
MASSIVE XL

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1. Disclaimer

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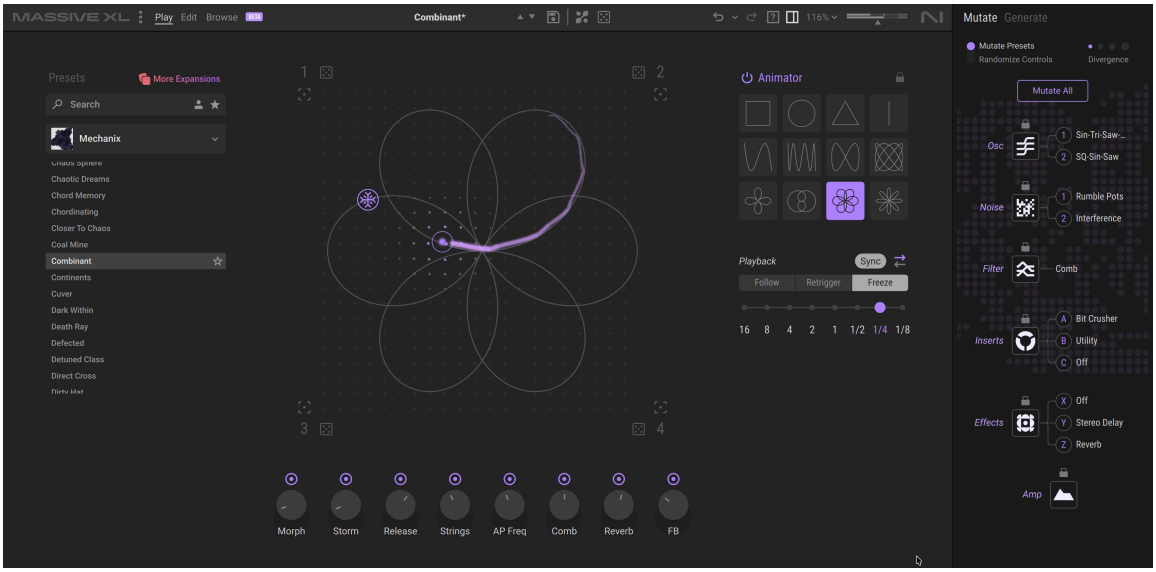
2. Welcome to Massive XL

Massive XL builds on its iconic heritage to guide you to your own distinctive sound with grit, weight, and character. Massive XL carries the legacy of Massive and Massive X, including the Massive X sound, presets, and Expansions, into the next chapter.

Begin with a preset, an Expansion, a sample, or an idea, then take it somewhere only you would. Mutate offers guided preset mutations and instant module randomization. Lock in what you love, change what you don't, stay in control. The Morpher turns expressive movement into something you can perform.

Generate turns a sample into a real, playable preset, with every parameter ready to shape – stem separation included. You can also build sounds from scratch in Edit view, where semi-modular patching meets expressive, playable modulation.

We hope you enjoy using this fantastic instrument!



User guide formatting and styles

You will find the following formatting and styles in this user guide:

- *Italics*: Paths to locations on your computer
- **Bold**: Names of user interface elements and important concepts
- [Brackets]: Keys on your computer keyboard

▶ An instruction with a single step

→ The expected result when following instructions



A useful tip, suggestion, or interesting fact



Essential information in a given context



Potential risks and important issues

What's new in Massive XL

The following features have been added or improved in Massive XL:

- **Generate**: Use your samples to automatically create a fully tweakable patch from scratch. You can find more information in Generate.
- **Mutate**: Come up with new sounds based on existing presets by introducing algorithmically generated variations. You can find more information in Mutate.
- **User wavetable import**: Import audio files into Massive XL and build your own wavetable library. You can find more information in User wavetables.
- **Module sub-presets**: Save and load sub-presets in the Filter, Inserts, and Effects. The Performers and Trackers offer the same functionality for their shapes. You can find more information in Sub-presets.
- **Morpher Freeze mode**: Lock the Morpher position for every note you play, giving you instant, per-note variations of your sound. You can find more information in Animator.
- **Polyphonic aftertouch**: Play sounds expressively using polyphonic aftertouch, including existing presets. You can find more information in Polyphonic aftertouch.
- **New Effects**: Load Raum, Replika Shimmer, and Tape Wobble in the Effects module to create new sounds.
- **New wavetables and noisetables**: Explore more than 100 new wavetables and more than 100 new noisetables across various categories, including vintage PPG and original Massive wavetables. You can find more information in Wavetables categories.
- **New Massive XL Factory Library**: Find presets that span a huge range of styles and genres in the new and expanded Factory Library. You can find more information about browsing in Browse view and presets.
- **User banks**: Organize user presets in your own custom user banks. You can find more information in Saving user presets and banks.

- **Updated themes and user interface**: Switch between the rebuilt dark and light themes, with optional flat mode. You can access them from the Settings menu in the Header.
- **New Wavetable oscillator views**: Switch between the original Dual view and Single view, where the new Wavetable display visualizes the wavetable and Wavetable mode. You can find more information in Wavetable oscillators overview.
- **Animated modulation and contextual assignment**: View active modulation using new scopes in the Navigation bar and real-time indicators in controls. The new modulation assignment workflows and views are contextual and responsive. You can find more information in Modulation.
- **Interactive envelope displays**: Dial in the envelope shape without using knobs using the new interactive envelope displays. You can find more information in Modulation Envelope.
- **Undo/redo**: Undo or redo all of your changes, and use the history to jump to specific versions of your patch. You can find more information in Header.
- **Info pane**: Learn about any control or element you hover in the new Info pane at the bottom of the instrument. You can find more information in Header.

Installation and Setup

Before you can make music with Massive XL, you must install the necessary software using Native Access.

1. Download and install Native Access here.
2. If you are new to Native Instruments, create your Native ID.
3. Login to Native Access using your Native ID.
4. Find Massive XL under **Recently Added** on the **Home** page, or in the **Available** tab on the **Library** page.
5. Click **Install** for Massive XL.

→ The software is installed automatically.

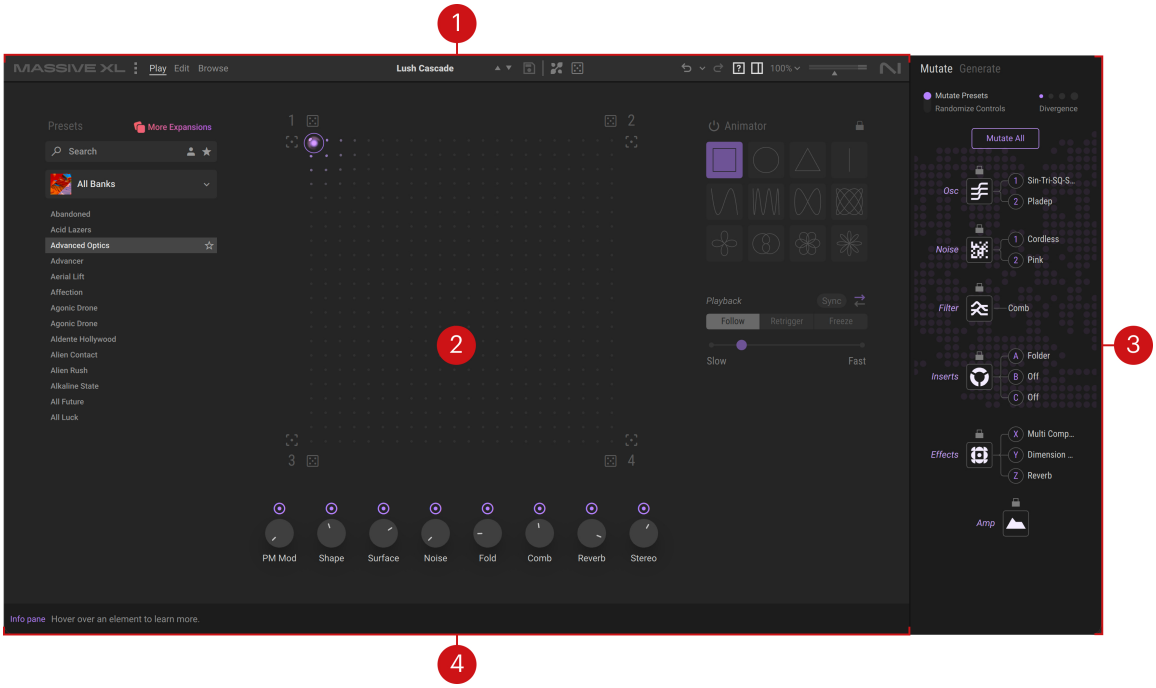
ⓘ If the Massive XL is already installed, check the **Updates** page and for new updates before proceeding.

3. Massive XL overview

When you first open Massive XL you will see Play view along with a set of global controls in the Header at the top, the Side pane to the right, and the Info pane at the bottom.

You can navigate the instrument from the Header by switching between Play, Edit, and Browse view, as well as showing or hiding the Side and Info pane.

Massive XL consists of the following main areas:

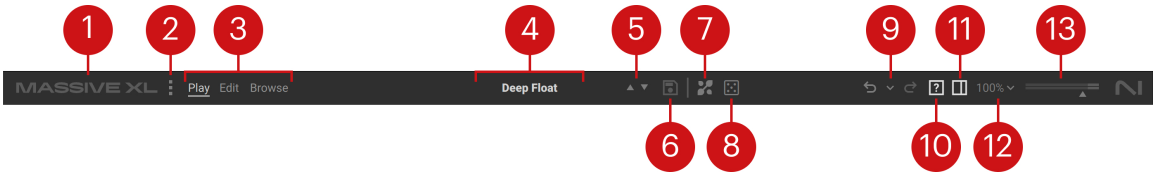


1. **Header**: Lets you switch views, browse presets, and access settings and options. You can find more information in Header.
2. **Instrument views**: In the main area of the instruments you can play presets, edit sounds, or browse your library depending on the view you have selected in the Header:
   - **Play view** gives you intuitive and inspiring tools to play and tweak presets. You can find more information in Play view.
   - **Edit view** (not available in Massive XL Player) lets you dive into sound design with full access to all of Massive XLs modules and modulation. You can find more information in Edit view.
   - **Browse view** lets you quickly find and load presets from your library and Expansions. You can find more information in Browse view and presets.
3. **Side pane** (not available in Massive XL Player): Features the **Mutate** and **Generate** views for transforming and generating presets. You can find more information in Side pane.
4. **Info pane**: Gives you a brief description for each control upon mouse hover.

Header

The Header at the top of the plugin provides direct access to a number of important options and functions such as browsing and presets, different views, undo/redo, and the main volume.

The Header consists of the following elements:

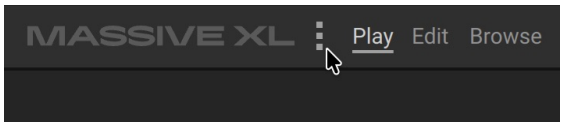


1. **Logo**: Opens the About dialog with information about the version number, license, and credits of the instrument.
2. **Settings menu**: Provides options for managing user presets, adjusting the instrument's appearance, and other settings. You can find more information in Settings menu.
3. **View**: These buttons let you switch between the instrument views.
   - **Play**: Opens the Play view, which lets you quickly load a preset, use the Macros to adjust the sound, and play with the Morpher, an intuitive tool for blending between Macro settings. You can find more information in Play view.
   - **Edit**: Opens the Edit view, which lets you adjust every detail of your preset and explore sounds by creating new combinations of modules and modulators. You can find more information in Edit view.
   - **Browse**: Opens Browse view, which lets you access the Massive XL preset library, Expansions, and user presets. You can filter sounds by tags, text search, and Favorites, helping you to quickly and intuitively find the right sound. You can find more information in Browse view and presets.
4. **Preset selector**: Shows the name of the current preset. Clicking the preset name opens Browse view. If you modify a preset, a star icon next to its name indicates that it has not been saved.
5. **Previous/next preset**: Loads the previous or next preset in the preset list.
6. **Save Preset**: Saves your sound as a user preset. You can find more information in Saving user presets and banks.
7. **Mutate**: Mutates all modules in the current preset at once, excluding modules that are locked in Mutate view.
8. **Randomize**: Randomizes all modules in the current preset at once, excluding modules that are locked in Mutate view.
9. **Undo/Redo**: Moves back and forth in your history of changes applied to the current preset. Clicking the left arrow undoes, while clicking the right arrow redoes. The drop-down menu in the middle shows the complete history so you can jump to specific changes.
10. **Info pane**: Shows or hides the help text area at the bottom of the plugin, giving you a brief description for each control upon mouse hover.
11. **Side pane**: Shows or hides the Side pane where you can find the **Mutate** and **Generate** views. You can find more information in Side pane.
12. **View size**: Opens a drop-down menu that lets you set the size of the plugin window. **Fit to Screen** sets the maximum size without completely covering your DAW window.
13. **Main volume**: Adjusts the output level of the plugin. The meter shows the current level of the output signal.

Settings menu

The Settings menu in the Header provides options for managing user content, adjusting the visual appearance of the interface, setting the control sensitivity, and adjusting the Morpher automation. You can also access learning resources, discover Massive XL Expansions, and set usage data tracking.

▶ To open the Settings menu, click the three dots icon next to the Massive XL logo in the Header.



The Settings menu contains the following entries:

- **Load Init Preset**: Loads a standard template preset with basic settings, allowing you to start designing a new sound from scratch.
- **Undo**: Moves back in your history of changes applied to the current preset.
- **Redo**: Moves forth in your history of changes applied to the current preset.
- **Show User Content Folder**: Opens the folder on the hard drive containing your user content. You can find more information in Managing user presets.
- **Discover Massive XL Expansions…**: Opens the Massive XL Expansions page on the Native Instruments website.
- **Learn more about Massive XL…**: Opens the Massive XL product page on the Native Instruments website.
- **Online Massive XL Documentation…**: Opens the Massive XL user guide online.
- **Watch the walkthrough...**: Opens the walkthrough video on YouTube.
- **Show Welcome Screen**: Sets whether the Welcome screen is shown when opening the plugin.
- **Sync to Monitor Refresh Rate**: Synchronizes the interface rendering to the monitor's refresh rate to prevent flickering of animations.
- **Control Sensitivity**: Provides nine settings for the sensitivity response of knob and slider controls.
- **Theme**: Switches the interface between the **Light** and the **Dark** theme.
- **Flat Mode**: Removes shading from the interface to make the appearance completely flat.
- **Default to Edit View** (not available in Massive XL Player): When this option is active, any new instance of Massive XL opens in Edit view instead of Play view.
- **Morpher Automation**: Lets you choose which control changes are exposed to your DAW when you use the Morpher. You can find more information in Using the Morpher with MIDI or host automation.
- **Morpher X/Y Inversion**: Inverts the Morpher's response to automation data for the X, Y, or both axes. You can find more information in Using the Morpher with MIDI or host automation.
- **Macros Bar Position**: Moves the Macro bar to the **Top**, **Center**, or **Bottom** of the interface.
- **Usage Data Tracking**: Offers more information about usage data tracking, and the option to activate or deactivate the feature.
- **Update Notifications**: Sets whether you are notified about free updates using a button in the Header.
- **Rescan Content**: Updates your library contents to reflect all changes made to the User Content folder. You can find more information in Managing user presets.

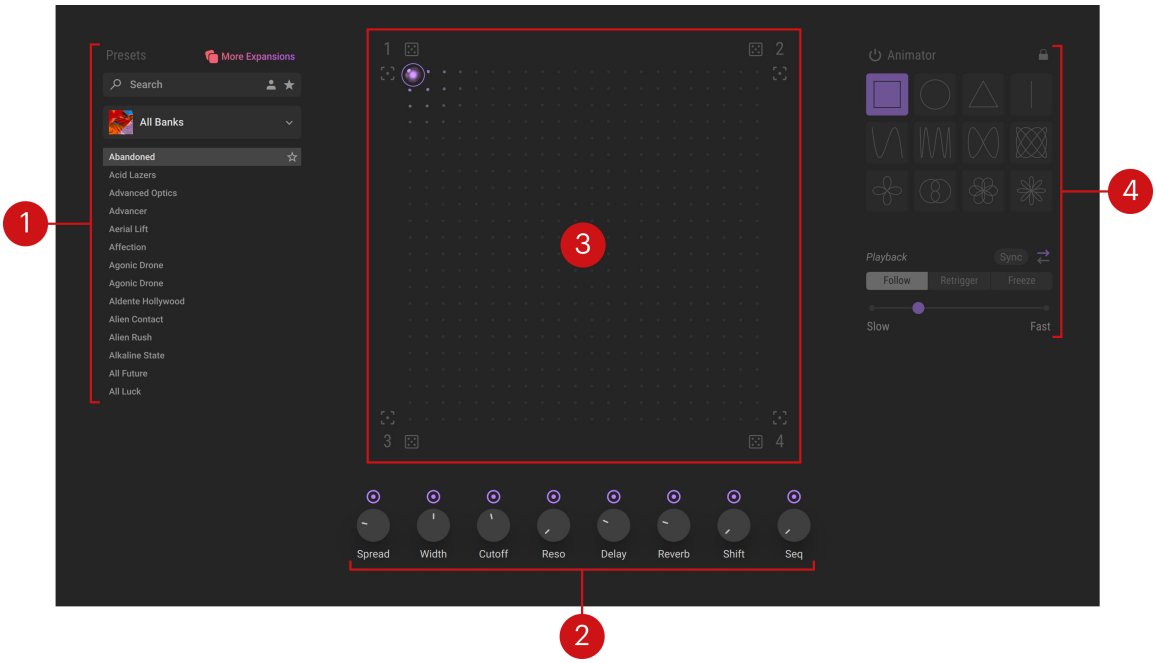
4. Play view

Play view lets you quickly load a preset, use the Macros to adjust the sound, and play with the Morpher, an intuitive tool for blending between Macro settings.

▶ Click **Play** in the Header to open the Play view.



Play view consists of the following areas:

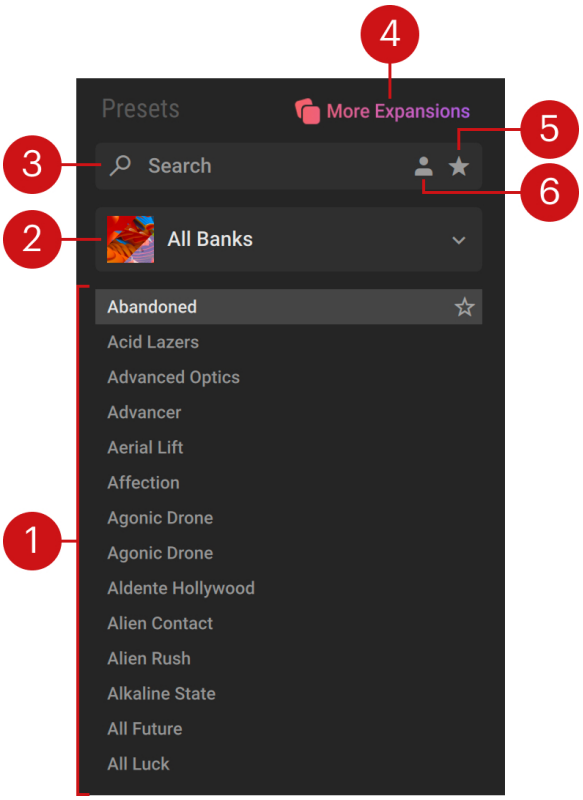


1. **Presets browser**: Lets you quickly search and load presets from your libraries and Expansions. You can find more information in Presets browser.
2. **Macros 1–8**: Provides access to the first eight Macros. You can find more information in Macros 1–8 in Play view.
3. **Morpher**: Adjusts the morphing between four different snapshots of the preset, each snapshot containing another set of values for the Macros 1–8. You can find more information in Morpher.
4. **Animator**: Configures an automatic morphing between the snapshots. You can find more information in Animator.

Presets browser

The Presets browser lets you quickly browse and load presets without leaving the Play page. It always stays in sync with Browse view, so you can pick up where you left off if you switch views.

The Presets browser consists of the following elements:



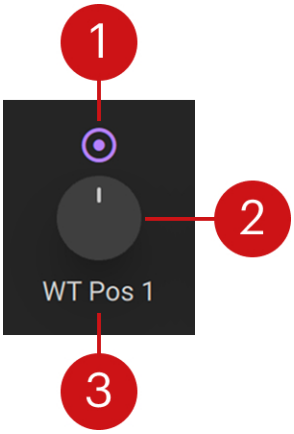
1. **Results list**: Displays the presets according to your search criteria. The presets are listed in alphabetical order and the selected preset is highlighted. You can click a preset to load it. As you hover over any preset with your mouse, a star icon appears on the right: If you click the star, the preset is set as Favorite and its star lights up. Clicking a lit star will remove the preset from your Favorites.
2. **Bank selector**: Displays the selected factory library or Expansion. Clicking the name opens a menu where you can select another bank from the factory libraries and Expansions installed on your computer. Selecting a bank filters the Results list accordingly. You can also select **All Banks** at the top of the menu to show the presets from all installed libraries and products. The selected entry is synchronized between the Presets browser and Browse view.
3. **Search field**: Filters the presets in the Results list according to the text entered in the field. The search engine considers the preset name, author, Character and Sound Type tags, and product name.
4. **More Expansions**: Opens the Massive XL Expansions page on the Native Instruments website.
5. **Favorites**: Filters the presets in the Results list by Favorite tags. You can assign the Favorite tag to any preset in the Results list, creating quick access to a custom collection of your most beloved presets sounds.
6. **User content**: Filters by user content. When activated, the Results list only shows user presets. When deactivated, the Results list only shows presets from your factory libraries and Expansions. You can find more information about user presets in Using presets. The state of this User Content button is synchronized between the Presets browser and Browse view.

Macros 1–8 in Play view

Macros are curated controls that are specific to each preset. You can think of them as shortcuts that are assigned to single or multiple controls under the hood. The first eight Macros of the loaded preset are available at the bottom of Play view.

In the full version of Massive XL all 16 Macros are available and fully customizable. You can find more information in Macros.

Each Macro in Play view consists of the following elements:

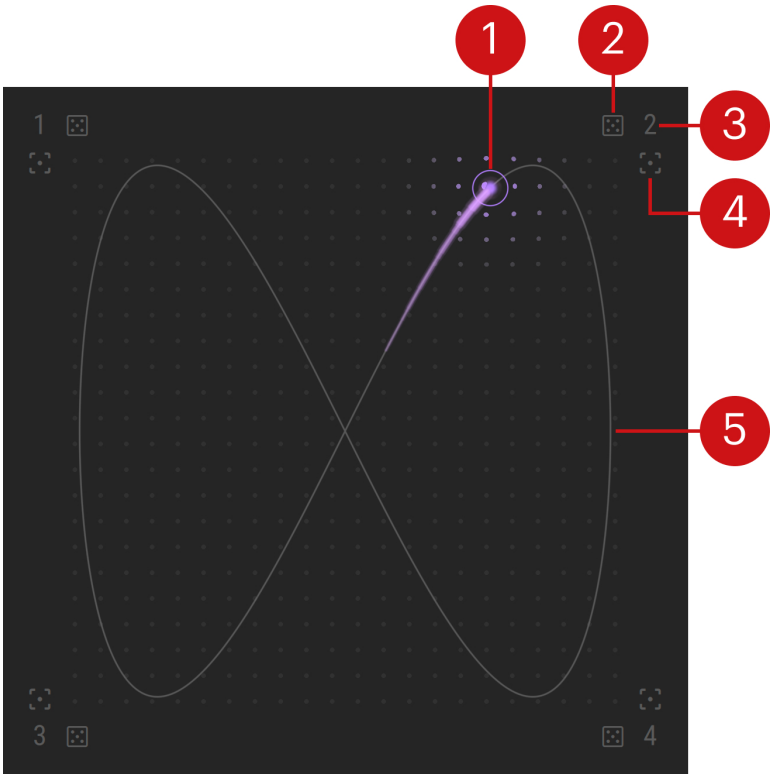


1. **Macro label**: Describes the Macro's purpose or the controls it is assigned to.
2. **Macro knob**: Adjusts the Macro value, which in turn changes the controls it is assigned to. Hovering the Macro shows its current value underneath the label. Double-clicking resets the Macro to its default value.
3. **Morph switch**: Links the Macro to the Morpher. When activated, the Macro value depends on the position of the Morpher cursor. When deactivated, the Macro is independent from the Morpher cursor.

Morpher

The Morpher lets you create four snapshots of Macros 1–8 and morph between them. Each corner of the Morpher represents one of the snapshots. By moving the Morpher cursor in the XY pad you can smoothly blend between the Macro settings saved in the four snapshots.

The Morpher consists of the following elements:



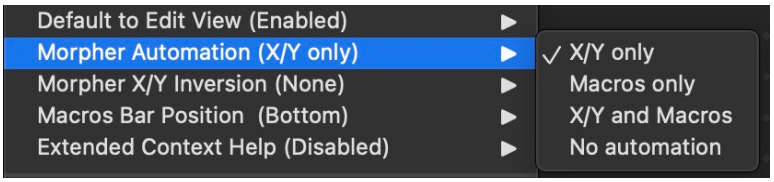
1. **Morpher cursor**: Blends between the Macro values saved in the four snapshots at the corners of the Morpher. The values are interpolated according to the relative distances to each corner. You can click and drag the Morpher cursor to morph between snapshots, or click anywhere in the XY pad to jump to that position. The Animator lets you create automatic movement.
2. **Randomize Snapshot**: Generates random values for the eight Macros and saves them in this snapshot. The Morpher cursor moves into this corner so you can see and play the new Macro settings.
3. **Recall Snapshot**: Moves the Morpher cursor to this corner so you can see and play the Macro settings saved in this snapshot.
4. **Store Snapshot**: Saves the current values of the eight Macros in this snapshot. The Morpher cursor moves into this corner so you can continue playing with your current Macro settings.
5. **Trail**: Indicates the trajectory of the Morpher cursor when the Animator is activated.

> When you click Store Snapshot or Randomize Snapshot, new values are captured for all eight Macros, whether or not their Morph switches are on or off. The Morph switches only determine if a Macro follows the values produced by the Morpher.

Using the Morpher with MIDI or host automation

You can control the position of the Morpher cursor from a MIDI keyboard/controller or by using host automation in your DAW by assigning the cursor's horizontal (x axis) and vertical (y axis) positions.

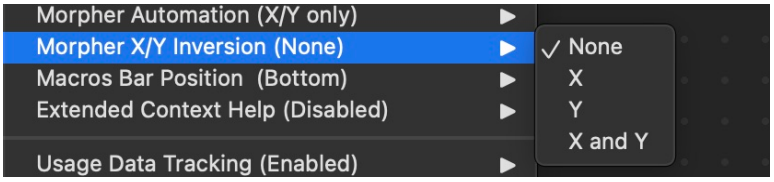
The Morpher cursor modifies the values of the Macros 1–8, which are also available for host automation. You can choose which control changes are exposed to your DAW using the **Morpher Automation** entry in Settings menu:



- **X/Y only** (default setting): When you move the Morpher cursor, only the changes in the cursor position (horizontal and vertical) will be reported to your DAW.
- **Macros only**: When you move the Morpher cursor, only the resulting changes in the Macro values will be reported to your DAW.
- **X/Y and Macros**: When you move the Morpher cursor, both cursor position and the resulting changes in the Macro values will be reported to your DAW.
- **No automation**: When you move the Morpher cursor, no parameter change will be reported to your DAW.

> These modes only affect the automation recorded when you move the Morpher cursor. Manual adjustments to the Macros themselves are always exposed to your DAW.

Additionally, you can invert the Morpher's response to automation data using the **Morpher X/Y Inversion** entry in the Settings menu:

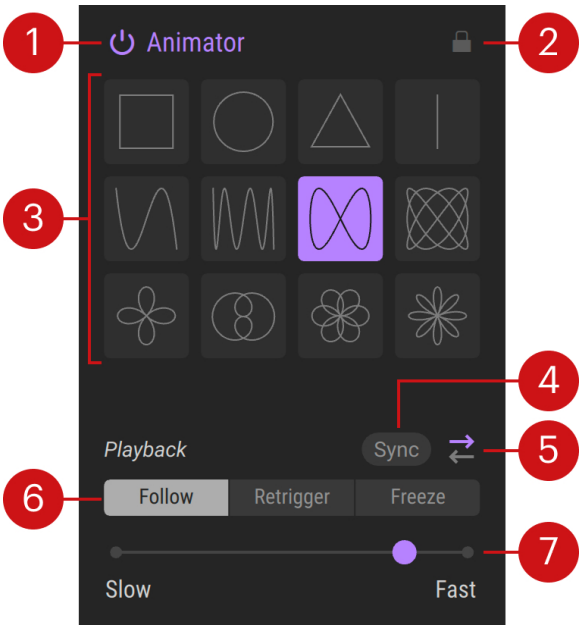


- **None** (default setting): The response of the Morpher cursor to automation data is not inverted.
- **X**: The Morpher cursor responds inversely to automation data applied to the horizontal axis.
- **Y**: The Morpher cursor responds inversely to automation data applied to the vertical axis.
- **X and Y**: The Morpher cursor responds inversely to automation data applied to both the horizontal and the vertical axis.

Animator

The Animator lets you automate the movement of the cursor in the Morpher, and thereby automate the morphing of the Macro values.

