and the notes are played earlier. Positive values shift the timing forward and the notes are played later.

Gate Scale

Allows you to shorten or lengthen the notes of the phrase. At a value of 100 %, the notes play with their original gate length.

Vel Scale

Allows you to raise or lower the note-on velocities of the phrase. At a value of 100 %, the notes are played with their original velocity.

Octaves

Extends the phrase playback to include higher or lower octaves. Positive settings extend the playback to higher and negative settings to lower octaves. For example, a value of +1 first plays the phrase in the octave range that you originally played. Then, it repeats the phrase one octave higher.

Velocity Range

The **Low Vel** and **High Vel** parameters determine the velocity range that is used to trigger phrase playback.

Key Range

The **Low Key** and **High Key** parameters determine the key range that is used to trigger phrase playback.

User Mode Parameters

Save Phrase/Delete Phrase

The two buttons on the right of the phrase field allow you to save/delete your phrases.

Mode

Determines how the notes are played back.

- If **Step** is selected, the last note that is received triggers a monophonic sequence.
- If **Chord** is selected, the notes are triggered as chords.
- If **Up** is selected, the notes are arpeggiated in ascending order.
- If **Down** is selected, the notes are arpeggiated in descending order.
- If **Up/Down 1** is selected, the notes are arpeggiated first in ascending, then in descending order.
- If **Up/Down 2** is selected, the notes are arpeggiated first in ascending, then in descending order. This mode depends on the set **Key Mode**.

  If **Key Mode** is set to **Sort**, the highest and the lowest note are repeated.

  If **Key Mode** is set to **As Played**, the first and the last note are repeated.
- If **Down/Up 1** is selected, the notes are arpeggiated first in descending, then in ascending order.
- If **Down/Up 2** is selected, the notes are arpeggiated first in descending, then in ascending order. This mode depends on the set **Key Mode**.

  If **Key Mode** is set to **Sort**, the highest and the lowest note are repeated.

  If **Key Mode** is set to **As Played**, the first and the last note are repeated.
- If **Random** is selected, the notes are arpeggiated in random order.

Wrap

For all modes except **Step** and **Chord**, you can use this parameter to restart the arpeggio after a specified number of steps.

NOTE

Deactivated steps are taken into account.

In **Step** and **Chord** mode, this parameter only affects the **Octaves** setting.

If the **Octaves** parameter is active, the arpeggio traverses the octaves and restarts from the original octave after the specified number of steps.

Key Replace

With this parameter, you can deactivate the **Key Select** function or specify how missing keys are replaced.

For example, if **Key Select** is set to 1 - 2 - 3 - 4 and you play a chord with 3 notes, key 4 is considered missing.

- **Off** deactivates **Key Replace** and **Key Select**. The selected arpeggio plays back normally.
- **Arp** replaces the missing keys with the note that the arpeggio would normally play.
- **Rest** does not replace any missing keys. The arpeggio plays a rest instead.
- **1st** replaces the missing keys with the first note in the note buffer.
- **Last** replaces the missing keys with the last note in the note buffer.
- **All** replaces the missing keys with all notes in the note buffer. The notes are played as a chord.

NOTE

Key Replace can be set separately for each variation.

Groove Quantize

To adapt the timing of a phrase to an external MIDI file, you can drop this MIDI file on the **Groove Quantize** drop field.

The **Groove Quantize Depth** parameter to the right of the drop field determines how accurately the phrase follows the timing of the MIDI file.

Key Select

The arpeggiator scans the keyboard and writes the keys that are pressed into a note buffer.

Depending on the selected **Key Mode**, this note buffer is sorted either by pitch or in the order in which you play the keys.

Key Select allows you to play back a defined key from the note buffer. You can set up **Key Select** for each step separately, which allows you to create very elaborate phrases.

NOTE

Key Select cannot be used in **Step** or **Chord** mode.

- To access the **Key Select** values of the steps, click **Show Transpose or Key Select** to the left of the editor, so that a keyboard icon is shown.
- To switch between the available **Key Select** values for a step, click the value and drag up/down or use the scroll wheel.

  The following options are available:

  - **P** (Phrase) plays the note of the user phrase, according to the selected mode, for example, **Up**, **Down**, **Up/Down 1**, etc.
  - The settings **1 - 8** play the corresponding keys from the note list. Which key is played depends on the **Key Mode** setting. For example, if **Key Mode** is set to **Sort**, the setting **1** plays the lowest key.
  - **L** (Last) always plays the last key from the note buffer. Depending on the **Key Mode**, this is the highest note or the last note in the note buffer.
  - **A** (All) plays all keys from the note buffer as a chord.

Recording the MIDI Output of the Arpeggiator

The phrases that are played by the instrument depend on the played notes and can therefore not be exported directly. However, it is possible to generate exportable phrases by recording the MIDI output of the arpeggiator.

PROCEDURE

1. Click **Record MIDI Output**.
   The arrow in the **Drag MIDI** field starts blinking to indicate record mode.
2. Play some notes.
3. When you are done, click **Record MIDI Output** again.
   Recording stops. In the **Drag MIDI** field, the arrow remains lit to indicate that a MIDI phrase can be exported.
4. Click the **Drag MIDI** field and drag the phrase on a MIDI track in your host sequencer application.

Creating Variations

PROCEDURE

1. Click one of the variation buttons.
2. You can either start from scratch or base the new variation on an existing variation.
   - To start from scratch, load a phrase and edit the settings.
   - To use an existing variation as base, use the **Copy** and **Paste** context menu commands.

RESULT

The variation can now be recalled by clicking the corresponding variation button.

NOTE

The parameters **Loop**, **Sync**, **Hold**, **Trigger Mode**, **Restart Mode**, **Key Mode**, **Vel Mode**, **Low/High Key**, and **Low/High Vel** are not part of the variations. You set them up only once.

Assigning Variations to Trigger Pads

If you assign the variations to trigger pads, you can use the trigger pads to switch between the variations.

PROCEDURE

1. Right-click a variation button and select the trigger pad on the **Assign Variation to** submenu.
2. Repeat this procedure for all the variations that you have created.

User Phrases

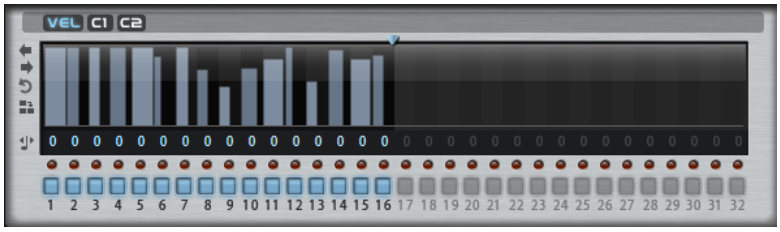
The user phrase has up to 32 steps. Each step has an adjustable **Velocity**, **Gate Length**, and **Transpose** value. By adding steps, adjusting their length, or leaving pauses, you define the rhythm of the user phrase. Consecutive steps can be combined to create longer notes. By selecting a **Mode**, you define how the notes play back. In addition, there are additional MIDI control sequences, that is, each step can also send modulation signals.

To create your own phrases, activate the **User** button.

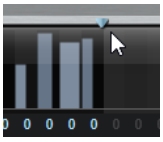
Editing User Phrases

You can make detailed settings for the user phrase in the editor for user phrases.

- To set up the phrase, activate the **Vel** button above the step display.
- To set up a controller curve for the phrase, activate one of the controller buttons.



- To specify the number of steps for the pattern, drag the **Pattern Length** handle to the right or left.



Editing Steps

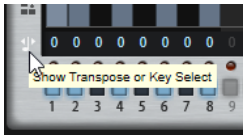
The height of a step represents its value. You can edit the steps in the following way:

- To activate all steps, select **Enable All Steps** from the context menu.
- To adjust a value, click a step and drag up or down.
- To adjust multiple steps, click and draw a curve.
- To adjust the velocity of all steps relatively, **Shift**-click and drag.
- To draw a ramp with steps, hold down **Alt** and draw a line.
- To draw symmetric ramps at the beginning and the end of the sequence, hold down **Shift**-**Alt** and draw a line.
- To reset the velocity of a step to 127, **Ctrl/Cmd**-click the step.
- To reset the velocity of all steps to 127, hold **Shift**-**Ctrl/Cmd** and click a step.
- To introduce a legato between two steps, click the number below the first of these steps, so that a small arrow is shown.

  If **Legato** is activated, the **Gate Scale** parameter is not taken into account.
- To transpose a step, click in the field below it and enter the number of semitones for the transposition.

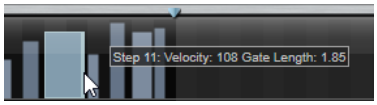
  NOTE

  You can only transpose steps if **Show Transpose or Key Select** is set to show the transpose values.



Adjusting the Gate Length

For velocity steps, the width of a step represents its gate length.



- To adjust the gate length of a step, drag its right border.
- To adjust the gate length of all steps, hold down **Shift** and drag the right border of a step.

  You can only adjust the length this way until a step reaches the next step. If you increase the gate length of a step so that it overlaps the following step, this following step is deactivated.
- To reset the length of a step to 1, **Ctrl/Cmd**-click its highlighted right border.
- To reset the length of all steps, hold down **Shift**-**Ctrl/Cmd** and click on a highlighted right border.
- To fill the gaps between consecutive steps, select **Fill Gap** or **Fill All Gaps** from the context menu.

Each MIDI controller lane can send a MIDI controller. By selecting the same MIDI controller as source in the Modulation Matrix, you can modulate any of the destinations with the MIDI controller sequence.

Adjusting the Phrase

- To shift the rhythm of the phrase, click **Shift Phrase Right** or **Shift Phrase Left** .

  If you shift the rhythm of the phrase to the left, the first step is moved to the end. If you shift the phrase to the right, the last step is moved to the beginning.
- To reverse the phrase, click **Reverse Phrase** .
- To duplicate short phrases, click **Duplicate Phrase** .

NOTE

The maximum number of steps is 32. Therefore, phrases that contain more than 16 steps cannot be duplicated entirely.

Trium

Trium was designed to create modern and rich sounds. It comes with 3 oscillators, a sub oscillator, a ring modulator, and a noise generator. With the integrated arpeggiator and step sequencer, you can create anything from sequencer lines to stepped chords.

The oscillators are followed by a multi-mode filter that offers a large number of different filter shapes. The filter can be modulated using modulation sources like the keyboard, velocity, and LFO, but also by the controller lanes of the step sequencer, for example.

Trium includes two LFOs for pitch, PWM, and filter modulations. The first LFO can be synchronized to the tempo of the host application and allows for filter cutoff, pitch, and waveform modulation of the three main oscillators. The second LFO is controlled by the modulation wheel and is used to create a vibrato.

Osc Page

The **Osc** page contains the parameters for the three main oscillators.

- To activate an oscillator, click its **On/Off** button.

OSC 1/2/3 Type

The oscillator type defines the basic sound character of the oscillator. This pop-up menu lists the waveforms **Sine**, **Triangle**, **Saw**, and **Square**, followed by the algorithms **PWM**, **Sync**, **CM** and **XOR**. The combination of waveform and algorithm controls the sound of the oscillator.

The following algorithms are available:

- **PWM** (pulse width modulation) is only supported by the square waveform. The **Waveform** parameter sets the ratio between the high and low value of the square wave. A setting of 50 % produces a pure square wave. With settings below or above 50 %, the oscillator produces rectangular waves.
- **Sync** provides different hard-sync oscillators, where each is a combination of a master and slave oscillator. The wave shape of the slave oscillator is reset with each full wave cycle of the master oscillator. This means that a single oscillator can produce a rich sync-sound without using other oscillators as slave or master. The **Waveform** parameter adjusts the pitch of the slave oscillator, producing the typical sync sound.
- **CM** (cross modulation) provides a combination of two oscillators where a master oscillator is modulating the pitch of a slave oscillator at the rate of the audio sample. The **Waveform** parameter adjusts the pitch ratio between slave and master oscillator, resulting in a sound close to frequency modulation.
- **XOR** (exclusive OR) compares two square waveforms with an **XOR** operation. Depending on the outcome of the **XOR** operation, the wave shape of a third oscillator is reset. The **Waveform** parameter adjusts the pitch ratio of the square oscillators resulting in a sound close to ring modulation of the third oscillator.

Level

Adjusts the output level of the oscillator.

Waveform

Modifies the sound of the oscillator algorithm. Its effect depends on the selected oscillator type.

NOTE

This parameter is only available for oscillator types that allow waveform modulation.

Filter Envelope

Determines how much the modulation of the filter envelope influences the oscillator waveform.

NOTE

This parameter is only available for oscillator types that allow waveform modulation.

Tuning

These parameters allow you to adjust the pitch in octave, semitone, and cent steps.

Multi Oscillator Number, Detune, and Spread

- **Number** determines the number of oscillators that play back simultaneously. You can also set fractions of numbers. For example, with a setting of 2.5, you hear two oscillators at full level and a third one at half level.
- **Detune** detunes the oscillators.
- **Spread** narrows or widens the stereo panorama. With a setting of 0 %, you create a mono signal, and with 100 %, you create a stereo signal.

Sub Page

The **Sub** page contains the parameters for the sub oscillator, the ring modulator, and the noise generator.

Activate the sub oscillator, the ring modulator, and the noise generator by clicking their **On/Off** buttons.

NOTE

Deactivate the sub oscillator, the ring modulator, and the noise generator if they are not needed, because they use CPU cycles even if they are not heard, such as in a situation where the level is set to 0 %.

Sub Oscillator

The pitch of the sub oscillator is always one octave lower than the overall pitch. The overall pitch is determined by the **Octave** setting.

On/Off

Activates/Deactivates the sub oscillator.

Type

The wave shape of the sub oscillator. You can choose between **Sine**, **Triangle**, **Saw**, **Square**, **Pulse Wide**, and **Pulse Narrow**.

Level

Adjusts the output level of the sub oscillator.

Ring Modulator

Ring modulation produces sums and differences between the frequencies of two signals.

Ring Modulation Source 1/Ring Modulation Source 2

Determines the sources to be ring modulated. You can select **OSC 1** or **Sub** as **Source 1**, and **OSC 2** or **OSC 3** as **Source 2**.

NOTE

Make sure that the corresponding oscillators are activated when you select them. Otherwise, no sound is heard.

Ring Modulation Level

Adjusts the output level of the ring modulation.

Noise Generator

The **Noise** parameter is used for non-pitched sounds. In addition to standard white and pink noise, there are also band-pass filtered versions of white and pink noise.

Noise Type

The sound color of the noise. You can choose between standard and band-pass filtered (**BPF**) versions of white and pink noise.

Noise Level

Adjusts the output level of the noise generator.

Voice Parameters

On the right, the voice parameters are available.

Polyphony

If **Mono** mode is deactivated, you can use this parameter to specify how many notes can be played simultaneously.

Octave

Adjusts the pitch in octave steps.

Pitchbend Up/Pitchbend Down

Determines the range for the modulation that is applied when you move the pitchbend wheel.

Glide

Allows you to bend the pitch between notes that follow each other. You achieve the best results in **Mono** mode.

Glide Time

Sets the glide time, that is, the time it takes to bend the pitch from one note to the next.

Fingered

Activate this parameter to glide the pitch only between notes that are played legato.

Mono

Activates monophonic playback.

Retrigger

If this option is activated, a note that was stolen is retriggered if you still hold the stolen note when releasing the newer note. This lets you play trills by holding one note and quickly and repeatedly pressing and releasing another note, for example.

Trigger Mode

Defines the trigger behavior for new notes.

- **Normal** triggers a new note when the previous note gets stolen. The sample and the envelope of the new note are triggered from the start.

  To minimize discontinuities, use the **Fade Out** parameter of the zone.
- **Resume** does not always trigger a new note.

  If the new note stays within the same zone, the envelope is retriggered, but resumes at the level of the stolen note. The pitch of the zone is set to the new note.

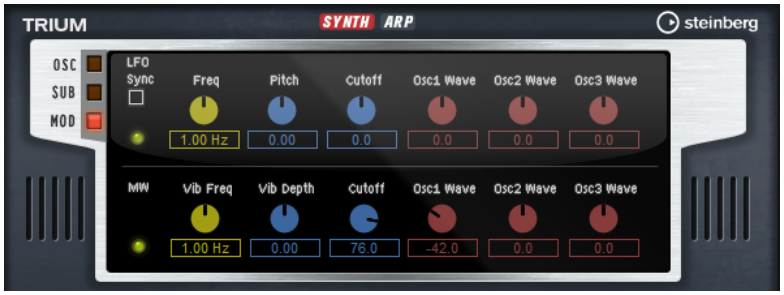
  If the new note plays in a different zone, the sample and the envelope of the new note are triggered from the start.
- **Legato** does not always trigger a new note.

  If the new note stays within the same zone, the envelope keeps running. The pitch of the zone is set to the new note.

  If the new note plays in a different zone, the sample and the envelope of the new note are triggered from the start.
- **Resume Keeps Zone** does not trigger a new note upon note stealing. The envelope resumes at the level of the stolen note and the pitch of the zone is set to the new note, even if the new note plays in a different zone.
- **Legato Keeps Zone** does not trigger a new note upon note stealing. The envelope keeps running and the pitch of the zone is set to the new note, even if the new note plays in a different zone.

Mod Page

The **Mod** page contains the LFO settings in the upper section and the mod wheel, or vibrato, settings in the lower section.



LFO Settings

Sync

If **Sync** is activated, the frequency is set in fractions of beats.

Freq

Controls the frequency of the modulation, that is, the speed of the LFO.

Pitch

Controls the modulation depth of the pitch modulation.

Cutoff

Controls the modulation depth of the filter cutoff modulation.

Osc1/2/3 Wave

These parameters control the modulation depth of the waveform modulation of the three main oscillators.

NOTE

These controls are only available if the selected oscillator type supports waveform modulation.

Mod Wheel Settings

Vib Freq

Controls the frequency of the second LFO that is used for pitch modulation (vibrato).

Vib Depth

Controls the depth of the pitch modulation (vibrato).

Cutoff

Controls the influence of the mod wheel on the filter cutoff.

Osc1/2/3 Wave

These parameters control the influence of the mod wheel on the waveform of the three main oscillators.

NOTE

These controls are only available if the selected oscillator type supports waveform modulation.

Filter Section

Filter Shape

- LP 24, 18, 12, and 6 are low-pass filters with 24, 18, 12, and 6 dB/oct. Frequencies above the cutoff are attenuated.
- BP 12 and BP 24 are band-pass filters with 12 and 24 dB/oct. Frequencies below and above the cutoff are attenuated.
- HP 6+LP 18 and HP 6+LP 12 are combinations of a high-pass filter with 6 dB/oct and a low-pass filter with 18 and 12 dB/oct, respectively (asymmetric band-pass filter). Frequencies below and above the cutoff are attenuated. Attenuation is more pronounced for the frequencies above the cutoff.
- HP 12+LP 6 and HP 18+LP 6 are combinations of a high-pass filter with 12 and 18 dB/oct and a low-pass filter with 6 dB/oct (asymmetric band-pass filter). Frequencies below and above the cutoff are attenuated. Attenuation is more pronounced for the frequencies below the cutoff.
- HP 24, 18, 12, and 6 are high-pass filters with 24, 18, 12, and 6 dB/oct. Frequencies below the cutoff are attenuated.
- BR 12 and BR 24 are band-reject filters with 12 and 24 dB/oct. Frequencies around the cutoff are attenuated.
- BR 12+LP 6 and BR 12+LP 12 are combinations of a band-reject filter with 12 dB/oct and a low-pass filter with 6 and 12 dB/oct, respectively. Frequencies around and above the cutoff are attenuated.

- BP 12+BR 12 is a band-pass filter with 12 dB/oct plus a band-reject filter with 12 dB/oct. Frequencies below, above, and around the cutoff are attenuated.
- HP 6+BR 12 and HP 12+BR 12 are combinations of a high-pass filter with 6 and 12 dB/oct and a band-reject filter with 12 dB/oct. Frequencies below and around the cutoff are attenuated.
- AP is an all-pass filter with 18 dB/oct. Frequencies around the cutoff are attenuated.
- AP+LP 6 is an all-pass filter with 18 dB/oct plus a low-pass filter with 6 dB/oct. Frequencies around and above the cutoff are attenuated.
- HP 6+AP is a high-pass filter with 6 dB/oct plus an all-pass filter with 18 dB/oct. Frequencies around and below the cutoff are attenuated.

Cutoff

Controls the cutoff frequency of the filter.

Resonance

Sets the filter resonance.

Distortion

Adds distortion to the signal. The following distortion types are available:

- **Tube** adds warm, tube-like distortion.
- **Hard Clip** adds bright, transistor-like distortion.
- **Bit Reduction** adds digital distortion by means of quantization noise.
- **Rate Reduction** adds digital distortion by means of aliasing.
- **Rate Reduction Key Follow** adds digital distortion by means of aliasing, but with **Key Follow**. The rate reduction follows the keyboard, so the higher you play, the higher the sample rate.

Envelope Amount

Controls the cutoff modulation from the filter envelope.

Cutoff Velocity

Controls the cutoff modulation from velocity.

Cutoff Key Follow

Adjusts the cutoff modulation using the note number. Increase this parameter to raise the cutoff with higher notes. At 100 %, the cutoff follows the played pitch exactly.

Filter Envelope Section

Attack

Controls the attack time of the filter envelope.

Decay

Controls the decay time of the filter envelope.

Sustain

Controls the sustain level of the filter envelope.

Release

Controls the release time of the filter envelope.

Amplifier Section

Level

Controls the overall volume of the sound.

Velocity

Controls the level modulation from velocity. At 0, all notes are played with the same level.

Amplifier Envelope Section

Attack

Controls the attack time of the amplifier envelope.

Decay

Controls the decay time of the amplifier envelope.

Sustain

Controls the sustain level of the amplifier envelope.

Release

Controls the release time of the amplifier envelope.

Arp Page

This page contains the integrated arpeggiator.

Arpeggiator On/Off

Activates/Deactivates the arpeggiator.

User Mode On/Off

Activates/Deactivates the user phrase and the user phrase editor.

Variations

Click the variation buttons to switch between the available variations.

Phrase

Allows you to select a phrase.

KSOff (Key Switches Off)

Phrases that make use of key switches and noises, such as fret noises for guitar phrases, for example, usually work only with programs for the same type of

instrument. Programs without key switches and noises interpret these events as regular notes and include them during playback, which yields unexpected results. To avoid the playback of key switches and noises, activate **KSOff**.

NOTE

KSOff filters out any note events that do not transpose with your playing. Therefore, it is not recommended for use with drum phrases.

NOTE

KSOff is not available for user phrases.

Drag Recorded MIDI to Sequencer

Allows you to drag the recorded MIDI phrase to your host sequencer.

Record Output

Allows you to record the MIDI output of the arpeggiator.

Loop

If this option is activated, the phrase plays in a loop.

Sync

Synchronizes the phrase to the tempo of your host application.

NOTE

In addition, you can set **Restart Mode** to **Sync to Host**. This aligns the phrase with the beats and measures of your host application.

Mute

Mutes playback. The phrase still plays in the background. If you deactivate **Mute**, playback resumes immediately.

Hold

Allows you to prevent the phrase from stopping or changing when the keys are released.

- If **Off** is selected, the phrase changes as soon as you release a key. The phrase stops immediately when you release all keys.
- If **On** is selected, the phrase plays to the end, even if the keys are released. If **Loop** is activated, the phrase repeats continuously.
- If **Gated** is selected, the phrase starts to play when the first key is played. It plays silently in the background, even if the keys are released, and resumes playback at the current position when you press any of the keys again. This way, you can gate the playback of the phrase.

Tempo

If **Sync** is deactivated, you can use the **Tempo** control to set the internal playback speed of the arpeggiator. The playback speed of the phrase is specified in BPM.

If **Sync** is activated, the **Tempo** parameter is not available.

Tempo Scale

Defines the rate at which notes are triggered, that is, the speed at which the phrase is running. In addition to the **Tempo** parameter, this gives you further control over the playback speed. You can specify a value in fractions of beats. You can also set dotted and triplet note values.

For example, if you change the **Tempo Scale** setting from 1/16 to 1/8, the speed is cut in half. If you set it to 1/32, the speed is doubled.

Trigger Mode

Determines at which moment the arpeggiator scans for new notes that you play on the keyboard.

- If **Immediately** is selected, the arpeggiator continuously scans for new notes. The phrase changes immediately in reaction to your playing.
- If **Next Beat** is selected, the arpeggiator scans for new notes at every new beat. The phrase changes in reaction to your playing on each new beat.
- If **Next Measure** is selected, the arpeggiator scans for new notes at the start of new measures. The phrase changes in reaction to your playing on each new measure.

Restart Mode

- If this is set to **Off**, the phrase runs continuously and does not restart at chord or note changes.
- **New Chord** restarts the phrase on new chords.

  NOTE

  The phrase does not restart upon notes that are played legato.

- **New Note** restarts the phrase with each new note that you play.
- **Sync to Host** aligns the phrase with the beats and measures of your host application each time that you start the transport.

Key Mode

Defines whether the order in which the notes are played on the keyboard affects the playback of the phrase.

- If **Sort** is selected, the notes are played in the order of the selected phrase. The chronological order does not have any influence.
- If **As Played** is selected, the notes are played in the order in which you play them on the keyboard.
- If **Direct** is selected, the phrase creates controller events instead of notes. You hear the notes that you play plus any controller events of the phrase, such as pitch bend, volume, pan, etc.

Vel Mode

- If **Original** is selected, the notes of the phrase play with the velocity that is saved in the phrase.
- If **Vel Controller** is selected, you can choose a velocity controller that is used to generate or modulate the velocities of the notes.
- If **Original + Vel Controller** is selected, the phrase velocity is determined by the combination of the velocity saved in the phrase and the velocity derived from the velocity controller.

Swing

Shifts the timing of notes on even-numbered beats. This way, the phrase gets a swing feeling. Negative values shift the timing backward and the notes are played earlier. Positive values shift the timing forward and the notes are played later.

Gate Scale

Allows you to shorten or lengthen the notes of the phrase. At a value of 100 %, the notes play with their original gate length.

Vel Scale

Allows you to raise or lower the note-on velocities of the phrase. At a value of 100 %, the notes are played with their original velocity.

Octaves

Extends the phrase playback to include higher or lower octaves. Positive settings extend the playback to higher and negative settings to lower octaves. For example, a value of +1 first plays the phrase in the octave range that you originally played. Then, it repeats the phrase one octave higher.

Velocity Range

The **Low Vel** and **High Vel** parameters determine the velocity range that is used to trigger phrase playback.

Key Range

The **Low Key** and **High Key** parameters determine the key range that is used to trigger phrase playback.

User Mode Parameters

Save Phrase/Delete Phrase

The two buttons on the right of the phrase field allow you to save/delete your phrases.

Mode

Determines how the notes are played back.

- If **Step** is selected, the last note that is received triggers a monophonic sequence.
- If **Chord** is selected, the notes are triggered as chords.
- If **Up** is selected, the notes are arpeggiated in ascending order.
- If **Down** is selected, the notes are arpeggiated in descending order.
- If **Up/Down 1** is selected, the notes are arpeggiated first in ascending, then in descending order.
- If **Up/Down 2** is selected, the notes are arpeggiated first in ascending, then in descending order. This mode depends on the set **Key Mode**.

  If **Key Mode** is set to **Sort**, the highest and the lowest note are repeated.

  If **Key Mode** is set to **As Played**, the first and the last note are repeated.
- If **Down/Up 1** is selected, the notes are arpeggiated first in descending, then in ascending order.

- If **Down/Up 2** is selected, the notes are arpeggiated first in descending, then in ascending order. This mode depends on the set **Key Mode**.

  If **Key Mode** is set to **Sort**, the highest and the lowest note are repeated.

  If **Key Mode** is set to **As Played**, the first and the last note are repeated.
- If **Random** is selected, the notes are arpeggiated in random order.

Wrap

For all modes except **Step** and **Chord**, you can use this parameter to restart the arpeggio after a specified number of steps.

NOTE

Deactivated steps are taken into account.

In **Step** and **Chord** mode, this parameter only affects the **Octaves** setting.

If the **Octaves** parameter is active, the arpeggio traverses the octaves and restarts from the original octave after the specified number of steps.

Key Replace

With this parameter, you can deactivate the **Key Select** function or specify how missing keys are replaced.

For example, if **Key Select** is set to 1 - 2 - 3 - 4 and you play a chord with 3 notes, key 4 is considered missing.

- **Off** deactivates **Key Replace** and **Key Select**. The selected arpeggio plays back normally.
- **Arp** replaces the missing keys with the note that the arpeggio would normally play.
- **Rest** does not replace any missing keys. The arpeggio plays a rest instead.
- **1st** replaces the missing keys with the first note in the note buffer.
- **Last** replaces the missing keys with the last note in the note buffer.
- **All** replaces the missing keys with all notes in the note buffer. The notes are played as a chord.

NOTE

Key Replace can be set separately for each variation.

Groove Quantize

To adapt the timing of a phrase to an external MIDI file, you can drop this MIDI file on the **Groove Quantize** drop field.

The **Groove Quantize Depth** parameter to the right of the drop field determines how accurately the phrase follows the timing of the MIDI file.

Key Select

The arpeggiator scans the keyboard and writes the keys that are pressed into a note buffer.

Depending on the selected **Key Mode**, this note buffer is sorted either by pitch or in the order in which you play the keys.

Key Select allows you to play back a defined key from the note buffer. You can set up **Key Select** for each step separately, which allows you to create very elaborate phrases.

NOTE

Key Select cannot be used in **Step** or **Chord** mode.

- To access the **Key Select** values of the steps, click **Show Transpose or Key Select** to the left of the editor, so that a keyboard icon is shown.
- To switch between the available **Key Select** values for a step, click the value and drag up/down or use the scroll wheel.

  The following options are available:

  - **P** (Phrase) plays the note of the user phrase, according to the selected mode, for example, **Up**, **Down**, **Up/Down 1**, etc.
  - The settings **1 - 8** play the corresponding keys from the note list. Which key is played depends on the **Key Mode** setting. For example, if **Key Mode** is set to **Sort**, the setting **1** plays the lowest key.
  - **L** (Last) always plays the last key from the note buffer. Depending on the **Key Mode**, this is the highest note or the last note in the note buffer.
  - **A** (All) plays all keys from the note buffer as a chord.

Recording the MIDI Output of the Arpeggiator

The phrases that are played by the instrument depend on the played notes and can therefore not be exported directly. However, it is possible to generate exportable phrases by recording the MIDI output of the arpeggiator.

PROCEDURE

1. Click **Record MIDI Output**.

   The arrow in the **Drag MIDI** field starts blinking to indicate record mode.
2. Play some notes.
3. When you are done, click **Record MIDI Output** again.

   Recording stops. In the **Drag MIDI** field, the arrow remains lit to indicate that a MIDI phrase can be exported.
4. Click the **Drag MIDI** field and drag the phrase on a MIDI track in your host sequencer application.

Creating Variations

PROCEDURE

1. Click one of the variation buttons.
2. You can either start from scratch or base the new variation on an existing variation.
   - To start from scratch, load a phrase and edit the settings.
   - To use an existing variation as base, use the **Copy** and **Paste** context menu commands.

RESULT

The variation can now be recalled by clicking the corresponding variation button.

NOTE

The parameters **Loop**, **Sync**, **Hold**, **Trigger Mode**, **Restart Mode**, **Key Mode**, **Vel Mode**, **Low/High Key**, and **Low/High Vel** are not part of the variations. You set them up only once.

Assigning Variations to Trigger Pads

If you assign the variations to trigger pads, you can use the trigger pads to switch between the variations.

PROCEDURE

1. Right-click a variation button and select the trigger pad on the **Assign Variation to** submenu.
2. Repeat this procedure for all the variations that you have created.

User Phrases

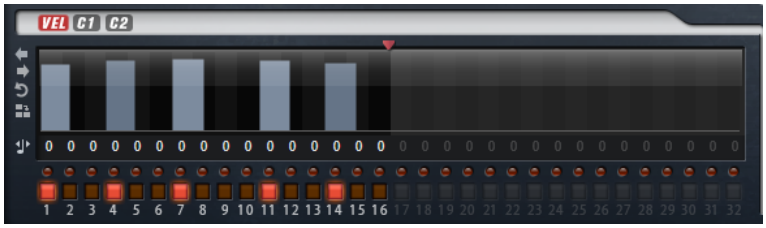
The user phrase has up to 32 steps. Each step has an adjustable **Velocity**, **Gate Length**, and **Transpose** value. By adding steps, adjusting their length, or leaving pauses, you define the rhythm of the user phrase. Consecutive steps can be combined to create longer notes. By selecting a **Mode**, you define how the notes play back. In addition, there are additional MIDI control sequences, that is, each step can also send modulation signals.

To create your own phrases, activate the **User** button.

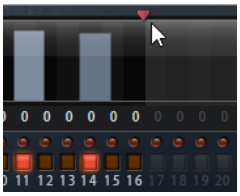
Editing User Phrases

You can make detailed settings for the user phrase in the editor for user phrases.

- To set up the phrase, activate the **Vel** button above the step display.
- To set up a controller curve for the phrase, activate one of the controller buttons.



- To specify the number of steps for the pattern, drag the **Pattern Length** handle to the right or left.



Editing Steps

The height of a step represents its value. You can edit the steps in the following way:

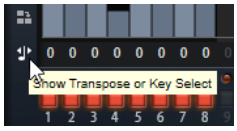
- To activate all steps, select **Enable All Steps** from the context menu.
- To adjust a value, click a step and drag up or down.
- To adjust multiple steps, click and draw a curve.
- To adjust the velocity of all steps relatively, **Shift**-click and drag.
- To draw a ramp with steps, hold down **Alt** and draw a line.
- To draw symmetric ramps at the beginning and the end of the sequence, hold down **Shift**-**Alt** and draw a line.
- To reset the velocity of a step to 127, **Ctrl/Cmd**-click the step.
- To reset the velocity of all steps to 127, hold **Shift**-**Ctrl/Cmd** and click a step.

- To introduce a legato between two steps, click the number below the first of these steps, so that a small arrow is shown.

  If **Legato** is activated, the **Gate Scale** parameter is not taken into account.
- To transpose a step, click in the field below it and enter the number of semitones for the transposition.

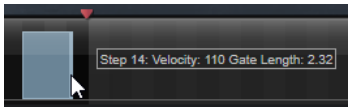
  NOTE

  You can only transpose steps if **Show Transpose or Key Select** is set to show the transpose values.



Adjusting the Gate Length

For velocity steps, the width of a step represents its gate length.



- To adjust the gate length of a step, drag its right border.
- To adjust the gate length of all steps, hold down **Shift** and drag the right border of a step.

  You can only adjust the length this way until a step reaches the next step. If you increase the gate length of a step so that it overlaps the following step, this following step is deactivated.
- To reset the length of a step to 1, **Ctrl/Cmd**-click its highlighted right border.
- To reset the length of all steps, hold down **Shift**-**Ctrl/Cmd** and click on a highlighted right border.
- To fill the gaps between consecutive steps, select **Fill Gap** or **Fill All Gaps** from the context menu.

Each MIDI controller lane can send a MIDI controller. By selecting the same MIDI controller as source in the Modulation Matrix, you can modulate any of the destinations with the MIDI controller sequence.

Adjusting the Phrase

- To shift the rhythm of the phrase, click **Shift Phrase Right** or **Shift Phrase Left** .

  If you shift the rhythm of the phrase to the left, the first step is moved to the end. If you shift the phrase to the right, the last step is moved to the beginning.
- To reverse the phrase, click **Reverse Phrase** .
- To duplicate short phrases, click **Duplicate Phrase** .

  NOTE

  The maximum number of steps is 32. Therefore, phrases that contain more than 16 steps cannot be duplicated entirely.

Voltage

Voltage is a two-oscillator and noise synthesizer that can be used for synth basses, but it also allows you to create any kind of classic monophonic and polyphonic synth sound. With the

integrated arpeggiator and step sequencer, you can create anything from sequencer lines to stepped chords.

The two oscillators and the noise generator are followed by a 24 dB low-pass filter. The filter can be modulated using modulation sources like the keyboard, velocity, and LFO, but also by the controller lanes of the step sequencer, for example. Voltage includes 2 LFOs for pitch, PWM, and filter modulations. The first LFO can be synchronized to the tempo of the host application and allows for filter and pitch modulation. The second LFO is controlled by the modulation wheel and is used to create a vibrato.

Oscillator Section

Oscillator 1/2 Waveform

Sets the waveform for the oscillator. You can choose between saw, triangle, and square.

Oscillator 1/2 Level

Controls the level of the oscillators.

PWM

PWM (pulse width modulation) is only available for the square waveform. Activate this option if you want to be able to let the LFO modulate the width of the wave.

Osc 2 Coarse

Detunes the second oscillator by +/-12 semitones.

Osc 2 Fine

Detunes the second oscillator by +/- 100 cents.

Noise Type

The sound color of the noise. You can choose between standard and band-pass filtered (**BPF**) versions of white and pink noise.

Level

Controls the level of the noise generator.

Filter Section

Cutoff

Controls the cutoff frequency of the filter.

Resonance

Emphasizes the frequencies around the cutoff. At higher settings, the filter self-oscillates, which results in a ringing tone.

Distortion

Adds tube-like distortion to the signal.

Envelope Amount

Controls the cutoff modulation from the filter envelope.

Cutoff Velocity

Controls the cutoff modulation from velocity.

Cutoff Key Follow

Adjusts the cutoff modulation using the note number. Increase this parameter to raise the cutoff with higher notes. At 100 %, the cutoff follows the played pitch exactly.

Amplifier Section

Level

Controls the overall volume of the sound.

Velocity

Controls the level modulation from velocity. At 0, all notes are played with the same level.

Voice Section

Octave

Adjusts the pitch in octave steps.

Pitchbend Up/Pitchbend Down

Determines the range for the modulation that is applied when you move the pitchbend wheel.

Glide

Allows you to bend the pitch between notes that follow each other. You achieve the best results in **Mono** mode.

Fingered

Activate this parameter to glide the pitch only between notes that are played legato.

Mono

Activates monophonic playback.

Retrigger

This option is only available in **Mono** mode. If **Retrigger** is activated, a note that was stolen by another note is retriggered if you still hold the stolen note when you release the new one.

This way, you can play trills by holding one note and quickly and repeatedly pressing and releasing another note, for example.

Trigger Mode

Defines the trigger behavior for new notes.

- **Normal** triggers a new note when the previous note gets stolen. The sample and the envelope of the new note are triggered from the start.

  To minimize discontinuities, use the **Fade Out** parameter of the zone.
- **Resume** does not always trigger a new note.

  If the new note stays within the same zone, the envelope is retriggered, but resumes at the level of the stolen note. The pitch of the zone is set to the new note.

  If the new note plays in a different zone, the sample and the envelope of the new note are triggered from the start.
- **Legato** does not always trigger a new note.

  If the new note stays within the same zone, the envelope keeps running. The pitch of the zone is set to the new note.

  If the new note plays in a different zone, the sample and the envelope of the new note are triggered from the start.
- **Resume Keeps Zone** does not trigger a new note upon note stealing. The envelope resumes at the level of the stolen note and the pitch of the zone is set to the new note, even if the new note plays in a different zone.

- **Legato Keeps Zone** does not trigger a new note upon note stealing. The envelope keeps running and the pitch of the zone is set to the new note, even if the new note plays in a different zone.

LFO Section

Freq

Controls the frequency of the modulation, that is, the speed of the LFO.

Sync

If **Sync** is activated, the frequency is set in fractions of beats.

Cutoff

Controls the modulation depth of the filter cutoff modulation.

Pitch

Controls the modulation depth of the pitch modulation.

PWM

Controls the modulation depth of the pulse width modulation of the square oscillators.

Mod Wheel Section

Vib Freq

Controls the frequency of the second LFO that is used for pitch modulation (vibrato).

Cutoff

Controls the influence of the mod wheel on the filter cutoff.

Vib Depth

Controls the depth of the pitch modulation (vibrato).

Distortion

Controls the influence of the mod wheel on the filter distortion.

Filter Envelope Section

Attack

Controls the attack time of the filter envelope.

Decay

Controls the decay time of the filter envelope.

Sustain

Controls the sustain level of the filter envelope.

Release

Controls the release time of the filter envelope.

Amp Envelope Section

Attack

Controls the attack time of the amplifier envelope.

Decay

Controls the decay time of the amplifier envelope.

Sustain

Controls the sustain level of the amplifier envelope.

Release

Controls the release time of the amplifier envelope.

Arp Page

This page contains the integrated arpeggiator.

Arpeggiator On/Off

Activates/Deactivates the arpeggiator.

User Mode On/Off

Activates/Deactivates the user phrase and the user phrase editor.

Variations

Click the variation buttons to switch between the available variations.

Phrase

Allows you to select a phrase.

KSOff (Key Switches Off)

Phrases that make use of key switches and noises, such as fret noises for guitar phrases, for example, usually work only with programs for the same type of instrument. Programs without key switches and noises interpret these events as regular notes and include them during playback, which yields unexpected results. To avoid the playback of key switches and noises, activate **KSOff**.

NOTE

KSOff filters out any note events that do not transpose with your playing. Therefore, it is not recommended for use with drum phrases.

NOTE

KSOff is not available for user phrases.

Drag Recorded MIDI to Sequencer

Allows you to drag the recorded MIDI phrase to your host sequencer.

Record Output

Allows you to record the MIDI output of the arpeggiator.

Loop

If this option is activated, the phrase plays in a loop.

Sync

Synchronizes the phrase to the tempo of your host application.

NOTE

In addition, you can set **Restart Mode** to **Sync to Host**. This aligns the phrase with the beats and measures of your host application.

Mute

Mutes playback. The phrase still plays in the background. If you deactivate **Mute**, playback resumes immediately.

Hold

Allows you to prevent the phrase from stopping or changing when the keys are released.

- If **Off** is selected, the phrase changes as soon as you release a key. The phrase stops immediately when you release all keys.
- If **On** is selected, the phrase plays to the end, even if the keys are released. If **Loop** is activated, the phrase repeats continuously.

- If **Gated** is selected, the phrase starts to play when the first key is played. It plays silently in the background, even if the keys are released, and resumes playback at the current position when you press any of the keys again. This way, you can gate the playback of the phrase.

Tempo

If **Sync** is deactivated, you can use the **Tempo** control to set the internal playback speed of the arpeggiator. The playback speed of the phrase is specified in BPM.

If **Sync** is activated, the **Tempo** parameter is not available.

Tempo Scale

Defines the rate at which notes are triggered, that is, the speed at which the phrase is running. In addition to the **Tempo** parameter, this gives you further control over the playback speed. You can specify a value in fractions of beats. You can also set dotted and triplet note values.

For example, if you change the **Tempo Scale** setting from 1/16 to 1/8, the speed is cut in half. If you set it to 1/32, the speed is doubled.

Trigger Mode

Determines at which moment the arpeggiator scans for new notes that you play on the keyboard.

- If **Immediately** is selected, the arpeggiator continuously scans for new notes. The phrase changes immediately in reaction to your playing.
- If **Next Beat** is selected, the arpeggiator scans for new notes at every new beat. The phrase changes in reaction to your playing on each new beat.
- If **Next Measure** is selected, the arpeggiator scans for new notes at the start of new measures. The phrase changes in reaction to your playing on each new measure.

Restart Mode

- If this is set to **Off**, the phrase runs continuously and does not restart at chord or note changes.
- **New Chord** restarts the phrase on new chords.

  NOTE

  The phrase does not restart upon notes that are played legato.

- **New Note** restarts the phrase with each new note that you play.
- **Sync to Host** aligns the phrase with the beats and measures of your host application each time that you start the transport.

Key Mode

Defines whether the order in which the notes are played on the keyboard affects the playback of the phrase.

- If **Sort** is selected, the notes are played in the order of the selected phrase. The chronological order does not have any influence.
- If **As Played** is selected, the notes are played in the order in which you play them on the keyboard.
- If **Direct** is selected, the phrase creates controller events instead of notes. You hear the notes that you play plus any controller events of the phrase, such as pitch bend, volume, pan, etc.

Vel Mode

- If **Original** is selected, the notes of the phrase play with the velocity that is saved in the phrase.

- If **Vel Controller** is selected, you can choose a velocity controller that is used to generate or modulate the velocities of the notes.
- If **Original + Vel Controller** is selected, the phrase velocity is determined by the combination of the velocity saved in the phrase and the velocity derived from the velocity controller.

Swing

Shifts the timing of notes on even-numbered beats. This way, the phrase gets a swing feeling. Negative values shift the timing backward and the notes are played earlier. Positive values shift the timing forward and the notes are played later.

Gate Scale

Allows you to shorten or lengthen the notes of the phrase. At a value of 100 %, the notes play with their original gate length.

Vel Scale

Allows you to raise or lower the note-on velocities of the phrase. At a value of 100 %, the notes are played with their original velocity.

Octaves

Extends the phrase playback to include higher or lower octaves. Positive settings extend the playback to higher and negative settings to lower octaves. For example, a value of +1 first plays the phrase in the octave range that you originally played. Then, it repeats the phrase one octave higher.

User Mode Parameters

Save Phrase/Delete Phrase

The two buttons on the right of the phrase field allow you to save/delete your phrases.

Mode

Determines how the notes are played back.

- If **Step** is selected, the last note that is received triggers a monophonic sequence.
- If **Chord** is selected, the notes are triggered as chords.
- If **Up** is selected, the notes are arpeggiated in ascending order.
- If **Down** is selected, the notes are arpeggiated in descending order.
- If **Up/Down 1** is selected, the notes are arpeggiated first in ascending, then in descending order.

- If **Up/Down 2** is selected, the notes are arpeggiated first in ascending, then in descending order. This mode depends on the set **Key Mode**.

  If **Key Mode** is set to **Sort**, the highest and the lowest note are repeated.

  If **Key Mode** is set to **As Played**, the first and the last note are repeated.
- If **Down/Up 1** is selected, the notes are arpeggiated first in descending, then in ascending order.
- If **Down/Up 2** is selected, the notes are arpeggiated first in descending, then in ascending order. This mode depends on the set **Key Mode**.

  If **Key Mode** is set to **Sort**, the highest and the lowest note are repeated.

  If **Key Mode** is set to **As Played**, the first and the last note are repeated.
- If **Random** is selected, the notes are arpeggiated in random order.

Wrap

For all modes except **Step** and **Chord**, you can use this parameter to restart the arpeggio after a specified number of steps.

NOTE

Deactivated steps are taken into account.

In **Step** and **Chord** mode, this parameter only affects the **Octaves** setting.

If the **Octaves** parameter is active, the arpeggio traverses the octaves and restarts from the original octave after the specified number of steps.

Key Replace

With this parameter, you can deactivate the **Key Select** function or specify how missing keys are replaced.

For example, if **Key Select** is set to 1 - 2 - 3 - 4 and you play a chord with 3 notes, key 4 is considered missing.

- **Off** deactivates **Key Replace** and **Key Select**. The selected arpeggio plays back normally.
- **Arp** replaces the missing keys with the note that the arpeggio would normally play.
- **Rest** does not replace any missing keys. The arpeggio plays a rest instead.
- **1st** replaces the missing keys with the first note in the note buffer.
- **Last** replaces the missing keys with the last note in the note buffer.
- **All** replaces the missing keys with all notes in the note buffer. The notes are played as a chord.

NOTE

Key Replace can be set separately for each variation.

Groove Quantize

To adapt the timing of a phrase to an external MIDI file, you can drop this MIDI file on the **Groove Quantize** drop field.

The **Groove Quantize Depth** parameter to the right of the drop field determines how accurately the phrase follows the timing of the MIDI file.

Key Select

The arpeggiator scans the keyboard and writes the keys that are pressed into a note buffer.

Depending on the selected **Key Mode**, this note buffer is sorted either by pitch or in the order in which you play the keys.

Key Select allows you to play back a defined key from the note buffer. You can set up **Key Select** for each step separately, which allows you to create very elaborate phrases.

NOTE

Key Select cannot be used in **Step** or **Chord** mode.

- To access the **Key Select** values of the steps, click **Show Transpose or Key Select** to the left of the editor, so that a keyboard icon is shown.
- To switch between the available **Key Select** values for a step, click the value and drag up/down or use the scroll wheel.

  The following options are available:

  - **P** (Phrase) plays the note of the user phrase, according to the selected mode, for example, **Up**, **Down**, **Up/Down 1**, etc.
  - The settings **1 - 8** play the corresponding keys from the note list. Which key is played depends on the **Key Mode** setting. For example, if **Key Mode** is set to **Sort**, the setting **1** plays the lowest key.
  - **L** (Last) always plays the last key from the note buffer. Depending on the **Key Mode**, this is the highest note or the last note in the note buffer.
  - **A** (All) plays all keys from the note buffer as a chord.

Recording the MIDI Output of the Arpeggiator

The phrases that are played by the instrument depend on the played notes and can therefore not be exported directly. However, it is possible to generate exportable phrases by recording the MIDI output of the arpeggiator.

PROCEDURE

1. Click **Record MIDI Output**.

   The arrow in the **Drag MIDI** field starts blinking to indicate record mode.
2. Play some notes.
3. When you are done, click **Record MIDI Output** again.

   Recording stops. In the **Drag MIDI** field, the arrow remains lit to indicate that a MIDI phrase can be exported.
4. Click the **Drag MIDI** field and drag the phrase on a MIDI track in your host sequencer application.

Creating Variations

PROCEDURE

1. Click one of the variation buttons.
2. You can either start from scratch or base the new variation on an existing variation.
   - To start from scratch, load a phrase and edit the settings.
   - To use an existing variation as base, use the **Copy** and **Paste** context menu commands.

RESULT

The variation can now be recalled by clicking the corresponding variation button.

NOTE

The parameters **Loop**, **Sync**, **Hold**, **Trigger Mode**, **Restart Mode**, **Key Mode**, **Vel Mode**, **Low/High Key**, and **Low/High Vel** are not part of the variations. You set them up only once.

Assigning Variations to Trigger Pads

If you assign the variations to trigger pads, you can use the trigger pads to switch between the variations.

PROCEDURE

1. Right-click a variation button and select the trigger pad on the **Assign Variation to** submenu.
2. Repeat this procedure for all the variations that you have created.

User Phrases

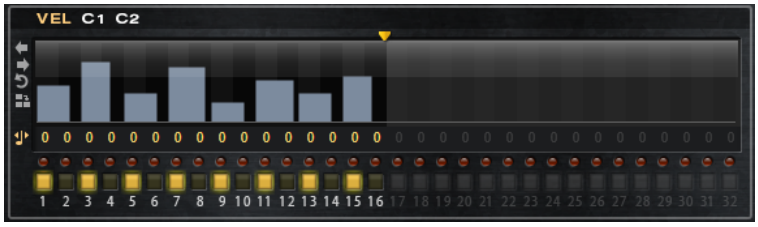
The user phrase has up to 32 steps. Each step has an adjustable **Velocity**, **Gate Length**, and **Transpose** value. By adding steps, adjusting their length, or leaving pauses, you define the rhythm of the user phrase. Consecutive steps can be combined to create longer notes. By selecting a **Mode**, you define how the notes play back. In addition, there are additional MIDI control sequences, that is, each step can also send modulation signals.

To create your own phrases, activate the **User** button.

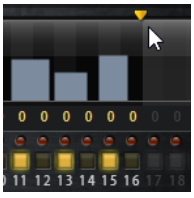
Editing User Phrases

You can make detailed settings for the user phrase in the editor for user phrases.

- To set up the phrase, activate the **Vel** button above the step display.
- To set up a controller curve for the phrase, activate one of the controller buttons.



- To specify the number of steps for the pattern, drag the **Pattern Length** handle to the right or left.



Editing Steps

The height of a step represents its value. You can edit the steps in the following way:

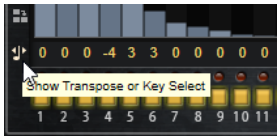
- To activate all steps, select **Enable All Steps** from the context menu.
- To adjust a value, click a step and drag up or down.
- To adjust multiple steps, click and draw a curve.
- To adjust the velocity of all steps relatively, **Shift**-click and drag.

- To draw a ramp with steps, hold down **Alt** and draw a line.
- To draw symmetric ramps at the beginning and the end of the sequence, hold down **Shift**-**Alt** and draw a line.
- To reset the velocity of a step to 127, **Ctrl/Cmd**-click the step.
- To reset the velocity of all steps to 127, hold **Shift**-**Ctrl/Cmd** and click a step.
- To introduce a legato between two steps, click the number below the first of these steps, so that a small arrow is shown.

  If **Legato** is activated, the **Gate Scale** parameter is not taken into account.
- To transpose a step, click in the field below it and enter the number of semitones for the transposition.

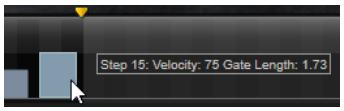
  NOTE

  You can only transpose steps if **Show Transpose or Key Select** is set to show the transpose values.



Adjusting the Gate Length

For velocity steps, the width of a step represents its gate length.



- To adjust the gate length of a step, drag its right border.
- To adjust the gate length of all steps, hold down **Shift** and drag the right border of a step.

  You can only adjust the length this way until a step reaches the next step. If you increase the gate length of a step so that it overlaps the following step, this following step is deactivated.
- To reset the length of a step to 1, **Ctrl/Cmd**-click its highlighted right border.
- To reset the length of all steps, hold down **Shift**-**Ctrl/Cmd** and click on a highlighted right border.
- To fill the gaps between consecutive steps, select **Fill Gap** or **Fill All Gaps** from the context menu.

Each MIDI controller lane can send a MIDI controller. By selecting the same MIDI controller as source in the Modulation Matrix, you can modulate any of the destinations with the MIDI controller sequence.

Adjusting the Phrase

- To shift the rhythm of the phrase, click **Shift Phrase Right** or **Shift Phrase Left** .

  If you shift the rhythm of the phrase to the left, the first step is moved to the end. If you shift the phrase to the right, the last step is moved to the beginning.
- To reverse the phrase, click **Reverse Phrase** .
- To duplicate short phrases, click **Duplicate Phrase** .

NOTE

The maximum number of steps is 32. Therefore, phrases that contain more than 16 steps cannot be duplicated entirely.

Model C

Model C is a classic tonewheel organ emulation with 9 drawbars and 3 additional drawbars for the percussion.

Model C comes with an integrated and highly configurable rotary effect, as well as an amplifier emulation using VST Amp technology. The effect section provides additional effects, such as phaser, delay, and reverb, and also offers a ring modulator which allows to add non-harmonic tones. Model C contains four pages: **Organ**, **Rotary**, **Amp**, and **FX**.

- To open a page, click the corresponding button in the top section of the window.

Organ Page

Drawbars

The main drawbars on the left adjust the levels of the individual tonewheels. The three drawbars on the right adjust the levels of the tonewheels that are used for percussion.

Rotary

Allows you to switch from fast to slow speaker rotation. In the middle position, rotation is stopped. On the **Rotary** page, you can make detailed settings for the effect.

Attack

Adjusts the attack time of the organ sound. Typically, the attack is very short, but you can set longer times to create pad-like sounds.

Release

Adjusts the release time of the organ sound. Typically, the release time is very short, but you can set longer times to achieve a slow fade out of the sound when a key is released.

Velocity

Determines the influence of the velocity on the level of the organ sound.

Key On Click/Key Off Click

Electromechanical organs produce short noise signals when a note is triggered and when it is released. The level of these clicks is set here.

Vibrato

Click the pedal button to activate the integrated vibrato effect. If it is activated, you can select a type using the control on the right.

Rotary/Amp

The organ signal is sent in parallel to the rotary speaker and to the internal amp. This control allows you to specify how the signal is distributed between these two destinations.

- If you turn the control all the way to the left, the signal is sent only to the rotary speaker. All the way to the right, it is sent only to the amp.

Percussion

Click the pedal button to activate the percussion signal. The following percussion parameters are available:

- **Steal 1'** – Typically, on an electromechanical organ, the 1' drawbar is not available when percussion is activated. To prevent this, deactivate the Steal 1' option.
- **Poly** – Typically, percussion in drawbar organs is monophonic, that is, when you play a key, the percussion envelope is triggered for this note. As long as the key is held, no new percussion can be retriggered. If you play a legato section, for example, percussion is only applied to the very first note or chord. Percussion can only be retriggered after all notes are released.

  To trigger the percussion with every new note, activate **Poly**.
- **Level** adjusts the loudness of the percussion signal.

Rotary Page

The settings on this page only have an effect on the sound when signals are sent to the rotary effect using the **Rotary/Amp** dial on the **Organ** page.

The Rotary effect on this page has the same parameters as the included Rotary effect, except for **Input** and **Color**.

RELATED LINKS
Rotary on page 268

Amp Page

The settings on this page only have an effect on the sound if signals are sent to the amp using the **Rotary/Amp** dial on the **Organ** page.

The parameters correspond to those of the VST Amp effect, with reduced microphone and microphone position options.

RELATED LINKS
VST Amp on page 258

FX Page

Ring Modulator

On/Off

Activates/Deactivates the ring modulator effect.

LFO Freq

Sets the frequency of the LFO for modulating the frequency of the sine oscillator.

LFO Depth

Sets the intensity of the LFO modulation of the sine oscillator frequency.

Sine Freq

Sets the frequency of the sine oscillator.

Mix

Sets the ratio between the dry and the wet signal.

Phaser

On/Off

Activates/Deactivates the Phaser effect.

Rate

Sets the frequency of the phase modulation in Hertz.

Depth

Sets the intensity of the phase modulation.

Feedback

Adds resonances to the effect. Higher settings produce a more pronounced effect.

Mix

Sets the ratio between the dry and the wet signal.

Delay

On/Off

Activates/Deactivates the delay effect.

Delay Mode

- **Stereo** has two delays in parallel, one for the left and one for the right audio channel, each with a feedback path of its own.
- **Cross** has two delay lines with cross feedback, where the delay of the left channel is fed back into the delay of the right channel, and vice versa.
- **Ping-Pong** mixes the left and right input channels and sends the mixed signal to hard-panned left and right delays. This way, the echoes bounce like a ping-pong ball between left and right in the stereo panorama.

Delay Time

Sets the overall time for the left and right delay in milliseconds.

Feedback

Sets the overall amount of feedback for the left and right delay. Feedback means the output of the delay is fed back to its input. At a setting of 0 %, you hear only one echo. At a setting of 100 %, the echoes repeat endlessly.

Mix

Sets the ratio between the dry and the wet signal.

Reverb

On/Off

Activates/Deactivates the Reverb effect.

Reverb Type

Use this dial to switch between the available reverb types: **Spring**, **Plate**, and **Hall**.

Time

Allows you to set the reverb time in seconds.

Predelay

Controls how much time passes before the reverb is applied. This allows you to simulate larger spaces by increasing the time it takes for first reflections to reach the listener.

Mix

Sets the ratio between the dry and the wet signal.

HALiotron

HALiotron emulates the sound generation of the pre-digital sampling era.

Before the introduction of digital samplers, original instrument sounds were created by playing a pre-recorded tape for every key. HALiotron comes with seven different tapes from these days, which can be blended to create sound mixtures. In addition to its classic archetype, HALiotron offers a set of the most important synthesis parameters, allowing you to vary the shape of the sound. Furthermore, you can play sounds dynamically by controlling filter and amp via velocity.

Main Page

Loop On/Off

Set this to **On** if you want the notes to be played using looped versions of the underlying samples and to **Off** if you want the notes to stop when the tape reaches its end.

Volume

Adjusts the main volume of the sound.

Speed

Adjusts the speed of the tape playback. If this is set to **Slow**, the samples are played back an octave lower.

Cutoff

Adjusts the cutoff frequency of the built-in low-pass filter.

Pitch

Adjusts the tuning of the sound. When you combine several HALiotron presets, this can be used to make the sound richer.

A, B, C

Click here to select one of the included tapes for each dial position. Use the dial to blend seamlessly between the tapes.

Attack

Adjusts the attack time of the sound.

Release

Adjusts the release time of the sound.

Velocity

Controls the influence of the velocity on the level of the sound.

Pitchbend Up/Pitchbend Down

Determines the range for the modulation that is applied when you move the pitchbend wheel.

Coarse Tune

Adjusts the sound in semitone steps. This allows you to play intervals with multiple layered HALiotron sounds.

Filter Page

Resonance

Adjusts the resonance of the low-pass filter.

Velocity

Sets the influence of the velocity on the level of the sound.

Env Amount

Adjusts the influence of the filter envelope on the cutoff frequency.

KYB

Adjusts the cutoff modulation from the keyboard, that is, cutoff key follow.

Attack

Controls the attack time of the filter envelope.

Decay

Controls the decay time of the filter envelope.

Sustain

Controls the sustain level of the filter envelope.

B-Box

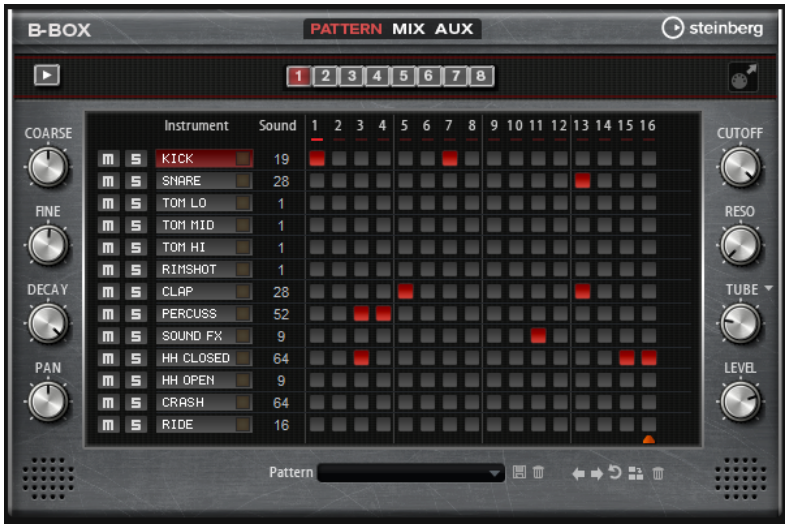
B-Box provides you with a veritable drum computer inside HALion Sonic. It comes with 13 instrument lanes that can make use of up to 128 different sounds. You can set up your drum patterns, create variations, and modify each drum sound using a low-pass filter and several distortion modes.

B-Box contains three pages: **Pattern**, **Mix**, and **Aux**.

- To open a page, click the corresponding button in the top section of the window.

Pattern Page

The **Pattern** page is where you create and edit the drum patterns. It gives you access to the pattern editor as well as to some of the most important sound parameters.



The pattern editor section in the center of the window allows you to create and edit drum patterns.

- To specify the number of steps for a pattern, drag the small triangle in the lower part of the pattern display.

  The maximum length is 16 steps.

- To change the drum sound for a lane, set a new value in the **Sound** column.

  You can choose between up to 128 drum sounds, depending on the selected drum instrument.

- To preview a drum sound, click the trigger button to the right of the instrument name.

- To add drum steps to the pattern, click on the step fields in the pattern editor.

  To add drum steps for all fields on a lane in one go, hold down **Shift** and click on a field.
- To mute or solo individual lanes, click the corresponding **Mute** and **Solo** buttons.
- To set up the velocity for a step, click it and drag up or down or use the mouse wheel.

  A step can be set to low, medium, or high velocity.

  To change the velocity of all steps in a lane at the same time, hold down **Shift** and use the mouse.

  NOTE

  This function inserts drum steps for every step field on the lane and sets it to the same velocity. If you want to use only several steps of this lane, you must modify the velocity separately for each step.
- To remove a step, click it.

  To remove all steps, hold down **Shift**-**Ctrl/Cmd** and click a step.

Editing the Entire Pattern

- To load a pattern, click in the field below the editor and select it from the pop-up menu.
- To move all steps of the pattern one step to the left or right, click **Shift Pattern Left** or **Shift Pattern Right**.

  This is useful if you have created a pattern that sounds the way you want but does not start on the first beat, for example.
- To mirror the pattern around its middle step, click **Reverse Pattern**.
- To copy all steps in the current pattern and insert them behind the current steps, click **Duplicate Pattern**.

  NOTE

  The maximum number of steps in a pattern is 16. If you select **Duplicate Pattern** and the resulting pattern would be longer than 16 steps, new steps are inserted until the maximum length is reached.
- To remove all steps in a pattern, click **Clear Pattern**.

Setting Up the Drum Sounds

With the controls to the left and right of the pattern editor, you can make settings for the selected drum instrument.

Coarse

Adjusts the tuning of the instrument in semitone steps.

Fine

Fine-tunes the instrument in cent steps.

Pan

Adjusts the panorama position.

Cutoff

Adjusts the cutoff frequency for the instrument.

Resonance

Adjusts the filter resonance for the instrument.

Distortion Type

Sets the distortion type. You can choose between **Tube**, **Hard Clip**, **Bit Reduction**, and **Rate Reduction**.

Distortion

Sets the amount of distortion for the instrument.

Level

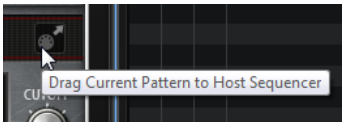
Sets the level of the instrument.

Playing Back the Pattern

- To play back the pattern, use the **Play/Stop** button at the top of the window.
  An indicator below the step number shows which step is playing.

Exporting Patterns

- To export a pattern as a MIDI file, drag the MIDI export field into your host application.



Variations

B-Box offers up to 8 variations that can be used to create different rhythm patterns, such as intros, fills, and endings, for example.

- To switch between variations, click the variation buttons above the pattern editor.
- You can copy and paste variations using the commands on the context menu.

NOTE

The parameters **Loop**, **Sync**, **Hold**, **Trigger Mode**, **Restart Mode**, and **Input Mode** are not part of the variations.

RELATED LINKS

Assigning Variations to Trigger Pads on page 149

Assigning Variations to Trigger Pads

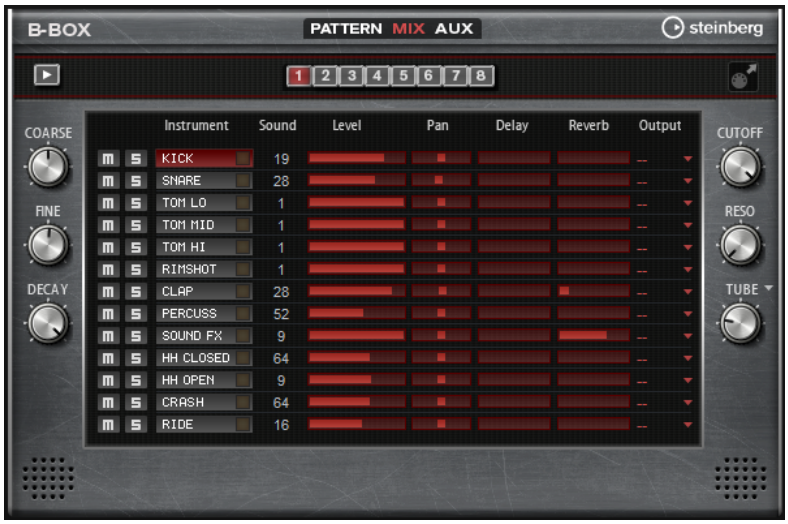
If you assign the variations to trigger pads, you can use the trigger pads to switch between the variations.

PROCEDURE

1. Right-click a variation button and select the trigger pad on the **Assign Variation to** submenu.
2. Repeat this procedure for all the variations that you have created.

Mix Page

On the **Mix** page, you can add effects to the patterns.



Level

Adjusts the level of the instrument.

Pan

Adjusts the panorama position of the instrument.

Delay

Determines how much of the signal is sent to the delay effect.

Reverb

Determines how much of the signal is sent to the reverb effect.

Output

Here, you can select one of the available plug-in outputs.

AUX Page

On the **Aux** page, you can make global settings for B-Box and the included effects.

The page is divided into two sections. The left section gives you access to the global performance settings, and the right section allows you to edit the integrated delay and reverb effects.

Performance Section

Loop

If this option is activated, the pattern plays back in a loop.

Hold

Allows you to prevent the pattern from stopping or changing when the keys are released.

- If **Off** is selected, the pattern changes as soon as you release a key. The pattern stops immediately when you release all keys.
- If **On** is selected, the pattern plays to the end, even if the keys are released. If **Loop** is activated, the pattern repeats continuously.
- If **Gated** is selected, the pattern starts to play when the first key is played. It plays silently in the background, even if the keys are released, and resumes playback at the current position when you press any of the keys again. This way, you can gate the playback of the pattern.

Trigger Mode

The trigger mode determines at which moment B-Box changes the pattern when you select another variation.

- If the parameter is set to **Immediately**, the pattern changes as soon as you switch to another variation.
- If the parameter is set to **Next Beat**, the pattern changes on the first new beat after switching to another variation.
- If the parameter is set to **Next Measure**, the pattern changes at the first new measure after switching to another variation.

Restart Mode

Determines whether the pattern playback is restarted when a note is triggered.

- **Off** – Playback is not restarted if it is already running.
- **First Note** – Restarts playback when a note is triggered and no other notes are playing.
- **Each Note** – Restarts playback every time a note is triggered.
- **Sync to Host** – Aligns playback with the beats and measures of your host application. Playback is synchronized every time you start the transport.
- **Follow Transport** – Playback starts and stops automatically together with the transport controls in your host application.

Input Mode

Keys that trigger the pattern are shown in green on the HALion Sonic keyboard. Keys that are assigned to an instrument sound are shown as regular black and white keys.

Depending on the Input Mode, the black and white keys either trigger or mute the assigned instrument.

- **Off** triggers the pattern with any key that you play.
- **Trigger** plays back the sound of the assigned instrument.
- **Mute** mutes the track for as long as you press the key.

Sync

To synchronize the pattern to the tempo of your host application, activate **Sync**.

For the modes **Sync to Host** and **Follow Transport**, synchronization to the host application is established automatically. In these modes, the **Sync** parameter cannot be edited.

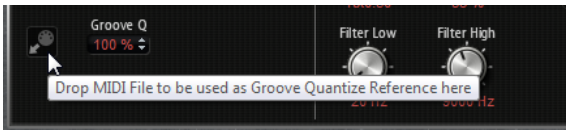
Tempo

If **Sync** is deactivated, you can use the **Tempo** parameter to set the internal playback speed.

Tempo Scale

Defines the speed at which the pattern is running. You can specify a value in fractions of beats. You can also set dotted and triplet note values. For example, if the **Tempo** parameter is set to **1/16** and you set this value to **1/8**, the speed is cut in half.

Groove Quantizing Patterns



To adapt the timing of a pattern to an external MIDI file, you can drop this MIDI file on the **Groove Quantize** drop field. You can quantize the playback of the pattern to the timing of a sliced loop by dragging its MIDI file from the MIDI export drag field to the **Groove Quantize** drop field.

The **Groove Quantize Depth** parameter to the right of the drop field determines how accurately the pattern follows the timing of the MIDI file.

Swing

Shifts the timing of notes on even-numbered beats. This way, the pattern gets a swing feeling. Negative values let the notes play earlier, positive values let the notes play later.

Velocity Scale

Allows you to raise or lower the note-on velocities of the pattern. At a value of 100 %, the notes play with their original velocity.

Delay and Reverb Section

The delay and reverb effect have the same parameters as the Multi Delay and Reverb effects.

Delay

Adjusts the general amount of delay.

Reverb

Adjusts the general amount of reverb.

Master

Adjusts the overall volume of B-Box.

RELATED LINKS
Multi Delay on page 247
Reverb on page 245

World Instruments

World Instruments delivers a great variety of ethnic instruments that can either be played manually or use the integrated arpeggiator.

On the **Sound** page, the instruments can be fine-tuned with filter and amp settings. In addition, you can use the built-in micro-tuning functionality to decrease the pitch of each key by a quarter note, to realize typical oriental scales.

Sound Page

Filter Section

Filter Shape

- LP 24, 18, 12, and 6 are low-pass filters with 24, 18, 12, and 6 dB/oct. Frequencies above the cutoff are attenuated.
- BP 12 and BP 24 are band-pass filters with 12 and 24 dB/oct. Frequencies below and above the cutoff are attenuated.
- HP 6+LP 18 and HP 6+LP 12 are combinations of a high-pass filter with 6 dB/oct and a low-pass filter with 18 and 12 dB/oct, respectively (asymmetric band-pass filter). Frequencies below and above the cutoff are attenuated. Attenuation is more pronounced for the frequencies above the cutoff.
- HP 12+LP 6 and HP 18+LP 6 are combinations of a high-pass filter with 12 and 18 dB/oct and a low-pass filter with 6 dB/oct (asymmetric band-pass filter). Frequencies below and above the cutoff are attenuated. Attenuation is more pronounced for the frequencies below the cutoff.
- HP 24, 18, 12, and 6 are high-pass filters with 24, 18, 12, and 6 dB/oct. Frequencies below the cutoff are attenuated.
- BR 12 and BR 24 are band-reject filters with 12 and 24 dB/oct. Frequencies around the cutoff are attenuated.
- BR 12+LP 6 and BR 12+LP 12 are combinations of a band-reject filter with 12 dB/oct and a low-pass filter with 6 and 12 dB/oct, respectively. Frequencies around and above the cutoff are attenuated.

- BP 12+BR 12 is a band-pass filter with 12 dB/oct plus a band-reject filter with 12 dB/oct. Frequencies below, above, and around the cutoff are attenuated.
- HP 6+BR 12 and HP 12+BR 12 are combinations of a high-pass filter with 6 and 12 dB/oct and a band-reject filter with 12 dB/oct. Frequencies below and around the cutoff are attenuated.
- AP is an all-pass filter with 18 dB/oct. Frequencies around the cutoff are attenuated.
- AP+LP 6 is an all-pass filter with 18 dB/oct plus a low-pass filter with 6 dB/oct. Frequencies around and above the cutoff are attenuated.
- HP 6+AP is a high-pass filter with 6 dB/oct plus an all-pass filter with 18 dB/oct. Frequencies around and below the cutoff are attenuated.

Cutoff

Controls the cutoff frequency of the filter.

Resonance

Emphasizes the frequencies around the cutoff. At higher settings, the filter self-oscillates, which results in a ringing tone.

Envelope Amount

Controls the cutoff modulation from the filter envelope.

Cutoff Velocity

Controls the cutoff modulation from velocity.

Filter Envelope

Attack

Controls the attack time of the filter envelope.

Decay

Controls the decay time of the filter envelope.

Sustain

Controls the sustain level of the filter envelope.

Release

Controls the release time of the filter envelope.

Amp Section

Key Delay

Delays playback of the notes. This parameter can be used when working with multiple programs or layers. Setting up different key delay values for the different layers allows you to spread the notes, so that they do not all begin at the same time.

Level

Controls the overall volume of the sound.

Velocity

Controls the level modulation from velocity. At 0, all notes are played with the same level.

Amp Envelope

Attack

Controls the attack time of the amplifier envelope.

Decay

Controls the decay time of the amplifier envelope.

Sustain

Controls the sustain level of the amplifier envelope.

Release

Controls the release time of the amplifier envelope.

Pitch Section

Coarse

Adjusts the tuning in semitones.

Fine

Adjusts the tuning in cents.

Pitchbend Up/Pitchbend Down

Determines the range for the modulation that is applied when you move the pitchbend wheel.

LFO Section

Freq

Controls the frequency of the modulation, that is, the speed of the LFO.

Sync

If **Sync** is activated, the frequency is set in fractions of beats.

Pitch

Controls the modulation depth of the pitch modulation.

Cutoff

Controls the modulation depth of the filter cutoff modulation.

MW Section

Vib Freq

Controls the frequency of the second LFO that is used for pitch modulation (vibrato).