The Animator contains the following options and controls:



1. **Animator on/off**: Activates or deactivates the Animator. When the switch is off, the whole Animator area is grayed out, and you can still adjust its settings but they will not affect the Morpher cursor until you reactivate the Animator. When the Animator is on, the Morpher cursor moves automatically and you cannot change its position by dragging it with the mouse.
2. **Animator Lock**: Keeps the current Animator settings when you load another preset so you can use the movement you have created with different presets and their Macros.
3. **Trail selector**: Selects the trail followed by the Morpher cursor.
4. **Sync**: Synchronizes the movement of the Morpher cursor to the tempo of your DAW. When Playback mode is set to **Follow**, the position of the Morpher cursor is additionally linked to the song position of your DAW.
5. **Playback direction**: Toggles the movement of the Morpher cursor between forward and backward.
6. **Playback mode**: Sets the Morpher's response to incoming MIDI notes. **Follow** makes the cursor move along the Animator shape independently of MIDI events. **Retrigger** makes the cursor jump to the start of the shape at the start of each note. **Freeze** captures the cursor position at the start of each note and holds its value until the next note is played.
7. **Rate**: Adjusts how fast the Morpher cursor follows the trail. When **Sync** is on, **Rate** is set relative to the tempo of your DAW. In this case you can set the number of bars it takes the Morpher cursor to complete the trail.

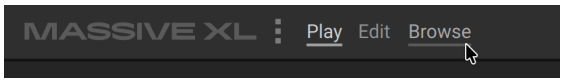


In **Freeze** mode, try using a fast Rate with **Sync** off and one of the more complex Animator trails to make every note you play sound different. If you instead use a slow Rate with **Sync** on and a basic Animator trail, you will get recognizable patterns of changes that repeat as you keep playing notes.

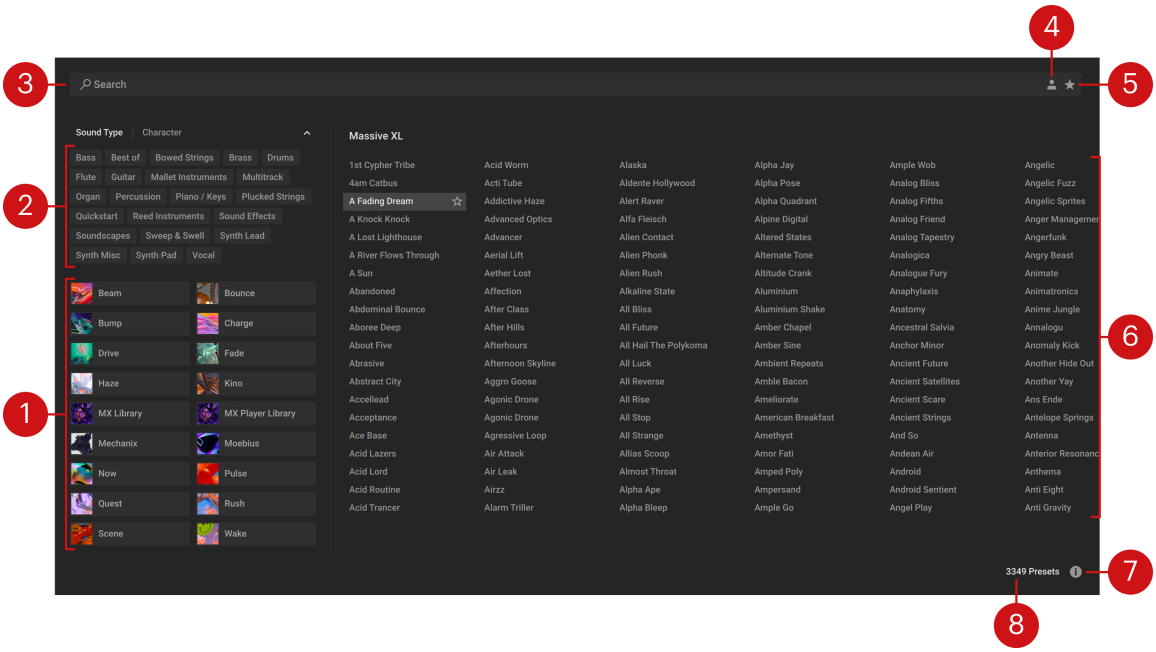
5. Browse view and presets

Browse view lets you access the Massive XL factory library, Expansions, and user presets. You can filter sounds by tags, text search, and Favorites, helping you to quickly and intuitively find the right sound.

▶ Click **Browse** in the Header to open the Browse view.



Browse view consists of the following areas and elements:



1. **Product filter**: Contains all of your factory libraries and Expansions. Selecting a library or Expansion filters the Results list to only show its included presets. Browsing with filters and the search adjusts the Product filter accordingly.
2. **Tag filter**: Contains Sound Type and Character filters that use NKS tagging to enhance the browsing experience. You can find more information in Using tag filters.
3. **Search field**: Filters presets in the Results list according to the entered text. The search engine considers preset names, author, Sound Type and Character filters, and other metadata. Additionally, the Search field shows your filter selection, and lets you remove filter tags. You can find more information in Using the search field.
4. **User**: Filters the Results list to only show user content, making it easy for you to find the user presets you saved. You can find more information in Using presets.
5. **Favorites**: Filters presets in the Results list by Favorite tags. You can assign a Favorite tag to any preset in the Results list, creating quick access to a custom collection of your most beloved presets sounds. You can find more information in Using Favorites.
6. **Results list**: Displays the list of presets according to the Product and Tag filters, the search field, and the User and Favorites filters. Presets are listed in alphabetical order. The entry for the loaded preset is highlighted. Clicking an entry loads the preset. Double-clicking an entry loads the preset and closes Browse view. You can scroll in the Results list horizontally, or use the scroll bar that appears upon hover at the bottom of the list.

7. **Metadata editor**: Opens or closes the Metadata editor, which lets you edit information saved in your user presets including user banks. You can find more information in Metadata editor.
8. **Preset count**: Displays the number of presets shown in the Results list, giving you an indication of how much you have narrowed down the choice of presets according to your filter selection and search.

Using tag filters

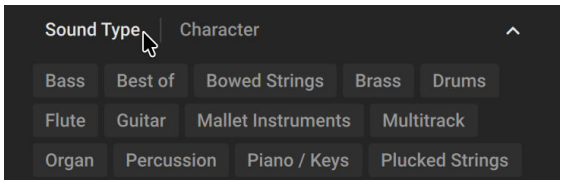
The Sound Type and Character filters let you browse for presets according to musical and aesthetic attributes. They are using the Native Kontrol Standard (NKS) and are shared between Massive XL, Maschine, and Komplete Kontrol. All presets in the Massive XL library are tagged in a meaningful way to help you find sounds quickly. The tag filters can be used in combination with the search field and product filter to further refine your search.

You can use the Sound Type filter to show results according to the types of instruments or sounds they are associated with. Selecting a tag will automatically amend the tag list with related sub-tags, if available. The Character filter lets you to further refine your search by selecting various attributes and characteristics that can be used to describe the sound you are looking for.

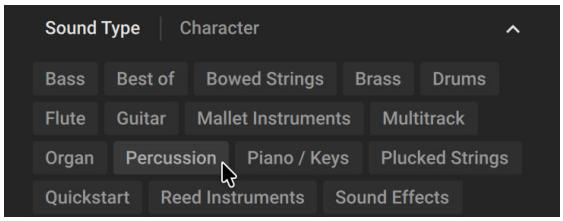
When a tag is selected it is highlighted and the Results list is updated accordingly. Clicking a tag selects it and removes all other tags from the selection. Pressing [command] (macOS) or [Ctrl] (Windows) and clicking a tag adds it to your existing selection. You can hide the Sound Type and Character filters by clicking the arrow icon in the upper right corner of the filter area.

To browse for presets using filter tags:

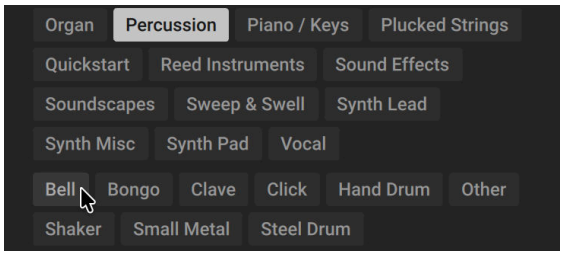
1. Click **Sound Type** or **Character** to open the respective filter and show its tags. You can move back and forth between filters without losing the selection you have made.



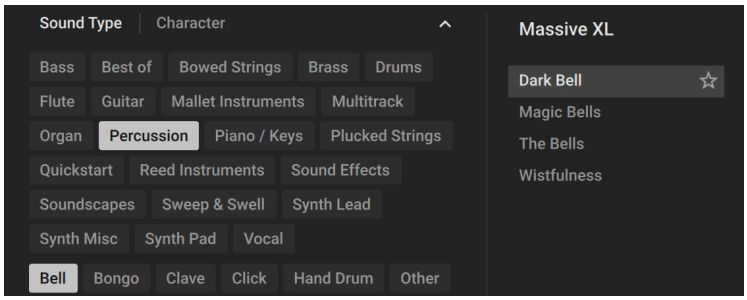
2. Click a tag to start filtering the presets in the Results list.



3. Press [command] (macOS) or [Ctrl] (Windows) and click to select another tag from the same filter.



→ The presets in the Results list are filtered according to the selected tags.



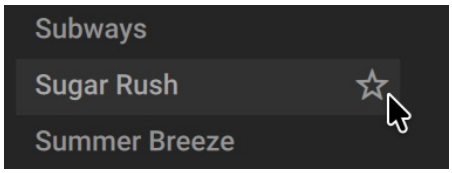


Your selection in the Sound Type and Character filters is shown in the search field, which also lets you remove them from your search. You can find more information in Using the search field.

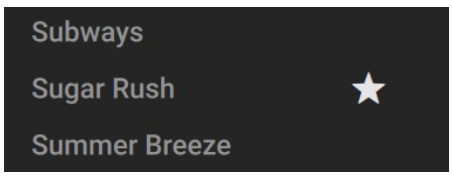
Using Favorites

Favorites let you tag your most beloved presets to create personal collection of your favorite sounds. Favorite tags can be assigned to both factory and user presets. Favorite preset files are shared between Massive XL, Maschine, and Komplete Kontrol.

▶ To assign a Favorite tag, click the star icon that appears when a preset is selected or hovered over.

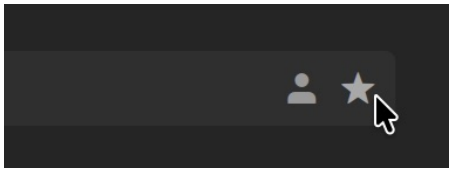


→ The Favorite tag is assigned. Clicking the star again removes the tag.



Once assigned, Favorites serve as an additional filter in the Browser. You can continue to use other filters to refine your search, including the search field.

▶ To view your Favorites in the Results list, click the Favorites icon in the search field.



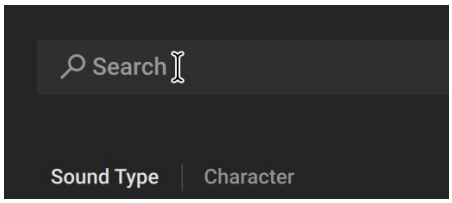
→ Only presets that have the Favorite tag assigned are shown in the Results list.

Using the search field

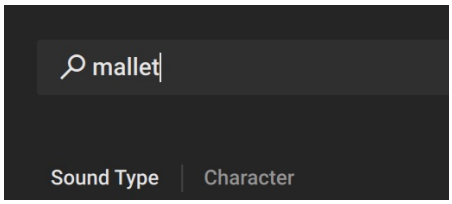
The search field at the top of Browse view lets you find presets according to the text you enter. The search considers preset, author, and bank names as well as other metadata and the filter tags.

To find presets using the search field:

1. Activate the search field by clicking it.



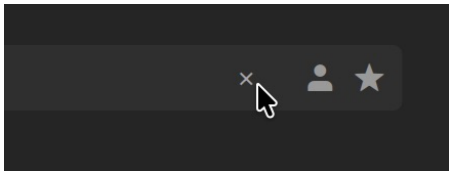
2. Enter your search terms.



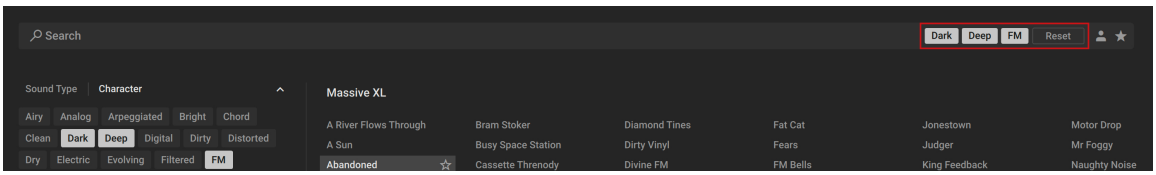
→ The Result list is filtered according to the terms entered in the search field.

Your search entry remains in the field even when you leave Browse view.

▶ To clear the search, click the cross icon on the right side of the search field.



If you are browsing using the Sound Type and Character filters, your search will only display results matching both the selected filters tags and your search terms. The search field shows all selected filter tags, and lets you remove them from your search:



▶ To remove a specific filter tag from your search, click its name in the search field.

▶ To remove all filter tags as well as your search terms from your search, click **Reset** in the search field.

Using presets

Massive XL's preset library and Expansions can be accessed and managed in Browse view as well as the User Content folder on your computer. You can load, save, and import presets, manage your user presets, and edit the information saved in them using the Metadata editor.

Loading a preset

Presets can be loaded directly from the Header or in Browse view. In the Header, you can quickly step through presets using the arrow buttons in the Preset menu. In Browse view, you can view and search your whole library to find presets.

▶ To load a preset from the Header, click the up and down arrow buttons in the Preset menu to select the previous or next preset in the Results list of the Browse view.

→ The previous or next preset is loaded instantly.

To load a preset in Browse view:

1. Click **Browse** or the preset name in the Header to open Browse view.
2. Use the filters and search to browse for presets.
3. Select an entry in the Results list to load the preset. Double-clicking loads the preset and closes Browse view.

→ The selected preset is loaded.

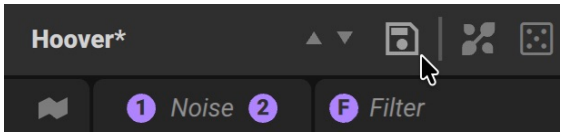
Saving user presets and banks

Saving user presets lets you add your own sounds to your library. They are saved as preset files in the User Content folder and added to the User presets in Browse view. You can also create user banks and use them to organize your user presets.

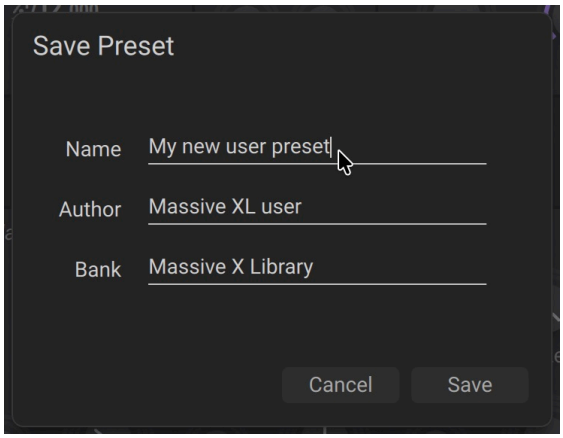
> ⓘ You cannot overwrite presets in the Massive XL Factory Library. Instead, edited factory presets are saved as new user presets.

To save a user preset:

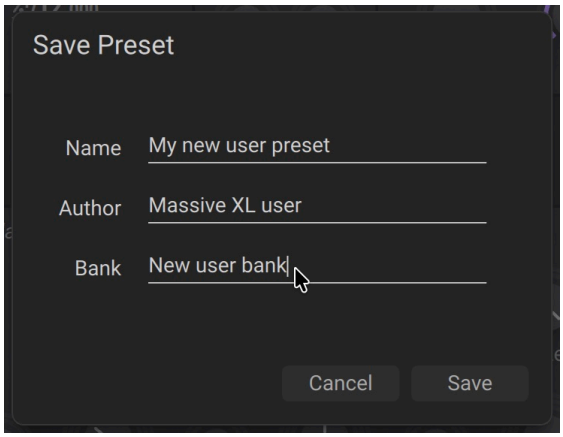
1. Click the Save Preset button (disk icon) in the Header.



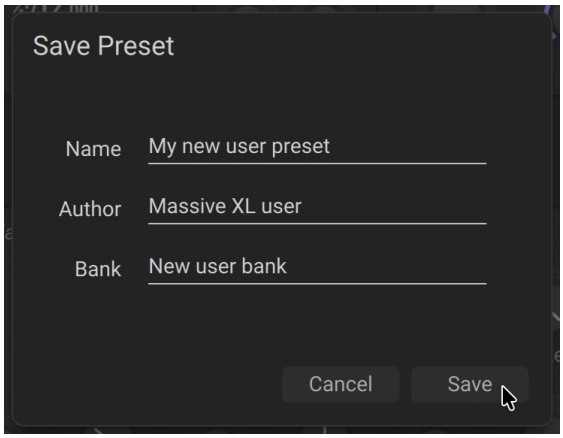
2. Enter a new **Name** for your user preset. You can also edit the **Author** of the preset.



3. Enter the name of the **Bank** you want the user preset to be associated with. You can create a new user bank by entering a custom name.



4. Click **Save**. If the preset name already exists, you can click **Replace** to overwrite the existing user preset or enter a new name.



→ The preset file is saved in the User Content folder and added to the User presets in Browse view along with your new user bank, if you created one.



You can edit the information saved in your user presets including user banks using the Metadata editor in Browse view.

Importing user presets

User presets can be imported into your library using drag and drop, making it easy to share presets across computers. You can drop preset files anywhere onto the Massive XL plugin, except for the Wavetable oscillators and the Noise module, which are drop areas for wavetables and noisetables, respectively.

To import a preset file:

1. Locate the preset file on your computer.
2. Drag and drop the preset file onto the Massive XL plugin, but not onto the Wavetable oscillators or Noise module.

→ The preset file is saved in the User Content folder and added to the User presets in Browse view.

You can access your user presets in the User content folder by selecting **Show User Content Folder** from the Settings menu.

Managing user presets

You can manage your user presets by viewing, adding, or deleting the preset files in the User Content folder. The Settings menu gives you two options to help you manage your user presets: **Show User Content Folder** and **Rescan Content**.

To view, add, or delete your preset files in the User Content folder:

1. Open the Settings menu, located next to the Massive XL logo on the left side of the Header.
2. Select **Show User Content Folder**.
3. Use your computer's file manager to view, add, or delete your user preset files in the User preset folder.
4. Go back to Massive XL and select **Rescan Content** from the Settings menu.

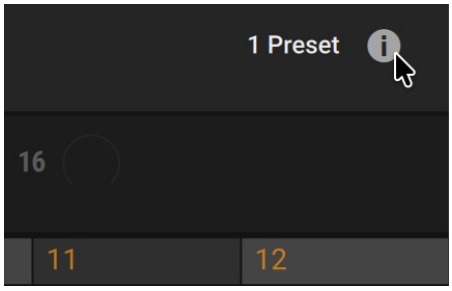
→ Your library is updated and your changes show up in Browse view.

Metadata editor

The Metadata editor in Browse view lets you edit information saved in your user presets, including user banks and filter tags. By customizing the metadata you can adjust how your presets show up as you browse and search your library.

You can edit individual presets, or select multiple presets in the Results list and apply your changes to all of them.

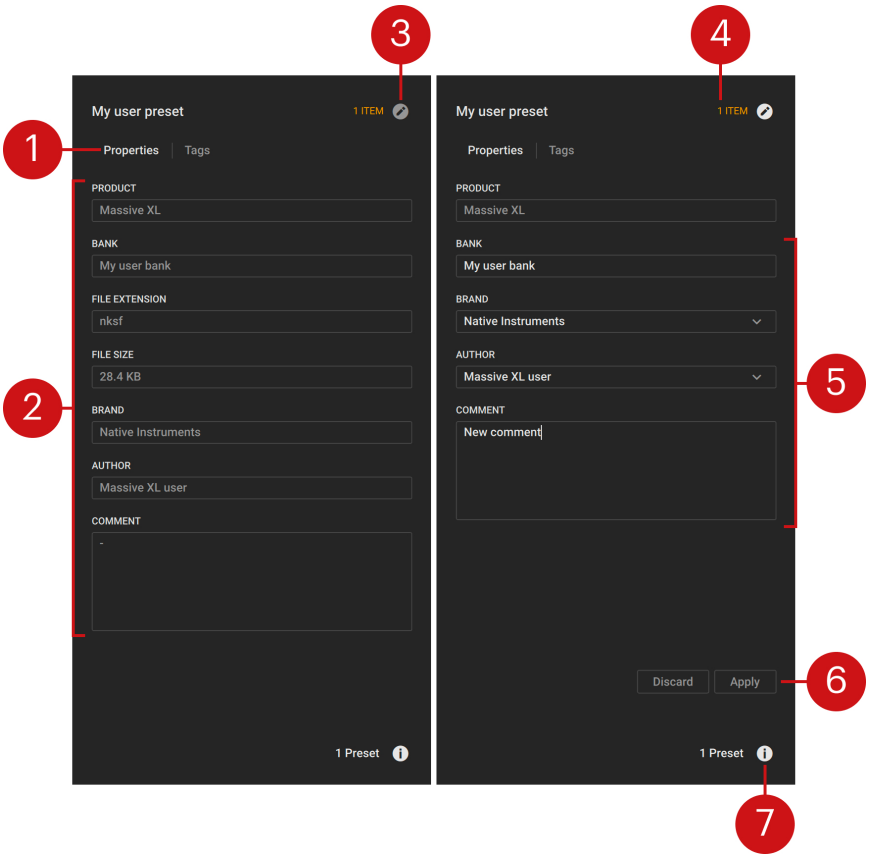
▶ To open the Metadata editor, click the **i** icon at the bottom-right corner of the Results list in Browse view.



→ The Metadata editor is shown to the right of the Results list, displaying the information of the preset, or multiple presets, you have selected.

Properties

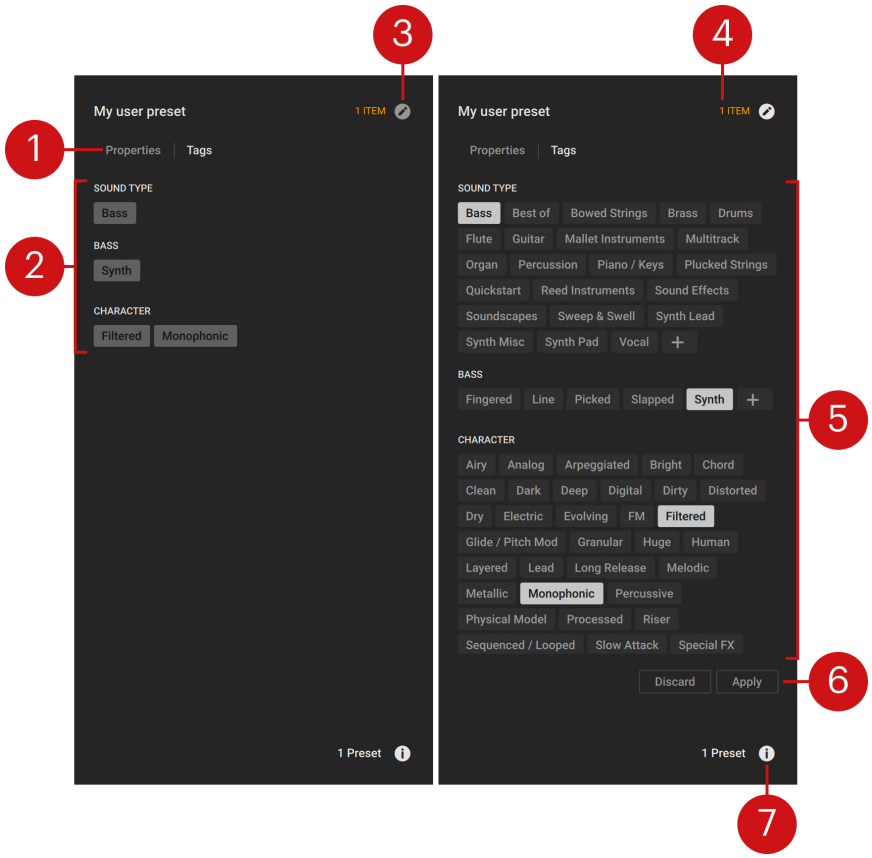
The first tab in the Metadata Editor lets you view and edit file information and metadata including user banks:



1. **Properties/Tags**: Switches between the two tabs of the Metadata editor, one for viewing and editing the **Properties**, and one for viewing and editing the **Tags**.
2. **Info fields**: Displays file information and metadata of the selected preset(s).
3. **Edit mode on/off**: Toggles the Edit mode of the Metadata editor on or off.
4. **Preset count**: Shows how many presets you are currently editing.
5. **Editing fields**: Lets you change the **Bank**, **Brand**, **Author** and **Comment** metadata saved in the selected preset(s).
6. **Apply/Discard**: Lets you **Apply** the changes you have made to the selected preset(s), or **Discard** them and reset all fields to their previous values.
7. **Metadata editor**: Opens or closes the Metadata editor.

Tags

The second tab in the Metadata Editor lets you view and edit filter tags:



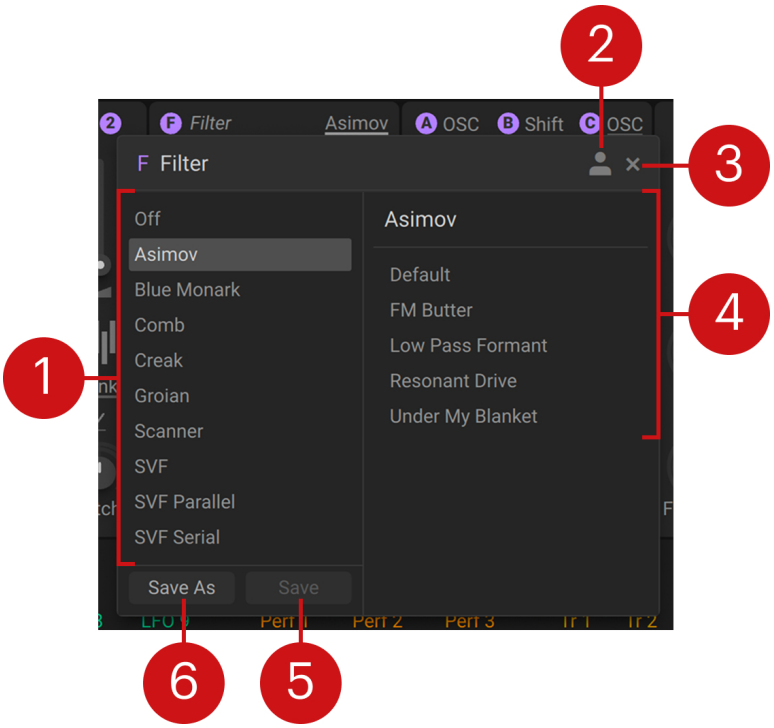
1. **Properties/Tags**: Switches between the two tabs of the Metadata editor, one for viewing and editing the **Properties**, and one for viewing and editing the **Tags**.
2. **Filter tags**: Shows all filter tags of the selected preset(s).
3. **Edit mode on/off**: Toggles the Edit mode of the Metadata editor on or off.
4. **Preset count**: Shows how many presets you are currently editing.
5. **Filter tag assignment**: Lets you assign the Sound Type and Character tags saved in the selected preset(s).
6. **Apply/Discard**: Lets you **Apply** the changes you have made to the selected preset(s), or **Discard** them and reset all fields to their previous values.
7. **Metadata editor**: Opens or closes the Metadata editor.

Sub-presets

Sub-presets are available for the Filter, Inserts, and Effects, making it possible to store and recall their settings individually. Each module slot has its own Sub-preset menu that comes with set of curated factory sub-presets.

The menu lets you load and save settings, enabling you to recall them at any time and from any preset or project. Clicking and dragging the header moves the menu to another position.

The Sub-preset menu consists of the following elements:



1. **Type list**: Shows all module types you can load in this slot. Clicking an entry filters the list to only show sub-presets for the selected type. Double-clicking loads the type's default sub-preset and closes the menu.
2. **User**: Filters the list to only show user content, making it easy for you to find the items you saved.
3. **Close**: Closes the menu.
4. **Sub-preset list**: Shows all available items. Clicking loads the item but keeps the menu open. Double-clicking loads the item and closes the menu.
5. **Save**: Overwrites the selected item with the current settings.
6. **Save As**: Saves the current settings as a new item.

6. Edit view

Edit view lets you adjust every detail of your preset and explore sounds by creating new combinations of modules and Modulators.

▶ Click **Edit** in the Header to open Edit view.



Edit view consists of the following areas:



1. **Modules**: The generators and processors used to build your patch. You can freely connect them on the Routing page to implement different synthesis techniques.
   - Pitch: Global tuning and glide settings. You can adjust the tuning in semitones and cents, and add a glide effect (portamento).
   - Wavetable oscillators: The two Wavetable oscillators at the heart of Massive XL. You can explore wavetables and add phase modulation.
   - Noise: Two noise sources with flexible playback options. You can use them for textures, percussive elements, and one-shot samples.
   - Filter: Virtual analog and digital filters that cover a wide range of applications. You can balance the tone, or sculpt and transform sounds.
   - Inserts: Three flexible generators or processors. You can use them to stack oscillators, distort sounds, or add effects.
   - Amplifier: The main output amplifier. You can adjust the level and panning, and add chaos to your sounds using feedback.
   - Effects: Three end-of-chain effects with flexible routing. You can select from spatial, saturation, and modulation effects.

2. **Navigation bar**: The central place to access the different pages in the editor, and assign modulation. Visualization options help you keep track of what is going on in your patch.
   - Voice page: Shows the Voice page in the editor, letting you manage voicing and polyphony.
   - Routing page: Shows the Routing page in the editor, letting you freely arrange and connect modules.
   - Modulation: Lets you access and assign Modulators.
3. **Editor**: All the options and controls of the page you have selected in the Navigation bar. Set monophonic or polyphonic behavior as well as unison and harmonization on the Voice page, arrange and connect modules on the Routing page, or dive deep into any of the Modulators.
4. **Macro bar**: Global controls including 16 Macros, Pitch Bend, the Modulation wheel, and Aftertouch. You can find more information in Macros.
5. **Remote Octave bar**: Options and key switches for controlling the Performers. You can find more information in Remote Octave.
6. **Info pane**: A brief description for any control you hover your mouse over.