Vib Depth

Controls the depth of the pitch modulation (vibrato).

Cutoff

Controls the influence of the mod wheel on the filter cutoff.

Oriental Scale Section

Scale On/Off

Activates/Deactivates the influence of the scale settings on the played notes.

Note Switches

Activate a switch to decrease the tuning of the corresponding note by a quarter note.

Arp Page

This page contains the integrated arpeggiator.

Arpeggiator On/Off

Activates/Deactivates the arpeggiator.

Variations

Click the variation buttons to switch between the available variations.

User Mode On/Off

Activates/Deactivates the user phrase and the user phrase editor.

Phrase

Allows you to select a phrase.

KSOff (Key Switches Off)

Phrases that make use of key switches and noises, such as fret noises for guitar phrases, for example, usually work only with programs for the same type of instrument. Programs without key switches and noises interpret these events as regular notes and include them during playback, which yields unexpected results. To avoid the playback of key switches and noises, activate **KSOff**.

NOTE

KSOff filters out any note events that do not transpose with your playing. Therefore, it is not recommended for use with drum phrases.

NOTE

KSOff is not available for user phrases.

Drag Recorded MIDI to Sequencer

Allows you to drag the recorded MIDI phrase to your host sequencer.

Record Output

Allows you to record the MIDI output of the arpeggiator.

Loop

If this option is activated, the phrase plays in a loop.

Sync

Synchronizes the phrase to the tempo of your host application.

NOTE

In addition, you can set **Restart Mode** to **Sync to Host**. This aligns the phrase with the beats and measures of your host application.

Mute

Mutes playback. The phrase still plays in the background. If you deactivate **Mute**, playback resumes immediately.

Hold

Allows you to prevent the phrase from stopping or changing when the keys are released.

- If **Off** is selected, the phrase changes as soon as you release a key. The phrase stops immediately when you release all keys.
- If **On** is selected, the phrase plays to the end, even if the keys are released. If **Loop** is activated, the phrase repeats continuously.
- If **Gated** is selected, the phrase starts to play when the first key is played. It plays silently in the background, even if the keys are released, and resumes playback at the current position when you press any of the keys again. This way, you can gate the playback of the phrase.

Tempo

If **Sync** is deactivated, you can use the **Tempo** control to set the internal playback speed of the arpeggiator. The playback speed of the phrase is specified in BPM.

If **Sync** is activated, the **Tempo** parameter is not available.

Tempo Scale

Defines the rate at which notes are triggered, that is, the speed at which the phrase is running. In addition to the **Tempo** parameter, this gives you further control over the playback speed. You can specify a value in fractions of beats. You can also set dotted and triplet note values.

For example, if you change the **Tempo Scale** setting from 1/16 to 1/8, the speed is cut in half. If you set it to 1/32, the speed is doubled.

Trigger Mode

Determines at which moment the arpeggiator scans for new notes that you play on the keyboard.

- If **Immediately** is selected, the arpeggiator continuously scans for new notes. The phrase changes immediately in reaction to your playing.
- If **Next Beat** is selected, the arpeggiator scans for new notes at every new beat. The phrase changes in reaction to your playing on each new beat.
- If **Next Measure** is selected, the arpeggiator scans for new notes at the start of new measures. The phrase changes in reaction to your playing on each new measure.

Restart Mode

- If this is set to **Off**, the phrase runs continuously and does not restart at chord or note changes.
- **New Chord** restarts the phrase on new chords.

NOTE

The phrase does not restart upon notes that are played legato.

- **New Note** restarts the phrase with each new note that you play.
- **Sync to Host** aligns the phrase with the beats and measures of your host application each time that you start the transport.

Key Mode

Defines whether the order in which the notes are played on the keyboard affects the playback of the phrase.

- If **Sort** is selected, the notes are played in the order of the selected phrase. The chronological order does not have any influence.
- If **As Played** is selected, the notes are played in the order in which you play them on the keyboard.
- If **Direct** is selected, the phrase creates controller events instead of notes. You hear the notes that you play plus any controller events of the phrase, such as pitch bend, volume, pan, etc.

Vel Mode

- If **Original** is selected, the notes of the phrase play with the velocity that is saved in the phrase.
- If **Vel Controller** is selected, you can choose a velocity controller that is used to generate or modulate the velocities of the notes.
- If **Original + Vel Controller** is selected, the phrase velocity is determined by the combination of the velocity saved in the phrase and the velocity derived from the velocity controller.

Swing

Shifts the timing of notes on even-numbered beats. This way, the phrase gets a swing feeling. Negative values shift the timing backward and the notes are played earlier. Positive values shift the timing forward and the notes are played later.

Gate Scale

Allows you to shorten or lengthen the notes of the phrase. At a value of 100 %, the notes play with their original gate length.

Vel Scale

Allows you to raise or lower the note-on velocities of the phrase. At a value of 100 %, the notes are played with their original velocity.

Octaves

Extends the phrase playback to include higher or lower octaves. Positive settings extend the playback to higher and negative settings to lower octaves. For example, a value of +1 first plays the phrase in the octave range that you originally played. Then, it repeats the phrase one octave higher.

Key Range

The **Low Key** and **High Key** parameters determine the key range that is used to trigger phrase playback.

Velocity Range

The **Low Vel** and **High Vel** parameters determine the velocity range that is used to trigger phrase playback.

User Mode Parameters

Save Phrase/Delete Phrase

The two buttons on the right of the phrase field allow you to save/delete your phrases.

Mode

Determines how the notes are played back.

- If **Step** is selected, the last note that is received triggers a monophonic sequence.
- If **Chord** is selected, the notes are triggered as chords.
- If **Up** is selected, the notes are arpeggiated in ascending order.
- If **Down** is selected, the notes are arpeggiated in descending order.
- If **Up/Down 1** is selected, the notes are arpeggiated first in ascending, then in descending order.
- If **Up/Down 2** is selected, the notes are arpeggiated first in ascending, then in descending order. This mode depends on the set **Key Mode**.

  If **Key Mode** is set to **Sort**, the highest and the lowest note are repeated.

  If **Key Mode** is set to **As Played**, the first and the last note are repeated.
- If **Down/Up 1** is selected, the notes are arpeggiated first in descending, then in ascending order.
- If **Down/Up 2** is selected, the notes are arpeggiated first in descending, then in ascending order. This mode depends on the set **Key Mode**.

  If **Key Mode** is set to **Sort**, the highest and the lowest note are repeated.

  If **Key Mode** is set to **As Played**, the first and the last note are repeated.
- If **Random** is selected, the notes are arpeggiated in random order.

Wrap

For all modes except **Step** and **Chord**, you can use this parameter to restart the arpeggio after a specified number of steps.

NOTE

Deactivated steps are taken into account.

In **Step** and **Chord** mode, this parameter only affects the **Octaves** setting.

If the **Octaves** parameter is active, the arpeggio traverses the octaves and restarts from the original octave after the specified number of steps.

Key Replace

With this parameter, you can deactivate the **Key Select** function or specify how missing keys are replaced.

For example, if **Key Select** is set to 1 - 2 - 3 - 4 and you play a chord with 3 notes, key 4 is considered missing.

- **Off** deactivates **Key Replace** and **Key Select**. The selected arpeggio plays back normally.
- **Arp** replaces the missing keys with the note that the arpeggio would normally play.
- **Rest** does not replace any missing keys. The arpeggio plays a rest instead.
- **1st** replaces the missing keys with the first note in the note buffer.
- **Last** replaces the missing keys with the last note in the note buffer.

- **All** replaces the missing keys with all notes in the note buffer. The notes are played as a chord.

NOTE

Key Replace can be set separately for each variation.

Groove Quantize

To adapt the timing of a phrase to an external MIDI file, you can drop this MIDI file on the **Groove Quantize** drop field.

The **Groove Quantize Depth** parameter to the right of the drop field determines how accurately the phrase follows the timing of the MIDI file.

Key Select

The arpeggiator scans the keyboard and writes the keys that are pressed into a note buffer.

Depending on the selected **Key Mode**, this note buffer is sorted either by pitch or in the order in which you play the keys.

Key Select allows you to play back a defined key from the note buffer. You can set up **Key Select** for each step separately, which allows you to create very elaborate phrases.

NOTE

Key Select cannot be used in **Step** or **Chord** mode.

- To access the **Key Select** values of the steps, click **Show Transpose or Key Select** to the left of the editor, so that a keyboard icon is shown.
- To switch between the available **Key Select** values for a step, click the value and drag up/down or use the scroll wheel.

  The following options are available:

  - **P** (Phrase) plays the note of the user phrase, according to the selected mode, for example, **Up**, **Down**, **Up/Down 1**, etc.
  - The settings **1 - 8** play the corresponding keys from the note list. Which key is played depends on the **Key Mode** setting. For example, if **Key Mode** is set to **Sort**, the setting **1** plays the lowest key.
  - **L** (Last) always plays the last key from the note buffer. Depending on the **Key Mode**, this is the highest note or the last note in the note buffer.
  - **A** (All) plays all keys from the note buffer as a chord.

Recording the MIDI Output of the Arpeggiator

The phrases that are played by the instrument depend on the played notes and can therefore not be exported directly. However, it is possible to generate exportable phrases by recording the MIDI output of the arpeggiator.

PROCEDURE

1. Click **Record MIDI Output**.

   The arrow in the **Drag MIDI** field starts blinking to indicate record mode.
2. Play some notes.
3. When you are done, click **Record MIDI Output** again.

   Recording stops. In the **Drag MIDI** field, the arrow remains lit to indicate that a MIDI phrase can be exported.

4. Click the **Drag MIDI** field and drag the phrase on a MIDI track in your host sequencer application.

Creating Variations

PROCEDURE

1. Click one of the variation buttons.
2. You can either start from scratch or base the new variation on an existing variation.
   - To start from scratch, load a phrase and edit the settings.
   - To use an existing variation as base, use the **Copy** and **Paste** context menu commands.

RESULT

The variation can now be recalled by clicking the corresponding variation button.

NOTE

The parameters **Loop**, **Sync**, **Hold**, **Trigger Mode**, **Restart Mode**, **Key Mode**, **Vel Mode**, **Low/High Key**, and **Low/High Vel** are not part of the variations. You set them up only once.

Assigning Variations to Trigger Pads

If you assign the variations to trigger pads, you can use the trigger pads to switch between the variations.

PROCEDURE

1. Right-click a variation button and select the trigger pad on the **Assign Variation to** submenu.
2. Repeat this procedure for all the variations that you have created.

User Phrases

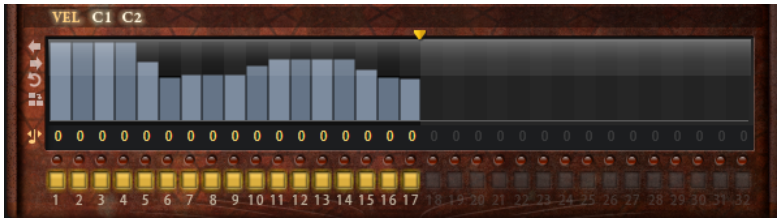
The user phrase has up to 32 steps. Each step has an adjustable **Velocity**, **Gate Length**, and **Transpose** value. By adding steps, adjusting their length, or leaving pauses, you define the rhythm of the user phrase. Consecutive steps can be combined to create longer notes. By selecting a **Mode**, you define how the notes play back. In addition, there are additional MIDI control sequences, that is, each step can also send modulation signals.

To create your own phrases, activate the **User** button.

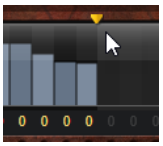
Editing User Phrases

You can make detailed settings for the user phrase in the editor for user phrases.

- To set up the phrase, activate the **Vel** button above the step display.
- To set up a controller curve for the phrase, activate one of the controller buttons.



- To specify the number of steps for the pattern, drag the **Pattern Length** handle to the right or left.



Editing Steps

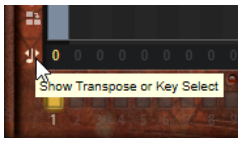
The height of a step represents its value. You can edit the steps in the following way:

- To activate all steps, select **Enable All Steps** from the context menu.
- To adjust a value, click a step and drag up or down.
- To adjust multiple steps, click and draw a curve.
- To adjust the velocity of all steps relatively, **Shift**-click and drag.
- To draw a ramp with steps, hold down **Alt** and draw a line.
- To draw symmetric ramps at the beginning and the end of the sequence, hold down **Shift**-**Alt** and draw a line.
- To reset the velocity of a step to 127, **Ctrl/Cmd**-click the step.
- To reset the velocity of all steps to 127, hold **Shift**-**Ctrl/Cmd** and click a step.
- To introduce a legato between two steps, click the number below the first of these steps, so that a small arrow is shown.

  If **Legato** is activated, the **Gate Scale** parameter is not taken into account.
- To transpose a step, click in the field below it and enter the number of semitones for the transposition.

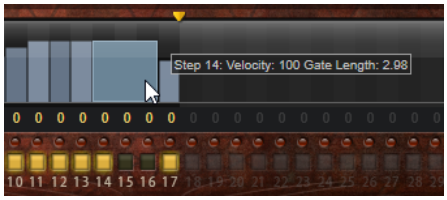
  NOTE

  You can only transpose steps if **Show Transpose or Key Select** is set to show the transpose values.



Adjusting the Gate Length

For velocity steps, the width of a step represents its gate length.



- To adjust the gate length of a step, drag its right border.
- To adjust the gate length of all steps, hold down **Shift** and drag the right border of a step.

  You can only adjust the length this way until a step reaches the next step. If you increase the gate length of a step so that it overlaps the following step, this following step is deactivated.
- To reset the length of a step to 1, **Ctrl/Cmd**-click its highlighted right border.
- To reset the length of all steps, hold down **Shift**-**Ctrl/Cmd** and click on a highlighted right border.

- To fill the gaps between consecutive steps, select **Fill Gap** or **Fill All Gaps** from the context menu.

Each MIDI controller lane can send a MIDI controller. By selecting the same MIDI controller as source in the Modulation Matrix, you can modulate any of the destinations with the MIDI controller sequence.

Adjusting the Phrase

- To shift the rhythm of the phrase, click **Shift Phrase Right** or **Shift Phrase Left** .

  If you shift the rhythm of the phrase to the left, the first step is moved to the end. If you shift the phrase to the right, the last step is moved to the beginning.
- To reverse the phrase, click **Reverse Phrase** .
- To duplicate short phrases, click **Duplicate Phrase** .

NOTE

The maximum number of steps is 32. Therefore, phrases that contain more than 16 steps cannot be duplicated entirely.

World Percussion

World Percussion delivers a great variety of ethnic percussion instruments and associated MIDI phrases.

The instruments can be globally fine-tuned with filter and amp settings which in turn can make use of envelope settings. The built-in MIDI player allows you to use the included MIDI phrases or to import your own MIDI phrases.

MIDI Player Parameters

In the top section of the macro page, the MIDI player parameters are available.

On/Off button

Activates/Deactivates the MIDI player part of World Percussion.

Variations

Click the variation buttons to switch between the available variations.

Phrase

Allows you to select a phrase.

Drag MIDI Phrase to Host Sequencer

Allows you to drag your MIDI phrase to your host sequencer.

Loop

If this option is activated, the phrase plays in a loop.

Hold

Allows you to prevent the phrase from stopping or changing when the keys are released.

- If **Off** is selected, the phrase changes as soon as you release a key. The phrase stops immediately when you release all keys.
- If **On** is selected, the phrase plays to the end, even if the keys are released. If **Loop** is activated, the phrase repeats continuously.
- If **Gated** is selected, the phrase starts to play when the first key is played. It plays silently in the background, even if the keys are released, and resumes playback at the current position when you press any of the keys again. This way, you can gate the playback of the phrase.

Trigger Mode

Determines at which moment the player changes the phrase when you select another variation.

- **Immediately** – The phrase changes as soon as you switch to another variation.
- **Next Beat** – The phrase changes on the first new beat after switching to another variation.
- **Next Measure** – The phrase changes on the first new measure after switching to another variation.

Restart

Depending on the selected **Restart** mode and your playing, you can restart playback from the beginning of the loop.

- **Off** – The loop runs continuously and will not restart upon note changes.
- **First Note** – The loop restarts when a note is triggered and no other notes are already held.
- **Each Note** – The loop restarts each time a note is triggered.
- **Sync to Host** – Select this to align the loop with the beats and measures of your host application. The loop aligns to the beats and measures each time you start the transport.
- **Follow Transport** – Playback starts and stops automatically together with the transport controls in your host application.

Start

Shifts the start of the loop in steps of 1/4 notes. The length of the loop is shortened accordingly.

Length

Allows you to shorten the length of the loop in steps of 1/4 notes.

NOTE

The control range of **Start** and **Length** varies with the original length of the loop.

Tempo

- If **Sync** is deactivated, the **Tempo** control sets the internal playback speed of the loop, in BPM. In addition, **Tempo Scale** gives you further control over the playback speed.
- If **Sync** is activated, the Tempo control is inactive.

Sync

To synchronize the loop to the tempo of your host application, activate **Sync**.

NOTE

In the **Restart** modes **Sync to Host** and **Follow Transport**, synchronization to the host application is established automatically. In these modes, the **Sync** parameter cannot be edited.

Play/Stop

Starts/Stops playback of the phrase.

Low Key

Defines the lowest key on which the phrase is triggered.

High Key

Defines the highest key on which the phrase is triggered.

Center Key

Determines the MIDI note that is used as the central position for the **Key Follow** function.

Pitch

Activate this option to set the pitch of the drum sounds according to the **Center Key**.

Performance Section

Tempo Scale

Defines the rate at which notes are triggered, that is, the speed at which the phrase is running. In addition to the **Tempo** parameter, this gives you further control over the playback speed. You can specify a value in fractions of beats. You can also set dotted and triplet note values.

For example, if you change the **Tempo Scale** setting from 1/16 to 1/8, the speed is cut in half. If you set it to 1/32, the speed is doubled.

Swing

Shifts the timing of notes on even-numbered beats. This way, the phrase gets a swing feeling. Negative values shift the timing backward and the notes are played earlier. Positive values shift the timing forward and the notes are played later.

Gate Scale

Allows you to shorten or lengthen the notes of the phrase. At a value of 100 %, the notes play with their original gate length.

Vel Scale

Allows you to raise or lower the note-on velocities of the phrase. At a value of 100 %, the notes are played with their original velocity.

Quantize Note Value

This pop-up menu allows you to set up a quantization grid, in fractions of beats. You can also specify dotted and triplet values. This way, you can force the timing of the MIDI note events to play back only at the selected note value.

Quantize Amount

Defines how much of the quantization grid is applied. A value of 100 % means that the MIDI note events play back only at the specified **Quantize** note value. Smaller values move the notes only partially towards the next **Quantize** note value. At a value of 0 %, no quantization is applied.

Filter Section

Cutoff

Controls the cutoff frequency of the filter.

Resonance

Emphasizes the frequencies around the cutoff. At higher settings, the filter self-oscillates, which results in a ringing tone.

Envelope Amount

Controls the cutoff modulation from the filter envelope.

Cutoff Velocity

Controls the cutoff modulation from velocity.

Decay

Controls the decay time of the filter envelope.

Amp Section

Level

Controls the overall volume of the sound.

Velocity

Controls the level modulation from velocity. At 0, all notes are played with the same level.

Decay

Controls the decay time of the amplifier envelope.

Creating Variations

PROCEDURE

1. Click one of the variation buttons.
2. You can either start from scratch or base the new variation on an existing variation.
   - To start from scratch, load a phrase and edit the settings.
   - To use an existing variation as base, use the **Copy** and **Paste** context menu commands.

RESULT

The variation can now be recalled by clicking the corresponding variation button.

NOTE

The parameters **Loop**, **Sync**, **Hold**, **Trigger Mode**, **Restart Mode**, **Key Mode**, **Vel Mode**, **Low/High Key**, and **Low/High Vel** are not part of the variations. You set them up only once.

Assigning Variations to Trigger Pads

If you assign the variations to trigger pads, you can use the trigger pads to switch between the variations.

PROCEDURE

1. Right-click a variation button and select the trigger pad on the **Assign Variation to** submenu.
2. Repeat this procedure for all the variations that you have created.

Anima

The Anima synth is a wavetable instrument using HALion's wavteable synthesis which crossfades the waves smoothly in real time based on an integrated wavetable envelope. This envelope makes it very easy to control the playback of the wavetable, because no further modulation settings are required. All you have to do is set up the **Speed** parameter. The modulation matrix allows you to control the playback position of the oscillator using one of the integrated LFOs, the velocity, or the modulation wheel, for example.

Anima provides two wavetable oscillators that can be used in parallel. Each oscillator features a multi-oscillator that allows you to create up to eight additional voices for each oscillator and then separately detune them and distribute them in the stereo panorama.

The sub oscillator comes with classic oscillator waves like sine, triangle, saw, square and two different pulses, and also features a noise generator. The noise generator delivers a large number of different noise types. These range from classic noises like white and pink noise over drum attacks and rhythmical noises to specifically filtered colored noises and unique circuit noises, recorded from various electronic devices. This powerful collection of noises can be used to add inharmonic frequencies to create atmospheric sound or add transients for rich and percussive attacks, for example. The integrated arpeggiator and step sequencer allows you to play rhythmic patterns and/or add modulations to the synthesis parameters using the three available controller lanes.

The oscillator is followed by a multi-mode filter that offers a large number of different filter shapes. The filter can be modulated by modulation sources like the keyboard, velocity, and LFO, but also by the controller lanes of the step sequencer, for example.

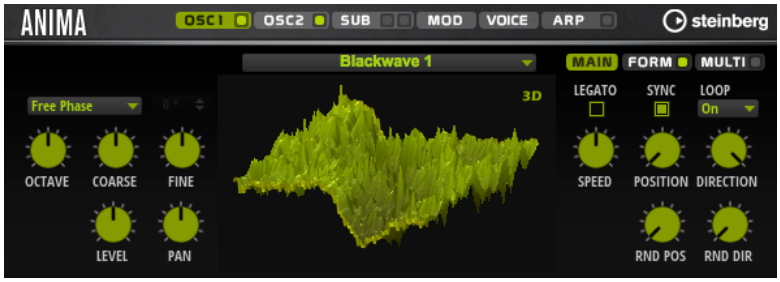
Anima includes two monophonic LFOs that can be synchronized to the host tempo and allow you to modulate a large number of modulation destinations using the modulation matrix. In addition, a user-defined envelope can be assigned to destinations like **Pitch**, **Pan**, or **Wavetable** parameters in the modulation matrix.

Anima contains six pages: **Osc1**, **Osc2**, **Sub**, **Mod**, **Voice**, and **Arp**. To show the settings for a page, click the corresponding page button.

If a page button itself contains an **On/Off** button, which is the case for the **Arp** page button, for example, you can use this to activate/deactivate the corresponding element without having to open the page first.

Oscillator Pages

The **Osc 1** and **Osc 2** pages contain the settings for the two main oscillators.



- To show the settings for oscillator 1 or oscillator 2, click the corresponding button.
- To activate/deactivate an oscillator, click the **On/Off** button on the right of the corresponding page button.

Select Wavetable

This pop-up menu allows you to select one of the included wavetables for the wavetable oscillator.

Show 3D Wavetable Map/2D Wave

Toggles between displaying a single cycle of the current waveform and a topographic map of the entire wavetable.

Retrigger Mode

- If **Free Phase** is selected, the behavior of analog synthesizers is emulated. The oscillator is running freely and continuously.
- If **Random Phase** is selected, the start phase is randomly set to a different value each time that you trigger a note. In contrast to **Free Phase**, there is no continuity in the phase of the waveform.
- If **Fixed Phase** is selected, the oscillator runs with a fixed start phase that can be specified between 0 and 360 degrees.

Octave

Adjusts the pitch in octave steps.

Coarse

Adjusts the pitch in semitone steps.

Fine

Adjusts the pitch in cent steps. This allows you to fine-tune the oscillator sound.

Level

Adjusts the output level of the oscillator.

Pan

Adjusts the position of the oscillator in the stereo panorama. At a setting of -100 %, the sound is panned hard left, and at +100 %, it is panned hard right.

Main Tab

Legato

If **Legato** is deactivated, each note starts playback from the position cursor.

If **Legato** is activated, the first note starts playback from the position cursor, and any following notes start from the current playback position for as long as the first note is held.

Sync to Host

Allows you to sync the wavetable to the beats and measures of your host application.

Loop Mode

- **Off**: If **Playback Direction** is set to a positive value, the wavetable plays from the position cursor to the end.

  If **Playback Direction** is set to a negative value, the wavetable plays from the position cursor to the start.
- **On**: Depending on the **Playback Direction** setting, the wavetable plays forward or backward in a loop.
- **Alt**: The wavetable plays in an alternate loop, that is, the loop is alternately played forward and backward. The first direction depends on the **Playback Direction** setting.

Speed

Determines the rate at which the envelope plays through the wavetables. At +100 %, the envelope plays back at its original speed. A value of +50 % corresponds to half the original speed, and +200 % to twice the original speed, for example.

This parameter is unipolar.

Position

Determines where the envelope starts.

Playback Direction

Allows you to set the playback speed in smaller increments. Furthermore, this parameter determines the playback direction.

- If you enter negative values, you reverse playback, that is, the playback position moves backward through the wavetable.

Random Position

Adds a random value to the current position when you play a note.

For example, if you want the position to vary between 25.0 % and 75.0 %, set **Position** to 25.0 % and **Random Position** to 50.0 %.

Random Direction

Adds a negative or positive random value to the current direction when you play a note.

For example, if you want the direction to vary between -100 % and +100 %, set **Direction** to 0.0 % and **Random Direction** to 100.0 %. If you want the direction to vary within the full positive range, set **Direction** to 50 % and **Random Direction** to 50 %, for example.

Form Tab

Formants are harmonics within the spectrum of a note which are pronounced and help to define the character of an instrument. The positions of the formants in the spectrum mainly depend on the construction of an instrument, such as the body of a guitar, the form of the vocal tract in a human body, the filter settings for electronic instruments, etc. These conditions lead to specific frequency ranges that are emphasized regardless of the pitch of the note. Playing back samples or wavetables with a different pitch than the original is usually done by increasing or decreasing the playback speed. This leads to the well-known monster or Mickey Mouse effect, because all harmonics are also affected, that is, the characteristic formants are shifted. To avoid this, you can activate the **Formant** option.

On/Off

Activates/Deactivates the formant settings.

Formant

Allows you to shift the formants of the entire wavetable by a fixed value.

Key Follow

Allows you to shift the formants depending on the played note.

- A value of 100 % means that the formant frequency moves with the played note.
- A value of 0 % means that the formants kept the same for all notes.

You can invert the behavior of the formant shift by setting **Key Follow** to negative values.

Multi Tab

The multi-oscillator function allows you to trigger multiple voices simultaneously with each note that you play. If you activate **Multi**, the following parameters become available:

- **Number** determines the number of oscillators that play back simultaneously. You can also set fractions of numbers. For example, with a setting of 2.5, you hear two oscillators at full level and a third one at half level.
- **Detune** detunes the oscillators.
- **Pan** narrows or widens the stereo panorama. With a setting of 0 %, you create a mono signal and with 100 %, you create a stereo signal.
- **Spread** distributes the oscillators so that each oscillator plays from a different position in the wavetable.

Sub Page

The **Sub** page contains the settings for the sub oscillator and the noise oscillator.

Sub Oscillator Section

Type

The wave shape of the sub oscillator. You can choose between **Sine**, **Triangle**, **Saw**, **Square**, **Pulse Wide**, and **Pulse Narrow**.

Retrigger Mode

- If **Free Phase** is selected, the behavior of analog synthesizers is emulated. The oscillator is running freely and continuously.
- If **Random Phase** is selected, the start phase is randomly set to a different value each time that you trigger a note. In contrast to **Free Phase**, there is no continuity in the phase of the waveform.
- If **Fixed Phase** is selected, the oscillator runs with a fixed start phase that can be specified between 0 and 360 degrees.

Level

Adjusts the output level of the sub oscillator.

Pan

Adjusts the position of the oscillator in the stereo panorama. At a setting of -100 %, the sound is panned hard left, and at +100 %, it is panned hard right.

Noise Oscillator Section

The noise oscillator offers you a large amount of different noise types that can be used to add inharmonic frequencies to the overall spectrum, either for the entire sound, with looped noises or with one-shot noise samples. This allows you to add characteristic transients to percussive instruments based on samples, for example.

Noise Type

This pop-up menu offers you a choice of classic noises, attack transients, soundscapes, and ambience noise samples.

Level

Adjusts the output level of the noise oscillator.

Sync

Activate **Sync** to synchronize the speed of the noise oscillator to the host tempo. This is particularly useful for rhythmic noises that are based on a tempo of 120 BPM.

Pan

Determines the position of the noise in the stereo panorama. At a setting of -100 %, the sound is panned hard left, and at +100 %, it is panned hard right.

Follow Pitch

If **Follow Pitch** is activated, zone pitch settings like **Octave**, **Coarse**, and **Fine**, as well as modulations like **Glide**, **Pitchbend**, or other pitch modulations, affect the duration length. A higher sample pitch leads to a shorter duration.

If **Follow Pitch** is deactivated, the duration is independent of the zone pitch and determined by the **Duration** settings.

Loop

Activate this button to play the noise sample in a loop.

If this button is not activated, the sample is played once.

Speed

Adjusts the playback speed of the noise sample. A setting of 800.0 % equals an increase of three octaves in pitch.

Speed Key Follow

Allows you to adjust the speed modulation by MIDI note number. At a setting of +100 %, the speed doubles per octave.

Start

Adjusts the start of the noise sample. With a value of 50 %, playback starts in the middle of the sample.

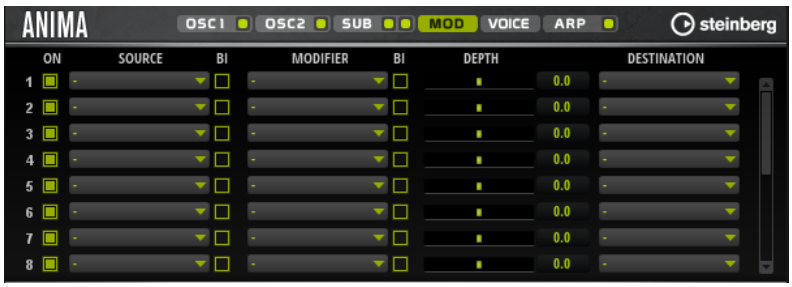
Random Start

Selects a random playback start within a specific range around the current position.

At a setting of 100 %, the playback position jumps to a random position between the specified **Start** value and the end of the noise sample.

Mod Page

The **Mod** page contains the modulation matrix.



The modulation matrix offers you up to 16 freely assignable modulations, each with a source, a modifier, and a destination with adjustable depth. The polarity of each source and each modifier can be switched between unipolar and bipolar.

Creating Modulations

You create modulations by selecting a source, a modifier, and a destination from the pop-up menus in the modulation matrix.

PROCEDURE

1. Click the modulation **Source** field and select the modulation source.
2. Optional: Click in the modulation **Modifier** field and select the parameter that you want to use to modify the modulation.

   This modifier is used to scale the output of the modulation source.

3. Optional: Specify whether you want the **Source** and **Modifier** parameters to be unipolar or bipolar.
4. Set the modulation intensity with the **Depth** parameter.
5. Click in the modulation **Destination** field and select the parameter that you want to modulate.

Modulation Matrix Parameters

Modulation Sources and Modulation Modifiers

The following options are available as modulation sources and as modulation modifiers.

LFO A/B

The LFOs A and B produce cyclic modulation signals.

Amp Envelope

The amplifier envelope. The shape of the envelope determines the modulation signal.

Filter Envelope

The filter envelope. The shape of the envelope determines the modulation signal.

Env 3

A freely assignable envelope. It is suitable for pan or pitch modulation, for example.

Key Follow

This produces an exponential modulation signal derived from the MIDI note number. Exponential means this source works with destinations such as **Pitch** or **Cutoff**.

Note-on Velocity

Note-on velocity can be used as modulation signal.

Note-on Vel Squared

The squared version of **Note-on Velocity**. The harder you press the key, the higher the modulation values.

Pitchbend

The position of the pitchbend wheel can be used as modulation signal.

Modulation Wheel

The position of the modulation wheel can be used as modulation signal.

Aftertouch

Aftertouch can be used as modulation signal. Some MIDI keyboards cannot send aftertouch messages. However, most sequencer software is able to produce such messages.

Arp Controller 1–3

The 3 controllers available on this submenu correspond to the three controller lanes on the **Arp** page.

Bus 1–8

Modulations that are sent to one of the eight busses can be reused as sources. This way, you can combine several modulations to produce more complex signals.

Quick Control 1–8

The quick controls can be used as modulation signal.

Unipolar vs. Bipolar Sources

The polarity of a modulation source specifies the value range that it produces. Unipolar sources modulate between 0 and +1. Bipolar sources modulate between -1 and +1.

- To change the polarity of a modulation source or modifier from unipolar to bipolar, activate its **Bipolar** button.

Modulation Destinations

Pitch

Modulates the pitch. For example, assign one of the LFOs to create a vibrato effect. If **Pitch** is selected, the modulation depth is set in semitones.

Cutoff

Modulates the filter cutoff.

Resonance

Modulates the filter resonance. Resonance changes the character of the filter.

For example, to accent the filter the harder you hit a key, assign **Velocity** to **Resonance**.

Distortion

Modulates the filter distortion.

Level

This modulation adds to the level setting. It can be used to create level offsets using the mod wheel, for example.

Volume

Modulates the gain. The volume modulation multiplies with the level.

Pan

Modulates the position of the sound in the panorama.

WT 1/2 Pitch

Modulates the **Pitch** parameter of the corresponding wavetable oscillator.

WT 1/2 Level

Modulates the **Level** parameter of the corresponding wavetable oscillator.

WT 1/2 Pan

Modulates the **Pan** parameter of the corresponding wavetable oscillator.

WT 1/2 Multi Detune

Modulates the multi-oscillator **Detune** parameter of the corresponding wavetable oscillator.

WT 1/2 Multi Pan

Modulates the multi-oscillator **Pan** parameter of the corresponding wavetable oscillator.

WT 1/2 Multi Spread

Modulates the multi-oscillator **Spread** parameter of the corresponding wavetable oscillator.

WT 1/2 Multi Voices

Modulates the multi-oscillator **Voices** parameter of the corresponding oscillator.

WT 1/2 Position

Modulates the **Position** parameter of the corresponding wavetable oscillator.

WT 1/2 Direction

Modulates the **Direction** parameter of the corresponding wavetable oscillator.

WT 1/2 Speed

Modulates the **Speed** parameter of the corresponding wavetable oscillator.

WT 1/2 Formant Shift

Modulates the **Formant Shift** parameter of the corresponding wavetable oscillator.

WT Sub Pitch

Modulates the **Pitch** parameter of the wavetable sub oscillator.

WT Sub Level

Modulates the **Level** parameter of the wavetable sub oscillator.

WT Sub Pan

Modulates the **Pan** parameter of the wavetable sub oscillator.

WT Noise Speed

Modulates the **Speed** parameter of the wavetable noise oscillator.

WT Noise Level

Modulates the **Level** parameter of the wavetable noise oscillator.

WT Noise Pan

Modulates the **Pan** parameter of the wavetable noise oscillator.

Amp Env Attack

Modulates the attack time of the amplitude envelope. This modulation destination cannot be modulated continuously. The time is updated only when the segment starts.

Amp Env Decay

Modulates the decay time of the amplitude envelope. This modulation destination cannot be modulated continuously. The time is updated only when the segment starts.

Amp Env Sustain

Modulates the sustain level of the amplitude envelope. This modulation destination cannot be modulated continuously. The level is updated only when the segment starts.

Amp Env Release

Modulates the release time of the amplitude envelope. This modulation destination cannot be modulated continuously. The time is updated only when the segment starts.

Filter Env Attack

Modulates the attack time of the filter envelope. This modulation destination cannot be modulated continuously. The time is updated only when the segment starts.

Filter Env Decay

Modulates the decay time of the filter envelope. This modulation destination cannot be modulated continuously. The time is updated only when the segment starts.

Filter Env Sustain

Modulates the sustain level of the filter envelope. This modulation destination cannot be modulated continuously. The level is updated only when the segment starts.

Filter Env Release

Modulates the release time of the filter envelope. This modulation destination cannot be modulated continuously. The time is updated only when the segment starts.

Env 3 Start Level

Modulates the start level of the user-definable envelope 3, that is, the level of the first envelope node. This modulation destination cannot be modulated continuously. The level is updated only when the segment starts.

Env 3 Attack

Modulates the attack time of the user-definable envelope 3. This modulation destination cannot be modulated continuously. The time is updated only when the segment starts.

Env 3 Attack Level

Modulates the attack level of the user-definable envelope 3, that is, the level of the second envelope node. This modulation destination cannot be modulated continuously. The level is updated only when the segment starts.

Env 3 Decay

Modulates the decay time of the user-definable envelope 3. This modulation destination cannot be modulated continuously. The time is updated only when the segment starts.

Env 3 Sustain

Modulates the sustain level of the user-definable envelope 3. This modulation destination cannot be modulated continuously. The level is updated only when the segment starts.

Env 3 Release

Modulates the release time of the user-definable envelope 3. This modulation destination cannot be modulated continuously. The time is updated only when the segment starts.

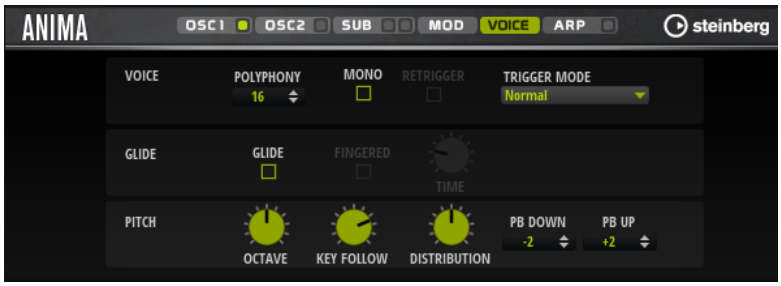
Env 3 Release Level

Modulates the release level of the user-definable envelope 3, that is, the last user envelope node. This modulation destination cannot be modulated continuously. The level is updated only when the segment starts.

Bus 1-8

You can send any modulation to one of the 8 busses, for example, to produce more complex modulation signals. Select the bus that you want to send the signals to as a destination. To use the modulation that was sent to a bus, assign the corresponding bus as a modulation source.

Voice Page



Polyphony

If **Mono** mode is deactivated, you can use this parameter to specify how many notes can be played simultaneously.

Mono

Activates monophonic playback.

Retrigger

This option is only available in **Mono** mode. If **Retrigger** is activated, a note that was stolen by another note is retriggered if you still hold the stolen note when you release the new one.

This way, you can play trills by holding one note and quickly and repeatedly pressing and releasing another note, for example.

Trigger Mode

Defines the trigger behavior for new notes.

- **Normal** triggers a new note when the previous note gets stolen. The sample and the envelope of the new note are triggered from the start.

  To minimize discontinuities, use the **Fade Out** parameter of the zone.
- **Resume** does not always trigger a new note.

  If the new note stays within the same zone, the envelope is retriggered, but resumes at the level of the stolen note. The pitch of the zone is set to the new note.

  If the new note plays in a different zone, the sample and the envelope of the new note are triggered from the start.
- **Legato** does not always trigger a new note.

  If the new note stays within the same zone, the envelope keeps running. The pitch of the zone is set to the new note.

  If the new note plays in a different zone, the sample and the envelope of the new note are triggered from the start.
- **Resume Keeps Zone** does not trigger a new note upon note stealing. The envelope resumes at the level of the stolen note and the pitch of the zone is set to the new note, even if the new note plays in a different zone.
- **Legato Keeps Zone** does not trigger a new note upon note stealing. The envelope keeps running and the pitch of the zone is set to the new note, even if the new note plays in a different zone.

Glide

Allows you to bend the pitch between notes that follow each other. You achieve the best results in **Mono** mode.

Fingered

Activate this parameter to glide the pitch only between notes that are played legato.

Glide Time

Sets the glide time, that is, the time it takes to bend the pitch from one note to the next.

Octave

Adjusts the pitch in octave steps.

Pitch Key Follow

Allows you to adjust the pitch modulation by MIDI note number. Set this parameter to positive values in order to raise the pitch the higher you play. Use negative values to lower the pitch the higher you play. At a setting of +100 %, the pitch follows the played note exactly.

Distribution

Allows you to specify how unison voices are spread in pitch. Changing the unison voice distribution will create different modulations between the unison voices.

- If this is set to 0, the distribution is linear, that is, all voices have an equal distance in their pitch offset.
- Raising the value stretches the distribution using an exponential curve, so that the first unison voices have a smaller pitch offset than the second and third.
- Decreasing the value stretches the distribution using a negative exponential curve, so that the first unison voices have a larger pitch offset than the second and third voices.

Pitchbend Up/Pitchbend Down

Determines the range for the modulation that is applied when you move the pitchbend wheel.

Filter Section

In the filter section in the lower left, you can activate and set up the filter.

Filter On/Off

Activates/Deactivates the filter.

Filter Shape

- LP 24, 18, 12, and 6 are low-pass filters with 24, 18, 12, and 6 dB/oct. Frequencies above the cutoff are attenuated.
- BP 12 and BP 24 are band-pass filters with 12 and 24 dB/oct. Frequencies below and above the cutoff are attenuated.
- HP 6+LP 18 and HP 6+LP 12 are combinations of a high-pass filter with 6 dB/oct and a low-pass filter with 18 and 12 dB/oct, respectively (asymmetric band-pass filter). Frequencies below and above the cutoff are attenuated. Attenuation is more pronounced for the frequencies above the cutoff.
- HP 12+LP 6 and HP 18+LP 6 are combinations of a high-pass filter with 12 and 18 dB/oct and a low-pass filter with 6 dB/oct (asymmetric band-pass filter). Frequencies below and above the cutoff are attenuated. Attenuation is more pronounced for the frequencies below the cutoff.
- HP 24, 18, 12, and 6 are high-pass filters with 24, 18, 12, and 6 dB/oct. Frequencies below the cutoff are attenuated.
- BR 12 and BR 24 are band-reject filters with 12 and 24 dB/oct. Frequencies around the cutoff are attenuated.
- BR 12+LP 6 and BR 12+LP 12 are combinations of a band-reject filter with 12 dB/oct and a low-pass filter with 6 and 12 dB/oct, respectively. Frequencies around and above the cutoff are attenuated.
- BP 12+BR 12 is a band-pass filter with 12 dB/oct plus a band-reject filter with 12 dB/oct. Frequencies below, above, and around the cutoff are attenuated.

- HP 6+BR 12 and HP 12+BR 12 are combinations of a high-pass filter with 6 and 12 dB/oct and a band-reject filter with 12 dB/oct. Frequencies below and around the cutoff are attenuated.
- AP is an all-pass filter with 18 dB/oct. Frequencies around the cutoff are attenuated.
- AP+LP 6 is an all-pass filter with 18 dB/oct plus a low-pass filter with 6 dB/oct. Frequencies around and above the cutoff are attenuated.
- HP 6+AP is a high-pass filter with 6 dB/oct plus an all-pass filter with 18 dB/oct. Frequencies around and below the cutoff are attenuated.

Cutoff

Controls the cutoff frequency of the filter.

Resonance

Emphasizes the frequencies around the cutoff. At higher settings, the filter self-oscillates, which results in a ringing tone.

Distortion

Adds distortion to the signal. The following distortion types are available:

- **Tube** adds warm, tube-like distortion.
- **Hard Clip** adds bright, transistor-like distortion.
- **Bit Reduction** adds digital distortion by means of quantization noise.
- **Rate Reduction** adds digital distortion by means of aliasing.
- **Rate Reduction Key Follow** adds digital distortion by means of aliasing, but with **Key Follow**. The rate reduction follows the keyboard, so the higher you play, the higher the sample rate.

Envelope Amount

Controls the cutoff modulation from the filter envelope.

Cutoff Velocity

Controls the cutoff modulation from velocity.

Cutoff Key Follow

Adjusts the cutoff modulation using the note number. Increase this parameter to raise the cutoff with higher notes. At 100 %, the cutoff follows the played pitch exactly.

Filter Envelope

On the left on the **Env F/A** tab, you can set up the filter envelope.

Attack

Controls the attack time of the filter envelope.

Decay

Controls the decay time of the filter envelope.

Sustain

Controls the sustain level of the filter envelope.

Release

Controls the release time of the filter envelope.

Amplifier and Amplifier Envelope

On the right of the **Env F/A** tab, you can make settings for the amplifier and the amplifier envelope.

Amplifier Parameters

Level

Controls the overall volume of the sound.

Velocity

Controls the level modulation from velocity. At 0, all notes are played with the same level.

Amplifier Envelope Parameters

Attack

Controls the attack time of the amplifier envelope.

Decay

Controls the decay time of the amplifier envelope.

Sustain

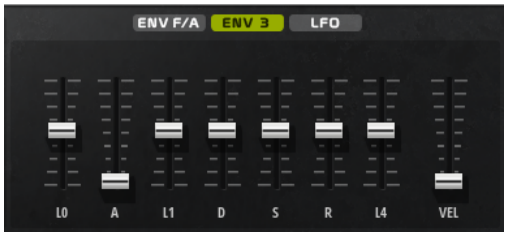
Controls the sustain level of the amplifier envelope.

Release

Controls the release time of the amplifier envelope.

Env 3 Section

The **Env 3** section provides an additional envelope that can be routed freely in the modulation matrix. This envelope is bipolar, therefore, it is particularly suited to modulate destinations like pan or pitch, for example.



The faders below the envelope display set the following parameters:

- **L0** sets the start level.

- **A** sets the attack time.
- **L1** sets the attack level.
- **D** sets the decay time.
- **S** sets the sustain level.
- **R** sets the release time.
- **L4** sets the end level.
- **Vel** determines how much the envelope intensity depends on the velocity.

  If this fader is set to 0, the envelope is fully applied. Higher values reduce the intensity for lower velocities.

LFO Section

In the **LFO** section, you can make settings for the two included LFOs.

LFO Waveform and Shape

- **Sine** produces smooth modulation, suitable for vibrato or tremolo. **Shape** adds additional harmonics to the waveform.
- **Triangle** is similar to **Sine**. **Shape** continuously changes the triangle waveform to a trapezoid.
- **Saw** produces a ramp cycle. **Shape** continuously changes the waveform from ramp down to triangle to ramp up.
- **Pulse** produces stepped modulation, where the modulation switches abruptly between two values. **Shape** continuously changes the ratio between the high and low state of the waveform. If **Shape** is set to 50 %, a square wave is produced.
- **Ramp** is similar to the **Saw** waveform. **Shape** increasingly puts silence before the sawtooth ramp up begins.
- **Log** produces a logarithmic modulation. **Shape** continuously changes the logarithmic curvature from negative to positive.
- **S & H 1** produces randomly stepped modulation, where each step is different. **Shape** puts ramps between the steps and changes the **S & H** into a smooth random signal when fully turned right.
- **S & H 2** is similar to **S & H 1**. The steps alternate between random high and low values. **Shape** puts ramps between the steps and changes the **S & H** into a smooth random signal when fully turned right.

Sync

If **Sync** is activated, the frequency is set in fractions of beats.

Freq

Controls the frequency of the modulation, that is, the speed of the LFO.

Phase

Sets the initial phase of the waveform when the LFO is retriggered.

Sync

If **Sync** is activated, the frequency is set in fractions of beats.

Freq

Controls the frequency of the modulation, that is, the speed of the LFO.

Phase

Sets the initial phase of the waveform when the LFO is retriggered.

Rnd (Random Phase)

If this button is activated, each note starts with a randomized start phase.

NOTE

The **Phase** control cannot be used if **Rnd** is activated.

Arp Page

This page contains the integrated arpeggiator.

Arpeggiator On/Off

Activates/Deactivates the arpeggiator.

User Mode On/Off

Activates/Deactivates the user phrase and the user phrase editor.

Variations

Click the variation buttons to switch between the available variations.

Phrase

Allows you to select a phrase.

Drag Recorded MIDI to Sequencer

Allows you to drag the recorded MIDI phrase to your host sequencer.

Record Output

Allows you to record the MIDI output of the arpeggiator.

Loop

If this option is activated, the phrase plays in a loop.

Sync

Synchronizes the phrase to the tempo of your host application.

NOTE

In addition, you can set **Restart Mode** to **Sync to Host**. This aligns the phrase with the beats and measures of your host application.

Mute

Mutes playback. The phrase still plays in the background. If you deactivate **Mute**, playback resumes immediately.

Hold

Allows you to prevent the phrase from stopping or changing when the keys are released.

- If **Off** is selected, the phrase changes as soon as you release a key. The phrase stops immediately when you release all keys.
- If **On** is selected, the phrase plays to the end, even if the keys are released. If **Loop** is activated, the phrase repeats continuously.
- If **Gated** is selected, the phrase starts to play when the first key is played. It plays silently in the background, even if the keys are released, and resumes playback at the current position when you press any of the keys again. This way, you can gate the playback of the phrase.

Tempo

If **Sync** is deactivated, you can use the **Tempo** control to set the internal playback speed of the arpeggiator. The playback speed of the phrase is specified in BPM.

If **Sync** is activated, the **Tempo** parameter is not available.

Tempo Scale

Defines the rate at which notes are triggered, that is, the speed at which the phrase is running. In addition to the **Tempo** parameter, this gives you further control over the playback speed. You can specify a value in fractions of beats. You can also set dotted and triplet note values.

For example, if you change the **Tempo Scale** setting from 1/16 to 1/8, the speed is cut in half. If you set it to 1/32, the speed is doubled.

Trigger Mode

Determines at which moment the arpeggiator scans for new notes that you play on the keyboard.

- If **Immediately** is selected, the arpeggiator continuously scans for new notes. The phrase changes immediately in reaction to your playing.
- If **Next Beat** is selected, the arpeggiator scans for new notes at every new beat. The phrase changes in reaction to your playing on each new beat.
- If **Next Measure** is selected, the arpeggiator scans for new notes at the start of new measures. The phrase changes in reaction to your playing on each new measure.

Restart Mode

- If this is set to **Off**, the phrase runs continuously and does not restart at chord or note changes.
- **New Chord** restarts the phrase on new chords.

NOTE

The phrase does not restart upon notes that are played legato.

- **New Note** restarts the phrase with each new note that you play.
- **Sync to Host** aligns the phrase with the beats and measures of your host application each time that you start the transport.

RstVar (Restart on Variation Change)

This option is available for new chords and new notes. If this button is activated, changing a variation restarts the arpeggiator, even if no new notes or chords were triggered.

Key Mode

Defines whether the order in which the notes are played on the keyboard affects the playback of the phrase.

- If **Sort** is selected, the notes are played in the order of the selected phrase. The chronological order does not have any influence.
- If **As Played** is selected, the notes are played in the order in which you play them on the keyboard.
- If **Direct** is selected, the phrase creates controller events instead of notes. You hear the notes that you play plus any controller events of the phrase, such as pitch bend, volume, pan, etc.

Vel Mode

- If **Original** is selected, the notes of the phrase play with the velocity that is saved in the phrase.
- If **As Played** is selected, the notes of the phrase use the velocity of the played note.
- If **Original + As Played** is selected, the phrase velocity is determined by the combination of the velocity saved in the phrase and the velocity of the played note.

Swing

Shifts the timing of notes on even-numbered beats. This way, the phrase gets a swing feeling. Negative values shift the timing backward and the notes are played earlier. Positive values shift the timing forward and the notes are played later.

Gate Scale

Allows you to shorten or lengthen the notes of the phrase. At a value of 100 %, the notes play with their original gate length.

Vel Scale

Allows you to raise or lower the note-on velocities of the phrase. At a value of 100 %, the notes are played with their original velocity.

Octaves

Extends the phrase playback to include higher or lower octaves. Positive settings extend the playback to higher and negative settings to lower octaves. For example, a value of +1 first plays the phrase in the octave range that you originally played. Then, it repeats the phrase one octave higher.

Velocity Range

The **Low Vel** and **High Vel** parameters determine the velocity range that is used to trigger phrase playback.

Key Range

The **Low Key** and **High Key** parameters determine the key range that is used to trigger phrase playback.

User Mode Parameters

Save Phrase/Delete Phrase

The two buttons on the right of the phrase field allow you to save/delete your phrases.

Mode

Determines how the notes are played back.

- If **Step** is selected, the last note that is received triggers a monophonic sequence.
- If **Chord** is selected, the notes are triggered as chords.
- If **Up** is selected, the notes are arpeggiated in ascending order.
- If **Down** is selected, the notes are arpeggiated in descending order.
- If **Up/Down 1** is selected, the notes are arpeggiated first in ascending, then in descending order.
- If **Up/Down 2** is selected, the notes are arpeggiated first in ascending, then in descending order. This mode depends on the set **Key Mode**.

  If **Key Mode** is set to **Sort**, the highest and the lowest note are repeated.

  If **Key Mode** is set to **As Played**, the first and the last note are repeated.
- If **Down/Up 1** is selected, the notes are arpeggiated first in descending, then in ascending order.
- If **Down/Up 2** is selected, the notes are arpeggiated first in descending, then in ascending order. This mode depends on the set **Key Mode**.

  If **Key Mode** is set to **Sort**, the highest and the lowest note are repeated.

  If **Key Mode** is set to **As Played**, the first and the last note are repeated.
- If **Random** is selected, the notes are arpeggiated in random order.

Key Replace

With this parameter, you can deactivate the **Key Select** function or specify how missing keys are replaced.

For example, if **Key Select** is set to 1 - 2 - 3 - 4 and you play a chord with 3 notes, key 4 is considered missing.

- **Off** deactivates **Key Replace** and **Key Select**. The selected arpeggio plays back normally.
- **Arp** replaces the missing keys with the note that the arpeggio would normally play.
- **Rest** does not replace any missing keys. The arpeggio plays a rest instead.
- **1st** replaces the missing keys with the first note in the note buffer.
- **Last** replaces the missing keys with the last note in the note buffer.
- **All** replaces the missing keys with all notes in the note buffer. The notes are played as a chord.

NOTE

Key Replace can be set separately for each variation.

Wrap

For all modes except **Step** and **Chord**, you can use this parameter to restart the arpeggio after a specified number of steps.

NOTE

Deactivated steps are taken into account.

In **Step** and **Chord** mode, this parameter only affects the **Octaves** setting.

If the **Octaves** parameter is active, the arpeggio traverses the octaves and restarts from the original octave after the specified number of steps.

Groove Quantize

To adapt the timing of a phrase to an external MIDI file, you can drop this MIDI file on the **Groove Quantize** drop field.

The **Groove Quantize Depth** parameter to the right of the drop field determines how accurately the phrase follows the timing of the MIDI file.

Key Select

The arpeggiator scans the keyboard and writes the keys that are pressed into a note buffer.

Depending on the selected **Key Mode**, this note buffer is sorted either by pitch or in the order in which you play the keys.

Key Select allows you to play back a defined key from the note buffer. You can set up **Key Select** for each step separately, which allows you to create very elaborate phrases.

NOTE

Key Select cannot be used in **Step** or **Chord** mode.

- To access the **Key Select** values of the steps, click **Show Transpose or Key Select** to the left of the editor, so that a keyboard icon is shown.
- To switch between the available **Key Select** values for a step, click the value and drag up/down or use the scroll wheel.

  The following options are available:

  - **P** (Phrase) plays the note of the user phrase, according to the selected mode, for example, **Up**, **Down**, **Up/Down 1**, etc.
  - The settings **1 - 8** play the corresponding keys from the note list. Which key is played depends on the **Key Mode** setting. For example, if **Key Mode** is set to **Sort**, the setting **1** plays the lowest key.

- **L** (Last) always plays the last key from the note buffer. Depending on the **Key Mode**, this is the highest note or the last note in the note buffer.
- **A** (All) plays all keys from the note buffer as a chord.

Recording the MIDI Output of the Arpeggiator

The phrases that are played by the instrument depend on the played notes and can therefore not be exported directly. However, it is possible to generate exportable phrases by recording the MIDI output of the arpeggiator.

PROCEDURE

1. Click **Record MIDI Output**.
   The arrow in the **Drag MIDI** field starts blinking to indicate record mode.
2. Play some notes.
3. When you are done, click **Record MIDI Output** again.
   Recording stops. In the **Drag MIDI** field, the arrow remains lit to indicate that a MIDI phrase can be exported.
4. Click the **Drag MIDI** field and drag the phrase on a MIDI track in your host sequencer application.

Creating Variations

PROCEDURE

1. Click one of the variation buttons.
2. You can either start from scratch or base the new variation on an existing variation.
   - To start from scratch, load a phrase and edit the settings.
   - To use an existing variation as base, use the **Copy** and **Paste** context menu commands.

RESULT

The variation can now be recalled by clicking the corresponding variation button.

NOTE

The parameters **Loop**, **Sync**, **Hold**, **Trigger Mode**, **Restart Mode**, **Key Mode**, **Vel Mode**, **Low/High Key**, and **Low/High Vel** are not part of the variations. You set them up only once.

Assigning Variations to Trigger Pads

If you assign the variations to trigger pads, you can use the trigger pads to switch between the variations.

PROCEDURE

1. Right-click a variation button and select the trigger pad on the **Assign Variation to** submenu.
2. Repeat this procedure for all the variations that you have created.

User Phrases

The user phrase has up to 32 steps. Each step has an adjustable **Velocity**, **Gate Length**, and **Transpose** value. By adding steps, adjusting their length, or leaving pauses, you define the rhythm of the user phrase. Consecutive steps can be combined to create longer notes. By

selecting a **Mode**, you define how the notes play back. In addition, there are additional MIDI control sequences, that is, each step can also send modulation signals.

To create your own phrases, activate the **User** button.

Editing User Phrases

You can make detailed settings for the user phrase in the editor for user phrases.

- To set up the phrase, activate the **Vel** button above the step display.
- To set up a controller curve for the phrase, activate one of the controller buttons.

- To specify the number of steps for the pattern, drag the **Pattern Length** handle to the right or left.

Editing Steps

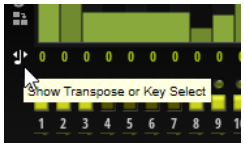
The height of a step represents its value. You can edit the steps in the following way:

- To activate all steps, select **Enable All Steps** from the context menu.
- To adjust a value, click a step and drag up or down.
- To adjust multiple steps, click and draw a curve.
- To adjust the velocity of all steps relatively, Shift-click and drag.
- To draw a ramp with steps, hold down Alt and draw a line.
- To draw symmetric ramps at the beginning and the end of the sequence, hold down Shift-Alt and draw a line.
- To reset the velocity of a step to 127, Ctrl/Cmd-click the step.
- To reset the velocity of all steps to 127, hold Shift-Ctrl/Cmd and click a step.
- To introduce a legato between two steps, click the number below the first of these steps, so that a small arrow is shown.

  If **Legato** is activated, the **Gate Scale** parameter is not taken into account.
- To transpose a step, click in the field below it and enter the number of semitones for the transposition.

NOTE

You can only transpose steps if **Show Transpose or Key Select** is set to show the transpose values.



Adjusting the Gate Length

For velocity steps, the width of a step represents its gate length.

- To adjust the gate length of a step, drag its right border.
- To adjust the gate length of all steps, hold down **Shift** and drag the right border of a step.

  You can only adjust the length this way until a step reaches the next step. If you increase the gate length of a step so that it overlaps the following step, this following step is deactivated.
- To reset the length of a step to 1, **Ctrl/Cmd**-click its highlighted right border.
- To reset the length of all steps, hold down **Shift**-**Ctrl/Cmd** and click on a highlighted right border.
- To fill the gaps between consecutive steps, select **Fill Gap** or **Fill All Gaps** from the context menu.

Each MIDI controller lane can send a MIDI controller. By selecting the same MIDI controller as source in the Modulation Matrix, you can modulate any of the destinations with the MIDI controller sequence.

Adjusting the Phrase

- To shift the rhythm of the phrase, click **Shift Phrase Right** or **Shift Phrase Left** .

  If you shift the rhythm of the phrase to the left, the first step is moved to the end. If you shift the phrase to the right, the last step is moved to the beginning.
- To reverse the phrase, click **Reverse Phrase** .
- To duplicate short phrases, click **Duplicate Phrase** .

NOTE

The maximum number of steps is 32. Therefore, phrases that contain more than 16 steps cannot be duplicated entirely.

Skylab

The Skylab synth is an instrument that produces a wide range of sounds that are perfectly suited to create cinematic or ambient soundtracks. It comes with a large number of multi-samples that provide a variety of evolving pads and soundscapes as well as typical orchestral sounds like strings, brass, and choirs, allowing you to create huge and epic sounds. Furthermore, percussive sample sets of orchestral percussion and taikos are available that can be used with the integrated arpeggiator to create rhythmic patterns, for example.

Skylab's oscillator section can be switched between **Sample Mode** and **Grain Mode**.

Grain Mode uses granular synthesis with up to eight grain streams, which allows you to produce even more variations of the source samples. The oscillator is followed by a multi-mode filter that offers a large number of different filter shapes. The filter can be modulated by modulation sources like the keyboard, velocity, and LFO, but also by the controller lanes of the step sequencer, for example. Skylab includes two monophonic LFOs that can be synchronized to the host tempo and allow you to modulate a large number of modulation destinations using the modulation matrix. In addition, a third envelope is included that can be assigned to destinations like **Pitch**, **Pan**, or **Wavetable** parameters in the modulation matrix.

Skylab contains four pages: **Osc**, **Mod**, **Voice**, and **Arp**. To show the settings for a page, click the corresponding page button.

The button for the **Arp** page also contains an **On/Off** button for the arpeggiator.

Osc Page

On this page, you can specify whether you want to use a sample or a grain oscillator and make settings for the oscillator.

Sample Mode

In **Sample Mode**, you can load and play different multi-samples.

Grain Mode

In **Grain Mode**, Skylab uses a grain oscillator for playback.

Position

You can set the playback position of the grains manually. For example, at a setting of 50 %, the playback position is in the middle of the sample. The playback position is updated with every new grain.

Random Position

Selects a random playback position within a specific range around the current position. At a setting of 100 %, the playback position jumps to a random position between the start and the end of the sample. The random playback position is calculated separately for each channel of the sample, at the start of a new grain. This can be used to widen the panorama of the sound.

Duration

Increases the grain period by a factor ranging from 1 to 1000.

For very short grains, the sound gets the pitch of the frequency at which the grains repeat. For grains longer than 30 ms, the sound gets the pitch of the original sample. This is the case for **Center Key** C3 if the **Duration** is set to a value above 10, for example.

Random Duration

Sets the random grain duration. This duration is calculated at the start of a new grain.

Duration Key Follow

Determines how the grain duration changes with the notes you play. It is mostly used with short durations. Longer durations sound with the original pitch of the sample and therefore do not need to follow the keyboard.

With a **Duration** of 1 and a **Duration Key Follow** setting of 100 %, the difference in pitch between two keys is one semitone, which corresponds to the standard keyboard tuning. Longer durations lead to an audible volume modulation that is different for the different keys. To apply the same volume modulation with each key, set **Duration Key Follow** to 0 %.

NOTE

The volume modulation is only audible if the grain is long and if you only use a few grains.

Pitch Interval

Allows you to specify an interval between -12 and +12 semitones. The grains are played randomly at their original pitch, or are transposed according to the pitch interval. This parameter is suitable for longer grain durations.

Pitch Random

Sets the random pitch range in semitones and cents. At a setting of +12, the random pitch values lie between -12 and +12 semitones. The random pitch is calculated separately for each channel of the sample, at the start of a new grain. This parameter can be used to enrich the sound.

Level

Adjusts the overall level of the grain oscillator. When you increase the number of grains, it might become necessary to lower the oscillator level. When you play back a very quiet portion of a sample, you can use this control to raise the level.

Random Level

Sets a random level for each new grain. At a setting of 100 %, the level varies between a factor of 0 and 2 of the original level. The random level is calculated separately for each channel of the sample, at the start of a new grain. This can be used to randomize the panorama of the sound.

Width

Narrows the stereo width of the grain oscillator. It is applied after the grain oscillator and does not affect the stereo width of the actual sample. At a setting of 0 %, the output of the grain oscillator is monophonic.

Auto Gain

Allows you to automatically adjust the level of grains using quieter sample parts. This way, you get a more homogeneous signal and you can use a quiet part of a sample as source.

Grains

Allows you to specify the number of grains, from 1 to 8. For example, with a setting of 4, you get 4 grains per period of the grain duration.

To hear the effect of this setting, you have to play a new note.

Fixed Pitch

Plays the sample at a fixed pitch.

- If this button is activated, the sample follows the pitch of the keyboard.

  The root key is C3.
- If this button is deactivated, the sample plays at its original pitch, and any pitch modulations for the zone have no effect.

Mod Page

The **Mod** page contains the modulation matrix.

The modulation matrix offers you up to 16 freely assignable modulations, each with a source, a modifier, and a destination with adjustable depth. The polarity of each source and each modifier can be switched between unipolar and bipolar.

Creating Modulations

You create modulations by selecting a source, a modifier, and a destination from the pop-up menus in the modulation matrix.

PROCEDURE

1. Click the modulation **Source** field and select the modulation source.
2. Optional: Click in the modulation **Modifier** field and select the parameter that you want to use to modify the modulation.

   This modifier is used to scale the output of the modulation source.
3. Optional: Specify whether you want the **Source** and **Modifier** parameters to be unipolar or bipolar.
4. Set the modulation intensity with the **Depth** parameter.
5. Click in the modulation **Destination** field and select the parameter that you want to modulate.

Modulation Matrix Parameters

Modulation Sources and Modulation Modifiers

The following options are available as modulation sources and as modulation modifiers.

LFO A/B

The LFOs A and B produce cyclic modulation signals.

Amp Envelope

The amplifier envelope. The shape of the envelope determines the modulation signal.

Filter Envelope

The filter envelope. The shape of the envelope determines the modulation signal.

Env 3

A freely assignable envelope. It is suitable for pan or pitch modulation, for example.

Key Follow

This produces an exponential modulation signal derived from the MIDI note number. Exponential means this source works with destinations such as **Pitch** or **Cutoff**.

Note-on Velocity

Note-on velocity can be used as modulation signal.

Note-on Vel Squared

The squared version of **Note-on Velocity**. The harder you press the key, the higher the modulation values.

Pitchbend

The position of the pitchbend wheel can be used as modulation signal.

Modulation Wheel

The position of the modulation wheel can be used as modulation signal.

Aftertouch

Aftertouch can be used as modulation signal. Some MIDI keyboards cannot send aftertouch messages. However, most sequencer software is able to produce such messages.

Arp Controller 1–3

The 3 controllers available on this submenu correspond to the three controller lanes on the **Arp** page.

Bus 1–8

Modulations that are sent to one of the eight busses can be reused as sources. This way, you can combine several modulations to produce more complex signals.

Quick Control 1–8

The quick controls can be used as modulation signal.

Unipolar vs. Bipolar Sources

The polarity of a modulation source specifies the value range that it produces. Unipolar sources modulate between 0 and +1. Bipolar sources modulate between -1 and +1.

- To change the polarity of a modulation source or modifier from unipolar to bipolar, activate its **Bipolar** button.

Modulation Destinations

Pitch

Modulates the pitch. For example, assign one of the LFOs to create a vibrato effect. If **Pitch** is selected, the modulation depth is set in semitones.

Cutoff

Modulates the filter cutoff.

Resonance

Modulates the filter resonance. Resonance changes the character of the filter.

For example, to accent the filter the harder you hit a key, assign **Velocity** to **Resonance**.

Distortion

Modulates the filter distortion.

Level

This modulation adds to the level setting. It can be used to create level offsets using the mod wheel, for example.

Volume

Modulates the gain. The volume modulation multiplies with the level.

Pan

Modulates the position of the sound in the panorama.

Grain Position

Modulates the playback position. The modulation is not continuous, but it is updated at the start of each grain.

Grain Duration

Modulates the grain duration, that is, the frequency at which the grains repeat. The maximum modulation range at a modulation depth of 100 % is -5 to +5 octaves.

Grain Pitch

Modulates the pitch of a grain. The modulation is not continuous, but it is updated at the start of a new grain. For continuous pitch modulation, use **Pitch** instead of **Grain Pitch** as destination and make sure that **Follow Zone Pitch** is activated in the grain oscillator.

Grain Formant

Modulates the pitch of the source sample independently from the grain duration. This results in formant shifting for short durations.

Grain Level

Modulates the grain level. The modulation is not continuous, but it is updated at the start of each new grain.

Amp Env Attack

Modulates the attack time of the amplitude envelope. This modulation destination cannot be modulated continuously. The time is updated only when the segment starts.

Amp Env Decay

Modulates the decay time of the amplitude envelope. This modulation destination cannot be modulated continuously. The time is updated only when the segment starts.

Amp Env Sustain

Modulates the sustain level of the amplitude envelope. This modulation destination cannot be modulated continuously. The level is updated only when the segment starts.

Amp Env Release

Modulates the release time of the amplitude envelope. This modulation destination cannot be modulated continuously. The time is updated only when the segment starts.

Filter Env Attack

Modulates the attack time of the filter envelope. This modulation destination cannot be modulated continuously. The time is updated only when the segment starts.

Filter Env Decay

Modulates the decay time of the filter envelope. This modulation destination cannot be modulated continuously. The time is updated only when the segment starts.

Filter Env Sustain

Modulates the sustain level of the filter envelope. This modulation destination cannot be modulated continuously. The level is updated only when the segment starts.

Filter Env Release

Modulates the release time of the filter envelope. This modulation destination cannot be modulated continuously. The time is updated only when the segment starts.

Env 3 Start Level

Modulates the start level of the user-definable envelope 3, that is, the level of the first envelope node. This modulation destination cannot be modulated continuously. The level is updated only when the segment starts.

Env 3 Attack

Modulates the attack time of the user-definable envelope 3. This modulation destination cannot be modulated continuously. The time is updated only when the segment starts.

Env 3 Attack Level

Modulates the attack level of the user-definable envelope 3, that is, the level of the second envelope node. This modulation destination cannot be modulated continuously. The level is updated only when the segment starts.

Env 3 Decay

Modulates the decay time of the user-definable envelope 3. This modulation destination cannot be modulated continuously. The time is updated only when the segment starts.

Env 3 Sustain

Modulates the sustain level of the user-definable envelope 3. This modulation destination cannot be modulated continuously. The level is updated only when the segment starts.

Env 3 Release

Modulates the release time of the user-definable envelope 3. This modulation destination cannot be modulated continuously. The time is updated only when the segment starts.

Env 3 Release Level

Modulates the release level of the user-definable envelope 3, that is, the last user envelope node. This modulation destination cannot be modulated continuously. The level is updated only when the segment starts.

Bus 1-8

You can send any modulation to one of the 8 busses, for example, to produce more complex modulation signals. Select the bus that you want to send the signals to as a destination. To use the modulation that was sent to a bus, assign the corresponding bus as a modulation source.

Voice Page

Voice Section

Polyphony

If **Mono** mode is deactivated, you can use this parameter to specify how many notes can be played simultaneously.

Mono

Activates monophonic playback.

Retrigger

This option is only available in **Mono** mode. If **Retrigger** is activated, a note that was stolen by another note is retriggered if you still hold the stolen note when you release the new one.

This way, you can play trills by holding one note and quickly and repeatedly pressing and releasing another note, for example.

Trigger Mode

Defines the trigger behavior for new notes.

- **Normal** triggers a new note when the previous note gets stolen. The sample and the envelope of the new note are triggered from the start.

To minimize discontinuities, use the **Fade Out** parameter of the zone.

- **Resume** does not always trigger a new note.

  If the new note stays within the same zone, the envelope is retriggered, but resumes at the level of the stolen note. The pitch of the zone is set to the new note.

  If the new note plays in a different zone, the sample and the envelope of the new note are triggered from the start.
- **Legato** does not always trigger a new note.

  If the new note stays within the same zone, the envelope keeps running. The pitch of the zone is set to the new note.

  If the new note plays in a different zone, the sample and the envelope of the new note are triggered from the start.
- **Resume Keeps Zone** does not trigger a new note upon note stealing. The envelope resumes at the level of the stolen note and the pitch of the zone is set to the new note, even if the new note plays in a different zone.
- **Legato Keeps Zone** does not trigger a new note upon note stealing. The envelope keeps running and the pitch of the zone is set to the new note, even if the new note plays in a different zone.

Glide Section

Glide

Allows you to bend the pitch between notes that follow each other. You achieve the best results in **Mono** mode.

Fingered

Activate this parameter to glide the pitch only between notes that are played legato.

Glide Time

Sets the glide time, that is, the time it takes to bend the pitch from one note to the next.

Pitch Section

Octave

Adjusts the pitch in octave steps.

Coarse

Adjusts the pitch in semitone steps.

Fine

Adjusts the pitch in cent steps. This allows you to fine-tune the oscillator sound.

Pitchbend Up/Pitchbend Down

Determines the range for the modulation that is applied when you move the pitchbend wheel.

Filter Section

Filter On/Off

Activates/Deactivates the filter.

Filter Shape

- LP 24, 18, 12, and 6 are low-pass filters with 24, 18, 12, and 6 dB/oct. Frequencies above the cutoff are attenuated.
- BP 12 and BP 24 are band-pass filters with 12 and 24 dB/oct. Frequencies below and above the cutoff are attenuated.
- HP 6+LP 18 and HP 6+LP 12 are combinations of a high-pass filter with 6 dB/oct and a low-pass filter with 18 and 12 dB/oct, respectively (asymmetric band-pass filter). Frequencies below and above the cutoff are attenuated. Attenuation is more pronounced for the frequencies above the cutoff.
- HP 12+LP 6 and HP 18+LP 6 are combinations of a high-pass filter with 12 and 18 dB/oct and a low-pass filter with 6 dB/oct (asymmetric band-pass filter). Frequencies below and above the cutoff are attenuated. Attenuation is more pronounced for the frequencies below the cutoff.
- HP 24, 18, 12, and 6 are high-pass filters with 24, 18, 12, and 6 dB/oct. Frequencies below the cutoff are attenuated.
- BR 12 and BR 24 are band-reject filters with 12 and 24 dB/oct. Frequencies around the cutoff are attenuated.
- BR 12+LP 6 and BR 12+LP 12 are combinations of a band-reject filter with 12 dB/oct and a low-pass filter with 6 and 12 dB/oct, respectively. Frequencies around and above the cutoff are attenuated.
- BP 12+BR 12 is a band-pass filter with 12 dB/oct plus a band-reject filter with 12 dB/oct. Frequencies below, above, and around the cutoff are attenuated.
- HP 6+BR 12 and HP 12+BR 12 are combinations of a high-pass filter with 6 and 12 dB/oct and a band-reject filter with 12 dB/oct. Frequencies below and around the cutoff are attenuated.
- AP is an all-pass filter with 18 dB/oct. Frequencies around the cutoff are attenuated.
- AP+LP 6 is an all-pass filter with 18 dB/oct plus a low-pass filter with 6 dB/oct. Frequencies around and above the cutoff are attenuated.
- HP 6+AP is a high-pass filter with 6 dB/oct plus an all-pass filter with 18 dB/oct. Frequencies around and below the cutoff are attenuated.

Cutoff

Controls the cutoff frequency of the filter.

Resonance

Emphasizes the frequencies around the cutoff. At higher settings, the filter self-oscillates, which results in a ringing tone.

Distortion

Adds distortion to the signal. The following distortion types are available:

- **Tube** adds warm, tube-like distortion.
- **Hard Clip** adds bright, transistor-like distortion.
- **Bit Reduction** adds digital distortion by means of quantization noise.
- **Rate Reduction** adds digital distortion by means of aliasing.
- **Rate Reduction Key Follow** adds digital distortion by means of aliasing, but with **Key Follow**. The rate reduction follows the keyboard, so the higher you play, the higher the sample rate.