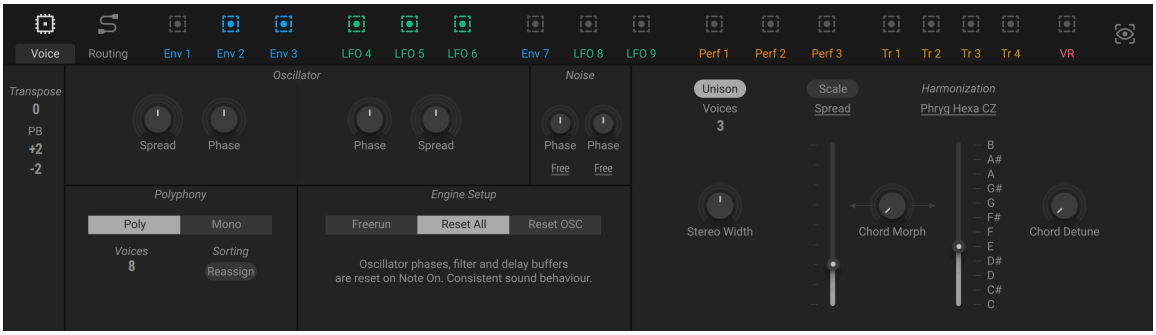
> Edit view is not available in Massive XL Player.

Basic concepts

This section introduces basic concepts and key features that are fundamental to Edit view in Massive XL.

Voice

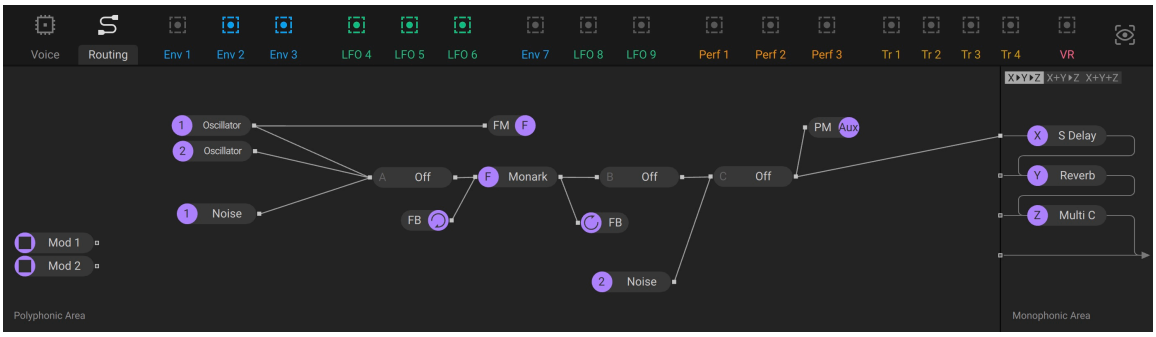
A voice consists of all components required by a synthesizer to create the sound of a single note. Massive XL is a polyphonic instrument, meaning that it can play multiple voices at the same time. In basic polyphonic operation, each voice corresponds to a note event. For example, when playing a triad chord, three voices will sound simultaneously. Each voice is processed independently, so every note can have different movements and articulation in the sound.



On the Voice page, you can define how the instrument responds to note events and how they are allocated to the available voices. Expanding on these basic options, advanced Unison and Scale features make it possible to use the voices as tonal clusters and to form complex chords. You can find more information in Voice page.

Routing

Routing enables you to create or change the signal path of a synthesizer. In Massive XL, you can freely route signals between the individual components of a voice, including sound generators and processors. This modular signal path facilitates a wide range of different synthesis techniques, giving you the freedom to design and explore sounds without constraints. You can use and combine techniques like wavetable synthesis, FM synthesis, subtractive synthesis, physical modeling, and various types of waveshaping, or distortion.



On the Routing page, you can define the structure of the voice in the Polyphonic Area, which contains modules like the Wavetable Oscillators, the Filter, and the Inserts. All polyphonic voices are summed and sent to the Monophonic Area with three additional Effects. You can find more information in Routing page.

Modulation

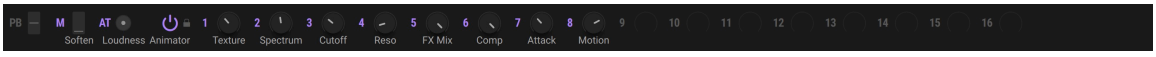
Massive XL puts focus on the concept of modulation by combining flexible Modulators with an intuitive system for modulation assignment. Modulation adds movement to your sound by changing controls over time. This movement defines the character and expression of a sound as you play it, from the contour of its amplitude, or volume level, to its timbral qualities.



You can assign Modulators to controls directly in the user interface by using drag and drop. Color-coded rings or lines next to controls indicate the Modulator and the amount of modulation applied to the control. You can find more information in Modulation.

Macros

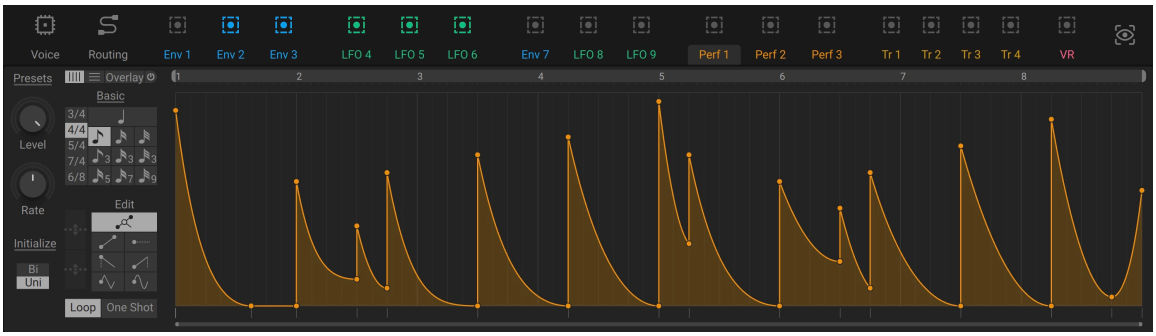
As additional control sources, Massive XL provides a set of 16 Macros plus pitch bend wheel, modulation wheel, and aftertouch. Each Macro can be assigned to any number of controls, or take over the full range of a single control. Additionally, you can play and animate Macros 1-8 using the Morpher in Play view.



You can assign Macros to controls directly in the user interface by using drag and drop. Purple rings or lines next to controls indicate the Macro assignment and its amount. You can find more information in Macros.

Performers

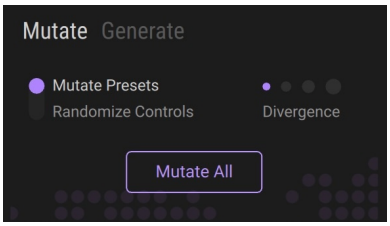
Among the available Modulators are the three **Performers**, which are specialized sequencers for modulation. They provide a flexible way to apply complex, rhythmical movements to controls. Performers can be controlled using the Remote Octave, which switches between patterns key switches.



You can view and edit the Performers by clicking on their labels **Perf 1**, **Perf 2**, and **Perf 3** in the Navigation bar. The Remote Octave bar lets you switch between patterns and access the Remote Octave view. You can find more information in Performers and Remote Octave.

Mutate

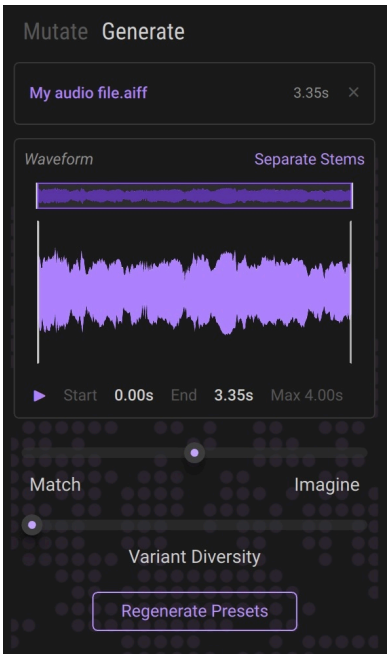
Inspired by the preset mutation feature in Native Instruments Absynth 6, Mutate lets you quickly come up with new sounds and patches based on the preset you have loaded by integrating modules and settings from other presets in your library.



You can mutate all modules at the same time or individually. If you lock a module, it will be excluded from mutation even if you click **Mutate All**. You can find more information in Mutate.

Generate

Generate lets you create new presets from audio files. It uses an AI model developed by NI that analyzes your samples and recreates the sound for you by building a fully tweakable patch from scratch.



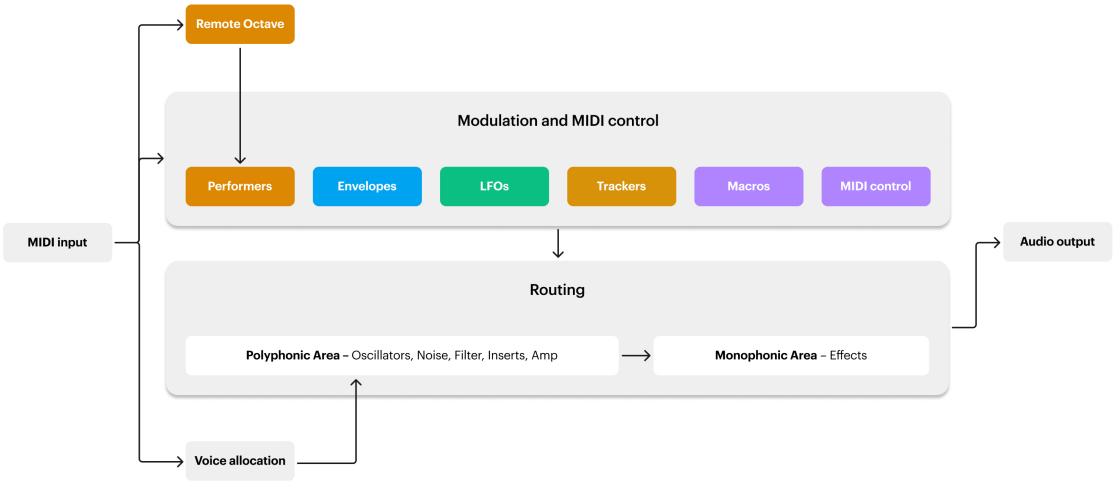
You can make preset generation closely **Match** the original sound, or give it creative freedom to **Imagine** new sounds. You can find more information in Generate.

Instrument structure

Massive XL is built on a flexible structure that enables modularity as well as optimized signal processing. It features both polyphonic and monophonic modules:

- Polyphonic modules process every voice you play independently.
- Monophonic modules process the sum of all polyphonic voices.

The following diagram shows the internal structure of Massive XL:



The **Polyphonic Area** contains the modular signal path of the polyphonic voices which make up your synthesis structure. You can freely arrange and connect the polyphonic modules including sound generators and processors on the Routing page.

The **Monophonic Area** contains the effect chain that is applied to the sum of all polyphonic voices. It includes three stereo effects that you can use to process the outputs of the polyphonic modules. You can route the outputs and choose from different configurations for the effects chain on the Routing page.

Modulation consists of Macros and Modulators that can be assigned to controls across the instrument. Modulators can be monophonic or polyphonic, depending on their type and selected mode, as well as the controls they are assigned to. Most Modulators respond to incoming MIDI notes. For example, note events are used to trigger envelopes and reset LFOs.

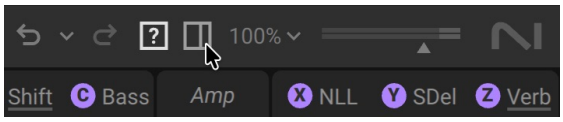
Voice allocation distributes the incoming MIDI notes across the available polyphonic voices. On the Voice page, you can manage the behavior of the voices, and transform the MIDI notes to create complex voicings and harmonic layers.

The **Remote Octave** provides dedicated control for the Performers, which are specialized sequencers for modulation. The Remote Octave maps incoming MIDI notes to key switches that you can use to access variations of the patterns used by the Performers.

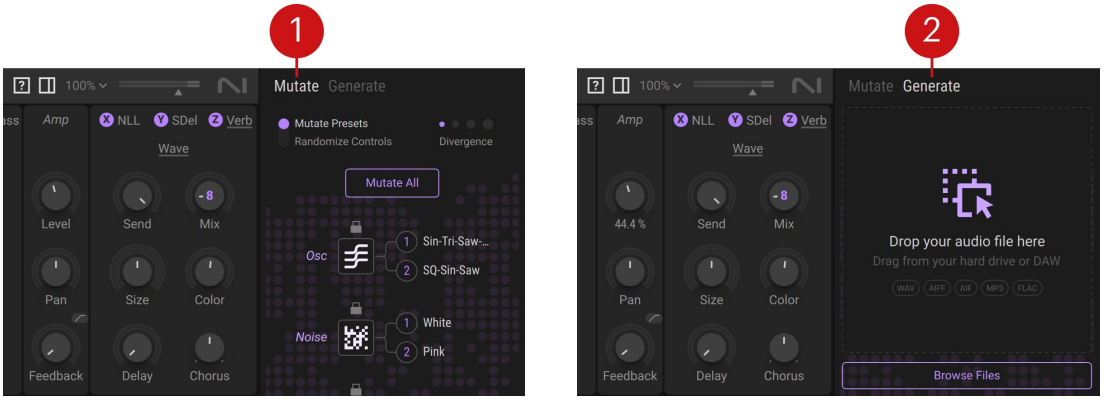
7. Side pane

The Side pane lets you access the **Mutate** and **Generate** views for transforming and generating presets. Whether you start from an existing preset or an audio file, Mutate and Generate will give you inspiring new sounds and ideas with a fast and intuitive workflow.

▶ Click the Side pane button in the Header to open the Side pane.



The Side pane has two tabs that you can use to switch between Mutate and Generate view:



1. **Mutate**: Switches the Side pane to Mutate view, where you can partly or fully transform your presets with new modules and settings, or apply randomization. You can find more information in Mutate.
2. **Generate**: Switches the Side pane to Generate view, where you can create new presets from audio files. You can find more information in Generate.

> The Side pane is not available in Massive XL Player.

Mutate

Mutate view is a homage to the preset mutation feature in Native Instruments Absynth 6. It lets you quickly come up with new sounds and patches based on the preset you have loaded by introducing algorithmically generated mutation or randomization.

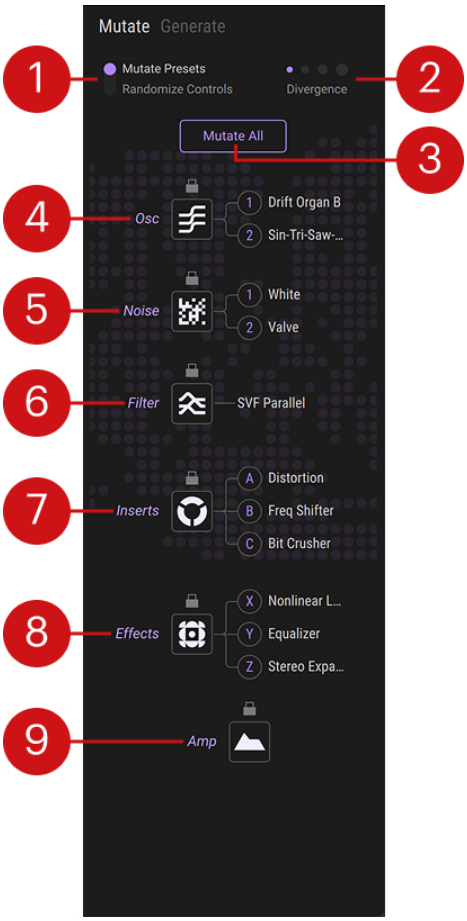
When you **Mutate Presets**, the Oscillators, Noise, Filter, Inserts, Effects, and Amp envelope integrate settings from other presets in your library. You can mutate all modules at the same time or individually. If you lock a module, it will be excluded from mutation even if you click **Mutate All**.

Divergence gives you control over how far mutation strays from your starting point, so you can decide if you want to introduce subtle changes or radically transform your preset. Every mutation is tracked in the undo/redo history, so you always use the controls in the header to go back and find your favorite.

When you **Randomize Controls**, all parameters acquire new, random values, opening up an even wider, unpredictable range of possibilities. You can trigger randomization for specific modules, lock modules to keep their settings when using **Randomize All**, and set the range of randomization using **Divergance**.

Mutate All and **Randomize All** are also available as shortcuts directly in the header.

Mutate view contains the following options and controls:



1. **Mutate / Randomize**: Switches between Mutate and Randomize modes for changes triggered across all modules. **Mutate** mode fuses settings from related presets into the current one. **Randomize** mode changes values of controls in a random fashion.
2. **Divergence**: Sets how far each change strays from the current sound, with higher values producing more unpredictable results. In **Randomize** mode, it sets the maximum range of randomization.
3. **Mutate/Randomize All**: Mutates or randomizes all modules at once, excluding locked modules.
4. **Oscs**: Mutates or randomizes both Wavetable oscillators.
    - **Oscs Lock**: Locks the Wavetable oscillators so they do not change when **Mutate/ Randomize All** is used.
    - **Oscillator 1**: Mutates or randomizes Wavetable oscillator 1 only.
    - **Oscillator 2**: Mutates or randomizes Wavetable oscillator 2 only.

5. **Filter**: Mutates or randomizes the Filter.
    - **Filter Lock**: Locks the Filter so it does not change when **Mutate/Randomize All** is used.
6. **Noise**: Mutates or randomizes both Noise modules.
    - **Noise Lock**: Locks both Noise modules so they do not change when **Mutate/Randomize All** is used.
    - **Noise 1**: Mutates or randomizes Noise module 1 only.
    - **Noise 2**: Mutates or randomizes Noise module 2 only.
7. **Inserts**: Mutates or randomizes all three Inserts.
    - **Inserts Lock**: Locks all three Inserts so they do not change when **Mutate/Randomize All** is used.
    - **Insert A**: Mutates or randomizes Insert A only.
    - **Insert B**: Mutates or randomizes Insert B only.
    - **Insert C**: Mutates or randomizes Insert C only.
8. **Effects**: Mutates or randomizes all three Effects together.
    - **Effects Lock**: Locks all three Effects so they do not change when **Mutate/Randomize All** is used.
    - **Effect X**: Mutates or randomizes Effect X only.
    - **Effect Y**: Mutates or randomizes Effect Y only.
    - **Effect Z**: Mutates or randomizes Effect Z only.
9. **Amp**: Mutates or randomizes the Amp envelope.
    - **Amp Lock**: Locks the Amp envelope so it does not change when **Mutate/Randomize All** is used.

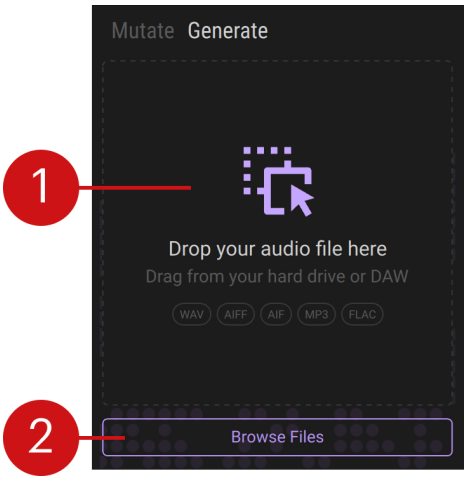
Generate

Generate lets you create new presets from audio files. It uses an AI model developed by NI that analyzes your samples and recreates the sound for you by building a fully tweakable patch from scratch. You can generate presets from the original audio file, or use stem separation powered by machine learning to run preset generation on individual stems from your audio.

You can make preset generation closely **Match** the original sound, or give it creative freedom to **Imagine** new sounds. Each preset generation creates four variants to choose from. **Variant Diversity** determines how much variety can be found across the variants. Finally, **Adjust Character** lets you fine-tune the sound of the selected variant in real time, with each variant featuring automatically curated controls that provide meaningful interaction with the sound.

Loading an audio file

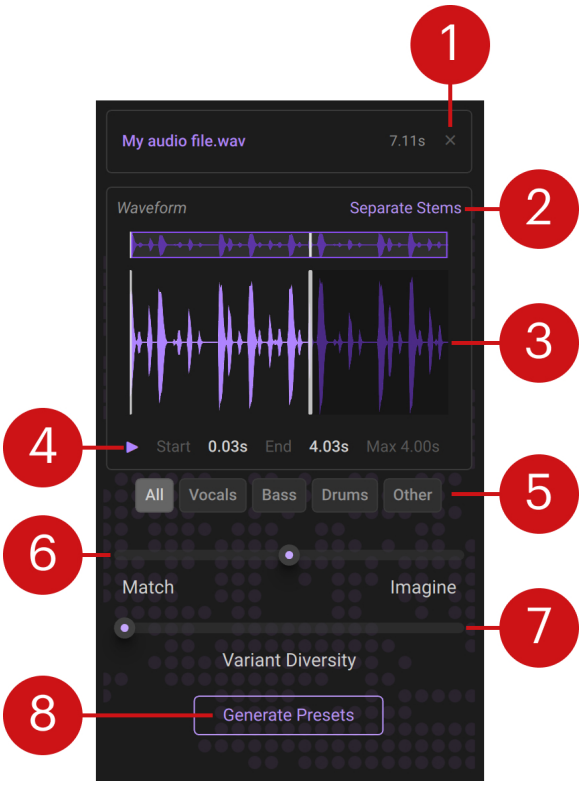
When you open Generate in the Side pane, the first screen lets you load an audio file using drag and drop or a file dialog.



1. **Drop your audio file here**: Lets you drag and drop an audio file for preset generation from your hard drive or your DAW. You can use WAV, AIFF, MP3, or FLAC files.
2. **Browse Files**: Shows a file dialog that lets you open an audio file for preset generation. You can use WAV, AIFF, MP3, or FLAC files.

Generating presets

Once you have loaded an audio file, **Generate** lets you define the parameters of the preset generation before you start generating.

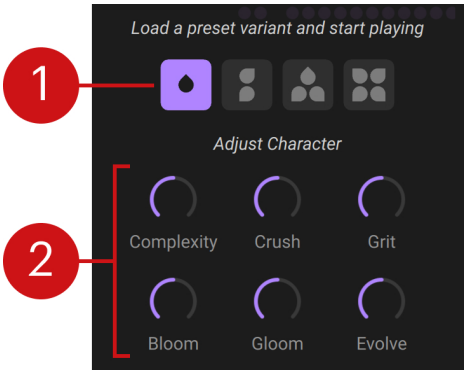


1. **Remove File**: Clears the loaded audio file and shows the options to drag and drop or browse for a different audio file.

2. **Waveform**: Displays the loaded audio file and lets you select the section used for preset generation by moving the start and end handles across the waveform. Alternatively, you can drag the **Start** and **End** values underneath the waveform up or down.
3. **Preview**: Plays back the selected section of the loaded audio file.
4. **Separate Stems**: Splits the audio into separate stems that can be used individually for preset generation.
5. **Stem**: Selects a stem to be used individually for preset generation, such as **Vocal**, **Bass**, **Drums**, or **Other**.
6. **Match / Imagine**: Adjusts how closely the preset generation mimics the sound of the audio file. Moving the slider to the left produces stricter matches, while moving it to the right creates more imaginative preset variants.
7. **Variant Diversity**: Adjusts how much the preset variants differ from one another, with high values creating the most diverse sounds.
8. **Generate Presets**: Generates preset variants from the selected audio file. While running, **Cancel** stops preset generation. Once completed, **Regenerate Presets** starts preset generation again using the same audio file.

Refining your generated preset

You can select from four preset variants for every preset generation, and use the Character controls to fine-tune your sound.



1. **Variant**: Selects one of four preset variants resulting from the preset generation. Once selected, you can play them just like a regular preset.
2. **Adjust Character**: Lets you tweak the sound of the selected variant using automatically generated controls. You can find more information in Character controls.

Character controls

- **Air**: Adds sparkle and breath by opening the filter, boosting high frequencies, and mixing in a hint of noise.
- **Bite**: Sharpens the attack by combining the Insert oscillator with snappy filter settings.
- **Bloom**: Lets notes open slowly into a large reverb.
- **Breath**: Softens and opens up the sound by mixing in noise with a gentle attack and boosting high frequencies.
- **Brightness**: Tilts the overall timbre from dark to brilliant by adjusting filter and EQ controls.
- **Choke**: Cuts notes short by reducing release times and delay feedback.

- **Clarity**: Brings out the core tone by pulling back noise, drive, and delay feedback.
- **Complexity**: Adjusts the depth of modulation. Turning to the left reduces modulation, turning to the right makes existing modulation more pronounced.
- **Crush**: Creates a compressed, saturated sound by increasing the level going into the drive stage.
- **Drift**: Adds analog instability by introducing jitter on cutoff frequencies and envelope times.
- **Echoes**: Brings in the delay effect by increasing mix, feedback, and delay time.
- **Evolve**: Sets the patch in motion by changing LFO rates and increasing their modulation depths.
- **Fat**: Widens and thickens the sound by boosting low frequencies, stacking unison voices, and adding gentle drive.
- **Glass**: Adds a crystalline quality to the sound by using phase modulation, boosting high frequencies, and cleaning the noise floor.
- **Gloom**: Creates a darker and more distant sound by lowering the cutoff, cutting mid frequencies, and emphasizing the reverb tail.
- **Gravel**: Makes the sound rougher and more growly by overdriving the lower-mid frequencies.
- **Grit**: Adds dirt and attitude by pushing the distortion stage for a saturated, aggressive tone.
- **Haze**: Wraps the sound in fog by adding a long reverb with dampened high frequencies.
- **Hold**: Emphasizes the body of the sound by increasing the envelope sustain and release.
- **Hollow**: Carves out the sound by narrowing the filter band and blending in the second filter.
- **Linger**: Lets every note trail off by increasing envelope release and adding a touch of reverb.
- **Liquid**: Produces highly resonant filter movement by increasing resonance and slowing down the LFOs to create flowing sweeps.
- **Metal**: Adds inharmonic bite by increasing phase modulation depth and blending in the Insert oscillator for bell-like tones.
- **Pluck**: Makes notes snappy by reducing the filter's envelope decay and increasing its modulation depth.
- **Punch**: Emphasizes the attack by reducing envelope sustain and decay, making every note hit like a drum.
- **Resonance**: Makes the sound more resonant by increasing filter resonance and EQ peak.
- **Rubber**: Adds an elastic quality to the sound by bending the wavetables in the oscillators.
- **Shimmer**: Moves the wavetables toward brighter sounds and emphasizes the upper octave.
- **Slam**: Maximizes the impact of the sound by reducing the amplifier's envelope attack to zero and driving the transient into saturation.
- **Space**: Moves the sound between intimate and vast by adjusting the delay and reverb mix.
- **Sub Weight**: Anchors the low end by boosting low frequencies and applying gentle drive.
- **Swell**: Produces a slowly rising, breathing sound by increasing envelope attacks.
- **Tension**: Makes the sound tighter by reducing envelope sustain and release, and increasing filter resonance.
- **Thin**: Makes the sound slimmer by cutting low frequencies and reducing the noise floor while opening the filter.
- **Vocalic**: Produces vowel-like sounds by narrowing the filter band toward a formant and increasing the EQ peak.
- **Stereo Width**: Spreads the sound across the stereo image by increasing unison voices and detuning.

- **Wobble**: Creates heavy modulation by slowing down the LFOs and increasing their modulation depths.

8. Macros

Macros are flexible global controls that you can use to interact with your sound. Depending on their assignments, the 16 Macros, Pitch Bend, the Modulation wheel, and Aftertouch let you adjust one single control in your patch, or multiple controls a once. You can also use a MIDI controller to play them, or automate them in your DAW.

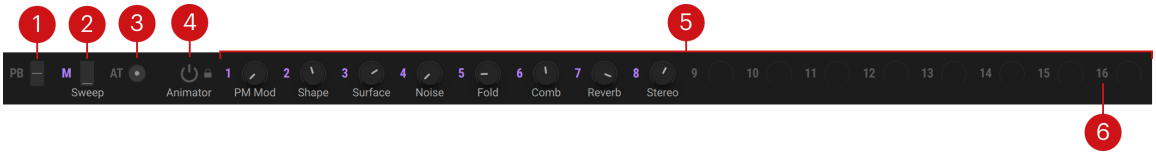
You can tweak Macros 1-8 and morph between their settings in Play view. All Macros can be modified and named in the Macro bar, which you can place either at the top, center, or bottom of Edit view using the option in the Settings menu.

Macros as well as Pitch Bend (**PB**), the Modulation wheel (**M**), and Aftertouch (**AT**) can be assigned to any number of controls using drag and drop, and the assignments are visualized directly in the user interface.

> In Massive XL Player, Macros 1-8 are available in Play view, and Macros 1-16 are available in the Macro bar at the top of Browse view. Editing Macro assignments and names is not available in Massive XL Player.

Macro bar overview

The Macro bar contains the following elements and controls:



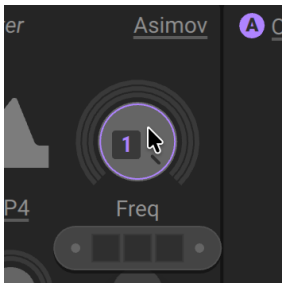
1. **PB (Pitch Bend)**: A standard MIDI control found on any keyboard controller, often in the form of a spring-loaded wheel.
2. **M (Modulation)**: A standard MIDI control found on most keyboard controllers, often in the form of a freely adjustable wheel.
3. **AT (Aftertouch)**: A special MIDI expression found on many keyboard controllers, transmitting the amount of pressure applied to the pressed keys. Massive XL supports both regular and polyphonic aftertouch. You can find more information in Polyphonic aftertouch.
4. **Animator on/off**: Activates or deactivates the Animator. It mirrors the state of the button in Play view.
   - **Animator Lock**: Keeps the current Animator settings when you load another preset. It mirrors the state of the button in Play view.
5. **Macro**: Adjusts a single control in your patch, or multiple controls at once, depending on the Macro assignment. You can also use a MIDI controller to play the Macro, or automate it in your DAW.
6. **Macro Assign**: Lets you assign Macros as well as Pitch Bend (**PB**), the Modulation wheel (**M**), and Aftertouch (**AT**) to controls using drag and drop, or by first clicking the Macro icon and then the control or modulation slot. Hovering the target icon shows all Macro assignments from the respective Macro. You can find more information in Assigning Macros to single parameters and Assigning Macros to multiple parameters.