Envelope Amount

Controls the cutoff modulation from the filter envelope.

Cutoff Velocity

Controls the cutoff modulation from velocity.

Cutoff Key Follow

Adjusts the cutoff modulation using the note number. Increase this parameter to raise the cutoff with higher notes. At 100 %, the cutoff follows the played pitch exactly.

Filter Envelope

On the left on the **Env F/A** tab, you can set up the filter envelope.

Attack

Controls the attack time of the filter envelope.

Decay

Controls the decay time of the filter envelope.

Sustain

Controls the sustain level of the filter envelope.

Release

Controls the release time of the filter envelope.

Amplifier and Amplifier Envelope

On the right of the **Env F/A** tab, you can make settings for the amplifier and the amplifier envelope.

Amplifier Parameters

Level

Controls the overall volume of the sound.

Velocity

Controls the level modulation from velocity. At 0, all notes are played with the same level.

Amplifier Envelope Parameters

Attack

Controls the attack time of the amplifier envelope.

Decay

Controls the decay time of the amplifier envelope.

Sustain

Controls the sustain level of the amplifier envelope.

Release

Controls the release time of the amplifier envelope.

Env3 Section

The **Env 3** section provides an additional envelope that can be routed freely in the modulation matrix. This envelope is bipolar, therefore, it is particularly suited to modulate destinations like pan or pitch, for example.

The faders below the envelope display set the following parameters:

- **L0** sets the start level.
- **A** sets the attack time.
- **L1** sets the attack level.
- **D** sets the decay time.
- **S** sets the sustain level.
- **R** sets the release time.
- **L4** sets the end level.
- **Vel** determines how much the envelope intensity depends on the velocity.

  If this fader is set to 0, the envelope is fully applied. Higher values reduce the intensity for lower velocities.

LFO Section

In the **LFO** section, you can make settings for LFO A and LFO B.

LFO Waveform and Shape

- **Sine** produces smooth modulation, suitable for vibrato or tremolo. **Shape** adds additional harmonics to the waveform.

- **Triangle** is similar to **Sine**. **Shape** continuously changes the triangle waveform to a trapezoid.
- **Saw** produces a ramp cycle. **Shape** continuously changes the waveform from ramp down to triangle to ramp up.
- **Pulse** produces stepped modulation, where the modulation switches abruptly between two values. **Shape** continuously changes the ratio between the high and low state of the waveform. If **Shape** is set to 50 %, a square wave is produced.
- **Ramp** is similar to the **Saw** waveform. **Shape** increasingly puts silence before the sawtooth ramp up begins.
- **Log** produces a logarithmic modulation. **Shape** continuously changes the logarithmic curvature from negative to positive.
- **S & H 1** produces randomly stepped modulation, where each step is different. **Shape** puts ramps between the steps and changes the **S & H** into a smooth random signal when fully turned right.
- **S & H 2** is similar to **S & H 1**. The steps alternate between random high and low values. **Shape** puts ramps between the steps and changes the **S & H** into a smooth random signal when fully turned right.

Sync

If **Sync** is activated, the frequency is set in fractions of beats.

Freq

Controls the frequency of the modulation, that is, the speed of the LFO.

Phase

Sets the initial phase of the waveform when the LFO is retriggered.

Rnd (Random Phase)

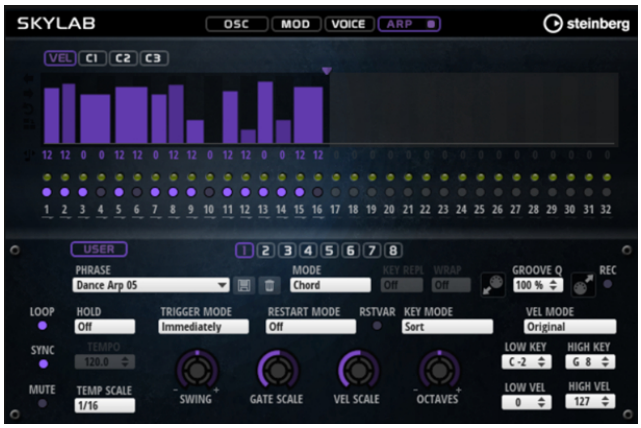
If this button is activated, each note starts with a randomized start phase.

NOTE

The **Phase** control cannot be used if **Rnd** is activated.

Arp Page

This page contains the integrated arpeggiator.



Arpeggiator On/Off

Activates/Deactivates the arpeggiator.

User Mode On/Off

Activates/Deactivates the user phrase and the user phrase editor.

Variations

Click the variation buttons to switch between the available variations.

Phrase

Allows you to select a phrase.

Drag Recorded MIDI to Sequencer

Allows you to drag the recorded MIDI phrase to your host sequencer.

Record Output

Allows you to record the MIDI output of the arpeggiator.

Loop

If this option is activated, the phrase plays in a loop.

Sync

Synchronizes the phrase to the tempo of your host application.

NOTE

In addition, you can set **Restart Mode** to **Sync to Host**. This aligns the phrase with the beats and measures of your host application.

Mute

Mutes playback. The phrase still plays in the background. If you deactivate **Mute**, playback resumes immediately.

Hold

Allows you to prevent the phrase from stopping or changing when the keys are released.

- If **Off** is selected, the phrase changes as soon as you release a key. The phrase stops immediately when you release all keys.
- If **On** is selected, the phrase plays to the end, even if the keys are released. If **Loop** is activated, the phrase repeats continuously.
- If **Gated** is selected, the phrase starts to play when the first key is played. It plays silently in the background, even if the keys are released, and resumes playback at the current position when you press any of the keys again. This way, you can gate the playback of the phrase.

Tempo

If **Sync** is deactivated, you can use the **Tempo** control to set the internal playback speed of the arpeggiator. The playback speed of the phrase is specified in BPM.

If **Sync** is activated, the **Tempo** parameter is not available.

Tempo Scale

Defines the rate at which notes are triggered, that is, the speed at which the phrase is running. In addition to the **Tempo** parameter, this gives you further control over the playback speed. You can specify a value in fractions of beats. You can also set dotted and triplet note values.

For example, if you change the **Tempo Scale** setting from 1/16 to 1/8, the speed is cut in half. If you set it to 1/32, the speed is doubled.

Trigger Mode

Determines at which moment the arpeggiator scans for new notes that you play on the keyboard.

- If **Immediately** is selected, the arpeggiator continuously scans for new notes. The phrase changes immediately in reaction to your playing.
- If **Next Beat** is selected, the arpeggiator scans for new notes at every new beat. The phrase changes in reaction to your playing on each new beat.
- If **Next Measure** is selected, the arpeggiator scans for new notes at the start of new measures. The phrase changes in reaction to your playing on each new measure.

Restart Mode

- If this is set to **Off**, the phrase runs continuously and does not restart at chord or note changes.
- **New Chord** restarts the phrase on new chords.

  NOTE

  The phrase does not restart upon notes that are played legato.

- **New Note** restarts the phrase with each new note that you play.
- **Sync to Host** aligns the phrase with the beats and measures of your host application each time that you start the transport.

RstVar (Restart on Variation Change)

This option is available for new chords and new notes. If this button is activated, changing a variation restarts the arpeggiator, even if no new notes or chords were triggered.

Key Mode

Defines whether the order in which the notes are played on the keyboard affects the playback of the phrase.

- If **Sort** is selected, the notes are played in the order of the selected phrase. The chronological order does not have any influence.
- If **As Played** is selected, the notes are played in the order in which you play them on the keyboard.
- If **Direct** is selected, the phrase creates controller events instead of notes. You hear the notes that you play plus any controller events of the phrase, such as pitch bend, volume, pan, etc.

Vel Mode

- If **Original** is selected, the notes of the phrase play with the velocity that is saved in the phrase.
- If **As Played** is selected, the notes of the phrase use the velocity of the played note.
- If **Original + As Played** is selected, the phrase velocity is determined by the combination of the velocity saved in the phrase and the velocity of the played note.

Swing

Shifts the timing of notes on even-numbered beats. This way, the phrase gets a swing feeling. Negative values shift the timing backward and the notes are played earlier. Positive values shift the timing forward and the notes are played later.

Gate Scale

Allows you to shorten or lengthen the notes of the phrase. At a value of 100 %, the notes play with their original gate length.

Vel Scale

Allows you to raise or lower the note-on velocities of the phrase. At a value of 100 %, the notes are played with their original velocity.

Octaves

Extends the phrase playback to include higher or lower octaves. Positive settings extend the playback to higher and negative settings to lower octaves. For example, a value of +1 first plays the phrase in the octave range that you originally played. Then, it repeats the phrase one octave higher.

Velocity Range

The **Low Vel** and **High Vel** parameters determine the velocity range that is used to trigger phrase playback.

Key Range

The **Low Key** and **High Key** parameters determine the key range that is used to trigger phrase playback.

User Mode Parameters

Save Phrase/Delete Phrase

The two buttons on the right of the phrase field allow you to save/delete your phrases.

Mode

Determines how the notes are played back.

- If **Step** is selected, the last note that is received triggers a monophonic sequence.
- If **Chord** is selected, the notes are triggered as chords.
- If **Up** is selected, the notes are arpeggiated in ascending order.
- If **Down** is selected, the notes are arpeggiated in descending order.
- If **Up/Down 1** is selected, the notes are arpeggiated first in ascending, then in descending order.
- If **Up/Down 2** is selected, the notes are arpeggiated first in ascending, then in descending order. This mode depends on the set **Key Mode**.

  If **Key Mode** is set to **Sort**, the highest and the lowest note are repeated.

  If **Key Mode** is set to **As Played**, the first and the last note are repeated.
- If **Down/Up 1** is selected, the notes are arpeggiated first in descending, then in ascending order.
- If **Down/Up 2** is selected, the notes are arpeggiated first in descending, then in ascending order. This mode depends on the set **Key Mode**.

  If **Key Mode** is set to **Sort**, the highest and the lowest note are repeated.

  If **Key Mode** is set to **As Played**, the first and the last note are repeated.
- If **Random** is selected, the notes are arpeggiated in random order.

Key Replace

With this parameter, you can deactivate the **Key Select** function or specify how missing keys are replaced.

For example, if **Key Select** is set to 1 - 2 - 3 - 4 and you play a chord with 3 notes, key 4 is considered missing.

- **Off** deactivates **Key Replace** and **Key Select**. The selected arpeggio plays back normally.
- **Arp** replaces the missing keys with the note that the arpeggio would normally play.
- **Rest** does not replace any missing keys. The arpeggio plays a rest instead.
- **1st** replaces the missing keys with the first note in the note buffer.
- **Last** replaces the missing keys with the last note in the note buffer.
- **All** replaces the missing keys with all notes in the note buffer. The notes are played as a chord.

NOTE

Key Replace can be set separately for each variation.

Wrap

For all modes except **Step** and **Chord**, you can use this parameter to restart the arpeggio after a specified number of steps.

NOTE

Deactivated steps are taken into account.

In **Step** and **Chord** mode, this parameter only affects the **Octaves** setting.

If the **Octaves** parameter is active, the arpeggio traverses the octaves and restarts from the original octave after the specified number of steps.

Groove Quantize

To adapt the timing of a phrase to an external MIDI file, you can drop this MIDI file on the **Groove Quantize** drop field.

The **Groove Quantize Depth** parameter to the right of the drop field determines how accurately the phrase follows the timing of the MIDI file.

Key Select

The arpeggiator scans the keyboard and writes the keys that are pressed into a note buffer.

Depending on the selected **Key Mode**, this note buffer is sorted either by pitch or in the order in which you play the keys.

Key Select allows you to play back a defined key from the note buffer. You can set up **Key Select** for each step separately, which allows you to create very elaborate phrases.

NOTE

Key Select cannot be used in **Step** or **Chord** mode.

- To access the **Key Select** values of the steps, click **Show Transpose or Key Select** to the left of the editor, so that a keyboard icon is shown.
- To switch between the available **Key Select** values for a step, click the value and drag up/down or use the scroll wheel.

  The following options are available:

  - **P** (Phrase) plays the note of the user phrase, according to the selected mode, for example, **Up**, **Down**, **Up/Down 1**, etc.
  - The settings **1 - 8** play the corresponding keys from the note list. Which key is played depends on the **Key Mode** setting. For example, if **Key Mode** is set to **Sort**, the setting **1** plays the lowest key.

- **L** (Last) always plays the last key from the note buffer. Depending on the **Key Mode**, this is the highest note or the last note in the note buffer.
- **A** (All) plays all keys from the note buffer as a chord.

Recording the MIDI Output of the Arpeggiator

The phrases that are played by the instrument depend on the played notes and can therefore not be exported directly. However, it is possible to generate exportable phrases by recording the MIDI output of the arpeggiator.

PROCEDURE

1. Click **Record MIDI Output**.
   The arrow in the **Drag MIDI** field starts blinking to indicate record mode.
2. Play some notes.
3. When you are done, click **Record MIDI Output** again.
   Recording stops. In the **Drag MIDI** field, the arrow remains lit to indicate that a MIDI phrase can be exported.
4. Click the **Drag MIDI** field and drag the phrase on a MIDI track in your host sequencer application.

Creating Variations

PROCEDURE

1. Click one of the variation buttons.
2. You can either start from scratch or base the new variation on an existing variation.
   - To start from scratch, load a phrase and edit the settings.
   - To use an existing variation as base, use the **Copy** and **Paste** context menu commands.

RESULT

The variation can now be recalled by clicking the corresponding variation button.

NOTE

The parameters **Loop**, **Sync**, **Hold**, **Trigger Mode**, **Restart Mode**, **Key Mode**, **Vel Mode**, **Low/High Key**, and **Low/High Vel** are not part of the variations. You set them up only once.

Assigning Variations to Trigger Pads

If you assign the variations to trigger pads, you can use the trigger pads to switch between the variations.

PROCEDURE

1. Right-click a variation button and select the trigger pad on the **Assign Variation to** submenu.
2. Repeat this procedure for all the variations that you have created.

User Phrases

The user phrase has up to 32 steps. Each step has an adjustable **Velocity**, **Gate Length**, and **Transpose** value. By adding steps, adjusting their length, or leaving pauses, you define the rhythm of the user phrase. Consecutive steps can be combined to create longer notes. By

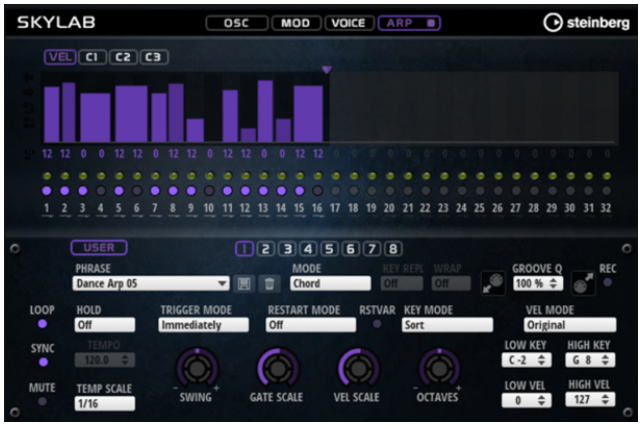
selecting a **Mode**, you define how the notes play back. In addition, there are additional MIDI control sequences, that is, each step can also send modulation signals.

To create your own phrases, activate the **User** button.

Editing User Phrases

You can make detailed settings for the user phrase in the editor for user phrases.

- To set up the phrase, activate the **Vel** button above the step display.
- To set up a controller curve for the phrase, activate one of the controller buttons.



- To specify the number of steps for the pattern, drag the **Pattern Length** handle to the right or left.

Editing Steps

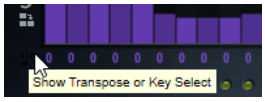
The height of a step represents its value. You can edit the steps in the following way:

- To activate all steps, select **Enable All Steps** from the context menu.
- To adjust a value, click a step and drag up or down.
- To adjust multiple steps, click and draw a curve.
- To adjust the velocity of all steps relatively, Shift-click and drag.
- To draw a ramp with steps, hold down Alt and draw a line.
- To draw symmetric ramps at the beginning and the end of the sequence, hold down Shift-Alt and draw a line.
- To reset the velocity of a step to 127, Ctrl/Cmd-click the step.
- To reset the velocity of all steps to 127, hold Shift-Ctrl/Cmd and click a step.
- To introduce a legato between two steps, click the number below the first of these steps, so that a small arrow is shown.

  If **Legato** is activated, the **Gate Scale** parameter is not taken into account.
- To transpose a step, click in the field below it and enter the number of semitones for the transposition.

NOTE

You can only transpose steps if **Show Transpose or Key Select** is set to show the transpose values.



Adjusting the Gate Length

For velocity steps, the width of a step represents its gate length.

- To adjust the gate length of a step, drag its right border.
- To adjust the gate length of all steps, hold down **Shift** and drag the right border of a step.

  You can only adjust the length this way until a step reaches the next step. If you increase the gate length of a step so that it overlaps the following step, this following step is deactivated.
- To reset the length of a step to 1, **Ctrl/Cmd**-click its highlighted right border.
- To reset the length of all steps, hold down **Shift**-**Ctrl/Cmd** and click on a highlighted right border.
- To fill the gaps between consecutive steps, select **Fill Gap** or **Fill All Gaps** from the context menu.

Each MIDI controller lane can send a MIDI controller. By selecting the same MIDI controller as source in the Modulation Matrix, you can modulate any of the destinations with the MIDI controller sequence.

Adjusting the Phrase

- To shift the rhythm of the phrase, click **Shift Phrase Right** or **Shift Phrase Left** .

  If you shift the rhythm of the phrase to the left, the first step is moved to the end. If you shift the phrase to the right, the last step is moved to the beginning.
- To reverse the phrase, click **Reverse Phrase** .
- To duplicate short phrases, click **Duplicate Phrase** .

  NOTE

  The maximum number of steps is 32. Therefore, phrases that contain more than 16 steps cannot be duplicated entirely.

Raven

Raven provides the sound of a classical Italian concert grand with six velocity layers and adjustable sustain resonances. Its **Tone** control allows you to adapt the tonal range from very

soft romantic to more intense colors. In addition, you can modify the character of the note-off behavior by adding a dedicated note-off layer.

Tone

Raven comes with 6 different velocity layers. The **Tone** control allows you to specify how these layers are used.

- If the **Tone** control is in middle position, different input velocities trigger all 6 layers.
- If you turn the knob to the left, the number of hard velocity layers that are used in the sound is reduced, that is, the sound becomes softer.
- If you turn the knob to the right, the number of soft velocity layers that are used is reduced, that is, the sound becomes harder.

NOTE

The **Tone** control is independent from the influence that the velocity has on the level of the piano. That means that you can always play the entire level range, even with the softest or the hardest layer.

Dynamics – Curve

Allows you to specify how the input velocity is affecting the level of the piano. The curve that is used by this control goes from linear to exponential/negative exponential. The curve display on the right reflects the current setting.

Dynamics – Minimum Level

Specifies the minimum level for the note that is playing the lowest MIDI velocity. This allows you to simulate the behavior of real pianos where you cannot play a note without a minimum amount of pressure. If you set this control to the lowest setting, you get a behavior that is more common with electronic instruments.

Sustain Resonance

Allows you to decide whether or not to use the additional sustain resonance layer of the piano.

If this option is activated, the sustain resonance layers are played when the sustain pedal is held and notes are played. You can adjust the level of the resonance layer with the dial on the right.

NOTE

The piano also allows for repedaling, which means that the sustain resonances will also be blended in when the sustain pedal is pressed again shortly after notes have been played.

If you do not want to use the sustain resonance layers, deactivate this option to save CPU power.

Note Off

Allows you to decide whether or not to use an additional note-off layer.

If this option is deactivated, the sound of the piano stops faster when a key is released. If this option is activated, the release is slightly longer and smoother.

Polyphony

Determines the number of notes that can be played before notes are stolen.

Eagle

Eagle provides the sound of a classical German concert grand with 12 velocity layers and adjustable sustain resonances. Its **Tone** control allows you to adapt the tonal range from very soft romantic to more intense colors. In addition, you can modify the character of the note-off behavior by adding a dedicated note-off layer.

Tone

Eagle comes with 12 different velocity layers. The **Tone** control allows you to specify how these layers are used.

- If the **Tone** control is in middle position, different input velocities trigger all 12 layers.
- If you turn the knob to the left, the number of hard velocity layers that are used in the sound is reduced, that is, the sound becomes softer.
- If you turn the knob to the right, the number of soft velocity layers that are used is reduced, that is, the sound becomes harder.

NOTE

The **Tone** control is independent from the influence that the velocity has on the level of the piano. That means that you can always play the entire level range, even with the softest or the hardest layer.

Dynamics – Curve

Allows you to specify how the input velocity is affecting the level of the piano. The curve that is used by this control goes from linear to exponential/negative exponential. The curve display on the right reflects the current setting.

Dynamics – Minimum Level

Specifies the minimum level for the note that is playing the lowest MIDI velocity. This allows you to simulate the behavior of real pianos where you cannot play a note without a minimum amount of pressure. If you set this control to the lowest setting, you get a behavior that is more common with electronic instruments.

Sustain Resonance

Allows you to decide whether or not to use the additional sustain resonance layer of the piano.

If this option is activated, the sustain resonance layers are played when the sustain pedal is held and notes are played. You can adjust the level of the resonance layer with the dial on the right.

NOTE

The piano also allows for repedaling, which means that the sustain resonances will also be blended in when the sustain pedal is pressed again shortly after notes have been played.

If you do not want to use the sustain resonance layers, deactivate this option to save CPU power.

Note Off

Allows you to decide whether or not to use an additional note-off layer.

If this option is deactivated, the sound of the piano stops faster when a key is released. If this option is activated, the release is slightly longer and smoother.

Polyphony

Determines the number of notes that can be played before notes are stolen.

Hot Brass

Hot Brass delivers a broad range of brass sounds and articulations suitable for rock, soul, funk, and other music styles that need sharp and accentuated brass tone colors. This instrument is particularly suited to play concise licks and riffs.

The instrument's sample oscillators are followed by a synthesis section with a flexible filter where you can modify the sounds further. With the FlexPhraser functionality on the **Arp** page, you can play typical brass phrases and licks with a single note on your keyboard.

Hot Brass contains four pages: **Main**, **Mod**, **Voice**, and **Arp**. To show the settings for a page, click the corresponding page button.

The button for the **Arp** page also contains an **On/Off** button for the arpeggiator.

Main Page

The **Main** page allows you to select the sample for Hot Brass and to make basic pitch settings.

Select Samples

Allows you to choose from a range of included samples. Hot Brass provides three differently mixed sections and a pure saxophone section. You can add additional authenticity to your play using the included falls, growls, doits, shakes, and staccato articulations.

Coarse

Adjusts the pitch in semitone steps.

Fine

Allows you to fine-tune the pitch in cent steps.

Random Pitch

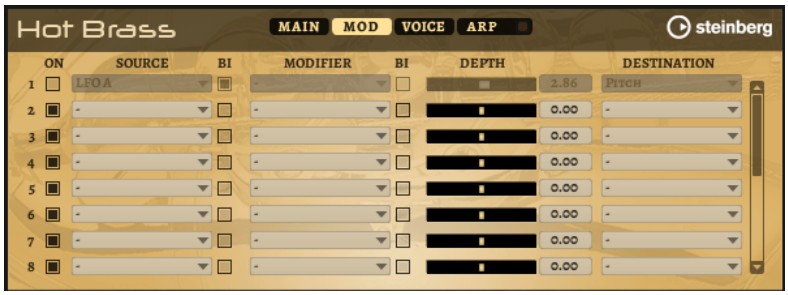
Allows you to randomly offset the pitch with each played note. Higher values cause stronger variations. At the maximum setting, the random offsets can vary from -60 cents to +60 cents.

Pan

Defines the position of the instrument in the stereo panorama.

Mod Page

The **Mod** page contains the modulation matrix.



The modulation matrix offers you up to 16 freely assignable modulations, each with a source, a modifier, and a destination with adjustable depth. The polarity of each source and each modifier can be switched between unipolar and bipolar.

Creating Modulations

You create modulations by selecting a source, a modifier, and a destination from the pop-up menus in the modulation matrix.

PROCEDURE

1. Click the modulation **Source** field and select the modulation source.
2. Optional: Click in the modulation **Modifier** field and select the parameter that you want to use to modify the modulation.

   This modifier is used to scale the output of the modulation source.
3. Optional: Specify whether you want the **Source** and **Modifier** parameters to be unipolar or bipolar.
4. Set the modulation intensity with the **Depth** parameter.
5. Click in the modulation **Destination** field and select the parameter that you want to modulate.

Modulation Matrix Parameters

Modulation Sources and Modulation Modifiers

The following options are available as modulation sources and as modulation modifiers.

LFO A/B

The LFOs A and B produce cyclic modulation signals.

Amp Envelope

The amplifier envelope. The shape of the envelope determines the modulation signal.

Filter Envelope

The filter envelope. The shape of the envelope determines the modulation signal.

Env 3

A freely assignable envelope. It is suitable for pan or pitch modulation, for example.

Key Follow

This produces an exponential modulation signal derived from the MIDI note number. Exponential means this source works with destinations such as **Pitch** or **Cutoff**.

Note-on Velocity

Note-on velocity can be used as modulation signal.

Note-on Vel Squared

The squared version of **Note-on Velocity**. The harder you press the key, the higher the modulation values.

Pitchbend

The position of the pitchbend wheel can be used as modulation signal.

Modulation Wheel

The position of the modulation wheel can be used as modulation signal.

Aftertouch

Aftertouch can be used as modulation signal. Some MIDI keyboards cannot send aftertouch messages. However, most sequencer software is able to produce such messages.

Arp Controller 1–3

The 3 controllers available on this submenu correspond to the three controller lanes on the **Arp** page.

Bus 1–8

Modulations that are sent to one of the eight busses can be reused as sources. This way, you can combine several modulations to produce more complex signals.

Quick Control 1–8

The quick controls can be used as modulation signal.

Unipolar vs. Bipolar Sources

The polarity of a modulation source specifies the value range that it produces. Unipolar sources modulate between 0 and +1. Bipolar sources modulate between -1 and +1.

- To change the polarity of a modulation source or modifier from unipolar to bipolar, activate its **Bipolar** button.

Modulation Destinations

Pitch

Modulates the pitch. For example, assign one of the LFOs to create a vibrato effect. If **Pitch** is selected, the modulation depth is set in semitones.

Cutoff

Modulates the filter cutoff.

Resonance

Modulates the filter resonance. Resonance changes the character of the filter.

For example, to accent the filter the harder you hit a key, assign **Velocity** to **Resonance**.

Distortion

Modulates the filter distortion.

Level

This modulation adds to the level setting. It can be used to create level offsets using the mod wheel, for example.

Volume

Modulates the gain. The volume modulation multiplies with the level.

Pan

Modulates the position of the sound in the panorama.

Amp Env Attack

Modulates the attack time of the amplitude envelope. This modulation destination cannot be modulated continuously. The time is updated only when the segment starts.

Amp Env Decay

Modulates the decay time of the amplitude envelope. This modulation destination cannot be modulated continuously. The time is updated only when the segment starts.

Amp Env Sustain

Modulates the sustain level of the amplitude envelope. This modulation destination cannot be modulated continuously. The level is updated only when the segment starts.

Amp Env Release

Modulates the release time of the amplitude envelope. This modulation destination cannot be modulated continuously. The time is updated only when the segment starts.

Filter Env Attack

Modulates the attack time of the filter envelope. This modulation destination cannot be modulated continuously. The time is updated only when the segment starts.

Filter Env Decay

Modulates the decay time of the filter envelope. This modulation destination cannot be modulated continuously. The time is updated only when the segment starts.

Filter Env Sustain

Modulates the sustain level of the filter envelope. This modulation destination cannot be modulated continuously. The level is updated only when the segment starts.

Filter Env Release

Modulates the release time of the filter envelope. This modulation destination cannot be modulated continuously. The time is updated only when the segment starts.

Env 3 Start Level

Modulates the start level of the user-definable envelope 3, that is, the level of the first envelope node. This modulation destination cannot be modulated continuously. The level is updated only when the segment starts.

Env 3 Attack

Modulates the attack time of the user-definable envelope 3. This modulation destination cannot be modulated continuously. The time is updated only when the segment starts.

Env 3 Attack Level

Modulates the attack level of the user-definable envelope 3, that is, the level of the second envelope node. This modulation destination cannot be modulated continuously. The level is updated only when the segment starts.

Env 3 Decay

Modulates the decay time of the user-definable envelope 3. This modulation destination cannot be modulated continuously. The time is updated only when the segment starts.

Env 3 Sustain

Modulates the sustain level of the user-definable envelope 3. This modulation destination cannot be modulated continuously. The level is updated only when the segment starts.

Env 3 Release

Modulates the release time of the user-definable envelope 3. This modulation destination cannot be modulated continuously. The time is updated only when the segment starts.

Env 3 Release Level

Modulates the release level of the user-definable envelope 3, that is, the last user envelope node. This modulation destination cannot be modulated continuously. The level is updated only when the segment starts.

Bus 1-8

You can send any modulation to one of the 8 busses, for example, to produce more complex modulation signals. Select the bus that you want to send the signals to as a destination. To use the modulation that was sent to a bus, assign the corresponding bus as a modulation source.

Voice Page

Polyphony

If **Mono** mode is deactivated, you can use this parameter to specify how many notes can be played simultaneously.

Mono

Activates monophonic playback.

Retrigger

This option is only available in **Mono** mode. If **Retrigger** is activated, a note that was stolen by another note is retriggered if you still hold the stolen note when you release the new one.

This way, you can play trills by holding one note and quickly and repeatedly pressing and releasing another note, for example.

Trigger Mode

Defines the trigger behavior for new notes.

- **Normal** triggers a new note when the previous note gets stolen. The sample and the envelope of the new note are triggered from the start.

  To minimize discontinuities, use the **Fade Out** parameter of the zone.
- **Resume** does not always trigger a new note.

  If the new note stays within the same zone, the envelope is retriggered, but resumes at the level of the stolen note. The pitch of the zone is set to the new note.

If the new note plays in a different zone, the sample and the envelope of the new note are triggered from the start.

- **Legato** does not always trigger a new note.

  If the new note stays within the same zone, the envelope keeps running. The pitch of the zone is set to the new note.

  If the new note plays in a different zone, the sample and the envelope of the new note are triggered from the start.

- **Resume Keeps Zone** does not trigger a new note upon note stealing. The envelope resumes at the level of the stolen note and the pitch of the zone is set to the new note, even if the new note plays in a different zone.
- **Legato Keeps Zone** does not trigger a new note upon note stealing. The envelope keeps running and the pitch of the zone is set to the new note, even if the new note plays in a different zone.

Glide

Allows you to bend the pitch between notes that follow each other. You achieve the best results in **Mono** mode.

Fingered

Activate this parameter to glide the pitch only between notes that are played legato.

Glide Time

Sets the glide time, that is, the time it takes to bend the pitch from one note to the next.

Pitchbend Up/Pitchbend Down

Determines the range for the modulation that is applied when you move the pitchbend wheel.

Filter Section

Filter On/Off

Activates/Deactivates the filter.

Filter Shape

- LP 24, 18, 12, and 6 are low-pass filters with 24, 18, 12, and 6 dB/oct. Frequencies above the cutoff are attenuated.
- BP 12 and BP 24 are band-pass filters with 12 and 24 dB/oct. Frequencies below and above the cutoff are attenuated.
- HP 6+LP 18 and HP 6+LP 12 are combinations of a high-pass filter with 6 dB/oct and a low-pass filter with 18 and 12 dB/oct, respectively (asymmetric band-pass filter). Frequencies below and above the cutoff are attenuated. Attenuation is more pronounced for the frequencies above the cutoff.
- HP 12+LP 6 and HP 18+LP 6 are combinations of a high-pass filter with 12 and 18 dB/oct and a low-pass filter with 6 dB/oct (asymmetric band-pass filter). Frequencies below and above the cutoff are attenuated. Attenuation is more pronounced for the frequencies below the cutoff.

- HP 24, 18, 12, and 6 are high-pass filters with 24, 18, 12, and 6 dB/oct. Frequencies below the cutoff are attenuated.
- BR 12 and BR 24 are band-reject filters with 12 and 24 dB/oct. Frequencies around the cutoff are attenuated.
- BR 12+LP 6 and BR 12+LP 12 are combinations of a band-reject filter with 12 dB/oct and a low-pass filter with 6 and 12 dB/oct, respectively. Frequencies around and above the cutoff are attenuated.
- BP 12+BR 12 is a band-pass filter with 12 dB/oct plus a band-reject filter with 12 dB/oct. Frequencies below, above, and around the cutoff are attenuated.
- HP 6+BR 12 and HP 12+BR 12 are combinations of a high-pass filter with 6 and 12 dB/oct and a band-reject filter with 12 dB/oct. Frequencies below and around the cutoff are attenuated.
- AP is an all-pass filter with 18 dB/oct. Frequencies around the cutoff are attenuated.
- AP+LP 6 is an all-pass filter with 18 dB/oct plus a low-pass filter with 6 dB/oct. Frequencies around and above the cutoff are attenuated.
- HP 6+AP is a high-pass filter with 6 dB/oct plus an all-pass filter with 18 dB/oct. Frequencies around and below the cutoff are attenuated.

Cutoff

Controls the cutoff frequency of the filter.

Resonance

Emphasizes the frequencies around the cutoff. At higher settings, the filter self-oscillates, which results in a ringing tone.

Distortion

Adds distortion to the signal. The following distortion types are available:

- **Tube** adds warm, tube-like distortion.
- **Hard Clip** adds bright, transistor-like distortion.
- **Bit Reduction** adds digital distortion by means of quantization noise.
- **Rate Reduction** adds digital distortion by means of aliasing.
- **Rate Reduction Key Follow** adds digital distortion by means of aliasing, but with **Key Follow**. The rate reduction follows the keyboard, so the higher you play, the higher the sample rate.

Envelope Amount

Controls the cutoff modulation from the filter envelope.

Cutoff Velocity

Controls the cutoff modulation from velocity.

Cutoff Key Follow

Adjusts the cutoff modulation using the note number. Increase this parameter to raise the cutoff with higher notes. At 100 %, the cutoff follows the played pitch exactly.

Filter Envelope

On the left on the **Env F/A** tab, you can set up the filter envelope.

Attack

Controls the attack time of the filter envelope.

Decay

Controls the decay time of the filter envelope.

Sustain

Controls the sustain level of the filter envelope.

Release

Controls the release time of the filter envelope.

Amplifier and Amplifier Envelope

On the right of the **Env F/A** tab, you can make settings for the amplifier and the amplifier envelope.

Amplifier Parameters

Level

Controls the overall volume of the sound.

Velocity

Controls the level modulation from velocity. At 0, all notes are played with the same level.

Amplifier Envelope Parameters

Attack

Controls the attack time of the amplifier envelope.

Decay

Controls the decay time of the amplifier envelope.

Sustain

Controls the sustain level of the amplifier envelope.

Release

Controls the release time of the amplifier envelope.

Env 3 Section

The **Env 3** section provides an additional envelope that can be routed freely in the modulation matrix. This envelope is bipolar, therefore, it is particularly suited to modulate destinations like pan or pitch, for example.

The faders below the envelope display set the following parameters:

- **L0** sets the start level.
- **A** sets the attack time.
- **L1** sets the attack level.
- **D** sets the decay time.
- **S** sets the sustain level.
- **R** sets the release time.
- **L4** sets the end level.
- **Vel** determines how much the envelope intensity depends on the velocity.

  If this fader is set to 0, the envelope is fully applied. Higher values reduce the intensity for lower velocities.

LFO Section

In the **LFO** section, you can make settings for LFO A and LFO B.

LFO Waveform and Shape

- **Sine** produces smooth modulation, suitable for vibrato or tremolo. **Shape** adds additional harmonics to the waveform.
- **Triangle** is similar to **Sine**. **Shape** continuously changes the triangle waveform to a trapezoid.
- **Saw** produces a ramp cycle. **Shape** continuously changes the waveform from ramp down to triangle to ramp up.
- **Pulse** produces stepped modulation, where the modulation switches abruptly between two values. **Shape** continuously changes the ratio between the high and low state of the waveform. If **Shape** is set to 50 %, a square wave is produced.
- **Ramp** is similar to the **Saw** waveform. **Shape** increasingly puts silence before the sawtooth ramp up begins.
- **Log** produces a logarithmic modulation. **Shape** continuously changes the logarithmic curvature from negative to positive.

- **S & H 1** produces randomly stepped modulation, where each step is different. **Shape** puts ramps between the steps and changes the **S & H** into a smooth random signal when fully turned right.
- **S & H 2** is similar to **S & H 1**. The steps alternate between random high and low values. **Shape** puts ramps between the steps and changes the **S & H** into a smooth random signal when fully turned right.

Sync

If **Sync** is activated, the frequency is set in fractions of beats.

Freq

Controls the frequency of the modulation, that is, the speed of the LFO.

Phase

Sets the initial phase of the waveform when the LFO is retriggered.

Rnd (Random Phase)

If this button is activated, each note starts with a randomized start phase.

NOTE

The **Phase** control cannot be used if **Rnd** is activated.

Arp Page

This page contains the integrated arpeggiator.

Arpeggiator On/Off

Activates/Deactivates the arpeggiator.

User Mode On/Off

Activates/Deactivates the user phrase and the user phrase editor.

Variations

Click the variation buttons to switch between the available variations.

Phrase

Allows you to select a phrase.

Drag Recorded MIDI to Sequencer

Allows you to drag the recorded MIDI phrase to your host sequencer.

Record Output

Allows you to record the MIDI output of the arpeggiator.

Loop

If this option is activated, the phrase plays in a loop.

Sync

Synchronizes the phrase to the tempo of your host application.

NOTE

In addition, you can set **Restart Mode** to **Sync to Host**. This aligns the phrase with the beats and measures of your host application.

Mute

Mutes playback. The phrase still plays in the background. If you deactivate **Mute**, playback resumes immediately.

Hold

Allows you to prevent the phrase from stopping or changing when the keys are released.

- If **Off** is selected, the phrase changes as soon as you release a key. The phrase stops immediately when you release all keys.
- If **On** is selected, the phrase plays to the end, even if the keys are released. If **Loop** is activated, the phrase repeats continuously.
- If **Gated** is selected, the phrase starts to play when the first key is played. It plays silently in the background, even if the keys are released, and resumes playback at the current position when you press any of the keys again. This way, you can gate the playback of the phrase.

Tempo

If **Sync** is deactivated, you can use the **Tempo** control to set the internal playback speed of the arpeggiator. The playback speed of the phrase is specified in BPM.

If **Sync** is activated, the **Tempo** parameter is not available.

Tempo Scale

Defines the rate at which notes are triggered, that is, the speed at which the phrase is running. In addition to the **Tempo** parameter, this gives you further control over the playback speed. You can specify a value in fractions of beats. You can also set dotted and triplet note values.

For example, if you change the **Tempo Scale** setting from 1/16 to 1/8, the speed is cut in half. If you set it to 1/32, the speed is doubled.

Trigger Mode

Determines at which moment the arpeggiator scans for new notes that you play on the keyboard.

- If **Immediately** is selected, the arpeggiator continuously scans for new notes. The phrase changes immediately in reaction to your playing.
- If **Next Beat** is selected, the arpeggiator scans for new notes at every new beat. The phrase changes in reaction to your playing on each new beat.
- If **Next Measure** is selected, the arpeggiator scans for new notes at the start of new measures. The phrase changes in reaction to your playing on each new measure.

Restart Mode

- If this is set to **Off**, the phrase runs continuously and does not restart at chord or note changes.
- **New Chord** restarts the phrase on new chords.

  NOTE

  The phrase does not restart upon notes that are played legato.

- **New Note** restarts the phrase with each new note that you play.
- **Sync to Host** aligns the phrase with the beats and measures of your host application each time that you start the transport.

RstVar (Restart on Variation Change)

This option is available for new chords and new notes. If this button is activated, changing a variation restarts the arpeggiator, even if no new notes or chords were triggered.

Key Mode

Defines whether the order in which the notes are played on the keyboard affects the playback of the phrase.

- If **Sort** is selected, the notes are played in the order of the selected phrase. The chronological order does not have any influence.
- If **As Played** is selected, the notes are played in the order in which you play them on the keyboard.
- If **Direct** is selected, the phrase creates controller events instead of notes. You hear the notes that you play plus any controller events of the phrase, such as pitch bend, volume, pan, etc.

Vel Mode

- If **Original** is selected, the notes of the phrase play with the velocity that is saved in the phrase.
- If **As Played** is selected, the notes of the phrase use the velocity of the played note.
- If **Original + As Played** is selected, the phrase velocity is determined by the combination of the velocity saved in the phrase and the velocity of the played note.

Swing

Shifts the timing of notes on even-numbered beats. This way, the phrase gets a swing feeling. Negative values shift the timing backward and the notes are played earlier. Positive values shift the timing forward and the notes are played later.

Gate Scale

Allows you to shorten or lengthen the notes of the phrase. At a value of 100 %, the notes play with their original gate length.

Vel Scale

Allows you to raise or lower the note-on velocities of the phrase. At a value of 100 %, the notes are played with their original velocity.

Octaves

Extends the phrase playback to include higher or lower octaves. Positive settings extend the playback to higher and negative settings to lower octaves. For example, a value of +1 first plays the phrase in the octave range that you originally played. Then, it repeats the phrase one octave higher.

Velocity Range

The **Low Vel** and **High Vel** parameters determine the velocity range that is used to trigger phrase playback.

Key Range

The **Low Key** and **High Key** parameters determine the key range that is used to trigger phrase playback.

User Mode Parameters

Save Phrase/Delete Phrase

The two buttons on the right of the phrase field allow you to save/delete your phrases.

Mode

Determines how the notes are played back.

- If **Step** is selected, the last note that is received triggers a monophonic sequence.
- If **Chord** is selected, the notes are triggered as chords.
- If **Up** is selected, the notes are arpeggiated in ascending order.
- If **Down** is selected, the notes are arpeggiated in descending order.
- If **Up/Down 1** is selected, the notes are arpeggiated first in ascending, then in descending order.
- If **Up/Down 2** is selected, the notes are arpeggiated first in ascending, then in descending order. This mode depends on the set **Key Mode**.

  If **Key Mode** is set to **Sort**, the highest and the lowest note are repeated.

  If **Key Mode** is set to **As Played**, the first and the last note are repeated.
- If **Down/Up 1** is selected, the notes are arpeggiated first in descending, then in ascending order.
- If **Down/Up 2** is selected, the notes are arpeggiated first in descending, then in ascending order. This mode depends on the set **Key Mode**.

  If **Key Mode** is set to **Sort**, the highest and the lowest note are repeated.

  If **Key Mode** is set to **As Played**, the first and the last note are repeated.
- If **Random** is selected, the notes are arpeggiated in random order.

Key Replace

With this parameter, you can deactivate the **Key Select** function or specify how missing keys are replaced.

For example, if **Key Select** is set to 1 - 2 - 3 - 4 and you play a chord with 3 notes, key 4 is considered missing.

- **Off** deactivates **Key Replace** and **Key Select**. The selected arpeggio plays back normally.
- **Arp** replaces the missing keys with the note that the arpeggio would normally play.
- **Rest** does not replace any missing keys. The arpeggio plays a rest instead.
- **1st** replaces the missing keys with the first note in the note buffer.
- **Last** replaces the missing keys with the last note in the note buffer.
- **All** replaces the missing keys with all notes in the note buffer. The notes are played as a chord.

NOTE

Key Replace can be set separately for each variation.

Wrap

For all modes except **Step** and **Chord**, you can use this parameter to restart the arpeggio after a specified number of steps.

NOTE

Deactivated steps are taken into account.

In **Step** and **Chord** mode, this parameter only affects the **Octaves** setting.

If the **Octaves** parameter is active, the arpeggio traverses the octaves and restarts from the original octave after the specified number of steps.

Groove Quantize

To adapt the timing of a phrase to an external MIDI file, you can drop this MIDI file on the **Groove Quantize** drop field.

The **Groove Quantize Depth** parameter to the right of the drop field determines how accurately the phrase follows the timing of the MIDI file.

Key Select

The arpeggiator scans the keyboard and writes the keys that are pressed into a note buffer.

Depending on the selected **Key Mode**, this note buffer is sorted either by pitch or in the order in which you play the keys.

Key Select allows you to play back a defined key from the note buffer. You can set up **Key Select** for each step separately, which allows you to create very elaborate phrases.

NOTE

Key Select cannot be used in **Step** or **Chord** mode.

- To access the **Key Select** values of the steps, click **Show Transpose or Key Select** to the left of the editor, so that a keyboard icon is shown.
- To switch between the available **Key Select** values for a step, click the value and drag up/down or use the scroll wheel.

  The following options are available:

  - **P** (Phrase) plays the note of the user phrase, according to the selected mode, for example, **Up**, **Down**, **Up/Down 1**, etc.
  - The settings **1 - 8** play the corresponding keys from the note list. Which key is played depends on the **Key Mode** setting. For example, if **Key Mode** is set to **Sort**, the setting **1** plays the lowest key.
  - **L** (Last) always plays the last key from the note buffer. Depending on the **Key Mode**, this is the highest note or the last note in the note buffer.
  - **A** (All) plays all keys from the note buffer as a chord.

Recording the MIDI Output of the Arpeggiator

The phrases that are played by the instrument depend on the played notes and can therefore not be exported directly. However, it is possible to generate exportable phrases by recording the MIDI output of the arpeggiator.

PROCEDURE

1. Click **Record MIDI Output**.
   The arrow in the **Drag MIDI** field starts blinking to indicate record mode.
2. Play some notes.
3. When you are done, click **Record MIDI Output** again.
   Recording stops. In the **Drag MIDI** field, the arrow remains lit to indicate that a MIDI phrase can be exported.
4. Click the **Drag MIDI** field and drag the phrase on a MIDI track in your host sequencer application.

Creating Variations

PROCEDURE

1. Click one of the variation buttons.
2. You can either start from scratch or base the new variation on an existing variation.
   - To start from scratch, load a phrase and edit the settings.
   - To use an existing variation as base, use the **Copy** and **Paste** context menu commands.

RESULT

The variation can now be recalled by clicking the corresponding variation button.

NOTE

The parameters **Loop**, **Sync**, **Hold**, **Trigger Mode**, **Restart Mode**, **Key Mode**, **Vel Mode**, **Low/High Key**, and **Low/High Vel** are not part of the variations. You set them up only once.

Assigning Variations to Trigger Pads

If you assign the variations to trigger pads, you can use the trigger pads to switch between the variations.

PROCEDURE

1. Right-click a variation button and select the trigger pad on the **Assign Variation to** submenu.
2. Repeat this procedure for all the variations that you have created.

User Phrases

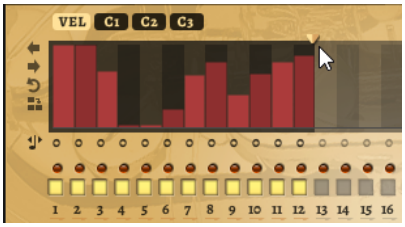
The user phrase has up to 32 steps. Each step has an adjustable **Velocity**, **Gate Length**, and **Transpose** value. By adding steps, adjusting their length, or leaving pauses, you define the rhythm of the user phrase. Consecutive steps can be combined to create longer notes. By selecting a **Mode**, you define how the notes play back. In addition, there are additional MIDI control sequences, that is, each step can also send modulation signals.

To create your own phrases, activate the **User** button.

Editing User Phrases

You can make detailed settings for the user phrase in the editor for user phrases.

- To set up the phrase, activate the **Vel** button above the step display.
- To set up a controller curve for the phrase, activate one of the controller buttons.
- To specify the number of steps for the pattern, drag the **Pattern Length** handle to the right or left.



Editing Steps

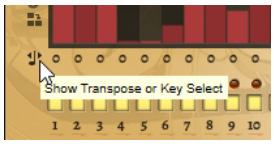
The height of a step represents its value. You can edit the steps in the following way:

- To activate all steps, select **Enable All Steps** from the context menu.
- To adjust a value, click a step and drag up or down.
- To adjust multiple steps, click and draw a curve.
- To adjust the velocity of all steps relatively, Shift-click and drag.
- To draw a ramp with steps, hold down Alt and draw a line.
- To draw symmetric ramps at the beginning and the end of the sequence, hold down Shift-Alt and draw a line.
- To reset the velocity of a step to 127, Ctrl/Cmd-click the step.
- To reset the velocity of all steps to 127, hold Shift-Ctrl/Cmd and click a step.
- To introduce a legato between two steps, click the number below the first of these steps, so that a small arrow is shown.

  If **Legato** is activated, the **Gate Scale** parameter is not taken into account.
- To transpose a step, click in the field below it and enter the number of semitones for the transposition.

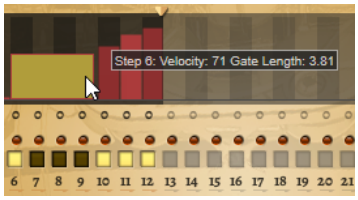
  NOTE

  You can only transpose steps if **Show Transpose or Key Select** is set to show the transpose values.



Adjusting the Gate Length

For velocity steps, the width of a step represents its gate length.



- To adjust the gate length of a step, drag its right border.
- To adjust the gate length of all steps, hold down **Shift** and drag the right border of a step.

  You can only adjust the length this way until a step reaches the next step. If you increase the gate length of a step so that it overlaps the following step, this following step is deactivated.
- To reset the length of a step to 1, **Ctrl/Cmd**-click its highlighted right border.
- To reset the length of all steps, hold down **Shift-Ctrl/Cmd** and click on a highlighted right border.
- To fill the gaps between consecutive steps, select **Fill Gap** or **Fill All Gaps** from the context menu.

Each MIDI controller lane can send a MIDI controller. By selecting the same MIDI controller as source in the Modulation Matrix, you can modulate any of the destinations with the MIDI controller sequence.

Adjusting the Phrase

- To shift the rhythm of the phrase, click **Shift Phrase Right** or **Shift Phrase Left** .

  If you shift the rhythm of the phrase to the left, the first step is moved to the end. If you shift the phrase to the right, the last step is moved to the beginning.
- To reverse the phrase, click **Reverse Phrase** .
- To duplicate short phrases, click **Duplicate Phrase** .

NOTE

The maximum number of steps is 32. Therefore, phrases that contain more than 16 steps cannot be duplicated entirely.

Studio Strings

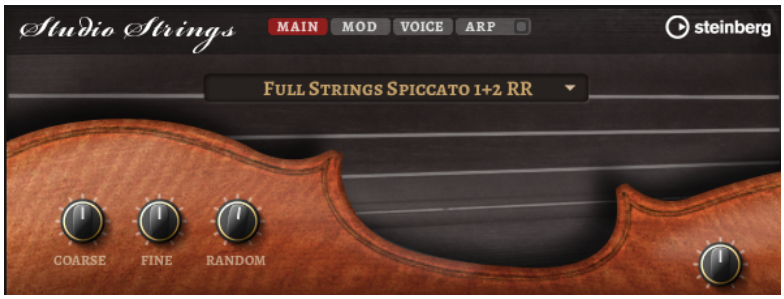
Studio Strings delivers a broad range of string sounds and articulations comprising solo strings, small chamber, and full orchestra sections.

The instrument's sample oscillators are followed by a synthesis section with a flexible filter where you can modify the sounds further. With the FlexPhraser functionality on the **Arp** page, you can play typical phrases with a single note on your keyboard. Studio Strings contains four pages: **Main**, **Mod**, **Voice**, and **Arp**. To show the settings for a page, click the corresponding page button.

The button for the **Arp** page also contains an **On/Off** button for the arpeggiator.

Main Page

The **Main** page allows you to select the sample for Studio Strings and to make basic pitch settings.



Select Samples

Allows you to choose from a range of included samples.

Coarse

Adjusts the pitch in semitone steps.

Fine

Allows you to fine-tune the pitch in cent steps.

Random Pitch

Allows you to randomly offset the pitch with each played note. Higher values cause stronger variations. At the maximum setting, the random offsets can vary from -60 cents to +60 cents.

Pan

Defines the position of the instrument in the stereo panorama.

Mod Page

The **Mod** page contains the modulation matrix.

The modulation matrix offers you up to 16 freely assignable modulations, each with a source, a modifier, and a destination with adjustable depth. The polarity of each source and each modifier can be switched between unipolar and bipolar.

Creating Modulations

You create modulations by selecting a source, a modifier, and a destination from the pop-up menus in the modulation matrix.

PROCEDURE

1. Click the modulation **Source** field and select the modulation source.
2. Optional: Click in the modulation **Modifier** field and select the parameter that you want to use to modify the modulation.

This modifier is used to scale the output of the modulation source.

3. Optional: Specify whether you want the **Source** and **Modifier** parameters to be unipolar or bipolar.
4. Set the modulation intensity with the **Depth** parameter.
5. Click in the modulation **Destination** field and select the parameter that you want to modulate.

Modulation Matrix Parameters

Modulation Sources and Modulation Modifiers

The following options are available as modulation sources and as modulation modifiers.

LFO A/B

The LFOs A and B produce cyclic modulation signals.

Amp Envelope

The amplifier envelope. The shape of the envelope determines the modulation signal.

Filter Envelope

The filter envelope. The shape of the envelope determines the modulation signal.

Env 3

A freely assignable envelope. It is suitable for pan or pitch modulation, for example.

Key Follow

This produces an exponential modulation signal derived from the MIDI note number. Exponential means this source works with destinations such as **Pitch** or **Cutoff**.

Note-on Velocity

Note-on velocity can be used as modulation signal.

Note-on Vel Squared

The squared version of **Note-on Velocity**. The harder you press the key, the higher the modulation values.

Pitchbend

The position of the pitchbend wheel can be used as modulation signal.

Modulation Wheel

The position of the modulation wheel can be used as modulation signal.

Aftertouch

Aftertouch can be used as modulation signal. Some MIDI keyboards cannot send aftertouch messages. However, most sequencer software is able to produce such messages.

Arp Controller 1–3

The 3 controllers available on this submenu correspond to the three controller lanes on the **Arp** page.

Bus 1–8

Modulations that are sent to one of the eight busses can be reused as sources. This way, you can combine several modulations to produce more complex signals.

Quick Control 1–8

The quick controls can be used as modulation signal.

Unipolar vs. Bipolar Sources

The polarity of a modulation source specifies the value range that it produces. Unipolar sources modulate between 0 and +1. Bipolar sources modulate between -1 and +1.

- To change the polarity of a modulation source or modifier from unipolar to bipolar, activate its **Bipolar** button.

Modulation Destinations

Pitch

Modulates the pitch. For example, assign one of the LFOs to create a vibrato effect. If **Pitch** is selected, the modulation depth is set in semitones.

Cutoff

Modulates the filter cutoff.

Resonance

Modulates the filter resonance. Resonance changes the character of the filter.

For example, to accent the filter the harder you hit a key, assign **Velocity** to **Resonance**.

Distortion

Modulates the filter distortion.

Level

This modulation adds to the level setting. It can be used to create level offsets using the mod wheel, for example.

Volume

Modulates the gain. The volume modulation multiplies with the level.

Pan

Modulates the position of the sound in the panorama.

Amp Env Attack

Modulates the attack time of the amplitude envelope. This modulation destination cannot be modulated continuously. The time is updated only when the segment starts.

Amp Env Decay

Modulates the decay time of the amplitude envelope. This modulation destination cannot be modulated continuously. The time is updated only when the segment starts.

Amp Env Sustain

Modulates the sustain level of the amplitude envelope. This modulation destination cannot be modulated continuously. The level is updated only when the segment starts.

Amp Env Release

Modulates the release time of the amplitude envelope. This modulation destination cannot be modulated continuously. The time is updated only when the segment starts.

Filter Env Attack

Modulates the attack time of the filter envelope. This modulation destination cannot be modulated continuously. The time is updated only when the segment starts.

Filter Env Decay

Modulates the decay time of the filter envelope. This modulation destination cannot be modulated continuously. The time is updated only when the segment starts.

Filter Env Sustain

Modulates the sustain level of the filter envelope. This modulation destination cannot be modulated continuously. The level is updated only when the segment starts.

Filter Env Release

Modulates the release time of the filter envelope. This modulation destination cannot be modulated continuously. The time is updated only when the segment starts.

Env 3 Start Level

Modulates the start level of the user-definable envelope 3, that is, the level of the first envelope node. This modulation destination cannot be modulated continuously. The level is updated only when the segment starts.

Env 3 Attack

Modulates the attack time of the user-definable envelope 3. This modulation destination cannot be modulated continuously. The time is updated only when the segment starts.

Env 3 Attack Level

Modulates the attack level of the user-definable envelope 3, that is, the level of the second envelope node. This modulation destination cannot be modulated continuously. The level is updated only when the segment starts.

Env 3 Decay

Modulates the decay time of the user-definable envelope 3. This modulation destination cannot be modulated continuously. The time is updated only when the segment starts.

Env 3 Sustain

Modulates the sustain level of the user-definable envelope 3. This modulation destination cannot be modulated continuously. The level is updated only when the segment starts.

Env 3 Release

Modulates the release time of the user-definable envelope 3. This modulation destination cannot be modulated continuously. The time is updated only when the segment starts.

Env 3 Release Level

Modulates the release level of the user-definable envelope 3, that is, the last user envelope node. This modulation destination cannot be modulated continuously. The level is updated only when the segment starts.

Bus 1-8

You can send any modulation to one of the 8 busses, for example, to produce more complex modulation signals. Select the bus that you want to send the signals to as a destination. To use the modulation that was sent to a bus, assign the corresponding bus as a modulation source.

Voice Page

Polyphony

If **Mono** mode is deactivated, you can use this parameter to specify how many notes can be played simultaneously.

Mono

Activates monophonic playback.

Retrigger

This option is only available in **Mono** mode. If **Retrigger** is activated, a note that was stolen by another note is retriggered if you still hold the stolen note when you release the new one.

This way, you can play trills by holding one note and quickly and repeatedly pressing and releasing another note, for example.

Trigger Mode

Defines the trigger behavior for new notes.

- **Normal** triggers a new note when the previous note gets stolen. The sample and the envelope of the new note are triggered from the start.

  To minimize discontinuities, use the **Fade Out** parameter of the zone.
- **Resume** does not always trigger a new note.

  If the new note stays within the same zone, the envelope is retriggered, but resumes at the level of the stolen note. The pitch of the zone is set to the new note.

  If the new note plays in a different zone, the sample and the envelope of the new note are triggered from the start.
- **Legato** does not always trigger a new note.

  If the new note stays within the same zone, the envelope keeps running. The pitch of the zone is set to the new note.

  If the new note plays in a different zone, the sample and the envelope of the new note are triggered from the start.
- **Resume Keeps Zone** does not trigger a new note upon note stealing. The envelope resumes at the level of the stolen note and the pitch of the zone is set to the new note, even if the new note plays in a different zone.
- **Legato Keeps Zone** does not trigger a new note upon note stealing. The envelope keeps running and the pitch of the zone is set to the new note, even if the new note plays in a different zone.

Glide

Allows you to bend the pitch between notes that follow each other. You achieve the best results in **Mono** mode.

Fingered

Activate this parameter to glide the pitch only between notes that are played legato.

Glide Time

Sets the glide time, that is, the time it takes to bend the pitch from one note to the next.

Start Range

Activate **Start Range** to use a shorter sample attack for notes that are played legato in **Mono** mode. This allows for a more realistic transition between notes, especially in combination with the **Glide** parameter. Use the **Attack Time** of the amplifier envelope to shape the effective attack of a note.

NOTE

The **Start Range** affects only sustained articulations. For staccato, pizzicato, and crescendo articulations, it has no effect.

Pitchbend Up/Pitchbend Down

Determines the range for the modulation that is applied when you move the pitchbend wheel.

Filter Section

Filter On/Off

Activates/Deactivates the filter.

Filter Shape

- LP 24, 18, 12, and 6 are low-pass filters with 24, 18, 12, and 6 dB/oct. Frequencies above the cutoff are attenuated.
- BP 12 and BP 24 are band-pass filters with 12 and 24 dB/oct. Frequencies below and above the cutoff are attenuated.
- HP 6+LP 18 and HP 6+LP 12 are combinations of a high-pass filter with 6 dB/oct and a low-pass filter with 18 and 12 dB/oct, respectively (asymmetric band-pass filter). Frequencies below and above the cutoff are attenuated. Attenuation is more pronounced for the frequencies above the cutoff.
- HP 12+LP 6 and HP 18+LP 6 are combinations of a high-pass filter with 12 and 18 dB/oct and a low-pass filter with 6 dB/oct (asymmetric band-pass filter). Frequencies below and above the cutoff are attenuated. Attenuation is more pronounced for the frequencies below the cutoff.
- HP 24, 18, 12, and 6 are high-pass filters with 24, 18, 12, and 6 dB/oct. Frequencies below the cutoff are attenuated.
- BR 12 and BR 24 are band-reject filters with 12 and 24 dB/oct. Frequencies around the cutoff are attenuated.
- BR 12+LP 6 and BR 12+LP 12 are combinations of a band-reject filter with 12 dB/oct and a low-pass filter with 6 and 12 dB/oct, respectively. Frequencies around and above the cutoff are attenuated.
- BP 12+BR 12 is a band-pass filter with 12 dB/oct plus a band-reject filter with 12 dB/oct. Frequencies below, above, and around the cutoff are attenuated.

- HP 6+BR 12 and HP 12+BR 12 are combinations of a high-pass filter with 6 and 12 dB/oct and a band-reject filter with 12 dB/oct. Frequencies below and around the cutoff are attenuated.
- AP is an all-pass filter with 18 dB/oct. Frequencies around the cutoff are attenuated.
- AP+LP 6 is an all-pass filter with 18 dB/oct plus a low-pass filter with 6 dB/oct. Frequencies around and above the cutoff are attenuated.
- HP 6+AP is a high-pass filter with 6 dB/oct plus an all-pass filter with 18 dB/oct. Frequencies around and below the cutoff are attenuated.

Cutoff

Controls the cutoff frequency of the filter.

Resonance

Emphasizes the frequencies around the cutoff. At higher settings, the filter self-oscillates, which results in a ringing tone.

Distortion

Adds distortion to the signal. The following distortion types are available:

- **Tube** adds warm, tube-like distortion.
- **Hard Clip** adds bright, transistor-like distortion.
- **Bit Reduction** adds digital distortion by means of quantization noise.
- **Rate Reduction** adds digital distortion by means of aliasing.
- **Rate Reduction Key Follow** adds digital distortion by means of aliasing, but with **Key Follow**. The rate reduction follows the keyboard, so the higher you play, the higher the sample rate.

Envelope Amount

Controls the cutoff modulation from the filter envelope.

Cutoff Velocity

Controls the cutoff modulation from velocity.

Cutoff Key Follow

Adjusts the cutoff modulation using the note number. Increase this parameter to raise the cutoff with higher notes. At 100 %, the cutoff follows the played pitch exactly.

Filter Envelope

On the left on the **Env F/A** tab, you can set up the filter envelope.

Attack

Controls the attack time of the filter envelope.

Decay

Controls the decay time of the filter envelope.

Sustain

Controls the sustain level of the filter envelope.

Release

Controls the release time of the filter envelope.

Amplifier and Amplifier Envelope

On the right of the **Env F/A** tab, you can make settings for the amplifier and the amplifier envelope.

Amplifier Parameters

Level

Controls the overall volume of the sound.

Velocity

Controls the level modulation from velocity. At 0, all notes are played with the same level.

Amplifier Envelope Parameters

Attack

Controls the attack time of the amplifier envelope.

Decay

Controls the decay time of the amplifier envelope.

Sustain

Controls the sustain level of the amplifier envelope.

Release

Controls the release time of the amplifier envelope.

Arp Page

This page contains the integrated arpeggiator.

Arpeggiator On/Off

Activates/Deactivates the arpeggiator.

User Mode On/Off

Activates/Deactivates the user phrase and the user phrase editor.

Variations

Click the variation buttons to switch between the available variations.

Phrase

Allows you to select a phrase.

Drag Recorded MIDI to Sequencer

Allows you to drag the recorded MIDI phrase to your host sequencer.

Record Output

Allows you to record the MIDI output of the arpeggiator.

Loop

If this option is activated, the phrase plays in a loop.

Sync

Synchronizes the phrase to the tempo of your host application.

NOTE

In addition, you can set **Restart Mode** to **Sync to Host**. This aligns the phrase with the beats and measures of your host application.

Mute

Mutes playback. The phrase still plays in the background. If you deactivate **Mute**, playback resumes immediately.

Hold

Allows you to prevent the phrase from stopping or changing when the keys are released.

- If **Off** is selected, the phrase changes as soon as you release a key. The phrase stops immediately when you release all keys.
- If **On** is selected, the phrase plays to the end, even if the keys are released. If **Loop** is activated, the phrase repeats continuously.
- If **Gated** is selected, the phrase starts to play when the first key is played. It plays silently in the background, even if the keys are released, and resumes playback at the current position when you press any of the keys again. This way, you can gate the playback of the phrase.

Tempo

If **Sync** is deactivated, you can use the **Tempo** control to set the internal playback speed of the arpeggiator. The playback speed of the phrase is specified in BPM.

If **Sync** is activated, the **Tempo** parameter is not available.

Tempo Scale

Defines the rate at which notes are triggered, that is, the speed at which the phrase is running. In addition to the **Tempo** parameter, this gives you further control over the playback speed. You can specify a value in fractions of beats. You can also set dotted and triplet note values.

For example, if you change the **Tempo Scale** setting from 1/16 to 1/8, the speed is cut in half. If you set it to 1/32, the speed is doubled.

Trigger Mode

Determines at which moment the arpeggiator scans for new notes that you play on the keyboard.

- If **Immediately** is selected, the arpeggiator continuously scans for new notes. The phrase changes immediately in reaction to your playing.
- If **Next Beat** is selected, the arpeggiator scans for new notes at every new beat. The phrase changes in reaction to your playing on each new beat.
- If **Next Measure** is selected, the arpeggiator scans for new notes at the start of new measures. The phrase changes in reaction to your playing on each new measure.

Restart Mode

- If this is set to **Off**, the phrase runs continuously and does not restart at chord or note changes.
- **New Chord** restarts the phrase on new chords.

  NOTE

  The phrase does not restart upon notes that are played legato.

- **New Note** restarts the phrase with each new note that you play.
- **Sync to Host** aligns the phrase with the beats and measures of your host application each time that you start the transport.

RstVar (Restart on Variation Change)

This option is available for new chords and new notes. If this button is activated, changing a variation restarts the arpeggiator, even if no new notes or chords were triggered.

Key Mode

Defines whether the order in which the notes are played on the keyboard affects the playback of the phrase.

- If **Sort** is selected, the notes are played in the order of the selected phrase. The chronological order does not have any influence.

- If **As Played** is selected, the notes are played in the order in which you play them on the keyboard.
- If **Direct** is selected, the phrase creates controller events instead of notes. You hear the notes that you play plus any controller events of the phrase, such as pitch bend, volume, pan, etc.

Vel Mode

- If **Original** is selected, the notes of the phrase play with the velocity that is saved in the phrase.
- If **As Played** is selected, the notes of the phrase use the velocity of the played note.
- If **Original + As Played** is selected, the phrase velocity is determined by the combination of the velocity saved in the phrase and the velocity of the played note.

Swing

Shifts the timing of notes on even-numbered beats. This way, the phrase gets a swing feeling. Negative values shift the timing backward and the notes are played earlier. Positive values shift the timing forward and the notes are played later.

Gate Scale

Allows you to shorten or lengthen the notes of the phrase. At a value of 100 %, the notes play with their original gate length.

Vel Scale

Allows you to raise or lower the note-on velocities of the phrase. At a value of 100 %, the notes are played with their original velocity.

Octaves

Extends the phrase playback to include higher or lower octaves. Positive settings extend the playback to higher and negative settings to lower octaves. For example, a value of +1 first plays the phrase in the octave range that you originally played. Then, it repeats the phrase one octave higher.

Velocity Range

The **Low Vel** and **High Vel** parameters determine the velocity range that is used to trigger phrase playback.

Key Range

The **Low Key** and **High Key** parameters determine the key range that is used to trigger phrase playback.

User Mode Parameters

Save Phrase/Delete Phrase

The two buttons on the right of the phrase field allow you to save/delete your phrases.

Mode

Determines how the notes are played back.

- If **Step** is selected, the last note that is received triggers a monophonic sequence.
- If **Chord** is selected, the notes are triggered as chords.
- If **Up** is selected, the notes are arpeggiated in ascending order.
- If **Down** is selected, the notes are arpeggiated in descending order.

- If **Up/Down 1** is selected, the notes are arpeggiated first in ascending, then in descending order.
- If **Up/Down 2** is selected, the notes are arpeggiated first in ascending, then in descending order. This mode depends on the set **Key Mode**.

  If **Key Mode** is set to **Sort**, the highest and the lowest note are repeated.

  If **Key Mode** is set to **As Played**, the first and the last note are repeated.
- If **Down/Up 1** is selected, the notes are arpeggiated first in descending, then in ascending order.
- If **Down/Up 2** is selected, the notes are arpeggiated first in descending, then in ascending order. This mode depends on the set **Key Mode**.

  If **Key Mode** is set to **Sort**, the highest and the lowest note are repeated.

  If **Key Mode** is set to **As Played**, the first and the last note are repeated.
- If **Random** is selected, the notes are arpeggiated in random order.

Key Replace

With this parameter, you can deactivate the **Key Select** function or specify how missing keys are replaced.

For example, if **Key Select** is set to 1 - 2 - 3 - 4 and you play a chord with 3 notes, key 4 is considered missing.

- **Off** deactivates **Key Replace** and **Key Select**. The selected arpeggio plays back normally.
- **Arp** replaces the missing keys with the note that the arpeggio would normally play.
- **Rest** does not replace any missing keys. The arpeggio plays a rest instead.
- **1st** replaces the missing keys with the first note in the note buffer.
- **Last** replaces the missing keys with the last note in the note buffer.
- **All** replaces the missing keys with all notes in the note buffer. The notes are played as a chord.

NOTE

Key Replace can be set separately for each variation.

Wrap

For all modes except **Step** and **Chord**, you can use this parameter to restart the arpeggio after a specified number of steps.

NOTE

Deactivated steps are taken into account.

In **Step** and **Chord** mode, this parameter only affects the **Octaves** setting.

If the **Octaves** parameter is active, the arpeggio traverses the octaves and restarts from the original octave after the specified number of steps.

Groove Quantize

To adapt the timing of a phrase to an external MIDI file, you can drop this MIDI file on the **Groove Quantize** drop field.

The **Groove Quantize Depth** parameter to the right of the drop field determines how accurately the phrase follows the timing of the MIDI file.

Key Select

The arpeggiator scans the keyboard and writes the keys that are pressed into a note buffer.

Depending on the selected **Key Mode**, this note buffer is sorted either by pitch or in the order in which you play the keys.

Key Select allows you to play back a defined key from the note buffer. You can set up **Key Select** for each step separately, which allows you to create very elaborate phrases.

NOTE

Key Select cannot be used in **Step** or **Chord** mode.

- To access the **Key Select** values of the steps, click **Show Transpose or Key Select** to the left of the editor, so that a keyboard icon is shown.
- To switch between the available **Key Select** values for a step, click the value and drag up/down or use the scroll wheel.

  The following options are available:

  - **P** (Phrase) plays the note of the user phrase, according to the selected mode, for example, **Up**, **Down**, **Up/Down 1**, etc.
  - The settings **1 - 8** play the corresponding keys from the note list. Which key is played depends on the **Key Mode** setting. For example, if **Key Mode** is set to **Sort**, the setting **1** plays the lowest key.
  - **L** (Last) always plays the last key from the note buffer. Depending on the **Key Mode**, this is the highest note or the last note in the note buffer.
  - **A** (All) plays all keys from the note buffer as a chord.

Recording the MIDI Output of the Arpeggiator

The phrases that are played by the instrument depend on the played notes and can therefore not be exported directly. However, it is possible to generate exportable phrases by recording the MIDI output of the arpeggiator.

PROCEDURE

1. Click **Record MIDI Output**.

   The arrow in the **Drag MIDI** field starts blinking to indicate record mode.
2. Play some notes.
3. When you are done, click **Record MIDI Output** again.

   Recording stops. In the **Drag MIDI** field, the arrow remains lit to indicate that a MIDI phrase can be exported.
4. Click the **Drag MIDI** field and drag the phrase on a MIDI track in your host sequencer application.

Creating Variations

PROCEDURE

1. Click one of the variation buttons.
2. You can either start from scratch or base the new variation on an existing variation.
   - To start from scratch, load a phrase and edit the settings.
   - To use an existing variation as base, use the **Copy** and **Paste** context menu commands.

RESULT

The variation can now be recalled by clicking the corresponding variation button.

NOTE

The parameters **Loop**, **Sync**, **Hold**, **Trigger Mode**, **Restart Mode**, **Key Mode**, **Vel Mode**, **Low/High Key**, and **Low/High Vel** are not part of the variations. You set them up only once.

Assigning Variations to Trigger Pads

If you assign the variations to trigger pads, you can use the trigger pads to switch between the variations.

PROCEDURE

1. Right-click a variation button and select the trigger pad on the **Assign Variation to** submenu.
2. Repeat this procedure for all the variations that you have created.

User Phrases

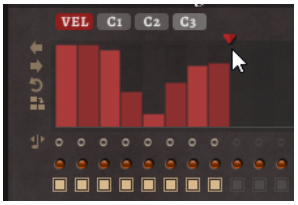
The user phrase has up to 32 steps. Each step has an adjustable **Velocity**, **Gate Length**, and **Transpose** value. By adding steps, adjusting their length, or leaving pauses, you define the rhythm of the user phrase. Consecutive steps can be combined to create longer notes. By selecting a **Mode**, you define how the notes play back. In addition, there are additional MIDI control sequences, that is, each step can also send modulation signals.

To create your own phrases, activate the **User** button.

Editing User Phrases

You can make detailed settings for the user phrase in the editor for user phrases.

- To set up the phrase, activate the **Vel** button above the step display.
- To set up a controller curve for the phrase, activate one of the controller buttons.
- To specify the number of steps for the pattern, drag the **Pattern Length** handle to the right or left.



Editing Steps

The height of a step represents its value. You can edit the steps in the following way:

- To activate all steps, select **Enable All Steps** from the context menu.
- To adjust a value, click a step and drag up or down.
- To adjust multiple steps, click and draw a curve.
- To adjust the velocity of all steps relatively, **Shift**-click and drag.
- To draw a ramp with steps, hold down **Alt** and draw a line.
- To draw symmetric ramps at the beginning and the end of the sequence, hold down **Shift**-**Alt** and draw a line.
- To reset the velocity of a step to 127, **Ctrl/Cmd**-click the step.
- To reset the velocity of all steps to 127, hold **Shift**-**Ctrl/Cmd** and click a step.

- To introduce a legato between two steps, click the number below the first of these steps, so that a small arrow is shown.

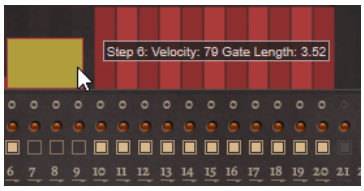
  If **Legato** is activated, the **Gate Scale** parameter is not taken into account.
- To transpose a step, click in the field below it and enter the number of semitones for the transposition.

  NOTE

  You can only transpose steps if **Show Transpose or Key Select** is set to show the transpose values.