Assigning Macros to single parameters

Macros can exclusively take over the full range of a single control, called a **1:1 assignment**.

> You can assign the Pitch Bend (**PB**), Modulation wheel (**M**), and Aftertouch (**AT**) in the same way as Macros.

▶ Drag and drop the Macro number onto the control you want to assign it to.



→ The Macro is assigned to the control.

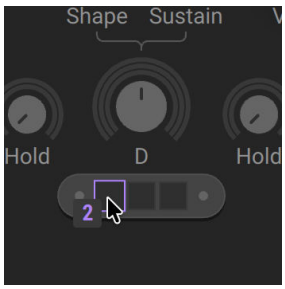
> You can find more information about removing Macro assignments in Removing and muting Macros.

Assigning Macros to multiple parameters

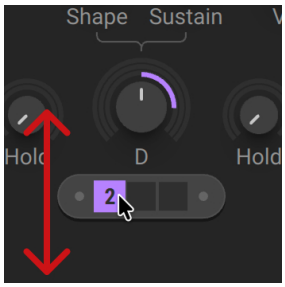
Macros can be used to adjust multiple parameters at the same time, and to a varying degree.

> You can assign the Pitch Bend (**PB**), Modulation wheel (**M**), and Aftertouch (**AT**) in the same way as Macros.

1. Drag and drop the Macro number onto a modulation slot. Modulation slots appear when hovering a control. Alternatively, first click the Macro number and then the modulation slot to make the assignment.



2. Click and drag the modulation slot up or down to increase Macro's the control range. Dragging up applies positive (non-inverted) control, and dragging down applies negative (inverted) control.



3. Repeat steps 1 and 2 to assign the Macro to additional controls.

→ The Macro is assigned to the controls.

You can find more information about removing or muting Macro assignments in Removing and muting Macros.

Replacing Macros

In some scenarios, you might want to remove a 1:1 assignment and instead assign the Macro to a modulation slot of the same control, or vice versa. When using a 1:1 assignment, the Macro exclusively takes over the full range of single control, while you can use modulation slots to adjust multiple parameters at the same time, and to a varying degree.

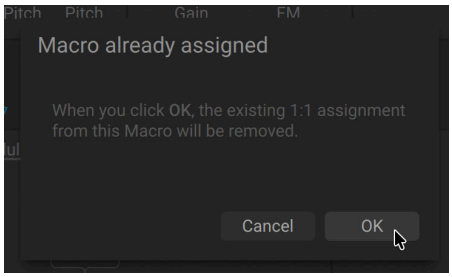
You can replace Pitch Bend (**PB**), Modulation wheel (**M**), and Aftertouch (**AT**) assignments in the same way as Macro assignments.

To replace a 1:1 assignment for a control with a modulation slot assignment:

1. Drag and drop the Macro number onto a modulation slot of the control it is already assigned to using a 1:1 assignment.



2. In the dialog, click **OK** to remove the 1:1 assignment and replace it with a modulation slot assignment.

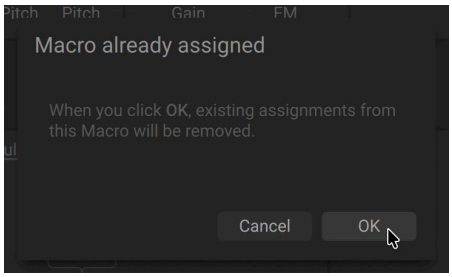


To replace a modulation slot assignment for a control with a 1:1 assignment:

1. Drag and drop the Macro number onto the control it is already assigned to using a modulation slot.



2. In the dialog, click **OK** to remove the Macro's modulation slot assignment, and replace it with a 1:1 assignment.



Removing and muting Macros

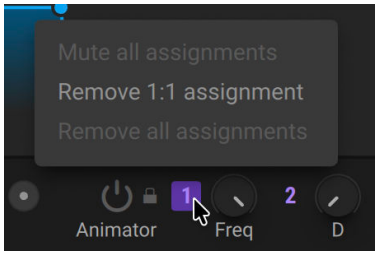
You can remove or mute Macro assignments by right-clicking the Macro number and using the context menu.

> ⓘ You can remove and mute Pitch Bend (**PB**), Modulation wheel (**M**), and Aftertouch (**AT**) assignments in the same way as Macro assignments.

Removing 1:1 assignments

To remove a 1:1 assignment applied to a single control:

1. Right-click the Macro number.

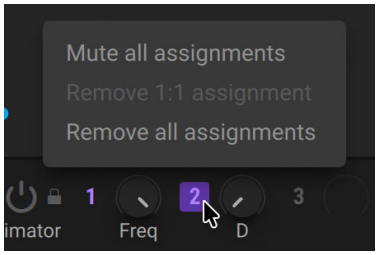


2. Select **Remove 1:1 assignment**.

Removing multiple assignments

To remove all assignments at once when a Macro is assigned to multiple controls:

1. Right-click the Macro number.

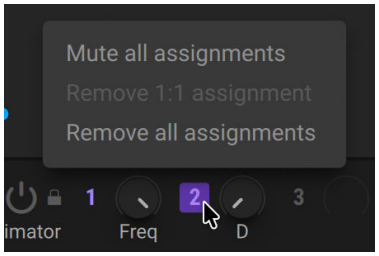


2. Select **Remove all assignments**.

Muting assignments

To mute all Macro assignments:

1. Right-click the Macro number.



2. Select **Mute all assignments**.

→ The Macro assignments are muted. You can unmute by using the same context menu.

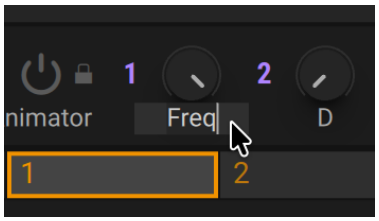
Renaming Macros

Macros are automatically named when they are assigned to a control. When the same Macro is assigned to multiple controls, you may want to rename it according to its specific function in your patch.

> ⓘ You can rename Pitch Bend (**PB**), Modulation wheel (**M**), and Aftertouch (**AT**) assignments in the same way as Macro assignments.

To rename a Macro:

1. Double-click the label under the Macro to highlight the text field.



2. Type the new Macro name in the text field and press [Enter] to confirm.

→ The Macro is named according to the text you have typed in.

9. Modulation

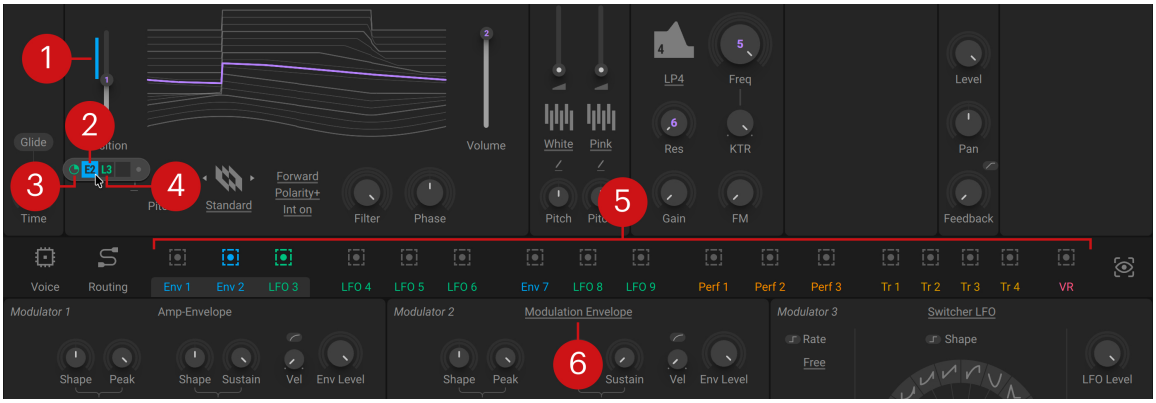
Modulation adds movement to your sound by changing controls over time. This movement defines the character and expression of a sound as you play it, from the contour of its amplitude, or volume level, to its timbral qualities. When you apply modulation to controls in your patch, the controls change their value according to the shape of the modulation signal.

Massive XL puts focus on the concept of modulation by combining flexible Modulators with an intuitive system for modulation assignment: Modulators can be assigned to any number of controls using drag and drop, and the modulation assignments are visualized directly in the user interface. Color-coded rings or lines next to controls show not only which type of Modulator is used, but also the amount of modulation applied to the control.

> Editing modulation is not available in Massive XL Player.

Modulation overview

The following elements and controls are used for modulation in Massive XL:



1. **Modulation Amount**: Adjusts the amount of modulation applied to the parameter from the Modulator. The modulation amount is represented by a color-coded ring or line next to the control. Active modulation is shown in real time as a gray ring or line inside of the control. You can find more information in Assigning modulation.
2. **Modulation Slot**: Lets you assign a Modulator to the control, and adjust the modulation amount by clicking and dragging the modulation slot up and down. Modulation slots appear when hovering a control. Right-clicking opens a context menu that lets you delete the modulation assignment. You can find more information in Assigning modulation.
3. **Sidechain Modulation Amount**: Adjusts the amount of sidechain modulation applied to the corresponding modulation slot from the sidechain modulation slot. Modulation slots appear when hovering a control. You can find more information in Sidechain modulation.
4. **Sidechain Modulation Slot**: Lets you assign a Modulator for sidechain modulation. Sidechain modulation changes the intensity of modulation applied to the other modulation slots. The sidechain modulation slot can also be used like a regular modulation slot. You can find more information in Sidechain modulation.

5. **Navigation bar**: Lets you access and assign all Modulators. You can view and edit Modulators in the Editor by clicking on their labels, and view all modulation assignments at a glance by using the Modulation Overview. Right-clicking opens a context menu that lets you mute or delete all assignments for a Modulator. You can find more information in Modulators in the Navigation bar.
6. **Modulator Menu**: Selects from four available Modulator types, the Modulation Envelope, Exciter Envelope, Switcher LFO, and the Random LFO. You can find more information in Modulators.



You can view modulation assignments individually, per Modulator, or all of them at once by hovering controls, the Modulator target icons, or the Modulation Overview. You can find more information in Viewing modulation assignments.

Modulators in the Navigation bar

Massive XL provides a comprehensive set of Modulators that can be used to add movement to your sound.

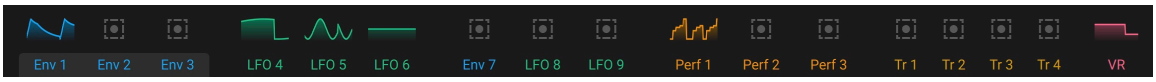
All Modulators can be assigned and accessed from the Navigation bar:



1. **Modulation Assign**: Lets you assign Modulators to controls using drag and drop, or by first clicking the target icon and then the control or modulation slot. Hovering the target icon shows all modulation assignments from the respective Modulator. You can find more information in Assigning modulation.
2. **Modulators**: Modulators include the **Modulation Envelope**, the **Exciter Envelope** for physical modeling, the **Switcher LFO** for cycling modulation, and the **Random LFO** for random modulation. **Env 1** controls the Amplifier level, all other Modulators are freely configurable. You can find more information in Modulators.
3. **Performers**: Performers are specialized sequencers for modulation. They provide a flexible way to apply complex, rhythmical movement to controls. You can find more information in Performers.
4. **Trackers**: Trackers facilitate advanced keyboard tracking. They map MIDI note data to modulation that you can assign to any control, letting you define how your sound responds to incoming MIDI. You can find more information in Trackers.
5. **Voice Randomization**: Voice Randomization lets you add pseudo-random variation to your sound, from subtle differences in tuning to dramatic changes across voices. You can find more information in Voice Randomization.
6. **Modulation Overview**: Hovering the Modulation Overview icon shows all modulation assignments from every Modulator at once. You can find more information in Viewing modulation assignments.

Modulator animation

You can view the modulation each Modulator produces using miniature scopes in the Navigation bar. The scopes are shown for every Modulator that is assigned to a control in an active module, and for as long as you play a note. The scopes are real-time displays showing a representation of the modulation rate and shape.

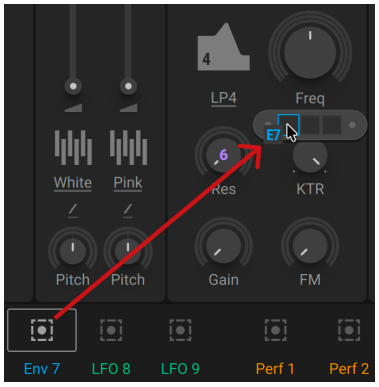


Assigning modulation

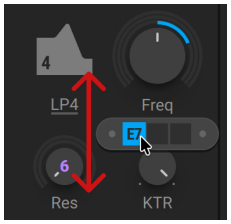
Before the effect of the envelope or LFO can be heard, it must be assigned to a modulation slot of the control you want to modulate. Modulators can be assigned to multiple controls at once. You can find more information about managing existing modulation assignments in Replacing, removing, and muting modulation.

To assign a Modulator to a control:

1. Drag and drop the target icon of a Modulator onto a modulation slot. Modulation slots appear when hovering a control. Alternatively, first click the target icon and then the modulation slot to make the assignment. You can also use the control as the target, which will assign the Modulator to the next available modulation slot.



2. Click and drag the modulation slot up or down to increase the modulation amount applied to the control. Dragging up applies positive (non-inverted) modulation, and dragging down applies negative (inverted) modulation.



→ The Modulator is assigned and modulates the control.



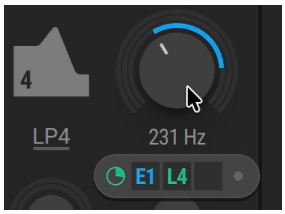
You can double-click the modulation slot to set the maximum modulation amount or reset the amount to zero.

Viewing modulation assignments

You can view modulation assignments including individually, per Modulator, or all of them at once. Any modulation assignment is always represented by a color-coded ring or line next to the control. Active modulation is shown in real time as a gray ring or line inside of the control.

To view existing modulation assignments applied to a single control, including the abbreviated Modulator names as well as the sidechain modulation amounts:

▶ Hover the control to show the modulation slots.



To show an overview of all modulation assignments from a specific Modulator:

▶ Hover the target icon of the Modulator in the Navigation bar.



To show an overview of all modulation assignments from every Modulator at once:

▶ Hover the Modulation Overview icon in the Navigation bar.



> If a Modulator is assigned to a control in an active module, the modulation it produces is visualized using a miniature scope in the Navigation bar for as long as you play a note. The scope is a real-time display showing a representation of the modulation rate and shape.

Replacing, removing, and muting modulation

You can replace or remove modulation assignments individually, and remove or mute them in groups per Modulator. When replacing or removing modulation assignments, the original modulation amount is retained. Muting assignments is useful to make a quick comparison with and without modulation.

Replacing modulation assignments

To replace a modulation assignment with another Modulator:

▶ Drag and drop the new Modulator onto the already assigned modulation slot. Modulation slots appear when hovering a control. Alternatively, you can first click the Modulator's target icon and then the modulation slot.



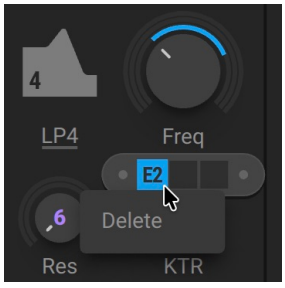
Removing modulation assignments individually

To remove a modulation assignment:

1. Hover the control to show the modulation slots.



2. Right-click the modulation slot.

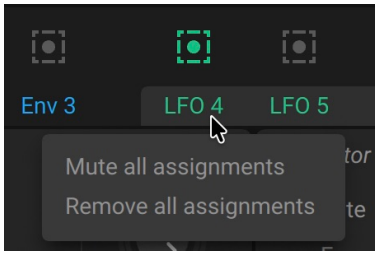


3. Select **Delete**.

Removing multiple modulation assignments

To remove all modulation assignments from a Modulator:

1. Right-click the Modulator name in the Navigation bar.

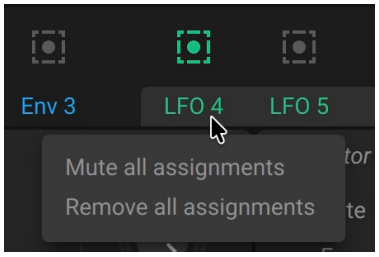


2. Select **Remove all assignments**.

Muting modulation assignments

To mute all modulation assignments from a Modulator:

1. Right-click the Modulator name in the Navigation bar.



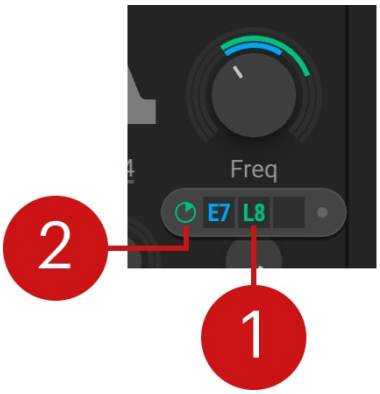
2. Select **Mute all assignments**.

→ The modulation assignments are muted. You can unmute by using the same context menu.

Sidechain modulation

Sidechain modulation lets you add movement to the modulation amount, or strength, of other modulation assignments. Instead of modulating the control itself, it changes the intensity of modulation applied to the control.

Sidechain modulation can be configured using special modulation slots and amount controls:



1. **Sidechain Modulation Slot**: Lets you assign a Modulator for sidechain modulation, which can be applied to the modulation slots to the left and to the right. It can also be used to apply modulation directly to the control like a regular modulation slot. Modulation slots appear when hovering a control.
2. **Sidechain Modulation Amount**: Adjusta the amount of sidechain modulation applied from the sidechain modulation slot to the corresponding modulation slot. Modulation slots appear when hovering a control.



In technical terms, the signal produced by the Modulator assigned to a modulation slot is multiplied by the signal produced by the Modulator assigned to the corresponding sidechain modulation slot, by a factor set with the sidechain modulation amount control.

10. Pitch

The Pitch section lets you set the global oscillator tuning and glide, or portamento. The settings apply to all voices in the same way. You can transpose all oscillators relative to the MIDI notes you are playing, or modulate pitch and glide globally.

Pitch contains the following options and controls:



1. **Pitch**: Adjusts the tuning of all oscillators in semitones and cents.
2. **Glide**: Activates glide, or portamento, making the pitch slide from one note to the other.
3. **Time**: Adjusts the glide time, which is the time it takes the pitch to slide from one note to the other. When turned fully to the left, pitch will change instantly. Turning the control to the right will create increasingly smooth pitch transitions.
4. **Glide Shape**: Selects the glide shape. **Exponential** produces the equivalent of a 1-pole low-pass filter curve, making it the best choice for classic glide. **Linear** creates a straight, even transition. **Inverse Exp** flips the characteristics of the 1-pole low-pass filter curve.
5. **Legato**: Activates legato behavior for the glide, making pitch slide from one note to the other only when playing two or more notes at the same time. When **Legato** is deactivated, glide will be applied to every note you play.



Additional settings for monophonic glide are available under Polyphony on the Voice page.

11. Voice page

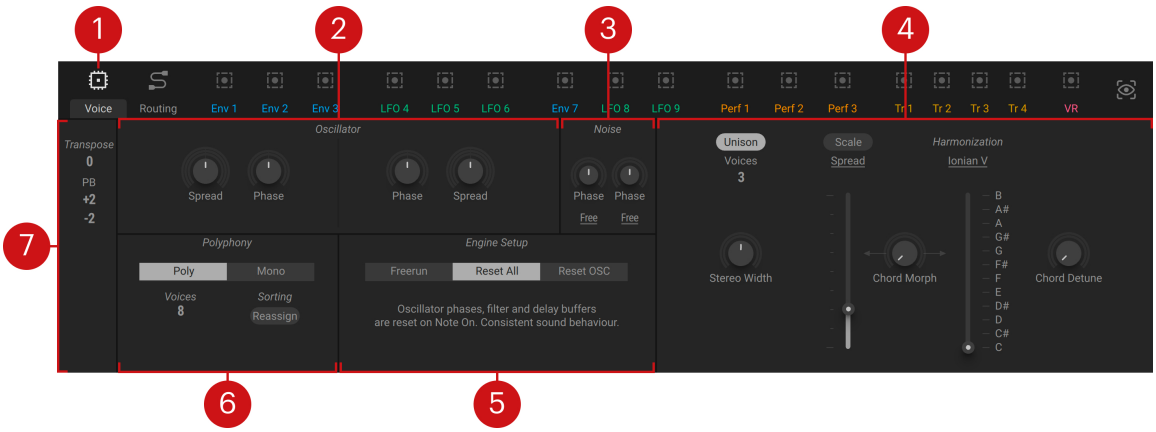
The Voice page lets you manage voicing and polyphony. You can set how the instrument's voices respond to MIDI notes and add unison to your sound. The additional unison voices can be detuned, stacked, and spread to create wide ensemble-like effects as well as harmonies and chords.

Micro-detuning can be used to emulate the drifting and detuning of analog synthesizers. Chord Sets enable you to explore different harmonies and create transitions by applying modulation to the chord selection.

> The Voice page is not available in Massive XL Player.

Voice page overview

The Voice page consists of the following areas:



1. **Voice page**: Shows the Voice page in the Editor.
2. **Oscillator**: Settings for the initial phase and spreading of the Wavetable oscillators. You can find more information in Oscillator.
3. **Noise**: Settings for the start position and restart behavior of the Noisetables in the Noise module. You can find more information in Noise.
4. **Unison**: Settings for unison and harmonization. You can find more information in Unison.
5. **Global Reset**: Settings for the phase behavior of the voices. You can find more information in Global Reset.
6. **Polyphony**: Settings for polyphony handling and playing behavior. You can find more information in Polyphony.
7. **Transpose**: Settings for global transposition and pitch-bend. You can find more information in Transpose.

Transpose

Transpose lets you set the global transposition of the instrument as well as the range of pitch bend you can apply using your MIDI controller.

Transpose contains the following controls:



- **Transpose**: Transposes the global pitch of the synthesizer in the range of -24 to +24 semitones.
- **PB**: Sets the maximum up and down values of the pitch bend control in the range of -96 to +96 semitones. You can invert the action of the pitch bend control by setting a low value that is higher than the up value.

Polyphony

Polyphony lets you switch Massive XL between **Poly** (polyphonic) and **Mono** (monophonic) mode. Each mode has additional options related to its behavior that are shown upon selecting the mode.



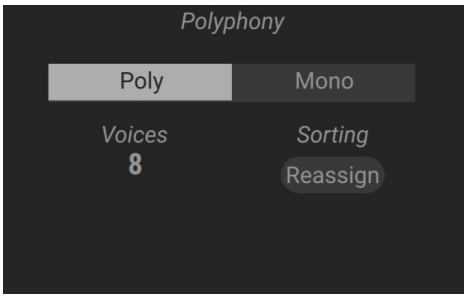
- **Polyphony**: Switches the instrument between **Poly** (polyphonic) and **Mono** (monophonic) mode. In **Poly** mode, you can play as many notes at the same time as voices are available. In **Mono** mode, you can play only one note at a time.

Poly mode

Poly mode lets you play up to 64 notes at the same time, only limited by the maximum number of **Voices** you have set. Poly mode offers constant-time glide. You can activate glide and change the global glide settings in the Pitch section.

> ⓘ Unison voices are stacked on top, so a high number of **Voices** with **Unison** activated can significantly increase the CPU load.

Polyphony contains the following additional options for **Poly** mode:



1. **Voices**: Sets the maximum number of voices that can be played at the same time before voices are reallocated to the most recent notes you play.

2. **Sorting**: Activates **Reassign** mode, which detects notes with identical pitch and allocates the same voice to them. When deactivated, each note is distributed to a new voice. In this case, two notes with identical pitch could play at the same time, which is not possible on acoustic instruments like the piano.

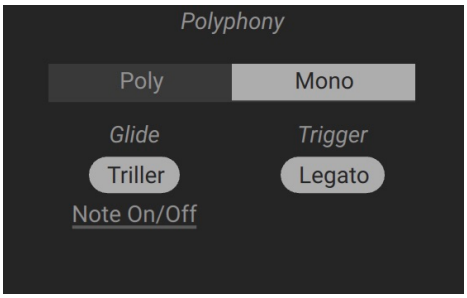
Mono mode

Mono mode lets you play one note at a time, just like a classic monophonic synthesizer. Mono mode offers constant-rate glide, with additional glide options available upon selecting the mode. You can activate glide and change the global glide settings in the Pitch section.



You can activate Unison to stack additional voices in Mono mode and create massive monophonic sounds or even chords.

Polyphony contains the following additional options for **Mono** mode:

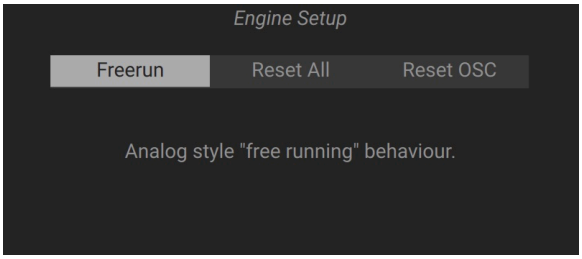


1. **Glide Triller**: Activates Triller mode, which mimics the glide behavior of classic monophonic synthesizers. If a secondary legato note is released, the pitch slides back to the original note that is being held. When deactivated, all notes end as soon as you release a secondary legato note.
2. **Glide mode**: Selects one of three modes for the monophonic glide behavior, **Note On**, **Note On/Off**, and **Note Off**. **Note On** applies glide only when notes are pressed. **Note Off** applies glide only when notes are released. **Note On/Off** triggers glide when notes are pressed and released.
3. **Trigger Legato**: Activates Legato mode for the envelopes and LFOs, preventing them from re-triggering when playing multiple notes at the same time in **Mono** mode. When deactivated, the envelopes and LFOs are triggered every time a note is played.

Global Reset

Global Reset lets you set how the polyphonic voices respond to MIDI notes in terms of the relative phases of their oscillators, filter, and Inserts. You can let them run freely to recreate analog behavior, or reset phases and buffers to make the notes you play sound more consistent.

Global Reset contains the following options:

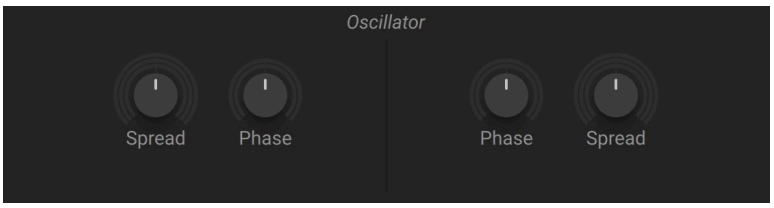


- **Global Reset**: Switches between three types of reset behavior of the oscillator phases as well as the Filter and Insert delay buffers when MIDI notes are received, **Freerun**, **Reset All**, and **Reset Oscs**.
  - **Freerun**: Lets the oscillator phases as well as the Filter and Insert delays run freely, making them independent of MIDI notes. **Freerun** recreates analog behavior by allowing oscillator phases to beat against each other organically, and filter self-oscillation to build up across multiple notes.
  - **Reset All**: Resets the oscillator phases as well as the Filter and Insert delay buffers at the start of each MIDI note. **Reset All** produces consistent sound behavior for every note you play.
  - **Reset Oscs**: Resets the oscillator phases at the start of each MIDI note. **Reset Oscs** makes the oscillators cycle and beat consistently, while the Filter and Insert delays run freely.

Oscillator

Oscillator lets you set the initial phase of the Wavetable oscillators, and the initial phase spread of the unison voices. These settings are only available if Global Reset is set to **Reset All** or **Reset Oscs**.

Oscillator contains the following controls:

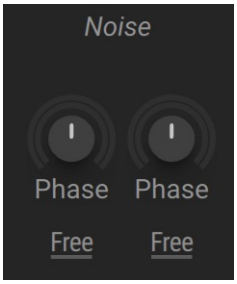


- **Phase**: Adjusts the initial phase of the Wavetable oscillator when Global Reset is set to **Reset All** or **Reset Oscs**.
- **Spread**: Adjusts the initial phase spreading of the Wavetable oscillator's unison voices when Global Reset is set to **Reset All** or **Reset Oscs**. Turning the control fully to the left aligns the phases of all unison voices at the start of each note.

Noise

Noise lets you set the **Phase** or **Start** position and the Playback mode of the noise sources in the Noise module. By default, noisetables play freely as a loop with adjustable **Phase**. In **One Shot** mode, the sample plays once when a note is received, with adjustable **Start** position and an automatic fade that prevents clicks.

Noise contains the following options and controls:



1. **Phase/Start**: Adjusts the phase or start position of the noise source in the Noise module, depending on the selected Playback mode. In **Free** and **Restart** mode, the control adjusts the **Phase** position of the sample playback from 0% to 100%. In **One Shot** mode, the control adjusts the **Start** position of the sample playback.
2. **Playback mode**: Selects from three modes for the noisetable playback, **Free**, **Restart**, or **One Shot**. **Free** loops the noisetable freely. **Restart** resets playback to the **Phase** position at the start of each note. **One Shot** plays the noisetable once for every note, with adjustable **Start** position. Switching modes preserves the values set for **Phase** and **Start**.



One Shot mode combines well with noisetables from the **Transients** category, letting you layer additional transients only onto the attack of your sound.

Unison

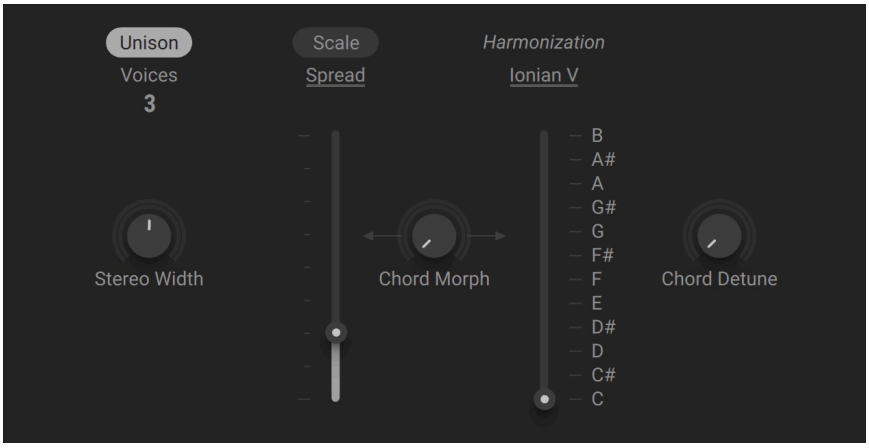
Unison lets you stack additional voices on top of each note you play. Unison voices can be detuned to recreate the beating effects known from analog synthesizers where multiple oscillators drift in and out of phase. By spreading the unison voices in the stereo image, you can create lively clouds of sound. Additionally, Harmonization let's play chords using the unison voices or lock the notes you are playing into a scale.

The additional unison voices are applied to all modules in the Polyphonic Area of the Routing page and are not limited to just the oscillators. For example, you can apply unison to physical modeling sounds using the Comb filter, or patches that rely on additional sound sources, distortion, or effects loaded in the Inserts module.

By adjusting the number of **Voices**, **Spread,** and **Stereo Width** you can create anything from subtle detuning to strong timbral shifts, making the sound bigger and thicker. **Spread** or **Wide** modes let you choose a suitable range for the detuning.

Activating **Scale** locks the notes you are playing into the scale selected in the Harmonization menu, and by turning **Chord Morph** to the right the unison voices will form chords that you can play with single MIDI notes.

Unison contains the following options and controls:



1. **Unison**: Activates Unison, which stacks additional voices on top of each note you play. Unison voices can be detuned for lively clouds of sound, spread across the stereo image, and harmonized to create chords.
2. **Voices**: Adjusts the number of unison voices that are added to each note from 1-6. When **Voices** is set to 1, there is no unison effect.

3. **Stereo Width**: Adjusts the stereo spread of the voices. When turned fully to the left, all voices are mono. Turning the control to the right spreads the voices in the stereo image.
4. **Scale**: Locks the notes you are playing into the scale selected in the Harmonization menu.
5. **Spread mode**: Switches between **Spread** and **Wide** mode for the detuning of the unison voices. **Spread** is suitable for micro-detuning, making sounds more alive in a subtle way. Results are best with 4, 5, or 6 voices selected. **Wide** detunes the unison voices by a maximum range of one octave. Equal distribution of the spreading produces pronounced beating effects.
6. **Spread**: Adjusts the amount of relative detuning applied to the unison voices, making the sound thicker. In **Wide** mode, the control is scaled in semitones. You can click the numbers next to the control to set exact semitone offsets.
7. **Chord Morph**: Blends between regular detuning and chord tuning for the unison voices. When turned fully to the left, regular detuning is applied. When turned fully to the right, the unison voices form a chord according to the scale selected in the Harmonization menu. Turning the control can create cinematic sound effects.
8. **Harmonization menu**: Opens the Harmonization menu that lets you load scales and chord sets for tuning the unison voices and the **Scale** function. When hovering the menu you can use the arrows to load the previous or next scale or chord set from the selected category. You can find more information in Harmonization menu.
9. **Harmonization**: Sets the key when a scale is selected in the Harmonization menu, or switches between 12 chord variations when a chord set is selected.
10. **Chord Detune**: Detunes the voices forming a chord for a smoother, more lively sound.

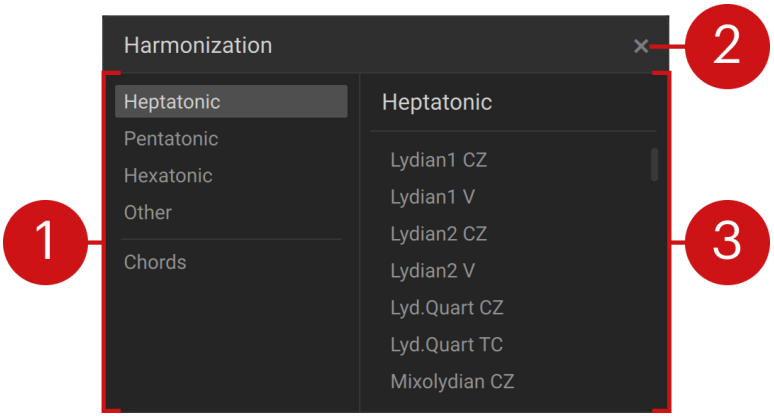


You can use a Tracker to switch between chords and set the detuning according to the notes you play.

Harmonization menu

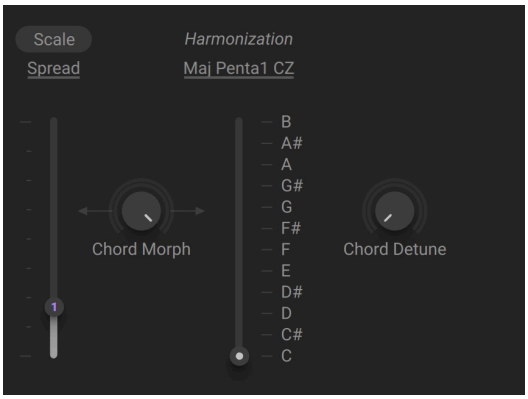
The Harmonization menu lets you load the scales and chord sets for tuning the unison voices and the **Scale** function. Clicking and dragging the header moves the menu to another position.

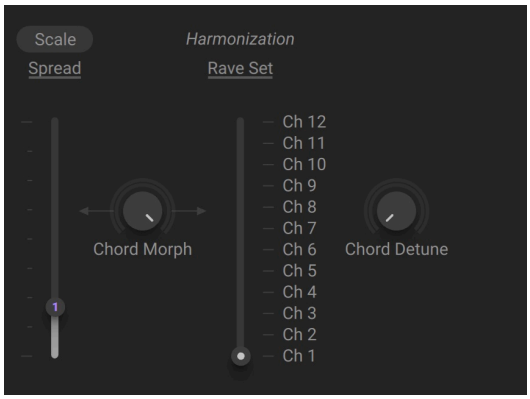
The Harmonization menu consists of the following elements:



1. **Category list**: Selects the category of items to be shown in the list on the right side of the menu.
2. **Close**: Closes the menu.
3. **Item list**: Shows all items in the selected category. Clicking an entry loads the item but keeps the menu open. Double-clicking an entry loads the item and closes the menu.

You can select a **scale** to perform within a specific musical scale, or a **chord set** to build chord progressions. Selecting either scales or chord sets will change the functionality of the **Harmonization** control. When selecting a scale, the control sets the key of the musical scale. When selecting a chord set, the control switches between chord variations:





Scales

Scales are organized in four categories at the top of the Harmonization menu, **Heptatonic**, **Pentatonic**, **Hexatonic**, and **Other**, each containing many different scales to choose from.

Selecting a scale determines not only the chords that will be formed when **Chord Morph** is turned to the right, but also the way the **Scale** function locks the notes you are playing into the scale.

If you play notes outside of the selected scale, they will be shifted according to three different types of correction as noted next to each scale in the list:

- **CZ** (Catch Zone): Corrects notes outside of the selected scale. In sharp scales, higher notes will be corrected and are shifted downwards. For example, in the Lydian scale, C# becomes C. In flat scales, lower notes will be corrected and are shifted upwards.
- **V** (Variation): Rearranges the chord structure instead of correcting the chord.
- **TC** (Transition): Uses transitional chords, which are extra chords that bridge between different keys.

Chord sets

Chord sets are available in the **Chords** category at the bottom of the Harmonization menu. They let you play a variety of chords with single MIDI notes when **Chord Morph** is turned to the right, providing parallel chords or transposition on top of the main pitch.

When a chord set is selected, you can switch between 12 chord variations using the **Harmonization** control. By modulating the control using a Performer, you can create chord progressions within each note you are playing. You can also use a Tracker to switch between chords variations according to the notes you play.

12. Routing page

Massive XL is a semi-modular synthesizer with an open architecture, letting you freely arrange and connect its modules to implement different styles of synthesis including wavetable synthesis, phase modulation (also known as FM synthesis), subtractive synthesis, physical modeling, and various wave shaping techniques.

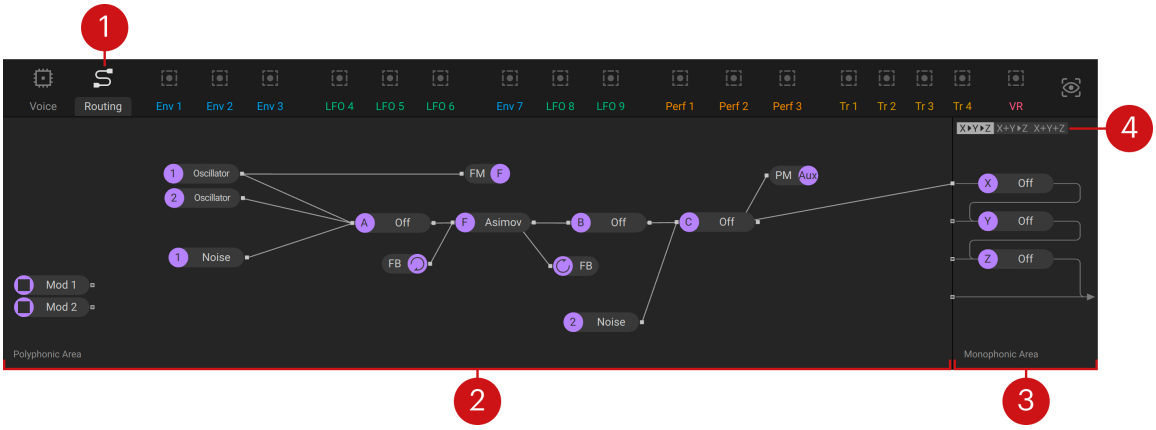
Modules are arranged and connected on the Routing page. Here you can combine all of Massive XL's sound generators and processors to create your sound.

> Editing the routing is not available in Massive XL Player.

Routing page overview

The Routing page is split into two main areas, the **Polyphonic Area** and the **Monophonic Area**. The Polyphonic Area is used to create the signal path that is processed independently for every single voice you play. The Monophonic Area contains three Effects that are globally applied to the sum of all polyphonic voices.

The Routing page consists of the following options and areas:



1. **Routing page**: Shows the Routing page in the Editor.

2. **Polyphonic Area**: Contains modules that you can use to create the signal path of the polyphonic voices. In order to complete the signal path, one or more module outputs need to be connected to the inputs of the **Monophonic Area**.
   - **Generators and processors**: Let you set up your basic signal path using Wavetable oscillators, Noise sources, the Filter, and the Inserts. The icons shown on the modules can also be found on the corresponding module panel. You can find more information in Generators and processors.
   - **Aux bus**: Lets you use any sound source for phase modulation of the Wavetable oscillators experiment with phase modulation based on noise, feedback, and inserts to achieve highly complex sounds. You can find more information in PM Aux bus.
   - **Feedback loop**: Lets you create a polyphonic feedback loop around modules to add chaotic and non-linear behavior. This feature is also useful for physical modeling sounds, especially when combined with the Comb filter. You can find more information in Feedback loop.
   - **Modulation modules**: Let you use the Modulators as generators in the signal path. Any Modulator can be assigned to the Modulation modules by dragging and dropping. For example, you can use the Switcher LFO in OSC mode as an additional oscillator, or the Exciter Envelope to turn the Comb filter into a sound source. You can find more information in Modulation modules.
3. **Monophonic Area**: Sums the polyphonic voices and applies the three Effects X, Y, and Z as the last stage before the output. The Monophonic Area provides a dedicated input for each Effect as well as a single input that is directly sent to the output. You can find more information in Effects.
4. **Routing options**: Arranges the three effects in the signal path. **X > Y > Z** chains the three effects, **X + Y > Z** sends the sum of the X and Y effects to the Z effect, and **X + Y + Z** sums all three effects.

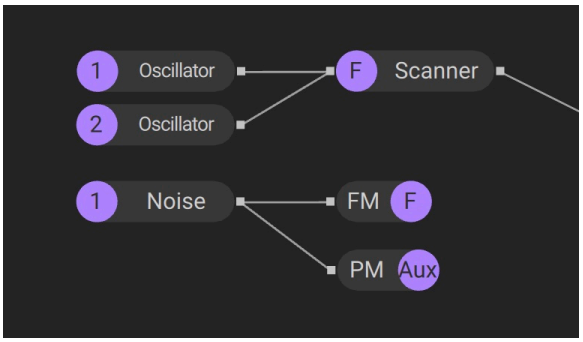


You can load the preset **Init - Massive XL** from the Settings menu in the Header to use the routing shown above as the starting point for your new patch.

Using the Routing page

On the Routing page you can arrange and connect the individual modules that make up your patch. The inputs and outputs of the modules are connected using virtual wires.

Outputs can be connected to any number of inputs and vice versa, so you can distribute signals to multiple destinations or mix multiple outputs into the same input:



To make a connection between modules:

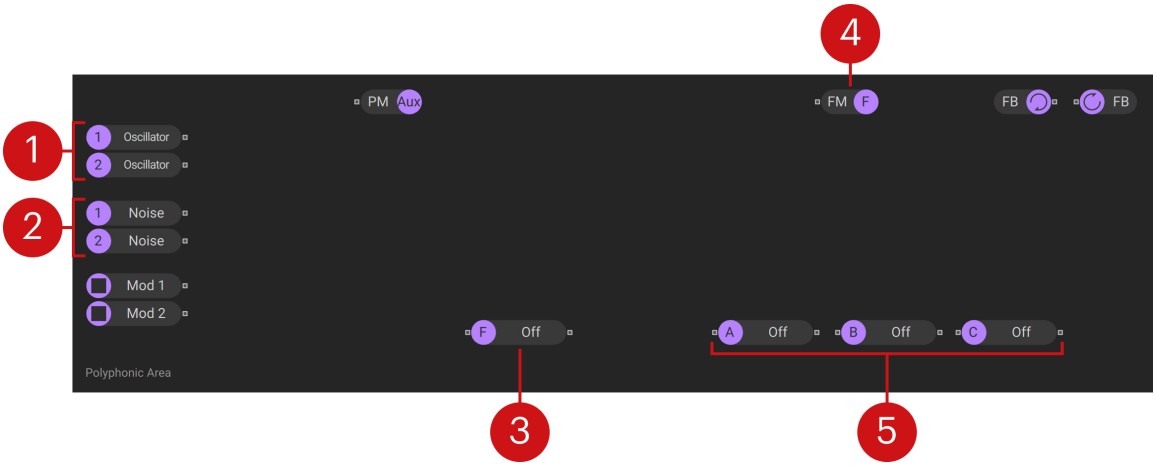
1. Click on an output to show all available inputs it can be connected to.
2. Click on the input you want to connect the output to.

> Alternatively, you can click and drag from an output to an input to connect them.

- To remove a connection, double-click the virtual wire.
- To remove all connections from a module, double-click the module.
- To bypass a module without removing its connections, right-click the module.

Generators and processors

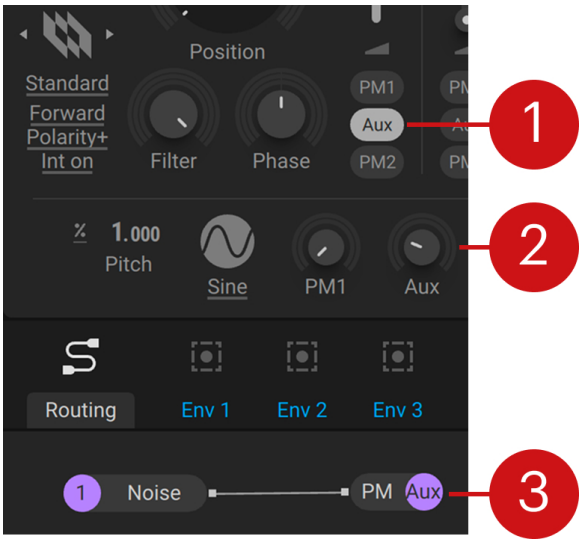
The generators and processors available in the Polyphonic Area of the Routing page are the basic components you can use to build your sound. They consist of the Oscillators, Noise sources, the Filter, and the Inserts.



1. **Oscillators**: The Wavetable oscillators 1 and 2 are generators that each feature a single output. They can be connected to the processors and buses in the Polyphonic Area, or directly to an input of the Monophonic Area. You can find more information in Wavetable oscillators.
2. **Noise sources**: The Noise sources 1 and 2 are generators that each feature a single output. They can be connected to the processors and buses in the Polyphonic Area, or directly to an input of the Monophonic Area. You can find more information in Noise.
3. **Filter**: The Filter is a processor that features a single input and a single output. It can be connected to the generators, processors, and buses in the Polyphonic Area, or directly to an input of the Monophonic Area. You can find more information in Filter.
4. **Filter FM**: The Filter types Asimov, Blue Monark, Groian, Scanner feature an extra FM bus in the routing. You can connect any source in the signal path here to apply audio rate modulation to the filter frequency, also called filter FM (frequency modulation). Filter FM produces rich harmonics and distortion effects.
5. **Inserts**: The three Inserts (A, B, C) are processors that each feature a single input and a single output. They can be connected to the generators, processors, and buses in the Polyphonic Area, or directly to an input of the Monophonic Area. By selecting OSC or PM OSC for the Inserts, you can also use them as generators. You can find more information in Inserts.

PM Aux bus

The Aux bus offers an additional input for phase modulation that can be connected on the Routing page and assigned to either of the Wavetable oscillators, or both. It lets you use any sound source for phase modulation, including Modulators via the Mod modules.



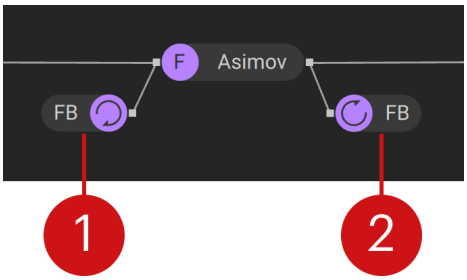
1. **Aux assign**: Routes the signal received by the **PM Aux** module on the Routing page to the phase modulation of the corresponding Wavetable oscillator.
2. **Aux**: Adjusts the amount of phase modulation applied from the Aux bus to the assigned Wavetable oscillators.
3. **PM Aux**: Sends the signal it receives to the Aux bus so it can be used to apply phase modulation to the Wavetable oscillators. It can be connected to the any of the generators and processors on the Routing page.

The flexible routing lets you experiment with phase modulation based on noise, feedback, and inserts to achieve highly complex sounds. Find Noise connected to the Aux bus in the presets **Noise Sub** and **Crown Alloy**. To check out feedback from the Inserts fed into the Aux bus, open the preset **Woozle** and turn up the **Aux** control.

Feedback loop

Feedback lets you connect a module's output to its input in the Routing tab. Multiple modules can be chained in the feedback loop. Feedback adds chaotic and non-linear behavior to the voice, creating organic and distorted sounds. When combined with the Comb filter, you can use feedback for physical modeling patches.

The feedback loop can be freely connected in the Polyphonic Area of the Routing page by using the two **FB** modules. Since it is processed independently for every single voice you play, you can play chords and overlapping notes with your feedback sounds.



1. **Feedback loop output**: This bus features a single output that receives signals from the feedback loop input. It can be connected to the generators, processors, and buses in the Polyphonic Area.
2. **Feedback loop input**: This bus features a single input that sends signals to the feedback loop output. It can be connected to the generators and processors in the Polyphonic Area.

In the example shown above, the output of the Asimov filter is connected to the **FB** input, and the **FB** output is connected to the input of the Asimov filter. This creates a feedback loop around the filter, creating an overdriven sound with a chaotic quality.

Feedback control

The feedback amount is controlled from the Amp module. Use the **Feedback** control to adjust the feedback level and apply a high-pass filter to reduce bass overloading in the feedback loop.



1. **Feedback**: Adjusts the level of the signal going into the feedback loop, controlling the chaotic behavior and distortion produced by the feedback. Feedback can result in extreme changes of the output volume, so making careful adjustments is key.
2. **High-pass**: Activates a high-pass filter that cuts low-frequency content in the feedback loop. You can use it to avoid overloading the feedback loop with excessive bass.

Modulation modules

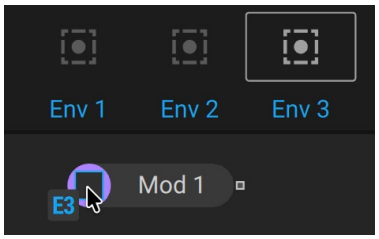
The Modulation modules in the Polyphonic area of the Routing page make it possible to use any of Massive XL's Modulators as generators in the signal path. For example, you can use the Switcher LFO in OSC mode as an additional oscillator, or the Exciter Envelope as an exciter for the Comb filter.

To assign a Modulator to a Modulation module in the Polyphonic area:

1. Click the Modulator's arrow icon to select it.



2. Click on the Modulation module slot in the Polyphonic area to assign it.



→ The signal produced by the modulation slot is now sent from the Modulation module's output and can be used anywhere in the signal path.

13. Wavetable oscillators

At the heart of Massive XL are the two Wavetable oscillators, which generate sound by reading out single-cycle waveforms that are arranged in a table. Scanning through the waveforms in the table using the **Position** control gives you different sounds, and by modifying the waveform readout using **Wavetable modes** you can explore even more variations in timbre.

Wavetable synthesis operates in two dimensions. One dimension is the readout, or playback, of the individual waveforms. The readout is controlled by the internal phase of the oscillator, which follows the pitch of MIDI notes. The internal phase can be manipulated by a variety of Wavetable modes. The other dimension is the stack of waveforms in each wavetable, letting you scan through and blend different waveforms.

A diverse collection of wavetables has been curated to cover anything from basic waveforms to special harmonics, formants, acoustic sounds, and wavetables that play well with specific Wavetable modes. Additionally, you can import audio files directly into Massive XL and use them as your own custom user wavetables.



The Wavetable oscillator modules can be freely placed in the signal flow on the Routing page. You can find more information in Generators and processors.



Editing the Wavetable oscillators is not available in Massive XL Player.

Wavetable oscillators overview

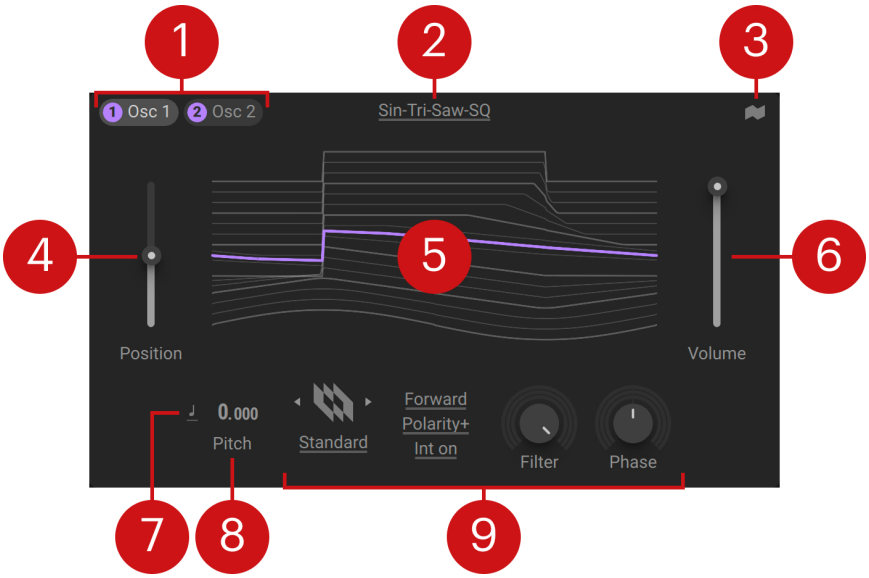
You can edit the two Wavetable oscillators individually in **Single view** or both at the same time in **Dual view**.

▶ Click the Oscillator view icon to toggle between Single view and Dual view.



Single view

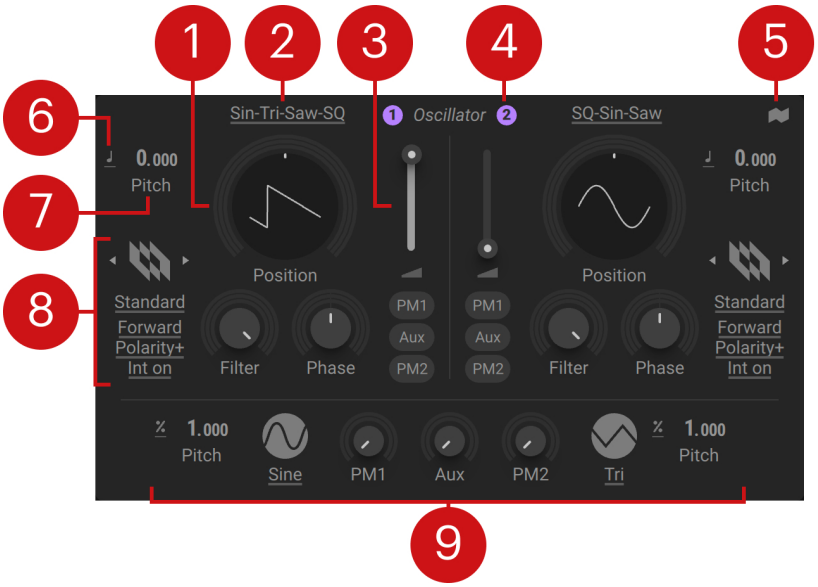
In Single view, the Wavetable oscillators contain the following options and controls:



1. **Oscillator selector**: Switches the view between the two Wavetable oscillators. Clicking the number switches the respective Wavetable oscillator on or off.
2. **Wavetable menu**: Opens the Wavetable menu that lets you load a wavetable into the oscillator, and add folders with user wavetables. When hovering the menu you can use the arrows to load the previous or next wavetable from the selected category. You can find more information in Wavetable menu.
3. **Oscillator view**: Toggles the view between focusing on one Wavetable oscillator and showing both Wavetable oscillators side by side.
4. **Wavetable Position**: Scans through the waveforms in the selected wavetable. Each wavetable can stack 2–128 waveforms.
5. **Wavetable display**: Visualizes the waveforms in the selected wavetable, with the current waveform highlighted in purple. When changing the Wavetable mode and its settings the visualization is updated according to how the waveform is read out.
6. **Level**: Adjusts the output volume of the Wavetable oscillator.
7. **Pitch mode**: Selects one of three pitch tracking modes, **Key Track**, **Fix**, **Ratio**. **Key Track** locks the pitch to MIDI. **Fix** sets an independent, fixed pitch in MIDI note numbers, defaulting to 60 (middle C). **Ratio** multiplies or divides MIDI pitch. For example, a ratio of 3 multiplies the pitch by 3, producing the 3rd harmonic.
8. **Pitch**: Adjusts the tuning of the oscillator in semitones and cents. Pitch can be modulated to produce vibrato and arpeggio effects by assigning a Modulator to the modulation slots.
9. **Wavetable mode controls**: Lets you select a Wavetable mode and change its settings. You can find more information in Wavetable modes.

Dual view

In Dual view, the Wavetable oscillators contain the following options and controls:



1. **Wavetable Position**: Scans through the waveforms in the selected wavetable. Each wavetable can stack 2–128 waveforms.
2. **Wavetable menu**: Opens the Wavetable menu that lets you load a wavetable into the oscillator, and add folders with user wavetables. When hovering the menu you can use the arrows to load the previous or next wavetable from the selected category. You can find more information in Wavetable menu.
3. **Level**: Adjusts the output volume of the Wavetable oscillator.
4. **Oscillator on/off**: Switches the Wavetable oscillator on or off.
5. **Oscillator view**: Toggles the view between focusing on one Wavetable oscillator and showing both Wavetable oscillators side by side.
6. **Pitch mode**: Selects one of three pitch tracking modes, **Key Track**, **Fix**, **Ratio**. **Key Track** locks the pitch to MIDI. **Fix** sets an independent, fixed pitch in MIDI note numbers, defaulting to 60 (middle C). **Ratio** multiplies or divides MIDI pitch. For example, a ratio of 3 multiplies the pitch by 3, producing the 3rd harmonic.
7. **Pitch**: Adjusts the tuning of the oscillator in semitones and cents. Pitch can be modulated to produce vibrato and arpeggio effects by assigning a Modulator to the modulation slots.
8. **Wavetable mode controls**: Lets you select a Wavetable mode and change its settings. You can find more information in Wavetable modes.
9. **Phase modulation controls**: Lets you apply phase modulation to the Wavetable oscillators using flexible PM oscillators and routing. You can find more information in Phase Modulation.