Adjusting the Gate Length

For velocity steps, the width of a step represents its gate length.



- To adjust the gate length of a step, drag its right border.
- To adjust the gate length of all steps, hold down **Shift** and drag the right border of a step.

  You can only adjust the length this way until a step reaches the next step. If you increase the gate length of a step so that it overlaps the following step, this following step is deactivated.
- To reset the length of a step to 1, **Ctrl/Cmd**-click its highlighted right border.
- To reset the length of all steps, hold down **Shift**-**Ctrl/Cmd** and click on a highlighted right border.
- To fill the gaps between consecutive steps, select **Fill Gap** or **Fill All Gaps** from the context menu.

Each MIDI controller lane can send a MIDI controller. By selecting the same MIDI controller as source in the Modulation Matrix, you can modulate any of the destinations with the MIDI controller sequence.

Adjusting the Phrase

- To shift the rhythm of the phrase, click **Shift Phrase Right** or **Shift Phrase Left** .

  If you shift the rhythm of the phrase to the left, the first step is moved to the end. If you shift the phrase to the right, the last step is moved to the beginning.
- To reverse the phrase, click **Reverse Phrase** .
- To duplicate short phrases, click **Duplicate Phrase** .

  NOTE

  The maximum number of steps is 32. Therefore, phrases that contain more than 16 steps cannot be duplicated entirely.

Effects Reference

Reverb Effects

REVerence

REVerence is a convolution tool that allows you to apply room characteristics (reverb) to the audio.

By recording an impulse in a room, you capture the characteristics of this room. Convolution superimposes these characteristics to the sound. The result is a very natural sounding reverb. Included with this effect is a collection of high-quality reverb impulse responses.

Impulse Response

Allows you to select an impulse response. This determines the basic sound character of the reverb.

Reverse

Reverses the impulse response.

Predelay

Determines the amount of time between the dry signal and the onset of the reverb. With higher predelay values, you can simulate larger rooms.

Time

Controls the reverb time. At a setting of 100 %, the impulse response is applied with its original length.

Size

Scales the size of the simulated room. At a setting of 100 %, the impulse response is applied as recorded in the original room.

Level

Adjusts the level of the impulse response.

Equalizer

Activates the built-in three-band equalizer.

ER/Tail Split

Sets the split point between the early reflections and the reverb tail.

ER/Tail Mix

Sets the balance between the early reflections and the reverb tail. At a setting of 50 % the early reflections and the tail have the same volume level. Settings below 50 % raise the early reflections and lower the tail, as a result the sound source moves towards the front of the room. Settings above 50 % raise the tail and lower the early reflections, as a result the sound source moves towards the back of the room.

Reverb

This effect produces a high-quality algorithmic reverb with early reflections and reverb tail.

The early reflections are responsible for the spatial impression in the first milliseconds of the reverb. For emulating different rooms, you can choose between different early reflection patterns and adjust their size. The reverb tail, or late reverberation, offers parameters for controlling the room size and the reverb time. You can adjust the reverb time individually in three frequency bands.

Predelay

Determines how much time passes before the reverb is applied. This allows you to simulate larger rooms by increasing the time it takes for the first reflections to reach the listener.

Early Reflections

Here, you select an early reflections pattern. The early reflections pattern contains the most important delays that deliver the key information for the spatial impression of the room.

Show Early Reflections Page/Show Chorusing Page

With these two buttons below the **Early Reflections** pop-up menu, you can choose whether to display the early reflections settings or the chorusing settings in the lower left part of the effect panel.

ER/Tail

Sets the level balance between the early reflections and the reverb tail. At a setting of 50 %, early reflections and tail have the same volume. Settings below 50 % raise the early reflections and lower the tail, as a result the sound source moves towards the front of the room. Settings above 50 % raise the tail and lower the early reflections, as a result the sound source moves toward the back of the room.

Delay

Delays the onset of the reverb tail.

Room Size

Controls the dimensions of the simulated room. At a setting of 100 %, the dimensions correspond to a cathedral or a large concert hall. At a setting of 50 %, the dimensions correspond to a medium-sized room or studio. Settings below 50 % simulate the dimensions of a small room or a booth.

Main Time

Controls the overall reverb time of the tail. The higher this value, the longer the reverb tail will decay. At a setting of 100 %, the reverb time is infinitely long. The **Main Time** parameter also represents the mid band of the reverb tail.

High Time

Controls the reverb time for the high frequencies of the reverb tail. With positive values, the decay time of the high frequencies is longer. With negative values, it is shorter. Frequencies are affected depending on the **High Freq** parameter.

Low Time

Controls the reverb time for the low frequencies of the reverb tail. With positive values, low frequencies decay longer and vice versa. Frequencies will be affected depending on the **Low Freq** parameter.

High Freq

Sets the cross-over frequency between the mid and the high band of the reverb tail. You can offset the reverb time for frequencies above this value from the main reverb time with the **High Time** parameter.

Low Freq

Sets the cross-over frequency between the low and the mid band of the reverb tail. The reverb time for frequencies below this value can be offset from the main reverb time with the **Low Time** parameter.

Size

Adjusts the length of the early reflections pattern. At a setting of 100 %, the pattern is applied with its original length and the room sounds the most natural. At settings below 100 %, the early reflections pattern is compressed and the room is perceived smaller.

ER Low Cut

Attenuates the low frequencies of the early reflections. The higher this value, the fewer low frequencies are present in the early reflections.

ER High Cut

Attenuates the high frequencies of the early reflections. The lower this value, the fewer high frequencies the early reflections will have.

Shape

Controls the attack of the reverb tail. At a setting of 0 %, the attack is more immediate, which is a good setting for drums. The higher this value, the less immediate the attack.

Density

Adjusts the echo density of the reverb tail. At a setting of 100 %, single reflections from walls cannot be heard. The lower this value, the more single reflections can be heard.

Tail High Cut

Attenuates the high frequencies of the reverb tail. The lower this value, the fewer high frequencies the reverb tail will have.

Width

Adjusts the output of the reverb signal between mono and stereo. At a setting of 0 %, the output of the reverb is mono, at 100 % it is stereo.

Mix

Sets the ratio between the dry and the wet signal.

Chorusing

Chorusing allows you to enrich the reverb tail through subtle pitch modulations. To access the chorusing parameters, click the **Show Chorusing Page** button.

Chorusing On/Off

Activates/Deactivates the chorusing effect.

Chorusing Rate

Specifies the frequency of the pitch modulation.

Chorusing Depth

Sets the intensity of the pitch modulation.

Delay Effects

Multi Delay

This effect produces delays, with adjustable time, feedback, and filters.

Delay Mode

- **Stereo** has two delays in parallel, one for the left and one for the right audio channel, each with a feedback path of its own.
- **Cross** has two delay lines with cross feedback, where the delay of the left channel is fed back into the delay of the right channel, and vice versa.
- **Ping-Pong** mixes the left and right input channels and sends the mixed signal to hard-panned left and right delays. This way, the echoes bounce like a ping-pong ball between left and right in the stereo panorama.

Delay Time

Sets the overall time for the left and right delay. Use the **Delay L/R** parameter to shorten the time for the left or right delay.

Sync

Activate **Sync** to synchronize the delay time to the host tempo. If **Sync** is activated, the time is set as a note value.

NOTE

The maximum delay time is 5000 ms. If the note length exceeds this value, it is automatically shortened.

Delay Time L/R

Offsets the time of the left or right delay from the overall delay time. At a factor of 1, the right or left delay time has the same length as the overall delay time. At a factor of 0.5, the time is half as long as the overall delay time.

- To offset the left delay time, turn the control to the left.

- To offset the right delay time, turn the control to the right.

Feedback

Sets the overall amount of feedback for the left and right delay. Feedback means the output of the delay is fed back to its input. At a setting of 0 %, you hear only one echo. At a setting of 100 %, the echoes repeat endlessly.

Feedback L/R

Offsets the amount of feedback of the left or right delay from the overall feedback. A factor of 1 means that the amount of feedback corresponds to the overall feedback. A factor of 0.5 means that the amount is half the overall feedback.

- To offset the left feedback, turn the control to the left.
- To offset the right feedback, turn the control to the right.

NOTE

This parameter is only available in **Stereo** mode.

High Freq

Attenuates the high frequencies of the delays.

Low Freq

Attenuates the low frequencies of the delays.

Mix

Sets the ratio between the dry and the wet signal.

EQ Effects

Studio EQ

Studio EQ is a high-quality 4-band parametric equalizer.

With the four frequency bands, you can shape the tone color, to create a brighter or darker sound, for example. The two mid-range bands act as peak filters and the low and high bands act as shelving filters. All bands are fully parametric with adjustable gain, frequency, and Q factor. Each frequency band offers the following controls:

On/Off

Activates/Deactivates the frequency band.

Gain

Sets the amount of cut or boost for the corresponding band.

Freq

Sets the frequency that is cut or boosted with the **Gain** parameter.

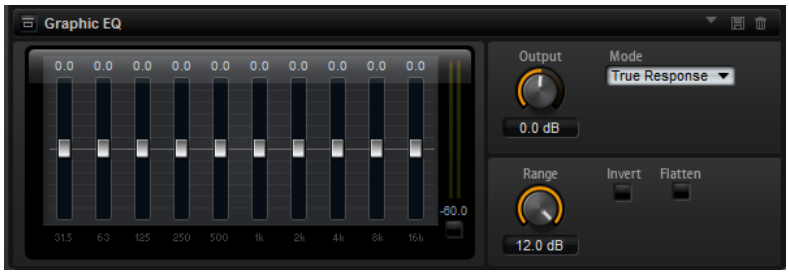
Q (Quality)

Adjusts the bandwidth of the mid-range peak filters from wide to narrow. By increasing the **Q** value on the low and high shelving filters, you can add a dip to their shape.

- To adjust the parameters **Gain** and **Freq** simultaneously, drag the points in the EQ curve display.

Graphic EQ

Graphic EQ is an equalizer with ten frequency bands that can be cut or boosted by up to 12 dB. In addition, you can specify the overall range and output of the equalizer.



Output

Controls the overall output level of the equalizer.

Mode

Allows you to add color or character to the equalized output. The following options are available:

- **True Response** mode uses serial filters with accurate frequency response.
- **Classic** mode uses parallel filters where the resonance depends on the amount of gain.
- **Constant Q** mode uses parallel filters where the resonance is raised when boosting the gain.

Range

Adjusts the maximum cut or boost for all frequency bands together.

Invert

Activate this to invert the EQ curve.

Flatten

Resets all frequency bands to 0 dB.

DJ-EQ

This plug-in is an easy-to-use 3-band parametric equalizer that resembles the EQs found on typical DJ mixers. This plug-in is designed for quick sound fixes.

Low Freq/Mid Freq/High Freq

Set the amount of boost or attenuation for the low, mid, and high bands.

You can also click and drag in the display to change these values.

Low Cut/Mid Cut/High Cut

Cut the low, mid, and high bands.

Reset Output Peak Level

Resets the peak level that is displayed in the output meter.

Filter Effects

Auto Filter

Auto Filter provides two morphable filter shapes with distortion.

The morphing between the two shapes, as well as the cutoff, can be controlled with a manual pedal control, an LFO, or an envelope follower.

Filter Parameters

Filter Shape

- LP 24, 18, 12, and 6 are low-pass filters with 24, 18, 12, and 6 dB/oct. Frequencies above the cutoff are attenuated.
- BP 12 and BP 24 are band-pass filters with 12 and 24 dB/oct. Frequencies below and above the cutoff are attenuated.
- HP 6+LP 18 and HP 6+LP 12 are combinations of a high-pass filter with 6 dB/oct and a low-pass filter with 18 and 12 dB/oct, respectively (asymmetric band-pass filter). Frequencies below and above the cutoff are attenuated. Attenuation is more pronounced for the frequencies above the cutoff.
- HP 12+LP 6 and HP 18+LP 6 are combinations of a high-pass filter with 12 and 18 dB/oct and a low-pass filter with 6 dB/oct (asymmetric band-pass filter). Frequencies below and above the cutoff are attenuated. Attenuation is more pronounced for the frequencies below the cutoff.
- HP 24, 18, 12, and 6 are high-pass filters with 24, 18, 12, and 6 dB/oct. Frequencies below the cutoff are attenuated.
- BR 12 and BR 24 are band-reject filters with 12 and 24 dB/oct. Frequencies around the cutoff are attenuated.
- BR 12+LP 6 and BR 12+LP 12 are combinations of a band-reject filter with 12 dB/oct and a low-pass filter with 6 and 12 dB/oct, respectively. Frequencies around and above the cutoff are attenuated.
- BP 12+BR 12 is a band-pass filter with 12 dB/oct plus a band-reject filter with 12 dB/oct. Frequencies below, above, and around the cutoff are attenuated.

- HP 6+BR 12 and HP 12+BR 12 are combinations of a high-pass filter with 6 and 12 dB/oct and a band-reject filter with 12 dB/oct. Frequencies below and around the cutoff are attenuated.
- AP is an all-pass filter with 18 dB/oct. Frequencies around the cutoff are attenuated.
- AP+LP 6 is an all-pass filter with 18 dB/oct plus a low-pass filter with 6 dB/oct. Frequencies around and above the cutoff are attenuated.
- HP 6+AP is a high-pass filter with 6 dB/oct plus an all-pass filter with 18 dB/oct. Frequencies around and below the cutoff are attenuated.

Input

Adjusts the gain before the filter and distortion. This parameter only affects the wet signal.

Cutoff

Specifies the cutoff frequency of the filter.

Resonance

Emphasizes the frequencies around the cutoff. At higher resonance settings, the filter self-oscillates, which results in a ringing tone.

Distortion Type

The following options are available:

- When this parameter is set to **Off**, the filter offers no distortion.
- **Tube Drive** adds warm, tube-like distortion.
- **Hard Clip** adds bright, transistor-like distortion.
- **Bit Red** adds digital distortion by means of quantization noise.
- **Rate Red** adds digital distortion by means of aliasing.

Distortion

Adds distortion to the signal. The effect depends on the selected distortion type. At higher settings, it creates a very intense distortion effect.

NOTE

This parameter is not available if **Distortion Type** is set to **Off**.

Output

Adjusts the gain after the filter and distortion. This parameter only affects the wet signal.

Mix

Sets the ratio between the dry and the wet signal.

LFO Section

LFO Waveform and Shape

Waveform selects the basic type of waveform. **Shape** changes the characteristic of the waveform.

- **Sine** produces smooth modulation. **Shape** adds additional harmonics to the waveform.
- **Triangle** is similar in character to **Sine**. The waveform periodically ramps up and down. **Shape** continuously changes the triangle waveform to a trapezoid.
- **Saw** produces a ramp cycle. **Shape** continuously changes the waveform from ramp down to triangle to ramp up.

- **Pulse** produces stepped modulation, where the modulation switches abruptly between two values. **Shape** continuously changes the ratio between the high and low state of the waveform. At 50 %, it produces a square wave.
- **Ramp** is similar to the **Saw** waveform. **Shape** increasingly puts silence before the sawtooth ramps up.
- **Log** is a logarithmic curvature. **Shape** continuously changes the curvature from negative to positive.
- **S & H 1** produces random stepped modulation, where each step is different. **Shape** puts ramps between the steps and produces a smooth random signal when fully turned right.
- **S & H 2** is similar to **S & H 1**. The steps alternate between random high and low values. **Shape** puts ramps between the steps and produces a smooth random signal when fully turned right.

Freq

Determines the frequency of the cutoff modulation.

Sync

Activate this to set the **Freq** parameter in fractions of beats.

Depth

Determines the output level of the LFO modulation signal.

Cutoff

Determines the modulation intensity of the LFO on the filter cutoff.

Morph

Determines the modulation intensity of the LFO on the filter morph.

Envelope Follower Section

The Envelope Follower traces the input signal with an adjustable attack and release time and delivers a modulation signal representing the level envelope of the signal.

Sensitivity

All input signals are mixed down to mono before they are sent to the Envelope Follower. This parameter sets the optimum input level for the Envelope Follower.

Attack

Adjusts the attack time, that is, the time the Envelope Follower needs to approach increasing input levels.

Release

Adjusts the release time, that is, the time the Envelope Follower needs to approach decreasing input levels.

Depth

Determines the output level of the modulation signal of the Envelope Follower.

Cutoff

Determines the modulation intensity of the Envelope Follower on the filter cutoff.

Morph

Determines the modulation intensity of the Envelope Follower on the filter morph.

Pedal Section

Pedal

Sets the position of the pedal.

Depth

Determines the output level of the pedal modulation signal.

Cutoff

Determines the modulation intensity of the pedal on the filter cutoff.

Morph

Determines the modulation intensity of the pedal on the filter morph.

Morph Filter

Morph Filter allows you to mix low-pass and high-pass filter effects, allowing for creative morphings between two filters. You can specify the filter shapes independently for filter shape A and B.

Filter Shape B

Here, you can choose between several high-pass and band-rejection filter shapes.

Filter Shape A

Here, you can select a low-pass or a band-pass filter shape.

Morph

Allows you to mix the output between the two selected filters.

Cutoff

Adjusts the cutoff frequency of the filters.

NOTE

You can also set the **Cutoff** and **Morph** parameters simultaneously by clicking in the display and dragging.

Resonance

Emphasizes the frequencies around the cutoff frequency. For an electronic sound, increase the resonance. At higher resonance settings, the filter self-oscillates, which results in a ringing tone.

Resonator

The sound of the human voice or of acoustic instruments can be characterized by their distinctive formant regions, that is, by resonances in the frequency spectrum that are typical for a particular sound.

For example, the vowel “ah” (as in father) sung by a male singer has three characteristic formants: F1 = 570 Hz, F2 = 840 Hz, and F3 = 2410 Hz. The Resonator effect allows you to induce such formant regions to a sound by using three filters that are connected in parallel. You can specify the positions and levels of the formant regions by adjusting the **Cutoff**, **Resonance**, and **Gain** parameters of the filters.

The Resonator effect comes with 14 predefined filter shapes that determine the basic sound character. In addition, three LFOs can be used to modulate each filter separately, which allows for adding extra motion to the sound.

Resonator Shape

Defines the basic sound character of the effect. Each shape is a unique combination of different filter types for the low, mid, and high frequency bands.

Option	Filter Low/Mid/High
Low-Pass 1	LP6/LP6/LP6
Low-Pass 2	LP12/LP12/LP12
Band-Pass 1	BP12/(-1)BP12/BP12*
Band-Pass 2	BP12/BP12/BP12
High-Pass 1	HP6/HP6/HP6
High-Pass 2	HP12/HP12/HP12
Peak 1	LP6/(-1)BP12/HP6*
Peak 2	LP6/BP12/HP6
Bat 1	HP12/BP12/LP12
Bat 2	HP6/BP12/LP6
Wings 1	LP6/BR12/HP6
Wings 2	HP12/BR12/LP12
Wings 3	LP6/(-1)BR12/HP6*
Wings 4	HP12/(-1)BR12/LP12*
	*(-1) means that the phase is inverted

Mix

Sets the ratio between the dry and the wet signal.

Cutoff Spread

Spreads the cutoff frequencies between the channels of the effect.

For example, if the effect is used in stereo, positive **Cutoff Spread** values shift the cutoff down on the left channel and up on the right channel.

Filter Tab

Cutoff

Adjusts the cutoff frequency of the filter, that is, the center frequency of the formant region.

Resonance

Adjusts the resonance of the filter. The resonance determines how much the formant region is emphasized. At higher settings, the filter self-oscillates, which results in a ringing tone.

Gain

Adjusts the input gain of the filter. The gain determines the level of the formant region.

LFO Modulation Source

Allows you to select the LFO that modulates the cutoff.

LFO Modulation Depth

Adjusts the cutoff modulation from the LFO.

LFO Tab

LFO Waveform and Shape

- **Sine** produces smooth modulation, suitable for vibrato or tremolo. **Shape** adds additional harmonics to the waveform.
- **Triangle** is similar to **Sine**. **Shape** continuously changes the triangle waveform to a trapezoid.
- **Saw** produces a ramp cycle. **Shape** continuously changes the waveform from ramp down to triangle to ramp up.
- **Pulse** produces stepped modulation, where the modulation switches abruptly between two values. **Shape** continuously changes the ratio between the high and low state of the waveform. If **Shape** is set to 50 %, a square wave is produced.
- **Ramp** is similar to the **Saw** waveform. **Shape** increasingly puts silence before the sawtooth ramp up begins.
- **Log** produces a logarithmic modulation. **Shape** continuously changes the logarithmic curvature from negative to positive.
- **S & H 1** produces randomly stepped modulation, where each step is different. **Shape** puts ramps between the steps and changes the **S & H** into a smooth random signal when fully turned right.
- **S & H 2** is similar to **S & H 1**. The steps alternate between random high and low values. **Shape** puts ramps between the steps and changes the **S & H** into a smooth random signal when fully turned right.

Spread

For each channel of the effect, there is a separate LFO signal. This parameter spreads the phase of the LFO signals across the different channels.

For example, if the effect is used in stereo, positive values shift the LFO phase forward on the left channel and backward on the right channel.

Sync

Activate this to set the **Freq** parameter in fractions of beats.

Freq

Determines the frequency of the cutoff modulation.

WahWah

WahWah is a variable slope band-pass filter modeling the well-known analog pedal effect.

You can independently specify the frequency, width, and the gain for the low and high pedal positions. The crossover point between the low and high pedal positions lies at 50.

Pedal

Controls the filter frequency sweep.

Freq Low/Freq High

These parameters determine the frequency of the filter for the low and high pedal positions.

Width Low/Width High

These parameters determine the width (resonance) of the filter for the low and high pedal positions.

Gain Low/Gain High

These parameters determine the gain of the filter for the low and high pedal positions.

Slope

Here, you can choose between two filter slope values: 6 dB or 12 dB.

Distortion Effects

Amplifier

This effect emulates the sound of an amplifier with speakers.

There are different amplifiers and speaker models you can combine.

Amp Model

Determines the type of amplifier. The sound character of the overdrive changes with the amplifier. To bypass the amplifier, select **No Amp**.

Speaker Model

Determines the speaker model type. Each model colors the sound uniquely. To bypass the model, select **No Speaker**.

Drive

Adjusts the amount of overdrive.

Bass

Adjusts the tone color of the low frequencies.

Middle

Adjusts the tone color of the mid frequencies.

Treble

Adjusts the tone color of the high frequencies.

Presence

Adds brightness to the sound.

Low Damp

Attenuates the low frequencies of the speakers.

High Damp

Attenuates the high frequencies of the speakers.

Channel Mode

Defines which output channels of the amplifier deliver a distorted signal. You can set it to **L** (Left), **R** (Right) or **L/R** (Both). When set to **L** or **R**, the other channel provides a clean signal.

Output

Controls the output level of the amplifier.

Distortion

This effect offers the whole range of distortion, from low fidelity, digital distortion to high fidelity, analog sounding distortion. The available distortion types (**Rate Red**, **Tube Drive**, **Hard Clip**, and **Bit Red**) can be freely combined.

In Gain

Adjusts the input level of the sound.

Rate Red (Rate Reduction)

Rate reduction distorts the sound by means of aliasing. Enable the **Rate Red** option to activate the control that adjusts the amount of aliasing. The lower the setting, the more aliasing is added.

Tube Drive

Adds warm, tube-like distortion to the sound. Enable the **Tube Drive** option to activate the control that adjusts the amount of distortion. The higher the setting, the more distortion is added.

Hard Clip

Adds bright, transistor-like distortion to the sound. Enable the **Hard Clip** option to activate the control that adjusts the amount of distortion. The higher the setting, the more distortion is added.

Bit Red (Bit Reduction)

Bit reduction distorts the sound by means of quantization noise. If **Bit Red** is activated, you can adjust the amount of quantization noise. The lower the setting, the more quantization noise is added.

Out Gain

Adjusts the output level of the sound.

Mix

Sets the ratio between the dry and the wet signal.

VST Amp

This effect emulates the sound of an amplifier with speakers. There are different amplifiers and speaker models you can combine.

Amp Model

Specifies the amplifier type. The sound character of the overdrive changes with the amplifier. To bypass the amp modeling, select **No Amplifier**.

Speaker Model

Specifies the speaker model type. Each model colors the sound uniquely. To bypass the speaker modeling, select **No Cabinet**.

Drive

Adjusts the amount of overdrive.

Bass

Adjusts the tone color of the low frequencies.

Middle

Adjusts the tone color of the mid frequencies.

Treble

Adjusts the tone color of the high frequencies.

Presence

Adjusts the brightness of the sound.

Mic Type

You can choose between two microphone types. If this control is set to 0 %, a large-diaphragm condenser microphone is used. At 100 %, you get a dynamic microphone. Settings in between allow you to fade between the characteristics of these two microphones.

Microphone Position

Here, you can choose between seven positions to place the microphone. These positions result from two different angles (center and edge) and three different distances from the speaker, as well as an additional center position at an even greater distance from the speaker.

Channel Mode

Determines in which way the two input channels are distorted.

- **L** (Left) only distorts the left input channel. The right channel remains clean and unprocessed.
- **R** (Right) only distorts the right input channel. The left channel remains clean and unprocessed.
- **L+R** (Left + Right) sums the two input channels into a mono signal which is then distorted.
- **Stereo** distorts the two input channels independently.

NOTE

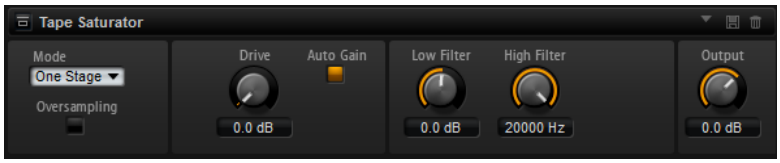
The **L** and **R** modes allow you to cascade two VST Amp effects, that is, to use the first one to processes the left channel and the second one to process the right channel at different settings.

Output

Controls the output level of the amplifier.

Tape Saturator

Tape Saturator simulates the behavior of classic tape recorders. These machines produced a specific saturation when recording higher input levels, which led to a compressed signal with light distortion.



Mode

Here, you can choose between the effect of a single (**One Stage**) or two cascaded tape machines (**Two Stage**). **Two Stage** mode leads to higher saturation and compression.

Oversampling

Activate this parameter to increase the accuracy of the effect by oversampling.

NOTE

If this parameter is activated, the effect requires more processing power.

Drive

Determines the level of the input signal and thus the amount of saturation.

Auto Gain

Activate this option for an automatic level compensation.

Low Filter

Here, you can adjust the low frequency range below 1000 Hz by +/- 3 dB.

High Filter

Here, you can attenuate the high frequency range. This high-cut filter works with a slope of 24 dB/octave.

Output

Determines the level of the output signal.

Tube Saturator

This effect enriches the sound by adding the characteristic harmonics of a saturated tube to the audio signal.

Oversampling

Increases the accuracy of the effect by oversampling.

NOTE

If this parameter is activated, the effect requires more processing power.

Drive

Determines the level of the input signal and thus the amount of saturation.

Low Filter

Allows you to reduce the low frequency range by up to 6 dB before saturation.

High Filter

Allows you to adjust the high frequency range by -/+ 6 dB before saturation.

Output

Determines the level of the output signal.

Pitch Shift Effects

Octaver

Octaver allows you to create two additional voices that follow the original voice an octave below and above. This effect is best suited for monophonic signals.

Direct

Determines the level of the input signal.

Octave 1

Determines the level of the signal that is produced an octave below the original voice.

Octave 2

Determines the level of the signal that is produced an octave above the original voice.

Modulation Effects

Chorus

Chorus thickens and broadens the sound by means of pitch modulation.

Rate

Determines the frequency of the pitch modulation, in Hertz.

Sync

Activate this to set the **Rate** value in fractions of beats.

Depth

Sets the intensity of the pitch modulation.

Phase

Widens the sound image of the effect from mono to stereo.

Shape

Adjusts the characteristics of the modulation. At a setting of 0 %, the pitch changes continuously, producing a steady modulation. At a setting of 100 %, the pitch does not change all the time, producing a less steady modulation.

Mix

Sets the ratio between the dry and the wet signal.

Flanger

This effect thickens and broadens the sound by means of pitch modulation.

Rate

Allows you to specify the frequency of the pitch modulation in Hertz.

Sync

Activate this to set the **Rate** value in fractions of beats.

Depth

Sets the intensity of the pitch modulation.

Phase

Widens the sound image of the effect from mono to stereo. This parameter also changes the characteristic of the **Cross FB** parameter.

Shape

Adjusts the characteristics of the modulation. You hear this best when **Feedback** is activated. At a setting of 0 %, the sound sweeps linearly up and down. At a setting of 100 %, the sound sweeps exponentially up and down.

Mix

Sets the ratio between the dry and the wet signal.

Feedback

Adds resonances to the effect. This allows for jet-like sweeps of the sound.

Cross FB

Mixes the feedback of the left channel with the right channel, and vice versa. The effect of this parameter is influenced by the **Phase** parameter.

NOTE

This parameter only takes effect if the **Feedback** parameter is set to a value above 0 %.

Tone

Adjusts the tone color of the feedback. At lower values, the feedback is less bright.

Step Flanger

The Step Flanger expands the Flanger with a Sample and Hold section that divides the modulation signal into a definable number of steps.

Rate

Allows you to specify the frequency of the pitch modulation in Hertz.

Sync

Activate this to set the **Rate** value in fractions of beats.

Depth

Sets the intensity of the pitch modulation.

Phase

Widens the sound image of the effect from mono to stereo. This parameter also changes the characteristic of the **Cross FB** parameter.

Shape

Adjusts the characteristics of the modulation. You hear this best when **Feedback** is activated. At a setting of 0 %, the sound sweeps linearly up and down. At a setting of 100 %, the sound sweeps exponentially up and down.

Mix

Sets the ratio between the dry and the wet signal.

Feedback

Adds resonances to the effect. This allows for jet-like sweeps of the sound.

Cross FB

Mixes the feedback of the left channel with the right channel, and vice versa. The effect of this parameter is influenced by the **Phase** parameter.

NOTE

This parameter only takes effect if the **Feedback** parameter is set to a value above 0 %.

Tone

Adjusts the tone color of the feedback. At lower values, the feedback is less bright.

Type

Defines the length of the delay line that is modulated. **Short** produces a sharper and **Long** a less defined, more blurred flanger sound.

S&H Mix

Use this parameter to blend the normal modulation signal with the stepped modulation signal. At 100 %, only the stepped modulation is used.

Smooth

Use this parameter to create ramps between the steps. This way, the stepped modulation signal sounds smoother.

Steps

Determines into how many steps the modulation signal is divided. You can use up to 32 steps.

Phaser

The Phaser effect thickens and broadens the sound by means of phase modulation.

Rate

Specifies the frequency of the phase modulation.

Sync

Activate this to set the **Rate** value in fractions of beats.

Depth

Sets the intensity of the phase modulation.

Shift

Shifts the phase modulation upwards to higher frequencies of the spectrum.

Phase

Widens the sound image of the effect from mono to stereo.

Feedback

Adds resonances to the effect. Higher settings produce a more pronounced effect.

Low Cut

Attenuates the low frequencies.

High Cut

Attenuates the high frequencies.

Mix

Sets the ratio between the dry and the wet signal.

Tremolo

This effect produces amplitude modulation, that is, cyclic modulation of the level of the sound.

Rate

Determines the frequency of the amplitude modulation.

Sync

Activate this to set the **Rate** value in fractions of beats.

Depth

Sets the intensity of the amplitude modulation.

Phase

Widens the sound image of the effect from mono to stereo.

Output

Sets the output level of the effect.

Ring Modulator

The Ring Modulator provides a sine oscillator that is multiplied with the input signal. This creates metallic, or bell-like, frequencies.

The integrated LFO modulates the frequency of the sine oscillator to vary the created frequencies over time. In addition, an envelope follower is available, which can be used to modulate the frequency of the sine oscillator depending on the level of the input signal.

LFO Waveform and Shape

Waveform selects the basic type of waveform. **Shape** changes the characteristic of the waveform.

- **Sine** produces smooth modulation. **Shape** adds additional harmonics to the waveform.
- **Triangle** is similar in character to **Sine**. The waveform periodically ramps up and down. **Shape** continuously changes the triangle waveform to a trapezoid.
- **Saw** produces a ramp cycle. **Shape** continuously changes the waveform from ramp down to triangle to ramp up.

- **Pulse** produces stepped modulation, where the modulation switches abruptly between two values. **Shape** continuously changes the ratio between the high and low state of the waveform. At 50 %, it produces a square wave.
- **Ramp** is similar to the **Saw** waveform. **Shape** increasingly puts silence before the sawtooth ramps up.
- **Log** is a logarithmic curvature. **Shape** continuously changes the curvature from negative to positive.
- **S & H 1** produces random stepped modulation, where each step is different. **Shape** puts ramps between the steps and produces a smooth random signal when fully turned right.
- **S & H 2** is similar to **S & H 1**. The steps alternate between random high and low values. **Shape** puts ramps between the steps and produces a smooth random signal when fully turned right.

LFO Freq

Use this to specify the frequency of the LFO for modulating the frequency of the sine oscillator.

Sync

Activate this to set the **LFO Freq** value in fractions of beats.

LFO Depth

Sets the intensity of the LFO modulation of the sine oscillator frequency.

Frequency

Determines the frequency of the sine oscillator.

Mix

Sets the ratio between the dry and the wet signal.

Envelope Follower

The Envelope Follower traces the input signal with an adjustable attack and release time and delivers a modulation signal representing the level envelope of the signal.

Sensitivity

All input signals are mixed down to mono before they are sent to the Envelope Follower. The **Sensitivity** parameter sets the optimum input level for the Envelope Follower.

Attack

This adjusts the attack time, that is, the time the Envelope Follower needs to approach increasing input levels.

Release

This adjusts the release time, that is, the time the Envelope Follower needs to approach decreasing input levels.

Depth

Determines the output level of the modulation signal of the Envelope Follower.

Frequency Shifter

A frequency shifter shifts each frequency of the input signal by a fixed amount.

Unlike pitch shifters, where the frequencies are shifted by a factor, and where the harmonic relations are kept, a frequency shifter alters the harmonic relations. Therefore, a larger frequency shift usually results in a disharmonic sound.

Furthermore, a frequency shifter alters the frequencies by adding an offset, while a pitch shifter multiplies the frequencies by a factor. The frequency shifter alters lower frequencies more than higher frequencies.

For example, if the input signal has the frequencies 100 Hz, 1000 Hz, and 10000 Hz, and you shift the frequency by +100 Hz, the resulting frequencies are 200 Hz, 1100 Hz, and 10100 Hz.

Freq Coarse

Here you set the amount of frequency shift.

Freq Fine

Here you can fine adjust the amount of frequency shift.

L/R Offset Coarse

Sets an offset for the left and right channels. Positive values shift the right channel upwards and the left channel downwards, and vice versa.

L/R Offset Fine

Allows for fine-adjustments of the offset between the left and right channels. Positive values shift the right channel upwards and the left channel downwards, and vice versa.

Mod Coarse

Sets the maximum amount of frequency shift via modulation from LFO and Envelope Follower.

Mod Fine

Allows for fine-adjustments to the amount of frequency shift via modulation from LFO and Envelope Follower.

Feedback

Sets the amount of feedback, that is, the amount of signal that is sent from the output of the effect back to its input. The sound is similar to that of a phaser. You can control the direction and speed of this effect with the **Frequency Fine** parameter.

Notches

Here you set the number of notches the phaser effect produces when you use larger amounts of Feedback.

LFO Section

LFO Waveform and Shape

Waveform selects the basic type of waveform. **Shape** changes the characteristic of the waveform.

- **Sine** produces smooth modulation. **Shape** adds additional harmonics to the waveform.
- **Triangle** is similar in character to **Sine**. The waveform periodically ramps up and down. **Shape** continuously changes the triangle waveform to a trapezoid.
- **Saw** produces a ramp cycle. **Shape** continuously changes the waveform from ramp down to triangle to ramp up.
- **Pulse** produces stepped modulation, where the modulation switches abruptly between two values. **Shape** continuously changes the ratio between the high and low state of the waveform. At 50 %, it produces a square wave.
- **Ramp** is similar to the **Saw** waveform. **Shape** increasingly puts silence before the sawtooth ramps up.
- **Log** is a logarithmic curvature. **Shape** continuously changes the curvature from negative to positive.
- **S & H 1** produces random stepped modulation, where each step is different. **Shape** puts ramps between the steps and produces a smooth random signal when fully turned right.
- **S & H 2** is similar to **S & H 1**. The steps alternate between random high and low values. **Shape** puts ramps between the steps and produces a smooth random signal when fully turned right.

Freq

Specifies the frequency of the LFO in Hertz.

Sync

Activate this to set the **Freq** parameter in fractions of beats.

Depth

Determines the direction and amount of frequency shift from the LFO modulation signal.

Envelope Follower

The Envelope Follower traces the input signal with an adjustable attack and release time and delivers a modulation signal representing the level envelope of the signal.

Sensitivity

All input signals are mixed down to mono before they are sent to the Envelope Follower. This parameter sets the optimum input level for the Envelope Follower.

Attack

Adjusts the attack time, that is, the time the Envelope Follower needs to approach increasing input levels.

Release

Adjusts the release time, that is, the time the Envelope Follower needs to approach decreasing input levels.

Depth

Determines the direction and amount of frequency shift from the envelope follower modulation signal.

NOTE

The maximum frequency shift via modulation from LFO or the Envelope Follower is determined by the parameters **Modulation Range Coarse** and **Modulation Range Fine**.

Mix

Sets the ratio between the dry and the wet signal.

Rotary

The Rotary effect emulates the sound of a vintage rotary speaker including amplifier, horn, drum, and cabinet.

By emitting the sound via a rotating horn and drum, the rotary speaker produces a Doppler effect that thickens the sound. The horn and drum rotate at variable speed producing different amounts of Doppler effect. The amplifier of the rotary speaker adds a warm sounding distortion, and the horn, drum, and cabinet color the sound uniquely. The horn and drum are recorded via (virtual) microphones that can be set to different angles to broaden the sound image. Typically, rotary speakers are used with electric organs.