Wavetables

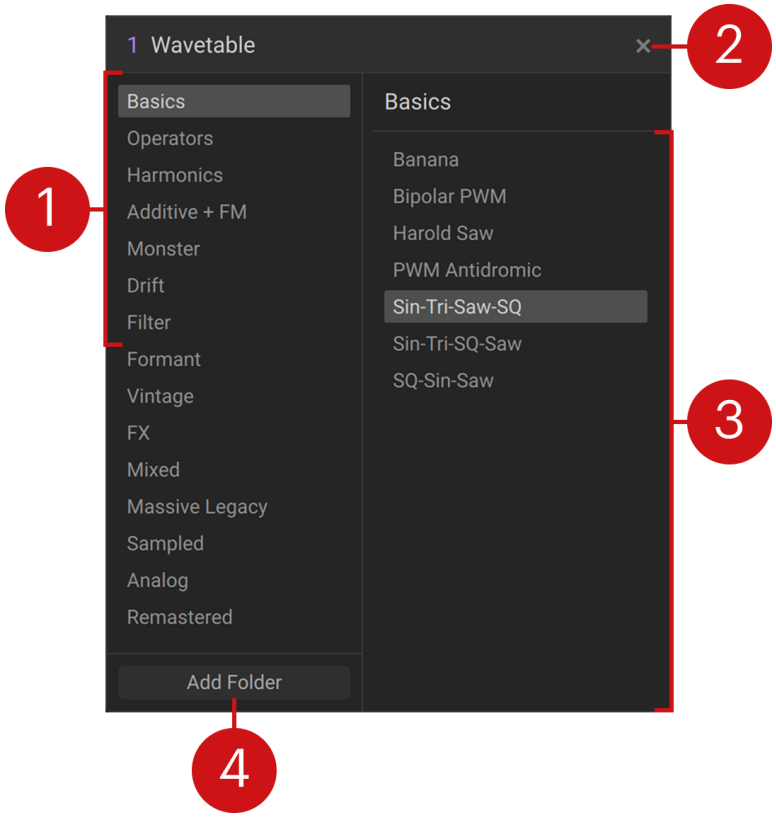
The wavetables in Massive XL are grouped in categories according to their sound and application. While all of them can serve as the starting point for your own sound exploration, some wavetables are more suitable for specific use cases than others. For example, **Basics** wavetables are best suited for sounds based on subtractive synthesis, while **Operators** wavetables are specifically designed to be used for phase modulation. You can find more information in Wavetables categories.

In some cases, the wavetables are not particularly exciting on their own, but work well in combination with a specific Wavetable mode. Each Wavetable mode has its own distinct sound, and by combining different wavetables with the Wavetable modes you can achieve a wide range of timbres that go beyond the sounds commonly associated with wavetable synthesis. You can find more information in Wavetable modes.

Wavetable menu

The Wavetable menu lets you load a wavetable into the Wavetable oscillator. By adding a folder containing audio files, you can use them as user wavetables. Clicking and dragging the header moves the menu to another position.

The Wavetable menu consists of the following elements:



1. **Category list**: Selects the category of items to be shown in the list on the right side of the menu.
2. **Close**: Closes the menu.
3. **Item list**: Shows all items in the selected category. Clicking an entry loads the item but keeps the menu open. Double-clicking an entry loads the item and closes the menu.
4. **Add Folder**: Opens a file dialog that you can use to import a folder containing audio files. All compatible audio files will be processed and imported as user wavetables.

Wavetables categories

Massive XL includes a curated library of wavetables that are organized in the following categories.

Basics

In this category you will find the most common oscillator waveforms, which serve as the basis for subtractive synthesis and are well suited for classic analog synth sounds. **SQ-SIN-SAW** is a good starting point for any type of synthesis. Basics also consists of classic analog waveforms, including **PWM** (pulse width modulation). T**Banana** is designed for Gorilla mode and sounds great with modulation applied to the mode's **Over** and **Bend** controls.

Operators

Specifically made to be used for phase modulation, these wavetables turn the Wavetable oscillators into FM operators. They can also be used to add body to a layered sound. **WM** (width modulation) is provided in wavetables that contain only few harmonics, allowing for a more dynamic and animated sound.

Harmonics

Wavetables in this category feature a specific effect that emphasizes the harmonic series when scanning through the wavetable. They combine well with subtle filtering or EQ, and produce interesting results when applying modulation to the wavetable position.

Additive + FM

You can use these wavetables to produce sounds typically associated with additive or FM synthesis. They are ideal for producing cold, shimmery, metallic, or glassy sounds.

Monster

In this category you will find wavetables with a strong character that shines when played in low registers. Combining them with phase modulation or **Bend** and **Mirror** modes produces even more aggressive timbres. Modulating the wavetable position creates wobble sounds typically associated with dubstep. The **SV** (state-variable) filters are ideal for taming and shaping the sound. The **Gorilla** wavetables produce an effect similar to Gorilla mode when scanning through the wavetable.

Drift

These wavetables provide hard transients that work well with subtractive filtering, from **PWM** to the unique **Drift** wavetables, which create the illusion of multiple, slightly detuned oscillators beating against each other when modulating the wavetable position.

Filter

Wavetables in this category mimic filter sounds, including BP (band-pass) and LP (low-pass) options. They combine well with EQ, unison and distortion. Scanning through the wavetable emulates the effect of adjusting filter cutoff at high resonance.

Formant

These wavetables feature characteristics of the human voice and can be used for creating vowel sounds, especially when combined with **Formant Capture** mode and modulating the wavetable position. Experiment with the modulation rate to emphasize human-like articulations and achieve nuanced vocal sounds.

Vintage

In this category you will find wavetables from the classic PPG Wave wavetable synthesizers.

FX

Wavetables in this category produce complex sound colors suitable for sound effects rather than standard oscillator sounds. You can use them to add shimmer and texture to layered sounds. When pitched down at a fixed frequency they can serve as noise generators, emulate environmental resonances, or produce inharmonic bell sounds. These wavetables are most effective with strong modulation applied to the wavetable position.

Mixed

These wavetables are made up of a variety of unrelated waveforms, creating diverse sonic palettes. As such, they do not morph smoothly like most typical wavetables, but can be used to create interesting stepping effects.

Massive Legacy

In this category you will find the original wavetables from Native Instruments Massive.

Sampled

Based on recordings of real instruments and voices, these wavetables let you add an acoustic quality to your sounds.

Analog

These wavetables are created from recordings of analog synthesizers, capturing their nuanced waveforms and imperfections.

Remastered

In this category you will find remastered wavetables from Native Instruments Massive.

User wavetables

In addition to the factory wavetables, you can also import audio files into Massive XL and use them as user wavetables.

The supported file formats are WAV, AIFF, MP3, FLAC, OGG and M4A. Stereo audio files will be converted to mono. The files must have at least 2,048 samples, which is the length of a single waveform. One wavetable can hold a maximum of 256 waveforms, so any audio exceeding a length of 524,288 samples will be ignored.

When you import an audio file, it is cut into consecutive, non-overlapping blocks of 2,048 samples, with each block becoming one waveform in the wavetable. The order will be the same as in the audio file. Each waveform goes through the same band-limiting process the factory wavetables use.

Audio files can be loaded individually using drag and drop. You can also import them to your library by adding custom folders in the Wavetable menu, or by adding audio files to the User Content folder on your computer.

User wavetables are not embedded in preset files. If you open a user preset created with user wavetables on another computer, make sure to also add the user wavetables to your library.

Importing audio files using drag and drop

You can drag and drop an audio file onto the Wavetable oscillators to immediately load them as a wavetable. It will be imported to your library appear under **User** in the Wavetable menu.

To load an audio file using drag and drop:

1. Locate the audio file on your computer.
2. Drag and drop the audio file onto either one of the Wavetable oscillators.

→ The audio file is loaded as user wavetable and imported to your library.

Adding a folder

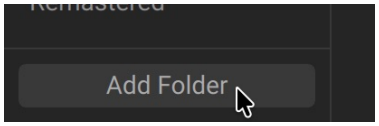
You can add folders from your computer to import them to your library and show them as custom categories in the Wavetable menu. All compatible audio files contained in the folders you have added will be available as wavetables.

To add a folder:

1. Open the Wavetable menu.



2. Click **Add Folder**.



3. Locate the folder containing the audio files you want to import and click **Open**.

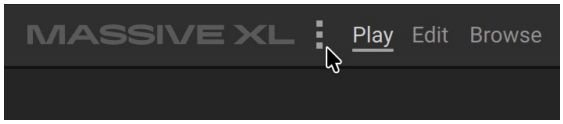
→ The selected folder is added as a new User category in the Wavetable menu.

Managing wavetables in the User Content folder

You can add, remove, or rename audio files in the user Wavetables folder to make changes to the **User** and custom categories in the Wavetable menu. Any changes will only be reflected in the Wavetable menu after performing a rescan of your content.

To view, add, or edit wavetables in the **User** and custom categories:

1. Open the Settings menu by clicking the three dots icon next to the Massive XL logo in the Header.

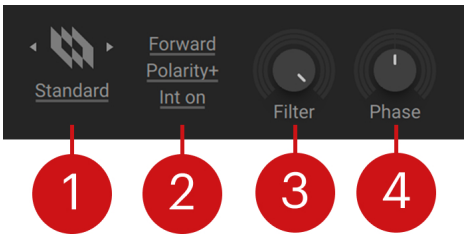


2. Select **Show User Content Folder** to open the User Content folder in your computer's file manager.
3. Open the *Wavetables* folder in the file manager window.
4. Add, remove, or rename the folders and audio files in the *Wavetables* folder.
5. Go back to Massive XL and open the Settings menu.
6. Select **Rescan Content**.

→ The changes you have made in the User Content folder will be reflected in the **User** and custom categories of the Wavetable menu. If you have added audio files, they will be imported as user wavetables.

Wavetable modes

The Wavetable modes modify the internal phase of the oscillator and therefore the readout of the waveform. They are key to unlocking the full potential of the Wavetable oscillators. Every mode features two dedicated controls for real time manipulation and additional settings to define its behavior.

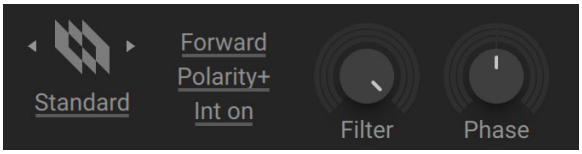


1. **Wavetable mode**: Selects one of ten modes that modify the readout of the waveform.
   - Standard: The default mode with controls and options that work well with most wavetables.
   - Bend: Warps the waveform by compressing some parts and expanding others.
   - Mirror: Reads out the waveform back and forth, folding the waveform in certain settings.
   - Hardsync: Produces the classic hard sync sound and variations thereof without the need for a second oscillator.
   - Wrap: Produces hard sync effects with reduced pitch artifacts.
   - Formant: Preserves strong formants in wavetables even when playing different pitches.
   - ART: Mimics the sound of a resonant filter only by manipulating the waveform readout.
   - Gorilla: Produces intense harmonics and is best combined with basic waveforms.
   - Random: Applies randomness to the waveform readout, producing interesting noise sounds.
   - Jitter: Introduces random deviations at the end of each cycle, making the signal read out faster or slower.
2. **Wavetable mode settings**: Options for defining the specific behavior of each Wavetable mode.
3. **Wavetable mode controls**: Controls for key parameters that let you tweak the sound of the Wavetable mode in real time.

Standard mode

Standard is the default Wavetable mode and similar to Spectrum mode in the original NI Massive. It features a **Filter** control that reduces high frequency harmonics down to the point where only the fundamental frequency can be heard, turning any waveform into a clean sine wave.

Standard mode contains the following controls and options:



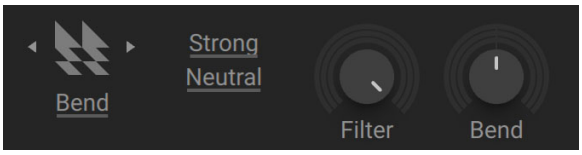
- **Direction**: Switches between **Forward** and **Backward** modes for the wavetable readout.
- **Polarity +/-**: Switches between positive and negative polarity, effectively flipping the waveform.
- **Internal phase on/off**: Switches the waveform readout on or off. When **Int on** is selected, the internal phase reads out the wavetable according to the oscillator pitch. Selecting **Int off** bypasses the internal phase and fixes the frequency at 0 Hz, effectively turning the oscillator into a wave shaper for the PM oscillators or the PM Aux bus.
- **Filter**: Reduces the high frequency harmonics of the selected waveform. The effect is similar to adjusting the cutoff frequency of a low-pass filter.
- **Phase**: Adjusts the oscillator phase.

Check out the preset **Amber Chapel** for a classic organ sound, and the preset **Analogica** for a classic analog saw wave sound.

Bend mode

Bend mode warps the waveform by accelerating and decelerating the readout depending on the position in the wavetable, compressing some parts while expanding others. **Up-down** mode can be used to create a hollow, square-like sound.

Bend mode contains the following controls and options:



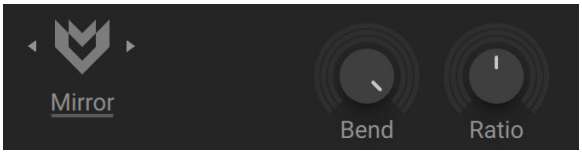
- **Bend Curve**: Selects the type of Bend, **Strong**, **Medium**, or **Gentle**. **Gentle** has a subtle effect, similar to the **+/- Bend** mode in the original NI Massive.
- **Direction**: Sets the direction of the wavetable readout, **Neutral**, **Up-Down**, or **For-Back**. **Neutral** continuously cycles through the waveform in one direction. **Up-Down** inverts every second fundamental cycle of the waveform. **For-Back** (Forward-Backwards) reads out every second fundamental cycle of the waveform backwards.
- **Filter**: Reduces the high frequency harmonics of the selected waveform. The effect is similar to adjusting the cutoff frequency of a low-pass filter.
- **Bend**: Bends the phase by accelerating and decelerating the readout of the waveform.

Check out the presets **Alkaline State** and **Alpha Ape** for a basic introduction to this mode. The preset **Anaphylaxis** showcases Bend mode in combination with wavetables from the Monster category, producing hollowed out square wave sounds. The preset **Andean Air** uses two **Operator** wavetables in Bend mode to create a breathy, hollow instrument sound.

Mirror mode

Mirror mode reads out the wavetable back and forth. High **Ratio** settings will force the waveform to be folded, producing sounds similar to hard sync.

Mirror mode contains the following controls and options:

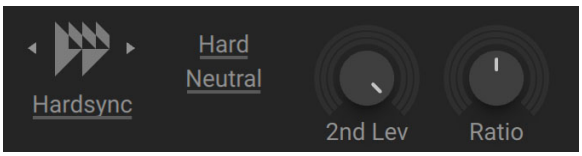


- **Bend**: Bends the phase by accelerating and decelerating the readout of the waveform.
- **Ratio**: Adjusts the depth ratio of the mirrored phase, effectively changing the range of mirroring up to folding the waveform onto itself.

Hardsync mode

Hardsync mode can be used to create variations of the classic hard sync sound without the need for a second oscillator as the sync source. High **Ratio** settings produce harsh sounds that can be smoothed out using the **Soft** and **Grain** window types, resulting in sounds that are not possible with classic analog hard sync.

Hardsync mode contains the following controls and options:

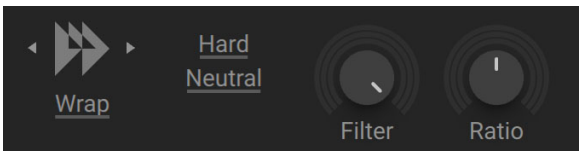


- **Window**: Selects the type of Hardsync, **Hard**, **Soft**, or **Grain**. **Hard** applies a very subtle smoothing window to the end and start point of the fundamental cycle. Depending on the waveform, this results in the typical sound of classic hard sync. **Soft** applies a smoother window and **Grain** applies the smoothest window.
- **Direction**: Sets the direction of the wavetable readout, **Neutral**, **Up-Down**, or **For-Back**. **Neutral** continuously cycles through the waveform in one direction. **Up-Down** inverts every second fundamental cycle of the waveform. **For-Back** (Forward-Backwards) reads out every second fundamental cycle of the waveform backwards.
- **2nd Lev**: Adjusts the amplitude of every second reset cycle. Turning the control fully to the left shifts the pitch down by one octave.
- **Ratio**: Adjusts the frequency ratio of the hard sync effect.

Wrap mode

Wrap mode is similar to Hardsync mode but with different behavior when modulated. It produces fewer pitch artifacts by multiplying the waveform symmetrically within the cycle.

Wrap mode contains the following controls and options:



- **Window**: Selects the type of Wrap, **Hard**, **Soft**, or **Grain**. **Hard** applies a very subtle smoothing window to the end and start point of the fundamental cycle. Depending on the waveform, this results in the typical sound of classic hard sync. **Soft** applies a smoother window and **Grain** applies the smoothest window.
- **Direction**: Sets the direction of the wavetable readout, **Neutral**, **Up-Down**, or **For-Back**. **Neutral** continuously cycles through the waveform in one direction. **Up-Down** inverts every second fundamental cycle of the waveform. **For-Back** (Forward-Backwards) reads out every second fundamental cycle of the waveform backwards.
- **Filter**: Reduces the high frequency harmonics of the selected waveform. The effect is similar to adjusting the cutoff frequency of a low-pass filter.
- **Ratio**: Adjusts the frequency ratio of the hard sync effect.

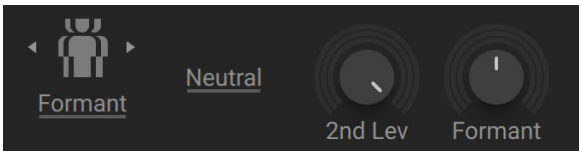
Check out the preset **Ample Wob** for a hard sync sound created using Wrap mode combined a with a square waveform.

Formant mode

Formant mode lets you adjust formant frequencies that are included in the wavetables as Formant Center metadata, and preserves them when playing different pitches. Rather than with sine, sawtooth or square waveforms, it is most effective when used with wavetables that have a strong formant.

Wavetables in the **Formant** category are designed to work well with Formant mode. They mimic characteristics of the human voice and can be used for creating vowel sounds.

Formant mode contains the following controls and options:



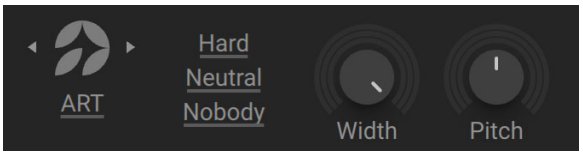
- **Direction**: Sets the direction of the wavetable readout, **Neutral**, **Up-Down**, or **For-Back**. **Neutral** continuously cycles through the waveform in one direction. **Up-Down** inverts every second fundamental cycle of the waveform. **For-Back** (Forward-Backwards) reads out every second fundamental cycle of the waveform backwards.
- **2nd Lev**: Adjusts the amplitude of every second reset cycle. Turning the control fully to the left shifts the pitch down by one octave.
- **Formant**: Shifts the formants in the frequency spectrum.

As a starting point, try Formant mode with the wavetable **Talkative SQ** and turn **2nd Lev** fully to the left. When combined with the **SVF Parallel** or **Groian** filter you can adjust the wavetable position and filter frequency to create vocal sounds. For more subtle vocal effects, check out the preset **Android** that combines wavetables from the **Formant** and **Basics** categories.

ART mode

ART (Artificial Resonance Technology) mode utilizes hard sync techniques and windowing to mimic a resonant filter. It embeds the sound of a highly resonant band-pass filter in the wavetable readout, resulting in timbres that a real filter cannot achieve.

ART mode contains the following controls and options:



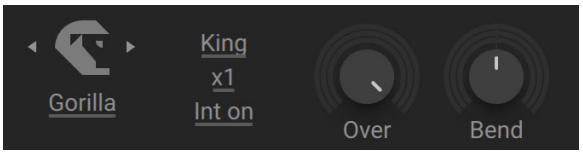
- **Window**: Selects the type of ART, **Hard**, **Bity**, or **Soft**. **Hard** is the most aggressive setting, creating a sharp impulse window. **Soft** is smooth sounding and the least aggressive setting. **Bity** has a balanced character and is a good starting point. The differences in the three modes can best be heard with low Pitch settings.
- **Direction**: Sets the direction of the wavetable readout, **Neutral**, **Up-Down**, **For-Back**, **FU-DB**. **Neutral** continuously cycles through the waveform in one direction. **Up-Down** inverts every second fundamental cycle of the waveform. **For-Back** (Forward-Backwards) reads out every second fundamental cycle of the waveform backwards. **FU-DB** combines Up-Down and For-Back.
- **Body**: Switches between two types of artificial bodies that are applied to the sound, **Body** and **Nobody**. When **Body** is active, this response adds bass to the sound. When **Nobody** is selected, you have the excitation response of an artificial filter.
- **Width**: Narrows or widens the impulse window, similar to the resonance amount of an analog filter.
- **Pitch**: Adjusts the frequency of the artificial resonance, similar to the cutoff of an analog filter.

You can check out the signature sound of ART mode in the presets **Alpine Digital**, **BAMX2** and **Golden Child**.

Gorilla mode

Gorilla is an aggressive sounding mode that produces uniquely exaggerated results. It produces intense harmonics and is best combined with basic waveforms. Applying modulation to both **Over** and **Bend** creates rich and animated sounds.

Gorilla mode contains the following controls and options:



- **K!ings**: Selects the type of Gorilla, **King**, **Kong**, or **Kang**, which determine how the phase of the readout is bent. **King** is the cleanest sounding option, providing the classic screaming sound. **Kang** provides medium bending for a dirtier sound. **Kong** has maximal bending for the dirtiest sound.
- **Ratio**: Sets the frequency ratio of a second internal oscillator phase, which has a huge impact on the sound. A ratio of **x2** is a good starting point for exploring the sound of Gorilla mode.
- **Internal phase on/off**: Switches the waveform readout on or off. When **Int on** is selected, the internal phase reads out the wavetable according to the oscillator pitch. Selecting **Int off** bypasses the internal phase and fixes the frequency at 0 Hz, effectively turning the oscillator into a wave shaper for the PM oscillators or the PM Aux bus.
- **Over**: Adjusts the strength of the harmonics.
- **Bend**: Shifts the harmonics in the frequency spectrum. Assigning modulation to both **Bend** and **Over** lets you fully animate the formant frequencies created by Gorilla mode.

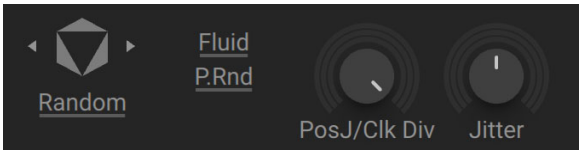


As a starting point, try the wavetable **Banana** and set the Ratio to **x2**, then use an LFO to modulate both the **Over** and **Bend** controls.

Random mode

Random mode uses two randomizers that are applied to the wavetable readout in several ways, creating unusual noise sounds.

Random mode contains the following controls and options:

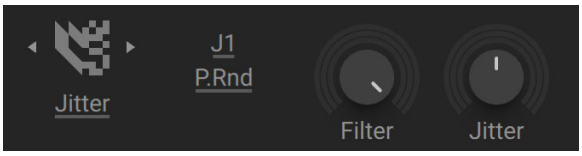


- **Mode**: Selects the type of Random, **Fluid**, **Thunder**, or **Divide**, each providing different flavors of randomization. The **Pos J/Clk Div** control adjusts different aspects of the randomization depending on the selected mode.
- **P.Rnd (Pitch Random)**: Switches between Pitch Random and Pitch Switch modes. When **P.Rnd** is selected, randomization is applied every cycle, depending on the Jitter rate. **P. Switch** produces static, quantized deviations rather than fully random ones.
- **PosJ/Clk Div (Position Jitter/Clock Divide)**: Adjusts different aspects of the randomization depending on the selected mode.
  - In **Fluid** mode, **PosJ/Clk Div** randomizes the wavetable position.
  - In **Thunder** mode, **PosJ/Clk Div** randomizes the wavetable position and reduces the randomizer clock.
  - In **Divide** mode, **PosJ/Clk Div** reduces the clock of the randomizer.
- **Jitter**: Adjusts the amount of randomization applied to the oscillator frequency, ranging from subtle jitter to sound destruction. The frequency is only randomized at the start of the cycle.

Jitter mode

Jitter mode introduces random deviations at the end of each cycle, making the signal read out faster or slower. It can add a shimmering quality to wavetables from the **Basics** category. Turning up the **Jitter** control creates more pronounced and chaotic effects.

Jitter mode contains the following controls and options:



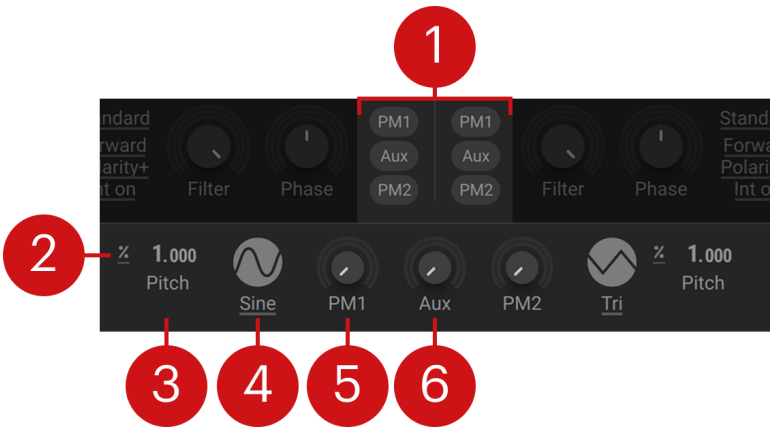
- **Jitter Rate**: Adjusts how often the waveform is flipped in each cycle, letting you spread out the randomization. **J1** applies randomization once every cycle, **J2** every 32 cycles, and **J3** every 128 cycles.
- **P.Rnd (Pitch Random)**: Switches between Pitch Random and Pitch Switch modes. When **P.Rnd** is selected, randomization is applied every cycle, depending on the Jitter rate. **P. Switch** produces static, quantized deviations rather than fully random ones.
- **Filter**: Reduces the high frequency harmonics of the selected waveform. The effect is similar to adjusting the cutoff frequency of a low-pass filter.
- **Jitter**: Adjusts the strength of the effect from soft to strong. You can create noise by playing high pitches and turning up **Jitter**.

Check out the preset **Aerial List** for a **Drift** wavetable producing a classic 80s television show sound. The preset **Ancient Strings** showcases a more subtle shimmer effect.

Phase Modulation

Phase modulation is used in classic FM (frequency modulation) synthesizers. The Wavetable oscillators function as carriers, while secondary PM oscillators are used as modulators. Phase modulation creates rich harmonic sounds that can be used for plucked basses, digital pianos, bells, and abstract soundscapes.

Massive XL features two PM oscillators and an additional Aux bus. Each of these sources can be flexibly assigned to the Wavetable oscillators. The PM oscillators modulate the phase of the Wavetable oscillators using waveforms from pure sine and triangle waves to variations of each.



1. **PM assign**: Routes the two PM oscillators and the Aux bus to the phase modulation of the Wavetable oscillators.

2. **Pitch mode**: Selects one of three pitch tracking modes, **Key Track**, **Fix**, **Ratio**. **Key Track** locks the pitch to MIDI. **Fix** sets an independent, fixed pitch in MIDI note numbers, defaulting to 60 (middle C). **Ratio** multiplies or divides MIDI pitch. For example, a ratio of 3 multiplies the pitch by 3, producing the 3rd harmonic.
3. **Pitch**: Adjusts the tuning of the PM oscillator in semitones and cents. Pitch can be modulated to shift the phase modulation ratio by assigning a Modulator to the modulation slots.
4. **Waveform**: Selects from six waveforms for the PM oscillator, **Sine**, **Tri**, **TriB1**, **TriB2**, **TriB3**, and **SinN**.
5. **PM1/2**: Adjusts the amount of phase modulation applied from the PM oscillator to the assigned Wavetable oscillators. **PM1/2** can be modulated to change the phase modulation index by assigning a Modulator to the modulation slots.
6. **Aux**: Adjusts the amount of phase modulation applied from the Aux bus to the assigned Wavetable oscillators. Any sound source can be routed to the Aux bus on the Routing page. You can find more information in PM Aux bus.

14. Noise

The Noise module in Massive XL contains two noise sources based on noisetables that not only give you traditional noise colors, but also recordings from machines, animals, and atmospheres, as well as transient samples that are particularly suited for percussive sounds. Importing your own custom noise samples into Massive XL is possible, too. You can find more information in User noisetables.

Noise as a building block in synthesizers can be used in practical or creative applications. You can mix it with oscillators as an additional layer of sound, adding depth and color, or use it to recreate the character and texture of environmental sounds. Noise is an ideal source for producing percussive sounds, like cymbals, snares and hi-hats.

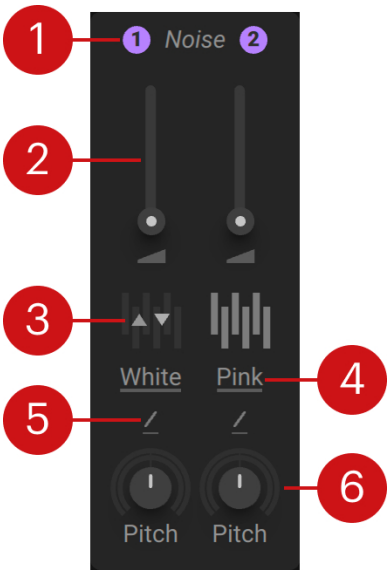
In addition to the controls in Noise module you can set the **Phase** or **Start** position and the Playback mode of the noise sources on the Voice page: by default, noisetables play freely as a loop. When selecting **One Shot** mode, noisetables are played as one-shot samples when a note is received.

The noise sources can be freely placed in the signal flow on the Routing page. You can find more information in Generators and processors.

Editing the Noise module is not available in Massive XL Player.

Noise module overview

The Noise module contains the following options and controls:



1. **Noise on/off**: Switches the Noise module on or off.
2. **Noise level**: Adjusts the output level of the noise source.

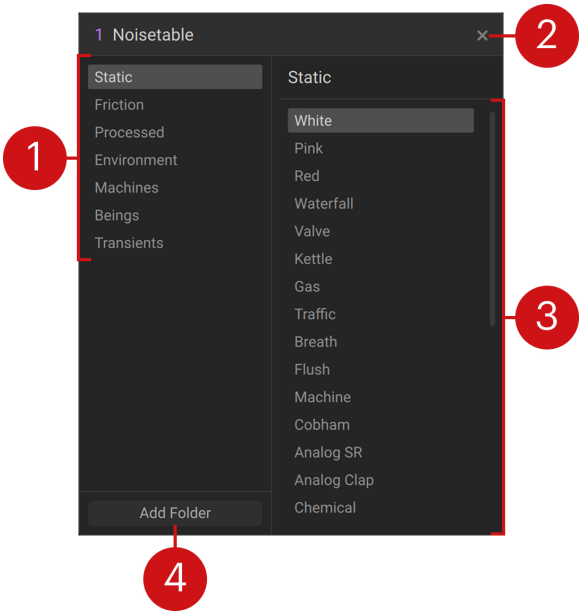
3. **Category icon**: Shows a visual representation of the selected noisetable category. When hovering the icon you can use the arrows to load the previous or next noisetable from the selected category.
4. **Noisetable menu**: Opens the Noisetable menu that lets you load a noisetable into the noise source, and add folders with user noisetables. You can find more information in Noisetable menu.
5. **Pitch mode**: Selects one of two modes (Key Track, Fix) that determine the response of the noise source in relation to incoming MIDI pitch. In **Key Track** mode, the pitch is locked to the main MIDI pitch. **Fix** mode sets the fixed tuning of the noise source, disregarding the incoming MIDI pitch. At center position (0), the default is set to C3.
6. **Pitch**: Adjusts the base pitch of the noise source. At center position, the noisetable plays back at its original pitch. Turning **Pitch** to the left slows down playback, while turning the control to the right speeds it up.

Noisetable menu

The Noisetable menu lets you load a noisetable into the noise source. You can also add a folder containing audio files and use them as user noisetables. Clicking and dragging the header moves the menu to another position.

Seven categories are available, each containing noisetables sharing the same basic character: Static, Friction, Processed, Environment, Machines, Beings, Transients.

The Noisetable menu consists of the following elements:



1. **Category list**: Selects the category of items to be shown in the list on the right side of the menu.
2. **Close**: Closes the menu.
3. **Item list**: Shows all items in the selected category. Clicking an entry loads the item but keeps the menu open. Double-clicking an entry loads the item and closes the menu.
4. **Add Folder**: Opens a file dialog that you can use to import a folder containing audio files. All compatible audio files will be processed and imported as user noisetables. You can find more information in User noisetables.

User noisetables

In addition to the factory noisetables, you can also import audio files into Massive XL and use them as user noisetables.

The supported file formats are WAV, AIFF, MP3, FLAC, OGG and M4A. The audio file length must be between 10 ms and 1 minute. Noisetables are always processed at 88.2 kHz. If your audio file has a different sample rate, it will be automatically converted upon import. Stereo audio files will be converted to mono.

Audio files can be loaded individually using drag and drop. You can also import them to your library by adding custom folders in the Noisetable menu, or by adding audio files to the User Content folder on your computer. If you save a preset that has a user noisetable loaded, it will be embedded in the preset file.

Loading audio files using drag and drop

You can drag and drop an audio file onto the noise sources to immediately load them as a noisetable. It will appear under **Temporary Content** in the Noisetable menu and not be added to your library.

To load an audio file using drag and drop:

1. Locate the audio file on your computer.
2. Drag and drop the audio file onto the noise source (left or right half of the Noise module).

→ The audio file is loaded as user noisetable.

Adding a folder

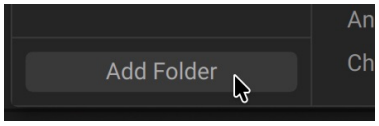
You can add folders from your computer to show them as custom categories in the Noisetable menu. All compatible audio files contained in the folders you have added will be available as noisetables.

To add a folder:

1. Open the Noisetable menu.



2. Click **Add Folder**.



3. Locate the folder containing the audio files you want to import and click **Open**.

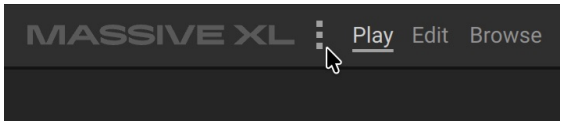
→ The selected folder is added as a new category in the Noisetable menu.

Managing noisetables in the User Content folder

You can add, remove, or rename audio files in the user Noisetables folder to make changes to the **User** category in the Noisetable menu. Any changes will only be reflected in the Noisetable menu after performing a rescan of your content.

To view, add, or edit noisetables in the **User** category:

1. Open the Settings menu by clicking the three dots icon next to the Massive XL logo in the Header.



2. Select **Show User Content Folder** to open the User Content folder in your computer's file manager.
3. Open the *Noisetables* folder in the file manager window.
4. Add, remove, or rename the audio files in the *Noisetables* folder.
5. Go back to Massive XL and open the Settings menu.
6. Select **Rescan Content**.

→ The changes you have made in the User Content folder will be reflected in the **User** category of the Noisetable menu. If you have added audio files, they will be imported as user noisetables.

15. Filter

The Filter module is a key element in Massive XL's polyphonic voice structure. It offers nine different types of filters, each with their own distinct sound and features. You can use filters to balance and correct the tone of a sound, to sculpt complex timbres from raw waveforms, and to transform sounds beyond recognition.

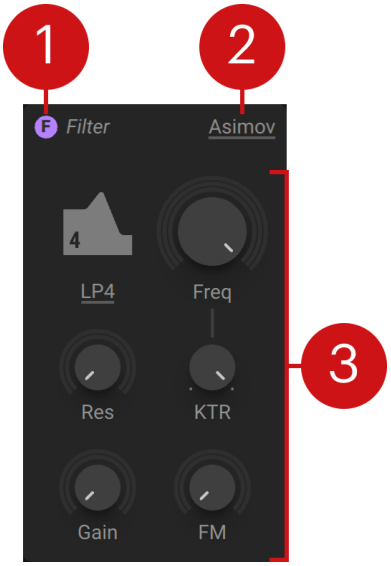
Filters can also be used as sound generators by increasing the resonance for self-oscillation, and by using the Exciter envelope or noise signals for resonator and physical modeling patches.

The Filter module can be freely placed in the signal flow on the Routing page. You can find more information in Generators and processors.

Editing the Filter module is not available in Massive XL Player.

Filter module overview

The Filter module consists of the following elements:



1. **Filter on/off**: Switches the Filter module on or off, bypassing its processing. The icon can also be found in the Filter module on the Routing page.
2. **Filter menu**: Selects the filter type and lets you access sub-presets.
3. **Filter controls**: Each filter type has a different set of controls specific to its character and features.

Asimov

This low-pass filter is inspired by a classic bass synthesizer from the 80s. It provides a huge sweet-spot for resonant filter sounds due to the lack of self-oscillation. It features high-pass filtering in the feedback path for a controlled bass response. Its squelchy sound makes it suitable for acid bass lines and works well with distortion.

Asimov contains the following controls and options:



- **Filter mode**: Selects the filter mode that determines the steepness of the low-pass filter. **LP1** (low-pass 1-pole) has a slope of 6 dB/Oct, **LP2** (low-pass 2-pole) has a slope of 12 dB/Oct, and **LP4** (low-pass 4-pole) has a slope of 24 dB/Oct.
- **Freq**: Adjusts the cutoff frequency of the low-pass filter. Frequency content above the cutoff frequency is attenuated, creating a darker sound.
- **Res**: Adjusts the resonance amount of the low-pass filter. Turning **Res** to the right increases the resonance, causing the frequency content at the cutoff frequency to become more pronounced.
- **KTR**: Adjusts the amount of key tracking, which is the degree to which the filter's cutoff frequency follows the MIDI pitch.
- **Gain**: Adjusts the input level and increases the amount of saturation applied to the signal.
- **FM**: Adjusts the amount of audio rate modulation applied to the filter frequency, also called filter FM (frequency modulation). The FM source needs to be connected to the FM bus on the Routing page, otherwise the **FM** control will not have an effect.

Blue Monark

Blue Monark is a polyphonic adaptation of the Monark multi-mode filter. Its characteristic saturation sound can be achieved by driving the filter using the **Gain** control. It offers audio-rate modulation and is capable of self-oscillation. The filter has a warm and fat character that makes it suitable for overdriven bass sounds as well as classic leads.

Blue Monark contains the following controls and options:

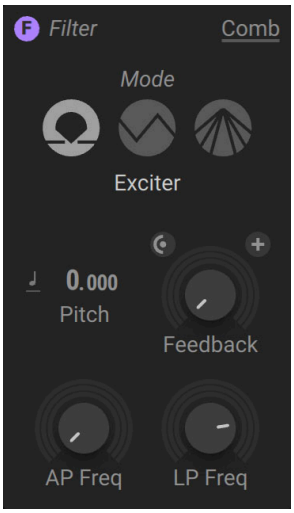


- **Filter mode**: Selects the filter mode. **LP** (low-pass) attenuates frequencies above the cutoff, with slopes of 6 dB/Oct (**LP1**), 12 dB/Oct (**LP2**), 24 dB/Oct (**LP4**). **BP** (band-pass) attenuates frequencies above and below the cutoff. **Peak** adds a resonant peak. **HP** (high-pass) attenuates frequencies below the cutoff. **Dual Notch** produces two narrow notches around the cutoff.
- **Freq**: Adjusts the cutoff frequency of the filter. The effect of this control on the sound depends on the selected filter mode.
- **Res**: Adjusts the resonance amount of the low-pass filter. Turning **Res** to the right increases the resonance, causing the frequency content at the cutoff frequency to become more pronounced.
- **KTR**: Adjusts the amount of key tracking, which is the degree to which the filter's cutoff frequency follows the MIDI pitch.
- **Gain**: Adjusts the input level and increases the amount of saturation applied to the signal.
- **FM**: Adjusts the amount of audio rate modulation applied to the filter frequency, also called filter FM (frequency modulation). The FM source needs to be connected to the FM bus on the Routing page, otherwise the **FM** control will not have an effect.

Comb

The Comb filter delays and feeds back the input signal. Unlike echo effects it is optimized for very short delay times, causing interferences in the audible range. It creates peaks and troughs in the frequency response, which get more pronounced as feedback is increased. Comb can be used as a tuned resonator, a complex filter, or to create flanging effects.

Comb contains the following controls and options:



- **Filter mode**: Selects one of three modes, Exciter, OSC, or Flanger. **Exciter** is suitable for physical modeling when combined with the Exciter envelope or Noise. **OSC** is suitable for oscillator signals to create complex filtering effects. It compensates for resonances caused by the harmonics of the signal. **Flanger** is suitable for flanging effects.
- **Pitch mode**: Selects one of three pitch tracking modes, **Key Track**, **Fix**, **Ratio**. **Key Track** locks the pitch to MIDI. **Fix** sets an independent, fixed pitch in MIDI note numbers, defaulting to 60 (middle C). **Ratio** multiplies or divides MIDI pitch. For example, a ratio of 3 multiplies the pitch by 3, producing the 3rd harmonic.
- **Pitch**: Adjusts the tuning of the Comb in semitones and cents. Applying modulation produces vibrato and arpeggio effects. In technical terms, **Pitch** changes the size of the delay buffer inside the Comb. Larger delay buffers increase the delay time, resulting in a lower filter frequency. Smaller delay buffers decrease the delay time, resulting in a higher filter frequency.
- **Feedback routing**: Switches between two different output taps. When off, the output is tapped after the delay. When on, the output is tapped before the delay. This setting only takes effect in combination with specific routings, for example when using the **FB** modules for external feedback around the Comb, or when mixing its output signal with the input signal as part of a parallel routing.
- **Feedback polarity**: Switches between positive and negative polarity for the feedback signal. With positive feedback polarity the Comb filter produces all harmonics, while with negative feedback polarity it produces only odd harmonics.
- **Feedback**: Sets the level of the internal feedback loop of the Comb. Higher settings increase the feedback level, resulting in a stronger resonance of the filter.
- **AP Freq**: Adjusts the frequency of an all-pass filter in the Comb's feedback path. By changing the all-pass filter frequency, you can use the Comb to produce inharmonic spectra.
- **LP Freq**: Controls the cutoff frequency of a low-pass filter in the feedback path. Decreasing the low-pass filter frequency attenuates the high-frequency content of the feedback signal, resulting in a dampened sound.

Creak

Creak is an experimental filter that produces strong resonances and distinct non-linear behavior. Combined with the feedback loop on the Routing page, you can apply heavy distortion and spectral transformation to a sound. The filter has an aggressive and wild character.

Creak contains the following controls and options:



- **Filter mode**: Selects the filter mode. **Driven** and **Gnarl** produce different sets of harmonically spaced resonances similar to a flanger, **Nosy** produces formants with a nasal quality, and **Euer** produces formants with a vocal quality.
- **Freq**: Adjusts the frequency of the filter. Unlike a typical cutoff control, it shifts the resonances across the frequency spectrum without attenuating broad frequency bands.
- **Res**: Adjusts the intensity of the resonances in the frequency spectrum produced by the filter.
- **KTR**: Adjusts the amount of key tracking, which is the degree to which the filter's frequency follows the MIDI pitch.
- **Mix**: Blends between the input signal and the filtered signal.

Groian

Groian is a hybrid between a filter and a flanger. It features a feedback delay in the filter's resonance path, producing strong resonances on top of the basic filter response. Self-oscillation is possible, however it becomes unstable towards lower frequencies. The filter has a highly resonant character that lends itself to vocal and metallic sounds.

Groian contains the following controls and options:



- **Filter mode**: Selects the filter mode. **LP4** (low-pass 4-pole) mode attenuates frequencies above the cutoff with a slope of 24 dB/Oct. **BP** (band-pass) attenuates frequencies above and below the cutoff. **Peak** adds a resonant filter peak at the cutoff. **HP** (high-pass) attenuates frequencies below the cutoff.
- **Freq**: Adjusts the cutoff frequency of the filter. The effect of this control on the sound depends on the selected filter mode.
- **Res**: Adjusts the resonance amount of the low-pass filter. Turning **Res** to the right increases the resonance, causing the frequency content at the cutoff frequency to become more pronounced.
- **KTR**: Adjusts the amount of key tracking, which is the degree to which the filter's frequency follows the MIDI pitch.
- **Character**: Adjusts the intensity of the additional resonances in the frequency spectrum produced by the delay in the resonance path.
- **FM**: Adjusts the amount of audio rate modulation applied to the filter frequency, also called filter FM (frequency modulation). The FM source needs to be connected to the FM bus on the Routing page, otherwise the **FM** control will not have an effect.



The behavior of the filter is sensitive to the level of the input signal with stronger self-oscillation at lower input levels.

Scanner

This multi-mode filter is inspired by the raw sound of analog monophonic synthesizers from the 80s. It has a strong and colorful resonance, which you can use to carve out the harmonics of a signal when doing filter sweeps. The filter has a dirty character that makes it suitable for adding texture and character to stacked pads and leads.

Scanner contains the following controls and options:



- **Filter mode**: Selects one of four filter modes. Two low-pass modes attenuate frequencies above the cutoff, **LP1** (low-pass 1-pole) with a slope of 6 dB/Oct and **LP2** (low-pass 2-pole) with a slope of 12 dB/Oct. **BP2** (band-pass 2-pole) attenuates frequencies above and below the cutoff with a slope of 12 dB/Oct. **Peak** mode adds a resonant filter peak at the cutoff.
- **Freq**: Adjusts the cutoff frequency of the filter. The effect of this control on the sound depends on the selected filter mode.

- **Res**: Adjusts the resonance amount of the low-pass filter. Turning **Res** to the right increases the resonance, causing the frequency content at the cutoff frequency to become more pronounced.
- **KTR**: Adjusts the amount of key tracking, which is the degree to which the filter's frequency follows the MIDI pitch.
- **Gain**: Adjusts the input level and increases the amount of saturation applied to the signal.
- **FM**: Adjusts the amount of audio rate modulation applied to the filter frequency, also called filter FM (frequency modulation). The FM source needs to be connected to the FM bus on the Routing page, otherwise the **FM** control will not have an effect.



The behavior of the filter is sensitive to the level of the input signal with stronger self-oscillation at lower input levels.

SVF

This multi-mode filter is based on the popular state-variable filter topology and serves as a tool for a wide range of filtering tasks. Its defining characteristic is the controlled behavior and universal applicability. The filter has a clean character that makes it suitable for any sound that requires tonal shaping without adding color or distortion.

SVF contains the following controls and options:



Filter mode: Selects the filter mode. **LP** (low-pass) attenuates frequencies above the cutoff, with slopes of 12 dB/Oct (**LP2**) and 24 dB/Oct (**LP4**). **BP** (band-pass) attenuates frequencies above and below the cutoff. **Peak** adds a resonant peak. **HP** (high-pass) attenuates frequencies below the cutoff.

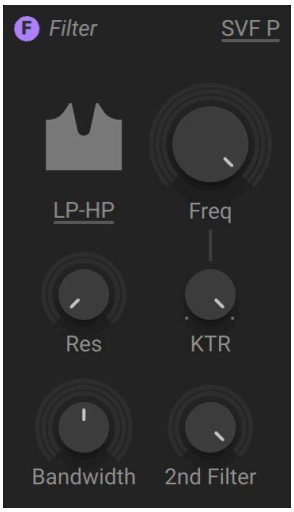
- **Freq**: Adjusts the cutoff frequency of the filter. The effect of this control on the sound depends on the selected filter mode.
- **Res**: Adjusts the resonance amount of the low-pass filter. Turning **Res** to the right increases the resonance, causing the frequency content at the cutoff frequency to become more pronounced.
- **KTR**: Adjusts the amount of key tracking, which is the degree to which the filter's cutoff frequency follows the MIDI pitch.
- **Res Boost**: Increases the range of the **Res** control to allow for a stronger resonance.

You can use the Exciter envelope via the Modulation modules on the Routing page to briefly trigger self-oscillation of the SVF at high **Res** settings. This so called filter pinging produces a damped sine wave that can be played via MIDI by using key tracking (**KTR**).

SVF Parallel

This flexible dual multi-mode filter is based on the state-variable filter topology. Its two filters are arranged in parallel. It has a clean character that makes it suitable for any sound that requires tonal shaping without adding color or distortion. The dual configuration allows for producing vocal formants as well as complex wobble sounds.

SVF Parallel contains the following controls and options:



- **Filter mode**: Selects one of seven modes that combine different responses of each of the two parallel filters. Six combinations of a 12 dB/Oct **LP** (low-pass) filter, a 12 dB/Oct **HP** (high-pass) filter, and a 6 dB/Oct **BP** (band-pass) filter are available, as well as the special Plateau mode.
- **Freq**: Adjusts the cutoff frequencies of the two parallel filters. Both cutoff frequencies are offset by the same amount. Their relative position in the frequency position is set with the **Bandwidth** control.
- **Res**: Adjusts the resonance amount of the low-pass filter. Turning **Res** to the right increases the resonance, causing the frequency content at the cutoff frequencies to become more pronounced.
- **Bandwidth**: Spreads the cutoff of the two parallel filters in the frequency spectrum. At minimum setting, both filters share the same cutoff, which makes the resonance more pronounced. As **Bandwidth** is increased, the cutoff of one filter moves down in frequency, while the other moves up, letting you distribute the filter resonances to create formant frequencies.
- **KTR**: Adjusts the amount of key tracking, which is the degree to which the filter's cutoff frequency follows the MIDI pitch.
- **2nd Filter**: Blends between single and dual configurations of the filter by mixing in the second filter and adjusting the amount of frequency spread introduced by the **Bandwidth** control.

You can use the Exciter envelope via the Modulation modules on the Routing page to briefly trigger self-oscillation of the SVF Parallel at high **Res** settings. This so called filter pinging produces damped sine waves that can be played via MIDI by using key tracking (**KTR**).

SVF Serial

This flexible dual multi-mode filter is based on the state-variable filter topology. A high-pass and a low-pass filter are arranged in series. It has a clean character that makes it suitable for any sound that requires tonal shaping without adding color or distortion.

SVF Serial contains the following controls and options:



- **Bandwidth**: Spreads the cutoff frequencies of the two serial filters in the frequency spectrum. At minimum setting, both filters share the same cutoff frequency. As **Bandwidth** is increased, the high-pass filter's cutoff moves down in frequency, while the low-pass filter's cutoff moves up. This way you can distribute the filter resonances to create formant frequencies.
- **Freq**: Adjusts the cutoff frequencies of the two serial filters. Both cutoff frequencies are offset by the same amount. Their relative position in the frequency position is set with the **Bandwidth** control.
- **Res**: Adjusts the resonance amount of the low-pass filter. Turning **Res** to the right increases the resonance, causing the frequency content at the cutoff frequencies to become more pronounced.
- **KTR**: Adjusts the amount of key tracking, which is the degree to which the filter's cutoff frequency follows the MIDI pitch.
- **HP Peak**: Gradually turns the high-pass filter into a peak filter (a band-pass filter mixed with the input signal) with only a resonant peak but no filter slope. This way you can add formant frequencies without filtering out the rest of a signal.
- **LP Peak**: Gradually turns the low-pass filter into a peak filter (a band-pass filter mixed with the input signal) with only a resonant peak but no filter slope. This way you can add formant frequencies without filtering out the rest of a signal.



You can use the Exciter envelope via the Modulation modules on the Routing page to briefly trigger self-oscillation of the SVF Serial at high **Res** settings. This so called filter pinging produces damped sine waves that can be played via MIDI by using key tracking (**KTR**).

16. Inserts

Inserts are key elements in Massive XL's polyphonic voice structure, just like the Filter module. You can use them to enhance the sound of subtractive and phase modulation patches, or as the central sound generators and processors in physical modeling and experimental patches.

The Insert module has three slots **A**, **B**, and **C**, which each load one Insert type independently. They can be chained together or inserted separately on any sound source. Where you choose to place the Inserts in the signal path will have significant impact on their sound and behavior.



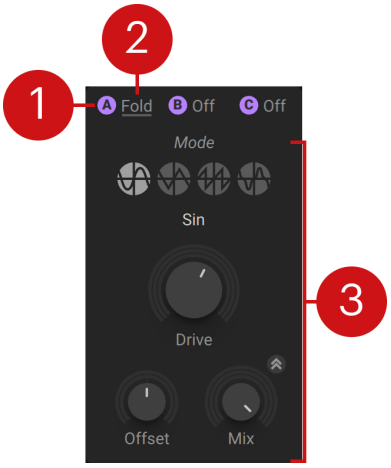
The Insert modules can be freely placed in the signal flow on the Routing page. You can find more information in Generators and processors.



Editing the Insert modules is not available in Massive XL Player.

Inserts module overview

The Inserts module consists of the following elements:

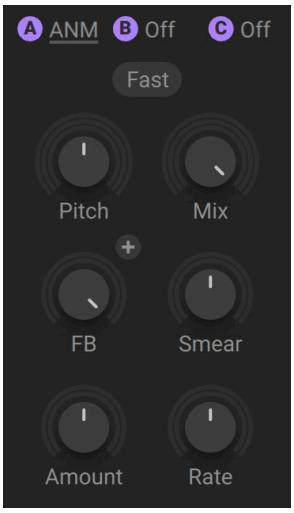


1. **Insert on/off**: Switches the Insert module on or off, bypassing its processing. The icons can also be found in the Insert modules on the Routing page.
2. **Insert menu**: Selects the Insert type for the visible slot and lets you access sub-presets. Clicking the other menus shows the respective slot in the module.
3. **Insert controls**: Each Insert type has a different set of controls specific to its character and features. You can show the controls for each slot by clicking on the respective Insert menu.

Anima

Anima is an experimental take on comb filters and flangers, using a combination of delay lines, audio rate modulation, and feedback. Its sound ranges from subtle colorization to harmonic transformations achieved by adding sidebands in the frequency spectrum. Similar to tuned comb filters, Anima tracks MIDI pitch, so you can tune it relative to the pitch of the oscillators.

Anima contains the following controls and options:

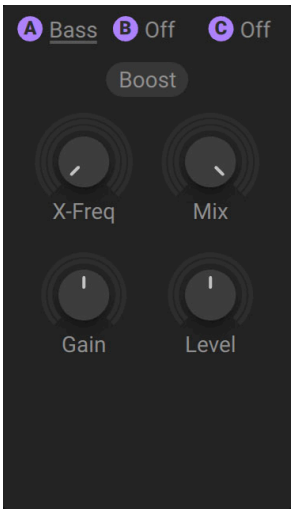


- **Fast**: Activates Fast mode, making the internal modulation run at audio rate relative to MIDI pitch. Fast mode produces new sidebands in the frequency spectrum, similar to FM. When deactivated, the internal modulation runs at LFO rates, producing sounds reminiscent of a comb filter combined with vibrato.
- **Pitch**: Adjusts the center frequency of the tuned delay lines in Anima's internal structure.
- **Mix**: Blends between the input signal and the effect signal. Turn the control fully left to bypass the effect, or right to mix in the effect. Anima is commonly used with high to maximum **Mix** settings.
- **Route**: Selects one of two routing modes, **+** (positive polarity) and **-** (negative polarity). Each of the two modes features a unique set of signal polarities within Anima's internal structure. This parameter has a strong influence on the overall sound character of the effect.
- **FB**: Adjusts the amount of feedback in Anima's internal structure. Anima is commonly used with high to maximum **FB** settings.
- **Smear**: Adjusts the distribution of tuned delay lines around the center frequency as set with **Pitch**.
- **Amount**: Adjusts the amount of internal modulation applied to the tuned delay lines.
- **Rate**: Sets the rate of the internal modulation oscillator.

Bass Enhancer

Bass Enhancer is a specialized effect that brings presence and drive to low frequency content. The **X-Freq** control adjusts the cutoff frequency of the crossover filter, splitting the signal into high and low bands, letting you apply saturation and compression only to the low band but not the high band.

The Bass Enhancer contains the following controls and options:

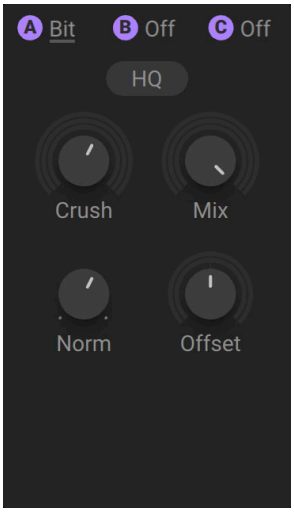


- **X-Freq**: Adjusts the cutoff frequency in a range of 40 Hz to 200 Hz. Frequency content below the cutoff frequency is amplified.
- **Mix**: Blends between the input signal and the effect signal. Turning the control from left to right mixes in the effect signal.
- **Gain**: Adjusts the input level in a range of -15 dB to +15 dB.
- **Level**: Adjusts the output level in a range of -6 dB to +6 dB.
- **Boost**: Activates the internal saturation stage, adding harmonics to the signal.

Bit Crusher

Bit Crusher degrades a signal by reducing the bit depth of the digital audio signal. A high bit depth results in an accurate representation of a signal, while a low bit depth adds noise and distortion. This can be used for lo-fi effects ranging from subtle noise textures to extreme distortion that turns any signal into clicks and pulses.

The Bit Crusher contains the following controls and options:



- **HQ**: Activates high quality anti-aliasing. By default, **HQ** is deactivated. Press the **HQ** button for less harsh, smooth lo-fi results.

- **Crush**: Adjusts the bit depth and therefore the strength of the bit reduction effect. By turning the control fully left, the lowest number of bits is used, resulting in the strongest effect. By turning the control fully right, the highest number of bits is used, closely resembling the input signal.
- **Mix**: Blends between the input signal and the effect signal. Turn the control fully left to bypass the Bit Crusher, or turn right to mix in the effect. Turning the control fully right results in a wet only signal.
- **Norm**: Subtracts the input signal from the effect signal, making the bit reduction effect more pronounced.
- **Offset**: Adds an offset to the input signal, making it asymmetric. This can be used to create variations of the basic bit reduction effect.

Distortion

Distortion offers nonlinear functions that are especially useful for polyphonic sound design. Applying a nonlinear function means that the output is not exactly proportional to the input, generating harmonics. You can choose from five nonlinear functions, and use the **Mix** and **Drive** controls to adjust the sound.

Distortion contains the following options and controls:



- **Mode**: Selects one of five nonlinear functions for the distortion effect, **tanH**, **hypB**, **SinC**, **Hardclip**, and **Rectify**.
- **Drive**: Controls how hard the saturation stages are driven from subtle to extreme.
- **High quality**: Activates anti-aliasing to improve the audio quality of the effect. It introduces 0.5 samples latency, which can cause phase artifacts when mixed with the input signal or when used in feedback configurations.
- **Mix**: Blends between the input signal and the distortion signal, enabling you to mix in the harmonics produced by the effect.

Folder

The Folder is a non-linear distortion effect that folds, or copies, the waveform of the input signal back into itself as gain is increased. The sound varies drastically depending on the input signal and the Mode, Drive, and Offset settings. The four modes, **Sin**, **Tri**, **Wrap**, **Spiky**, determine the character of the folding by applying different non-linear functions from smooth to distinctly rough.

The Folder contains the following controls and options:

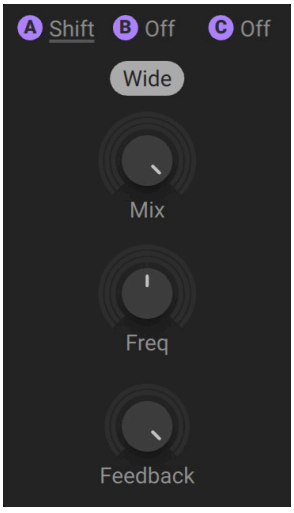


- **Mode**: Selects one of four different types of wavefolding, **Sin**, **Tri**, **Wrap**, **Spiky**. Each mode is using a different non-linear transfer function as indicated in the icons.
- **Drive**: Pre-amplifies the signal before it reaches the folding algorithm.
- **Offset**: Shifts the operating point of the algorithm.
- **High quality**: Activates high quality anti-aliasing. By default, HQ is deactivated. Press the HQ button to turn on anti-aliasing.
- **Mix**: Blends between the input signal and the effect signal. Turn the control fully left to bypass the effect, or turn right to mix in the effect.