Rotation

This parameter changes the rotation speed of the horn and drum. When set to **Fast**, the Doppler effect is stronger. When set to **Stop**, there is no Doppler effect because the drum and horn do not rotate. Because the horn and drum accelerate and decelerate at different speeds, the transition from **Slow** to **Fast** and vice versa sounds the most interesting.

Distance

Sets the distance between the microphones and the horn and drum. The amplitude modulation of the sound decreases with the distance of the microphones. Set this to higher values for less amplitude modulation.

Cabinet

The horn and drum sound different when recorded through the louvers of the cabinet. Use this to color the horn and drum with the sound of the cabinet. At a setting of 100 %, you get the full sound of the cabinet.

Balance

Here you adjust the balance between the horn and drum microphones. At a setting of 0 %, you hear only the drum. At a setting of 100 %, you hear only the horn.

Slow

Adjusts the slow speed of the horn and drum together.

Fast

Adjusts the fast speed of the horn and drum together.

Accel

Adjusts the acceleration time for raising and lowering the rotation speed of the horn and drum.

Horn Mic Angle

This adjusts the stereo spread of the horn microphones. At a setting of 0°, the sound image is monophonic. At a setting of 180°, the sound image is fully stereo.

Drum Mic Angle

This adjusts the stereo spread of the drum microphones. At a setting of 0°, the sound image is monophonic. At a setting of 180°, the sound image is fully stereo.

Input

Adjusts the gain before the rotary and drive.

Drive

Adjusts the distortion of the amplifier.

Output

Adjusts the gain after the rotary and drive.

Color

Alters the sound of the Rotary effect by changing the timbre, which leads to the rotation of the horn and the drum being perceived with greater depth.

Bass

Adjusts the tone color of the low frequencies.

Treble

Adjusts the tone color of the high frequencies.

Vibrato

The Vibrato effect emulates the chorus and vibrato effects of vintage organs. It thickens the sound by means of pitch modulation.

The effect provides direct access to the classic chorus and vibrato settings (C1, C2 and C3 and V1, V2 and V3). In addition, there is a custom mode that allows you to adjust the amount of chorus or vibrato freely.

Type

Here, you can select the classic chorus and vibrato settings. This control is only available if the effect is set to **Classic** mode.

Custom Mode

Activate this to adjust the chorus and vibrato settings freely with the **Rate**, **Depth**, and **Vibr/Chor** controls.

Rate

Sets the frequency of the pitch modulation.

Depth

Sets the intensity of the pitch modulation.

Vibr/Chor

Controls the mix between the vibrato and the chorus signal. At 100 %, you only hear the chorus effect.

Vintage Ensemble

This effect emulates the sound of classic ensemble modulation effects. It is based on a delay with LFO-modulated delay times. A secondary LFO with higher frequencies is used to produce the so-called shimmer.

Rate

Sets the frequency of the LFO.

Sync

If **Sync** is activated, you can set the **Rate** value in fractions of beats.

Depth

Sets the intensity of the delay time modulation by the LFO.

Shimmer

Sets the intensity of a secondary faster delay time modulation.

Shimmer Rate

Determines the relation between the speed of the primary and the secondary delay modulation. For example, with a value of 10, the secondary modulation is 10 times faster.

Low Cut

Applies a low-cut filter to the signal. Only frequencies above the set frequency are sent to the effect.

High Cut

Applies a high-cut filter to the signal. Only frequencies below the set frequency are sent to the effect.

FX Level

Allows you to adapt the effect signal level to compensate for level reductions caused by the low-cut and high-cut filters.

Mix

Sets the ratio between the dry and the wet signal.

Dynamics Effects

Compressor

The Compressor reduces the dynamic range of a sound. This way, the sound gains headroom. You can use this extra headroom to make the overall sound louder again.

The graphical control to the left indicates the compression curve. You can edit the **Threshold** and **Ratio** values with the handles of this control. The input and output VU meters indicate the level before and after the compression. The Gain Reduction meter indicates the current attenuation of the level.

Threshold

Sets the threshold. Sounds that are louder than the threshold are reduced in gain. Sounds below the threshold stay untreated.

Ratio

Sets the amount of gain reduction for sounds that are louder than the threshold. The higher the ratio, the more the output is lowered. For example, if the ratio is set to 2:1 and the amplitude of the sound is 4 dB above the threshold, the output is lowered by 2 dB. If the amplitude is 8 dB above the threshold, the output is lowered by 4 dB.

Soft Knee

If this button is deactivated, signals above the threshold are compressed instantly according to the set ratio. If **Soft Knee** is activated, the onset of the compression is more gradual, producing a less drastic result.

Make-Up

Raises the overall sound. This can become necessary if too much gain reduction is introduced by the **Threshold** and **Ratio** parameters. You can see the amount of gain reduction in the Gain Reduction meter.

NOTE

This parameter is not available if the **Auto** button is activated.

Auto Make-Up Gain

Sets the **Make-Up** value automatically, depending on the current **Threshold** and **Ratio** settings.

Attack

Determines how fast the Compressor reacts to sounds that exceed the threshold. The longer the attack time, the longer the time it takes to reduce the gain. With longer attack times, the onset of sounds exceeding the threshold pass through unprocessed.

Hold

Sets the time period during which the compression is applied after the sound exceeds the set threshold.

Release

Determines how fast the Compressor effect reacts to sounds that fall below the set threshold. The longer the release time, the longer it takes to return to the original level.

NOTE

This parameter is not available if the **Auto Release** button is activated.

Auto Release

Activate this to set the release time automatically. The Compressor analyzes the input sound continuously to find the optimal setting.

Peak/RMS

Determines whether the input signal is analyzed according to peak or RMS values or a mixture of both. At a setting of 0 %, the Compressor uses Peak sensing only and at 100 %, RMS sensing only. Peak means that the Compressor directly senses the peak level of the sound. RMS means that the Compressor senses the average power of the sound. Peak sensing responds faster than RMS sensing. Typically, Peak sensing is used for transient and RMS sensing for sustained sounds.

Live

If this button is activated, the look-ahead feature of the effect is disengaged. Look-ahead produces more accurate processing, but adds a certain amount of latency as a trade-off. If **Live** mode is activated, there is no latency, which is better for live processing.

Vintage Compressor

Vintage Compressor is modeled after vintage type compressors.

This compressor features separate controls for **Input** and **Output** gain, **Attack**, and **Release**. In addition, there is a **Punch** mode which preserves the attack phase of the signal and a program-dependent **Auto** feature for the **Release** parameter.

In/Out Meters

Show the highest peaks of all available input and output channels.

GR Meter

Shows the amount of gain reduction.

Input

Determines the compression amount. The higher the input gain, the more compression is applied.

Ratio

Sets the amount of gain reduction for sounds that are louder than the threshold. The higher the ratio, the more the output is lowered.

Attack (0.1 to 100 ms)

Determines how fast the compressor responds. If the attack time is long, more of the initial part of the signal passes through unprocessed.

Punch

If this is activated, the early attack phase of the signal is preserved, retaining the original punch in the audio material, even with short **Attack** settings.

Release (10 to 1000 ms or Auto mode)

Sets the time after which the gain returns to its original level. If **Auto Release** is activated, the plug-in automatically finds the best release setting for the audio material.

Output (-48 to 24 dB)

Sets the output gain.

Tube Compressor

This versatile compressor with integrated tube-simulation allows you to achieve smooth and warm compression effects. The GR meter shows the amount of gain reduction. Tube Compressor features an internal side-chain section that lets you filter the trigger signal.

In/Out Meters

Show the highest peaks of all available input and output channels.

GR Meter

Shows the amount of gain reduction.

Input

Determines the compression amount. The higher the input gain, the more compression is applied.

Limit

Increases the ratio of the compressor for a limiting effect.

Drive (1.0 to 6.0)

Controls the amount of tube saturation.

Attack (0.1 to 100 ms)

Determines how fast the compressor responds. If the attack time is long, more of the initial part of the signal passes through unprocessed.

Release (10 to 1000 ms or Auto mode)

Sets the time after which the gain returns to its original level. If **Auto Release** is activated, the plug-in automatically finds the best release setting for the audio material.

Output (-12 to 12 dB)

Sets the output gain.

Mix

Adjusts the mix between dry signal and wet signal preserving the transients of the input signal.

Side-Chain

Activates the internal side-chain filter. The input signal can then be shaped according to the filter parameters. Internal side-chaining is useful for tailoring how the gate operates.

Monitor

Allows you to monitor the filtered signal.

Filter Type (Low-Pass/Band-Pass/High-Pass)

If **Side-Chain** is activated, these buttons allow you to set the filter type to low-pass, band-pass, or high-pass.

Center (50 to 20000 Hz)

If the **Side-Chain** button is activated, this sets the center frequency of the filter.

Q-Factor

If the **Side-Chain** button is activated, this sets the resonance or width of the filter.

Limiter

The Limiter effect prevents the sound from exceeding the set output level. This can be used to avoid clipping in following effects, for example.

The input and output meters indicate the level before and after the Limiter. The Gain Reduction meter in the middle indicates the current attenuation of the level.

Input

Adjusts the input level of the sound. By increasing the input level, you can drive the sound more and more into limiting.

Output

Sets the maximum output level of the sound.

Release

Sets the time that the gain needs to return to its original level. The longer the release time, the longer it takes to return to the original level.

NOTE

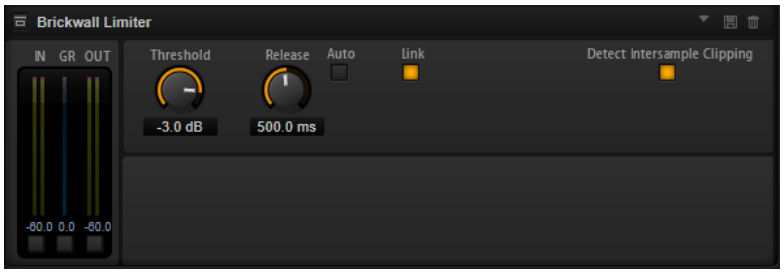
This parameter is not available if the **Auto** button is activated.

Auto

Activate this to set the release time automatically. The Limiter analyzes the input sound continuously to find the optimal setting.

Brickwall Limiter

Brickwall Limiter ensures that the output level never exceeds a set limit.



Due to its fast attack time, Brickwall Limiter can reduce even short audio level peaks without creating audible artifacts. However, this plug-in creates a latency of 1 ms. Brickwall Limiter features separate meters for input, output, and the amount of limiting.

Threshold (-20 to 0 dB)

Determines the level where the limiter kicks in. Only signal levels above the set threshold are processed.

Release (ms or Auto mode)

Sets the time after which the gain returns to the original level when the signal drops below the threshold. If the **Auto** button is activated, the plug-in automatically finds the best release setting for the audio material.

Link

If this button is activated, **Brickwall Limiter** uses the channel with the highest level to analyze the input signal. If the button is deactivated, each channel is analyzed separately.

Detect Intersample Clipping

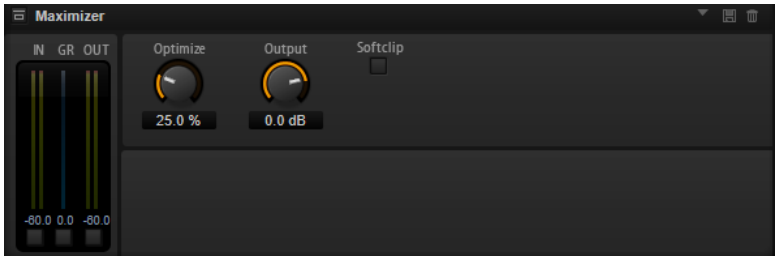
If this option is activated, **Brickwall Limiter** uses oversampling to detect and limit signal levels between two samples to prevent distortion when converting digital signals into analog signals.

NOTE

Brickwall Limiter is designed for the reduction of occasional peaks in the signal. If the Gain Reduction meter indicates constant limiting, try raising the threshold or lowering the overall level of the input signal.

Maximizer

This plug-in raises the loudness of audio material without the risk of clipping.



Optimize

Determines the loudness of the signal.

Output

Sets the maximum output level.

Soft Clip

If this button is activated, **Maximizer** starts limiting or clipping the signal softly. At the same time, harmonics are generated, adding a warm, tube-like characteristic to the audio material.

Expander

The Expander reduces the output level in relation to the input level for signals below the set threshold. This is useful to enhance the dynamic range or reduce the noise in quiet passages.

The graphical control to the left shows the expansion curve. You can edit the **Threshold** and **Ratio** values with the handles of this control. The input and output meters indicate the level before and after the expansion. The Gain Reduction meter indicates the current attenuation of the level.

Threshold

Sets the threshold. Sounds that are softer than the threshold are reduced in gain. Sounds above the threshold stay untreated.

Ratio

Sets the amount of gain reduction for sounds that are softer than the threshold. The higher the ratio, the more the output is lowered. For example, if the ratio is set to 2:1 and the amplitude of the sound is 4 dB below the threshold, the output is lowered by 2 dB. If the amplitude is 8 dB below the threshold, the output is lowered by 4 dB.

Soft Knee

If this button is deactivated, signals above the threshold are compressed instantly according to the set ratio. When **Soft Knee** is activated, the onset of the expansion is more gradual, producing a less drastic result.

Attack

Determines how fast the Expander reduces the gain when the sound falls below the set threshold. The longer the attack time, the longer it takes to reduce the gain.

Hold

Sets the time period during which the expansion is applied after the sound falls below the set threshold.

Release

Determines how fast the Expander effect raises the gain after the sound exceeds the set threshold. The longer the release time, the longer it takes to raise the gain.

NOTE

This parameter is not available when the **Auto Release** button is activated.

Auto

Activate this to set the release time automatically. The Expander analyzes the input sound continuously to find the optimal setting.

Peak/RMS

Determines whether the input signal is analyzed according to peak or RMS values or a mixture of both. At a setting of 0 %, the Expander uses Peak sensing only and at 100 %, RMS sensing only. Peak means that the Expander directly senses the peak level of the sound. RMS means that the Expander senses the average power of the sound. Peak sensing responds faster than RMS sensing. Typically, Peak sensing is used for transient and RMS sensing for sustained sounds.

Live

If this button is activated, the look-ahead feature of the effect is disengaged. Look-ahead produces more accurate processing, but adds a certain amount of latency as a trade-off. If **Live** mode is activated, there is no latency, which is better for live processing.

Gate

The Gate effect passes sound only to its output if the input sound exceeds the set threshold. Sounds below the threshold are silenced.

An internal side-chain filter allows you to analyze a filtered version of the input sound instead. This way, the gate detects only certain frequencies of the input sound.

Threshold

Determines the level that activates the gate. Signal levels above the set threshold trigger the gate to open, and signal levels below the set threshold close the gate.

Filter

Activates the internal side-chain filter. If this button is activated, the input sound is filtered before it is analyzed. The gate opens only if the filtered sound exceeds the set threshold. When the **Filter** button is deactivated, the filter controls are not available.

Filter Type

Sets the filter type for the side-chain filter. Select high-pass (**HP**) to detect high frequencies, band-pass (**BP**) to detect mid frequencies, and low-pass (**LP**) to detect low frequencies only.

Monitor

Activate this button to listen to the sound of the side-chain filter. The gate is inactive when the **Monitor** button is activated.

Center

Sets the center frequency of the side-chain filter.

Q-Factor

Adjusts the bandwidth of the filter from wide to narrow.

Attack

Determines how fast the gate opens when the sound exceeds the set threshold. The longer the attack time, the longer it takes for the sound to fade in.

Hold

Sets the time period during which the gate is applied after the sound falls below the set threshold.

Release

Determines how fast the gate closes after the sound falls below the set threshold. The longer the release time, the longer it takes for the sound to fade out.

NOTE

This parameter is not available when the **Auto** button is activated.

Auto

Activate this to set the Release time automatically. The Gate analyzes the input sound continuously to find the optimal setting.

Peak/RMS

Determines whether the input signal is analyzed according to peak or RMS values (or a mixture of both). At a setting of 0 %, the Gate uses Peak sensing only and at 100 %, RMS sensing only. Peak means that the Gate directly senses the peak level of the sound. RMS means that the Gate senses the average power of the sound. Peak sensing responds faster than RMS sensing. Typically, Peak sensing is used for transient and RMS sensing for sustained sounds.

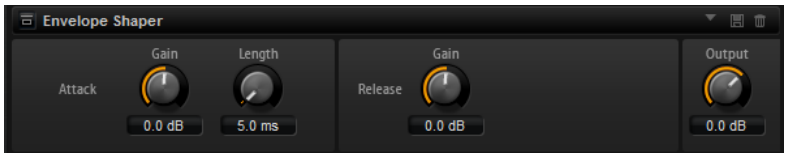
Live

If this button is activated, the look-ahead feature of the effect is disengaged. Look-ahead produces more accurate processing, but adds a certain amount of latency as a trade-off. If **Live** mode is activated, there is no latency, which is better for live processing.

Envelope Shaper

This effect can be used to attenuate or boost the gain of the attack and release phase of audio material.

Be careful with levels when boosting the gain and, if needed, reduce the output level to avoid clipping.



Attack - Gain

Changes the gain of the attack phase of the signal.

Attack - Length

Determines the length of the attack phase of the signal.

Release - Gain

Changes the gain of the release phase of the signal.

Output

Sets the output level.

Spatial and Panner Effects

Stereo Pan

This effect allows you to set the stereo position and width of the signal.

Input Swap

Swaps the stereo channels.

Pan

Sets the pan position of the signal. The panning is available for mono and stereo input signals.

Width

Adjusts the stereo width of the signal from stereo to mono.

Stereo Enhancer

This plug-in expands the stereo width of stereo audio material. It cannot be used with mono files.

Width

Controls the width or depth of the stereo enhancement. Turn clockwise to increase the enhancement.

Delay

Increases the amount of differences between the left and right channels to further increase the stereo effect.

Color

Generates additional differences between the channels to increase the stereo enhancement.

Mono

Switches the output to mono, to check for possible unwanted coloring of the sound which sometimes can occur when enhancing the stereo image.

Legacy Effects

HALion 3 Legacy Effects

In addition to the standard effects, a number of effects from HALion 3 is also provided. These effects can be selected from the **Legacy** submenu of the effects menu.

Hall Reverb

A simple reverb with adjustable pre-delay and damping.

PreDelay

Delays the wet signal to simulate larger acoustic spaces or to create a slap-back effect.

Time

Length of reverb tail.

Damp

Progressive damping of high frequencies.

Low EQ

Low-cut EQ.

High EQ

High-cut EQ.

Mix

Wet/dry mix.

Non-Linear Reverb

A gated reverb with a sharp cutoff.

Time

Length of reverb tail. It also allows you to change the sound from dense early reflections to a trashy, grainy 1980's-type reverb.

Low EQ

Low-cut EQ.

High EQ

High-cut EQ.

Mix

Wet/dry mix.

Early Reflections

A short, dense reverb for simulating small acoustic spaces and to thicken or blur sounds.

Time

Length of reverb tail. It also allows you to change the sound from dense early reflections to a trashy, grainy 80's-type reverb.

Low EQ

Low-cut EQ.

High EQ

High-cut EQ.

Mix

Wet/dry mix.

Delay

A simple mono-in/stereo-out delay.

Time

Delay time.

Sync

If **Sync** is activated, you can set the delay time in fractions of beats.

Feedback

Controls the number of delay repeats.

Balance

Ratio of left delay time to right delay time.

Damp

High-cut filter to soften delay repeats.

Stereo Delay

A stereo-in/stereo-out delay.

Time

Delay time.

Feedback

Controls the number of delay repeats. For minimum feedback, set the slider to the mid position. By moving the slider to the left or right, cross delay is applied, where left output feeds back into right input or vice versa.

Sync

If **Sync** is activated, you can set the delay time in fractions of beats.

Balance

Ratio of left delay time to right delay time.

Damp

High-cut filter to soften delay repeats.

Long Delay

This effect provides the same parameter set as the Delay effect, except that longer delays of up to four seconds can be set.

Tape Delay

Simulation of a vintage 4-head analog tape delay.

Time

Delay time.

Sync

If **Sync** is activated, you can set the delay time in fractions of beats.

Feedback

Controls the number of delay repeats.

Vintage

Amount of vintage color and tape flutter.

Mix

Wet/dry mix.

Head 1

Delay level 1 (the output is panned left).

Head 2

Delay level 2 (the output is panned right).

Head 3

Delay level 3.

Head 4

Delay level 4.

Pan 3+4

Varies the panning of delays 3 and 4 from center to hard left/right.

Vol 3+4

Varies the volume of delay outputs 3 and 4.

Chorus

A straightforward chorus effect that can be used to widen sounds.

Rate

The modulation rate.

Depth

The amount of pitch modulation.

PreDelay

The initial delay, to vary the tightness of the chorused voices in relation to the dry signal.

Mix

Wet/dry mix.

Ensemble

Chorus with a more complex modulation waveform for a lively thickening effect.

Rate

The modulation rate.

Depth

The amount of pitch modulation.

Shimmer

Creates a more complex modulation effect.

Width

Stereo width adjustment.

Mix

Wet/dry mix.

Flanger

A classic flanger effect.

Rate

Sweep rate.

Depth

Sweep depth.

Feedback

Feedback amount. Increase for a more intense flanging effect.

PreDelay

Initial delay. Adjusts the minimum delay time/maximum flange frequency.

Mix

Wet/dry mix.

Phaser

A four pole phaser for subtle phasing effects.

Rate

Sweep rate.

Depth

Sweep depth.

Feedback

Feedback amount. Increase for a more pronounced effect.

Stereo

Offset between left and right modulation.

Center

Sets the center frequency around which the modulation occurs.

Mix

Wet/dry mix.

Pan & Tremolo

Autopan and Tremolo effect as used in vintage electric pianos.

Rate

Sweep rate.

Phase

Relative phase of left and right channel amplitude modulation, to vary from tremolo to autopan.

Shape

Shape of modulation waveform from thin pulse, through sine, to fat pulse.

Mix

Wet/dry mix.

Stereo Width

A stereo width enhancer with 4 modes.

Mode

- **Adjust** mode adjusts the existing width of the stereo signal.
- **Swap** mode adjusts the existing width of the stereo signal and additionally swaps the left and right channels.
- **Comb** mode applies a stereo comb filter effect.
- **Haas** mode synthesizes the stereo width by delaying one channel.

Delay

Delay time (not used in **Adjust** and **Swap** modes).

Width

Overall width adjustment.

Low/Mid/High
Width adjustment for the low, mid, and high frequencies.

Output
Output level trim.

Rotary Speaker

Simulation of a rotary speaker cabinet with high and low rotors.

Rate
Master speed control: Stop, Slow, Fast.

Dirt
Amount of overdrive.

LoHi
Crossover frequency between low and high rotors.

Width
Stereo width.

Tone
Adjusts the tone of the overdriven signal.

Low/High Speed
Speed of the high and low rotors.

Low/High Acceleration
Acceleration of the high and low rotors.

Mix
Wet/dry mix.

Wah Pedal

An auto-wah effect.

Rate
Modulation rate.

Depth
Modulation depth.

Pedal
Adjusts the filter frequency.

Mode

- **Auto Wah**: Envelope controlled wah effect.
- **Pedal Wah**: No modulation. The **Pedal** parameter sets the frequency.
- **Mod Wah**: LFO modulation. The **Rate** parameter controls the modulation rate.

Resonance
Sets the amount of filter resonance.

Tracking
Adjusts the envelope tracking speed in **Auto** mode, and the envelope rate modulation in **Mod** mode.

Mix

Wet/dry mix.

TalkBox

Modulated vowel formant filter.

Rate

LFO modulation rate.

Depth

LFO modulation depth.

Vowel

In center setting, vowels are produced when there is no modulation.

Env Mod

Amount of vowel modulation by input signal level.

Env Att

Rate of response to a rising input signal level.

Env Rel

Rate of response to a falling input signal level.

Mix

Wet/dry mix.

Shelf EQ

Simple tone control.

Output

Output level trim.

Bass

Low frequency cut/boost.

Treble

High frequency cut/boost.

Parametric EQ

Two-band parametric equalizer.

Gain 1/2

Cut/boost amount for the two bands.

Freq 1/2

Sets the center frequency for the two bands.

Width 1/2

Sets the bandwidth for the two bands (Q).

Output

Output level trim.

Enhancer

Psycho acoustic spectrum shaping.

High Depth
High frequency boost, combined with mid cut.

High Tune
High/mid tune.

Low Depth
Low frequency boost.

Low Tune
Low frequency tune.

Limiter

Hard level limiting.

Drive
Input signal drive.

Attack
Attack time.

Release
Release time.

Output
Output level trim.

Compressor

A simple compressor effect.

Threshold
Compression threshold.

Ratio
Compression amount.

Attack
Attack time.

Release
Release time.

Output
Output level trim.

Multiband

Three-band compressor.

Drive
Input signal drive (increase for more density).

Lo/Hi
Balance of low and high frequency bands.

Mid
Level of mid frequency band.

Attack
Attack time.

Release
Release time.

Output
Output level trim.

Gate

Simple gate effect.

Threshold
Gate threshold.

Range
Level reduction when gate closed.

Attack
Attack time.

Release
Release time.

Output
Output level trim.

Distortion

Hard clipping distortion.

Drive
Distortion amount.

Bias
Adjusts the balance between even and odd harmonics, that is, the character of the distortion.

Tone
Distortion tone.

Out
Output level trim.

Mix
Wet/dry mix.

Overdrive

Softer distortion with a gradual onset.

Drive
Overdrive amount.

Bias
Overdrive character. Adjusts the balance between even and odd harmonics.

Out
Output level trim.

Mix

Wet/dry mix.

Bit Reduction

Digital, lo-fi, quality degradation.

Mode

Determines whether the bit depth is fixed (**Linear**) or depends on the signal level (**Companding**).

Rate

Simulated sample rate.

Depth

Sample bit depth.

Slew Rate

Maximum rate of change of output waveform, for a soft, wooly distortion.

Mix

Wet/dry mix.

Amp Simulator

Amplifier modeling effect.

Model

The type of amplifier model. This changes the tone character.

Mode

Mono/Stereo operation. Mono saves CPU, and in some cases sounds more solid.

Drive

Overdrive amount.

Feedback

Feedback amount. The result depends on the input signal.

Treble

Treble boost. Optionally in or out of phase for different tones.

Mix

Wet/dry mix.

Modulate L/R

This effect features three modes of signal distortion, where one side of a stereo signal is used to modulate the other.

Mode

- **Ring Mod**: Ring modulation.
- **Env Mod**: The signal level of the right channel is modulated by the level of the left channel.
- **Duck**: The signal level of the right channel is reduced when the level of the left channel increases.

Thru

Defines which input signals are used as the dry signal for the Mix.

Smooth

Smoothing of modulation.

Drive

Level trim.

Mix

Wet/dry mix.

Note Expression

Steinberg's Note Expression technology was developed for creating realistic instrument performances. Note Expression allows you to create automated modulations for each note. HALion Sonic supports Note Expression for volume, pan, and tuning.

If you use a Steinberg DAW that supports Note Expression, you can automate the Note Expression parameters for any program in HALion Sonic per note.

Furthermore, in programs that give you access to the modulation matrix, you can assign up to eight Note Expression controllers to the available modulation destinations. These work in addition to the preassigned pitch, pan, and level modulations.

NOTE

The Note Expression controllers of a program are shared by all its layers. This means that the controller data affects all layers simultaneously. Depending on how the Note Expression controllers are set up, each layer can react differently.

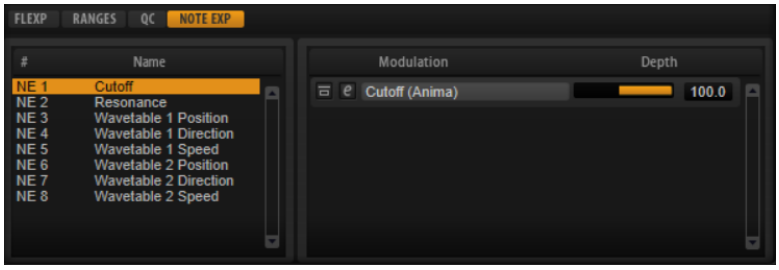
NOTE

If you use HALion Sonic with host applications that do not support Note Expression, the **Note Expression** editor page and the Note Expression controllers in the modulation matrix are visible, but they do not have any influence on the program.

Note Expression Editor

The editor shows the Note Expression controllers on the left and the assigned modulation destinations on the right. This gives you a quick overview of how the Note Expression controllers are routed in the modulation matrix and what their influence on the sound will be.

- To open the **Note Expression** editor, open the **Edit** page and select the **Program** tab.



NOTE

A Note Expression controller can be assigned to several destinations.

Name

If you assign a Note Expression controller for the first time, it gets the name of the modulation destination that it is assigned to. Any further assignments do not change the name. You can specify a name manually by entering it in the **Name** field.

Bypass Note Expression Controller

To deactivate the effect of the controller, click the **Bypass Note Expression Controller** button. It is linked to the **Bypass** button of the corresponding modulation destination in the modulation matrix.

Depth

This slider adjusts the intensity of the Note Expression modulation. It is linked to the **Depth** slider of the corresponding modulation destination in the modulation matrix.

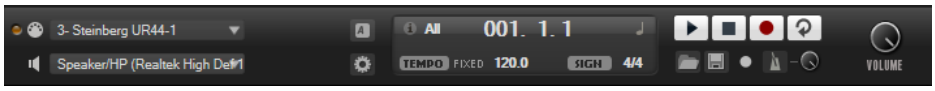
Edit

Click **Edit** to jump to the first modulation assignment of the Note Expression controller in the modulation matrix.

Using the Standalone Version of the Plug-In

You can use HALion Sonic independently from a host application.

If you use HALion Sonic as a standalone application, an additional section is available at the top of the control panel. Here, you can define key commands, set up audio and MIDI interface routings, adjust the master volume, and access the integrated MIDI scratch pad, which allows you to record your musical ideas without having to start a MIDI sequencer application. It can also be used to play multitrack arrangements that trigger the different programs.



Making Preferences Settings

You can configure the standalone version of HALion Sonic in the **Plug-In Preferences** dialog.

- To open the **Plug-In Preferences** dialog, click the **Open Preferences** button to the right of the audio output field or right-click in the topmost section of the control panel and select **Plug-In Preferences** on the context menu.

Preferences Dialog

The **Plug-In Preferences** dialog has several pages on which you can make settings.

MIDI Page

MIDI Input Ports

Use this pop-up menu to specify a MIDI input.

Channel Filter

Determines whether MIDI events are recorded on all MIDI channels, or only on one specific channel.

Filter 'All Notes Off' Controller

Activate this parameter to avoid unwanted "All Notes Off" messages. Such messages are sent by some keyboards when the last key is released. This causes HALion Sonic to stop playback, even when the sustain pedal is still in use.

Outputs Page

You can use the **Audio Output Ports** pop-up menus to assign different audio outputs. You can assign different audio outputs for each channel.

- To map an output to a channel, select it from the pop-up menu.
- To set the front and rear channels to incrementing audio output ports, hold down **Shift** and select an audio output.

- To assign the audio outputs in pairs to the front and rear channels, hold down **Alt-Shift** and select an audio output.

Metronome Page

On the **Metronome** page, a number of settings can be made regarding the use of a metronome.

Mode

Activates/Deactivates the metronome or sets it to **Count In** mode.

Accent

Accentuates the first beat of each bar.

Level

Adjusts the volume of the metronome.

Connections

Allows you to select a separate stereo output for the metronome.

General Page

Don’t prompt for confirmation when quitting HALion Sonic

If you want the plug-in to close without prompting when you quit the program, activate **Don’t prompt for confirmation when quitting HALion Sonic**.

High DPI Mode

- If **High DPI Mode** is activated, the plug-in uses high-resolution bitmaps when it is displayed with a scaling of 150 % and higher on a high-resolution monitor, such as 4K (UHD), 5K, etc. This allows for sharper images on high-resolution displays.

  NOTE

  Windows systems currently only support scaling factors that are multiples of 100. For example, if you use a scaling factor of 150 %, in HALion Sonic, the scaling factor used is 200 %.

  High DPI Mode may not be compatible with some combinations of software and hardware. If you experience display issues with your setup, you can deactivate **High DPI Mode**.

  If **High DPI Mode** is deactivated, the native monitor resolution is used.

ASIO Driver Page

On the **ASIO Driver** pop-up menu, you can select your audio hardware driver.

Release Driver when Application is in Background

Activate this option if you plan to use several audio applications simultaneously.

Input Latency/Output Latency

The input and output latency values for your audio hardware are displayed. Latency is the amount of time it takes for your system to respond to any messages that are sent to it. High latency results in a noticeable delay between when you press a key and when you hear the sound.

You can change the latency with the **Buffer Size** parameter in the control panel for your driver, opened by clicking the **Control Panel** button on the **Advanced** tab.

Sample Rate

Below the latency values, you can set the sample rate for the connected audio hardware.

Audio Priority

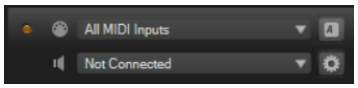
Determines which of the HALion Sonic processes gets priority when accessing processor resources on your computer.

- In **Normal** mode, non-audio processes and audio playback get roughly equal priorities.
- In **Boost** mode, audio precedes MIDI in priority. Try this mode if audio playback problems occur when playing back MIDI and audio material.

Advanced Page

Once you have selected the driver, you can specify which inputs and outputs to use and name these on the **Advanced** page. Click the **Control Panel** button to open the control panel for the audio hardware and adjust the settings as recommended by the audio hardware manufacturer.

Selecting the MIDI Input and the Audio Output



The MIDI input pop-up menu lists all MIDI devices that are installed on your system.

- Select the MIDI device that you want to use from the **MIDI Input** pop-up menu.

  The MIDI activity LED in the top left corner of the control panel indicates incoming MIDI messages via the selected MIDI input. The LED lights up on receiving note-on and controller messages. This way, you can check if HALion Sonic and your MIDI keyboard are connected to the same MIDI device input.

The Audio output pop-up menu lists all outputs of the selected ASIO device.

- To select an audio output for the main stereo channel of the plug-in, open the **Audio Output** pop-up menu.

RELATED LINKS
ASIO Driver Page on page 293

Scratch Pad

The scratch pad allows you to record and play back MIDI files in Standard MIDI File format. You can load existing MIDI files and you can record your own files and save them.

The transport section provides buttons for play, stop, record, and loop. The display shows the song position, the tempo, and the time signature of the MIDI file. In addition, there is a metronome that you can use for recording and practicing.

The scratch pad can play back multi-track MIDI files sending notes on all 16 MIDI channels. It also sends MIDI program change messages when a MIDI file is loaded.

Transport Controls

Play

Click **Play** to start playback of the MIDI file. Playback always starts at the song position.

Stop

Click **Stop** to pause the MIDI file at the current position. Click the button twice to reset the song position to the start.

Record

Click **Record** to start recording.

Loop

Activate **Loop** to play the entire MIDI file in a loop.

Info Icon

To check which MIDI file is loaded, point the mouse at the info icon in the top left corner of the scratch pad. A tooltip appears, showing the name of the MIDI file.

Song Position Indicator

The song position indicator shows the position of the transport. Above the song position indicator, the position is displayed numerically.

After loading a MIDI file, the display shows the full length of the file.

- To move the transport to a different song position, drag the song position indicator to the new position.
- To switch the time format between **Time** and **Bars**, click **Select Time Format** in the top right corner of the display.

Tempo and Time Signature

Below the song position display, the **Tempo** and **Time Signature** fields are located. These fields provide HALion Sonic with tempo and time signature information. These settings are used by the scratch pad and the metronome.

Fixed Tempo/Tempo Track

Set this parameter to **Track** to follow the original tempo of the MIDI file.

Set this parameter to **Fixed** to enter the tempo manually. You can either enter the value directly in the value field or you can enter a tempo by repeatedly clicking the **Tap to set Tempo** field next to the value field.

Tempo Value

Determines the tempo of the MIDI file.

Adjust Tempo

If the **Tempo Track** option is selected, this parameter is available, allowing you to scale the playback relatively to the original tempo of the MIDI file.

Time Signature

Determines the time signature. You can enter the new signature as fractions of beats.

Recording Your Performance

PROCEDURE

1. Click the record symbol below the **Record** button to select a record mode.
   - To start recording immediately when you click the record button, select **Direct**.
   - To start recording with the first MIDI note, select **MIDI**.
   - To start the recording after a count-in of one bar, select **Count In 1**.
   - To start the recording after a count-in of 2 bars, select **Count In 2**.
2. Click the **Record** button to start recording.
   To indicate that the recording is running, the song position indicator moves from left to right.
3. When you are done recording, click the **Stop** button.

RELATED LINKS
Saving a MIDI File on page 296

Using the Metronome

PROCEDURE

- To select the playback mode of the metronome, click **Metronome** and select one of the options from the pop-up menu:
  - If **On** is selected, the metronome is activated and plays continuously.
  - If **Count In** is selected, the metronome plays only during the count-in of a recording.
  - To deactivate the metronome, select **Off**.

Loading a MIDI File

You can load MIDI files in Standard MIDI File format (file name extension `.mid`).

PROCEDURE

1. Click the **Load MIDI File** button below the transport buttons.
2. In the file dialog, select the file that you want to use.
3. Click **Open** to load the MIDI file.

MIDI Channel Filter

If a multitrack MIDI file is loaded, you can play back all MIDI events or only the events of a specific MIDI channel.

- To specify which events to play back, click the **MIDI Channel Filter** field to the right of the info icon and select an option from the pop-up menu.

Saving a MIDI File

PROCEDURE

1. Click the **Save MIDI File** button below the transport buttons.

2. In the file dialog, specify a location and a file name.
3. Click **Save** to save your recorded performance as a MIDI file.

Master Volume

Use the volume control on the right to set the master volume of the outputs of the standalone version of HALion Sonic.

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