Frequency Shifter

The Frequency Shifter shifts the frequency of the incoming signal. Unlike a pitch shifter, the Frequency Shifter is able to create inharmonic partials from a sound comprised of harmonic partials, adding a metallic character to your sound. A Shepard phaser effect can be achieved when slow modulation and feedback is applied, with the Mix control set to 50%.

The Frequency Shifter contains the following controls and options:



- **Wide**: Extends the frequency range of the **Freq** control, which is useful for achieving wild and animated sounds. When deactivated, the range is suitable for more nuanced frequency shifting.

- **Mix**: Blends between the input signal and the effect signal. Turn the control fully left to bypass the effect, or right to mix in the effect.
- **Freq**: Shifts the partial tones of a signal. Turning the control to the right shifts the partial tones upwards, while turning it to the left shifts them downwards. Partial tones can be reflected upwards again if the downshifted partials are exceeding zero hertz.
- **Feedback**: Adjusts the amount of feedback. When this control is turned up, the output of the Frequency Shifter is reflected back into the input, creating a Shepard flanger effect.

Insert Oscillator

The Insert oscillator (**OSC**) is an independent source for three classic synth waveforms, sine, sawtooth, and pulse, which can be used in addition to the main Wavetable oscillators. The Insert oscillator can also be locked to the phase of either Wavetable oscillator, creating a classic sub oscillator.

The Insert oscillator contains the following controls and options:



- **Mode**: Selects the waveform of the oscillator (**Sine**, **Saw**, **Pulse**). **Sine** and **Saw** modes offer a phase shift control while **Pulse** mode offers control over PW (pulse width).
- **Invert**: Inverts the polarity of the waveform, effectively flipping it upside-down.
- **Pitch mode**: Selects one of three pitch tracking modes, **Key Track**, **Fix**, **Ratio**. **Key Track** locks the pitch to MIDI. **Fix** sets an independent, fixed pitch in MIDI note numbers, defaulting to 60 (middle C). **Ratio** multiplies or divides MIDI pitch. For example, a ratio of 3 multiplies the pitch by 3, producing the 3rd harmonic.
- **Pitch**: Adjusts the tuning of the oscillator in semitones and cents. The **Pitch** can be modulated by routing a Modulator to either of the two modulation slots below, allowing you to produce vibrato and arpeggio effects.
- **Lock**: Lets you lock the pitch to either of the Wavetable oscillators. When activated, you can adjust the pitch ratio relative to the selected Wavetable oscillator.
  - **Ratio**: Sets the pitch ratio relative to the selected Wavetable oscillator.
  - **Pitch source**: Selects either Wavetable oscillator **1** or **2** as the source for the Lock function.

- **Phase/PW**: The label and functionality of this control changes according to the selected mode. Sine and Sawtooth modes offer a **Phase** control, allowing you to phase shift the oscillator. Pulse mode offers a **PW** control, allowing you to adjust the pulse width.
  - **PW**: Adjusts the width of the Pulse wave. When set to the center value, a square wave is produced. Adjusting the PW control makes the Pulse wave asymmetric, introducing even harmonics that create a thinner sound. Known as PWM (pulse width modulation), this classic technique is used to add movement to the sound, producing an ensemble-like quality.
  - **Phase**: Shifts the phase of the oscillator, setting the phase relationship between oscillators when locked to the Wavetable oscillators, or if Global Reset is set to **Reset All** or **Reset Oscs** on the Voice page.
- **Mix**: Blends between the input signal and the independently delivered waveform. Turn the control fully left to bypass the effect, or turn right to mix in the waveform. The Mix control has the same functionality across all modes.

PM Oscillator

The Phase Modulation oscillator (**PM OSC**) features a sine wave oscillator that can be phase-modulated by the Insert's input signal. Combining three Inserts set to **PM OSC** with the Wavetable and their dedicated PM oscillators, you can create an FM synth with seven operators.

Complex Wavetable oscillators can be used to modulate the operators, or the operators can be used to phase-modulate the Wavetable oscillators via the Aux bus. With Massive XL's flexible routing, you can achieve cross-feeding of operators and feedback modulation.

The PM Oscillator contains the following controls and options:



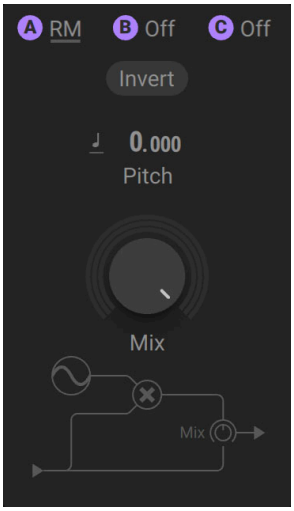
- **Invert**: Inverts the polarity of the waveform, effectively flipping it upside-down.
- **Pitch mode**: Selects one of three pitch tracking modes, **Key Track**, **Fix**, **Ratio**. **Key Track** locks the pitch to MIDI. **Fix** sets an independent, fixed pitch in MIDI note numbers, defaulting to 60 (middle C). **Ratio** multiplies or divides MIDI pitch. For example, a ratio of 3 multiplies the pitch by 3, producing the 3rd harmonic.
- **Pitch**: Adjusts the tuning of the oscillator in semitones and cents. The **Pitch** can be modulated by routing a Modulator to either of the two modulation slots below, allowing you to produce vibrato and arpeggio effects.
- **PM**: Adjusts the Phase Modulation amount. This works as an amplifier for the incoming signal added to the sine oscillator's phase.

- **Mix**: Blends between the input signal and the sine operator signal. Turn the control fully left to bypass the effect, or turn right to mix in the waveform.

Ring Modulator

The Ring Modulator multiplies the input signal with its internal sine wave oscillator, producing the sum and difference of the frequencies present in each. Ring modulation can be used to create metallic and bell-like sounds from basic oscillator signals, or as an interesting distortion effect for any signal.

The Ring Modulator contains the following controls and options:



- **Invert**: Inverts the polarity of the waveform, effectively flipping it upside-down.
- **Pitch mode**: Selects one of three pitch tracking modes, **Key Track**, **Fix**, **Ratio**. **Key Track** locks the pitch to MIDI. **Fix** sets an independent, fixed pitch in MIDI note numbers, defaulting to 60 (middle C). **Ratio** multiplies or divides MIDI pitch. For example, a ratio of 3 multiplies the pitch by 3, producing the 3rd harmonic.
- **Pitch**: Adjusts the tuning of the internal oscillator in semitones and cents. By assigning modulation you can create vibrato and arpeggio effects.
- **Mix**: Blends between the input signal and the ring-modulated signal.

Sample and Hold

Sample and Hold samples the signal at the rate of its internal oscillator, resulting in a quantized audio signal. It can be used to create a variety of distortion effects, and recreate the sound of old digital synths. Without key tracking you can achieve classic sample rate reduction effects.

The Sample and Hold module contains the following controls and options:

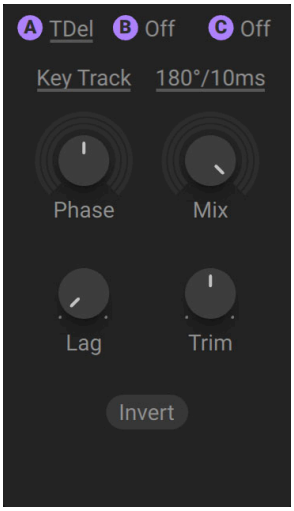


- **HQ**: Activates a high quality algorithm applied to the steps in the waveform caused by the downsampling, producing an analog sound.
- **Pitch mode**: Selects one of three pitch tracking modes, **Key Track**, **Fix**, **Ratio**. **Key Track** locks the pitch to MIDI. **Fix** sets an independent, fixed pitch in MIDI note numbers, defaulting to 60 (middle C). **Ratio** multiplies or divides MIDI pitch. For example, a ratio of 3 multiplies the pitch by 3, producing the 3rd harmonic.
- **Pitch**: Adjusts the tuning of the oscillator in semitones and cents. The **Pitch** can be modulated by routing a Modulator to either of the two modulation slots below, allowing you to produce vibrato and arpeggio effects.
- **Mix**: Blends between the input signal and the delayed signal. Turn the control fully left to bypass the effect, or turn right to mix in the delayed signal.

Track Delay

Track Delay is a specialized delay for audio-rate applications. In Key Track mode, the delay time follows MIDI pitch. It stays in sync with the oscillators, introducing constant phase shifts. You can use this to mimic PWM for any waveform. Fix mode can be used to create the effect of moving a pickup on a virtual string, or as a polyphonic chorus.

The Track Delay contains the following controls and options:

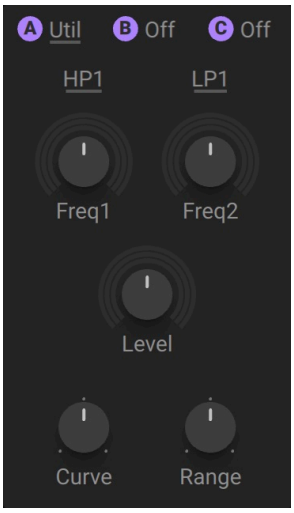


- **Pitch mode**: Selects one of two pitch tracking modes, **Key Track** and **Fix**. **Key Track** locks the pitch to MIDI. **Fix** lets you adjust the delay time independently in ms. The delay time range is determined by the **Range** menu.
- **Range**: Sets the range of the delay time in phase degree/milliseconds (**180°/10msec**, **360°/50msec**, **720°/150msec**).
- **Phase**: Adjusts the **Phase** when **Key Track** mode is selected. In **Fix** mode, it determines the delay time.
- **Mix**: Blends between the input signal and the delayed signal. Turn the control fully left to bypass the effect, or right to mix in the delay signal. Center position is recommended. At this position, the **Trim** encoder can be used to control the center level.
- **Lag**: Adjusts the smoothing of delay time changes.
- **Trim**: When the **Mix** encoder is set to center position, the **Trim** knob controls the center level.
- **Invert**: Switches the polarity of the delay signal between positive and negative (inverted). Inverted polarity is recommended in most applications.

Utility

Utility lets you balance your sound with neutral sounding filters and a VCA (voltage-controlled amplifier). It is a perfect companion for the Tracker, enabling you to adjust the tonal balance and level in relation to MIDI pitch or velocity to ensure a balanced sound over the whole keyboard range, or create special behavior mimicking acoustic instruments.

The Utility contains the following controls and options:



- **Filter Type 1/2**: Selects from four filter types, 1-pole high-pass (**HP1**), 2-pole high-pass (**HP2**), 1-pole low-pass (**LP1**), and 2-pole low-pass (**LP2**). Using two **LP2** filters with the same settings produces a 4-pole filter characteristic.
- **Freq 1/2**: Adjusts the cutoff frequency of the filter.
- **Level**: Adjusts the gain of the VCA (voltage controlled amplifier).
- **Curve**: Adjusts the VCA behavior from exponential to logarithmic, changing its response to modulation from snappy to sustained. At center position, the VCA responds linearly.
- **Range**: Adjusts the maximum gain range of the VCA from 1% to 500%. At center position, the gain range is 100%.

17. Amplifier

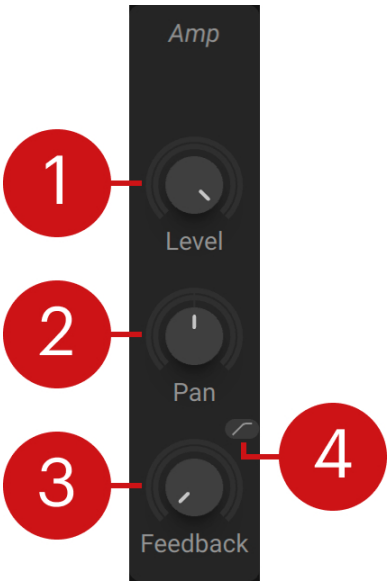
The Amp (Amplifier) is the final module in the signal path of the voice. It controls the level and panning before the Effects. **Level** can be used to adjust the signal level going into the Effects and is always controlled by the Amp Envelope (**Env 1**). **Pan** is used to place the sound in the stereo image, and can be modulated for creative panning effects.

The additional **Feedback** control adjusts the level of the signal sent into the voice's feedback loop. The feedback loop can be freely connected in the Polyphonic Area of the Routing page and can be used to create organic, chaotic, and distorted sounds as well as physical modeling patches. You can find more information in Feedback loop.

ⓘ Editing the Amplifier module is not available in Massive XL Player.

Amplifier module overview

The Amplifier module contains the following options and controls:



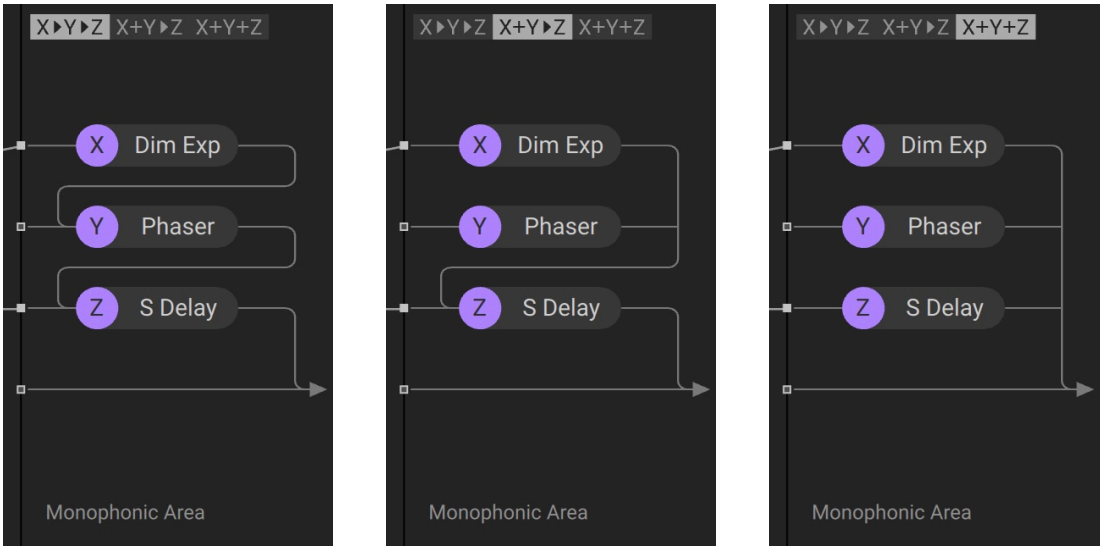
1. **Level**: Adjusts the output level of the amplifier.
2. **Pan**: Adjusts the position of the sound in the stereo image by panning the signal from left to right.
3. **Feedback**: Adjusts the level of the signal going into the feedback loop, controlling the chaotic behavior and distortion produced by the feedback. You can find more information in Feedback loop.
4. **High-pass**: Activates a high-pass filter that cuts low-frequency content in the feedback loop. You can use it to avoid overloading the feedback loop with excessive bass.

18. Effects

Effects are the final processing modules that the signal passes through before the output of the instrument. Choose from modulation effects, true-stereo delay and reverb, an over-the-top multi-band compressor, as well as versatile distortion, saturation and overdrive effects.

Effects are loaded into three slots **X**, **Y**, and **Z**, which you can access in the Effects section. Selecting a slot lets you view and edit the controls of the loaded Effect. All slots are active at the same time unless you have switched them off using the Effect On/Off buttons in the section header.

You can choose between different ways for the effects to be chained and mixed on the Routing page:

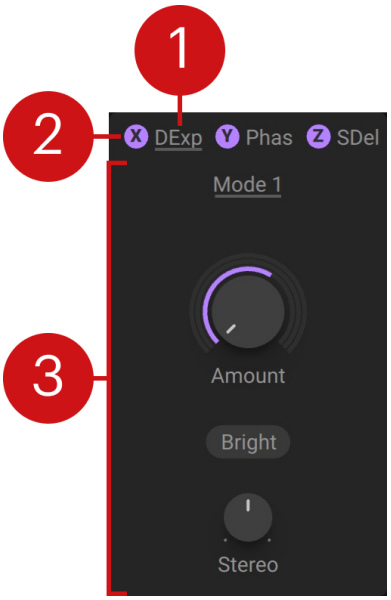


- **X > Y > Z** chains the three effects
- **X + Y > Z** sends the sum of the X and Y effects to the Z effect
- **X + Y + Z** sums all three effects

Editing Effects modules is not available in Massive XL Player.

Effects module overview

The Effects module consists of the following elements:

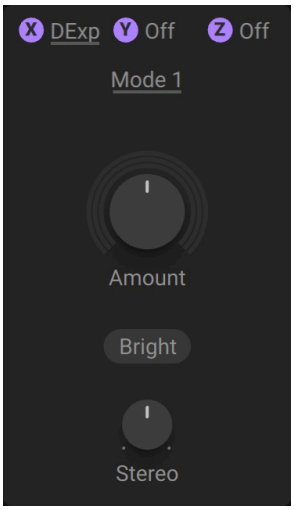


1. **Effect selector**: Shows the name of the selected effect, or **Off** if the slot is empty. The selected slot is highlighted with an underline and its effect controls appear in the panel below. You can click this underlined name to open a menu and load another effect into this slot, or switch to another slot by clicking on its name.
2. **Effect On/Off**: Switches the Effect on or off. You can use this to bypass the effect for A/B comparison. This icon can also be found on the Stereo module on the Routing page.
3. **Effect panel**: Shows the parameters of the Effect in the highlighted slot (its name is underlined above). Each Effect has a distinct set of parameters.

Dimension Expander

Dimension Expander is a wide stereo chorus known from the original Massive that can produce subtle stereo expansion or a shimmering, expansive sound.

The Dimension Expander contains the following controls and options:



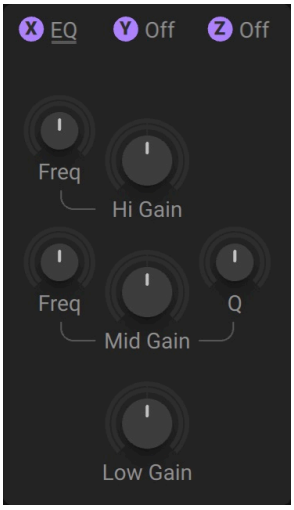
- **Mode**: Selects one of four modes that range from subtle (**Mode 1**) to strong (**Mode 4**) chorusing.

- **Amount**: Adjusts the strength of the effect.
- **Bright:** Switches the sound character of the chorus from neutral to bright by introducing subtle filtering.
- **Stereo**: Morphs the output of the device from mono to stereo. When turned fully to the right the chorus is operating as a stereo effect.

Equalizer

The Equalizer is used to balance and shape the frequency content of a sound. Internal algorithms make this equalizer sound particularly musical.

The Equalizer contains the following controls and options:

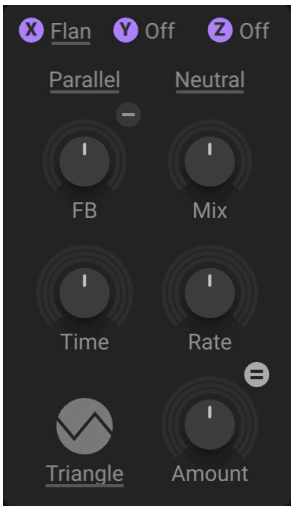


- **Freq**: Adjusts the frequency of the high shelf filter from 1.2 kHz to 23.6 kHz.
- **Hi Gain**: Adjusts the gain of the high shelf filter from -24 dB to +24 dB.
- **Freq**: Adjusts the frequency of the mid-frequency peak filter from 90 Hz to 14 kHz.
- **Mid Gain**: Adjusts the gain of the mid-frequency peak filter from -24 dB to +24 dB.
- **Q**: Adjusts the Q factor of the mid-frequency peak filter from 0.35 to 2.18, effectively changing the filter band from wide and smooth to narrow and sharp.
- **Low Gain**: Adjusts the gain of the low shelf filter from -36 dB to +18 dB. The frequency dynamically changes between 120 Hz and 260 Hz along with the gain.

Flanger

The Flanger is a sonically diverse module, featuring seven different play modes, ranging from classic stompbox-style to wild and complex flange effects. The delay range of a typical flanger is expanded, allowing you to also create unusual and unique effects. To achieve a classic flanger sound, the range must be chosen carefully.

The Flanger contains the following controls and options:



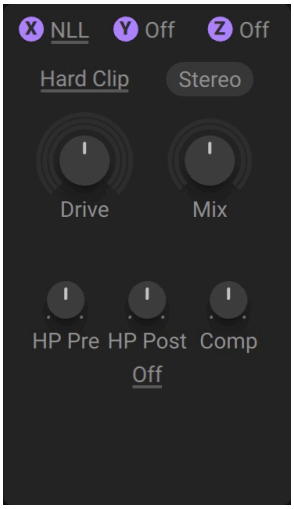
- **Modes**: Selects one of seven modes that determine the type of modulation and the internal routing of the flanger. The available parameters vary depending on the chosen mode.
  - **Parallel**: The LFO modulation is identical for the left and right channels while the audio inputs are still true stereo. This mode is best suited for the classic stompbox flanger sound.
  - **Wide**: The LFO modulation of the left and right channel is slightly offset, resulting in a wider, stereophonic sound.
  - **Inverse**: The LFO modulation is shifted by 180 degrees (inverse modulation) on one side, resulting in an even wider stereophonic sound.
  - **Difference**: The internal signals are mixed so that the output stages show the sum and the differences of this operation. This results in a sound with a metallic character, that is most clearly heard when the **Time** control is set to a short delay time. The Triangle **LFO Shape** is recommended for this mode.
  - **Cross**: The LFO uses inverse modulation. The internal signals are mixed and the output stages show the sum and the differences of this operation. As Cross mode relies on a specific, internal modulation to achieve its result, the **LFO Shape** is predefined and can not be changed. While it shares similarities to Difference mode, it creates stable frequency sidebands resulting in less movement and sonic wobble.
  - **Cross Astral**: A variation of Cross and Difference modes, using more complex internal modulation. The **LFO Shape** is fixed and the shape menu is removed. This mode can be particularly effective for raw pads or pure waveforms.
  - **Manual**: In Manual Mode, independent Time control for the left and right channels is available and the internal LFO modulation is removed. Applying different modulations to the left and right sides can produce dramatic results.
- **Character**: Selects from five different flavors that change the sound character of the effect, **Neutral**, **Controlled**, **Silky**, **Bass**, and **Guitar**.
- **Mix**: Blends between the input signal and the effect signal, determining how much phasing is applied. Turn the control fully left to bypass the effect. At the center position, the largest frequency gaps are created. Turning the control fully right creates a pure flanger effect.
- **FB**: Sets the amount of signal that will feed back from the delays output into the input of the delay. The more feedback, the more the frequency peaks and gaps are modeled out of the sound spectrum.
- **FB +/-**: Switches the polarity of the feedback signal between positive and negative (inverted) feedback. Positive feedback produces even and odd harmonics. Negative feedback produces only odd harmonics. **FB +/-** is not available in **Cross** and **Cross Astral** modes.

- **Time**: Sets the delay time or fundamental frequency of the flanger. The LFO modulation is applied around this center frequency. In Manual mode, independent **Time** control of the left and right channels is available.
- **Rate**: Sets the Modulation Rate of the LFO.
- **LFO Shape**: Selects one of three modulation shapes (Triangle, Logarithmic, Sine). The LFO shapes are tweaked to be musical rather than mathematically perfect shapes. Besides the standard **Triangle** and **Sine** shapes, a **Logarithmic** shape is an option to recreate classic flanger sounds.
- **Amount**: Sets the amount of **Time** modulation by the LFO. Classic flange sounds can be achieved with lower **Amount** settings.
- **Constant Amount Button**: Fixes the amount of detuning regardless of the modulation rate, creating interesting pitch-shifting effects when using internal triangle modulation with high **Feedback**. When deactivated, faster modulation rates apply stronger detuning to the comb filter.

Nonlinear Lab

The Nonlinear Lab offers a multitude of overdrive and distortion characteristics. Several optional speaker cabinet simulations further expand the sonic flexibility of the Nonlinear Lab. The available parameters and controls are dependent on the chosen Drive type and Cabinet.

The Nonlinear Lab contains the following controls and options:



- **Drive type**: Selects one of three different HQ saturator/distortion models (Hard Clip, Soft Clip, Overdrive).
  - **Hard Clip**: A standard tanH (=hyperbolic tangent) saturator. This model offers great standard distortion that works particularly well for acidic sounds.
  - **Soft Clip**: The most gentle distortion mode of the Nonlinear Lab. It works well for a wide number of signals like bass, guitar, and drum sounds. This mode offers three different models of different sonic flavors.
  - **Overdrive**: An extreme, intense distortion effect, that produces exaggerated sonic results.
- **Stereo**: Selects between Mono and Stereo. In **Mono**, the left and right sides are mixed together and sent to the monophonic saturator and cabinet stages. The dry path remains stereo. In **Stereo** mode, the device operates in true stereo.
- **Drive**: Controls how hard the saturation stages are driven, from subtle to extreme.

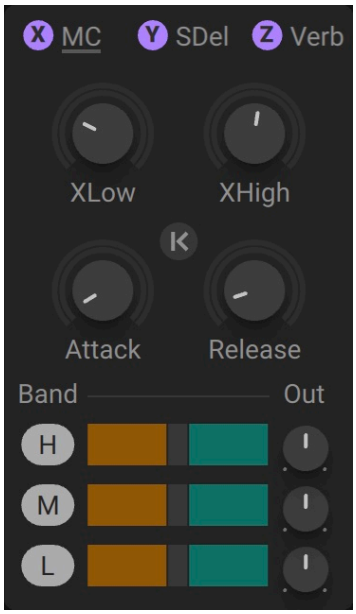
- **Mix**: Blends between the unaltered input signal and the affected output of the Lab.
- **HP Pre**: Adjusts the frequency of the high-pass filter, applied to the input signal before the saturator. Use this control to avoid overloading the saturator stage with excessive bass.
- **Type controls**: Each Drive type features an extra control to adjusts its character. **Hard Clip** has **HP Post**, **Soft Clip** has a Models switch, and **Overdrive** has the **Inertia** control.
  - **HP Post**: Adjusts the frequency of the high-pass filter after the saturator, letting you control the bass output of the saturator.
  - **Models**: Selects one of three soft clipping models, Glue, Warm, or Hot. **Glue** compresses with relatively subtle distortion. **Warm** compresses with medium distortion, and **Hot** compresses with strong distortion.
  - **Inertia**: Determines how fast the loading of the stage occurs, depending on the frequency. Turn the control fully right for the fastest response.
- **Comp**: Adjusts the output level compensation for the **Drive** amount. The output level of different **Drive** amounts is highly dependent on the input signal. The **Comp** control helps to keep the output level under guard.
- **Cabinet Stage**: Selects one of six different guitar cabinet simulations (California, West Coast, Classy, Hi Gain, Crank, British). The cabinets drastically shape the overall color of the output. Bypass the cabinet stage by selecting **Off**. Without a cabinet selected, the distortions may sound raw and are particularly suitable for raw synth sounds.
  - **Bass**: Adjusts the bass response and boominess of the cabinet model.
  - **Vari**: Selects one of three sub-models of the cabinet (A, B, C).

Multi Compressor

The Multi Compressor is a multi-band compressor providing both downward and upward compression. This effect lets you reduce the dynamic range of your sound by selectively raising soft signals and attenuating loud signals on each of the three frequency bands. The Multi Compressor is a great tool for adding punch to your sound while retaining its details.

Multi Compressor contains the following controls and options:





The top part of the Multi Compressor contains global parameters that affect all three frequency bands together. You can toggle between two sets of controls using the Page button:

- **Page**: Toggles the view between two sets of controls. The second page has controls for the crossover frequencies as well as the attack and release times.
- **In Gain**: Adjusts the input level going into the effect, from -24 dB to +24 dB (0 dB by default).
- **Mix**: Adjusts the mix between the dry, unprocessed signal and the signal processed by the effect. At full left (0 %), you hear only the unprocessed signal. At full right (100 %), you hear only the processed signal.
- **Out Gain**: Adjusts the level of the signal after it has been processed by the effect, from -24 dB to +24 dB (0 dB by default).
- **Up**: Adjusts the amount of upward compression applied to all frequency bands, from 0 to 200 % (100 % by default).
- **Down**: Adjusts the amount of downward compression applied to all frequency bands, from 0 to 200 % (100 % by default).
- **XLow**: Adjusts the crossover frequency between the low and mid bands. Lower values will set a narrower low-frequency band and a wider mid-frequency band, and inversely.
- **XHigh**: Adjusts the crossover frequency between the mid and high bands. Higher values will set a narrower high-frequency band and a wider mid-frequency band, and inversely.
- **Attack**: Adjusts how quickly the compression is applied once a signal exceeds the threshold. For example, you can use higher attack values to retain more transients of percussive sounds.
- **Release**: Adjusts how quickly the compressor gets back to its standby state once the signal returns below the threshold (for the downward compression) or above the threshold (for the upward compression).

The bottom part of the Multi Compressor lets you adjust the compression applied to the high, mid, and low frequency bands. For each band a row of controls contains, from left to right:

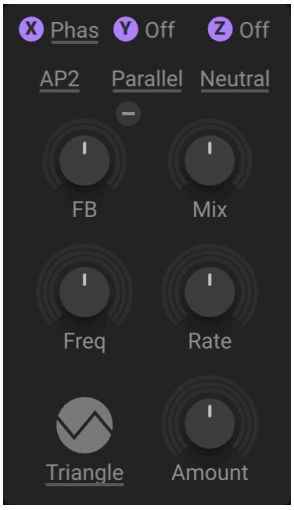
- **Mute band**: Mutes or unmutes the frequency band. When a frequency band is muted, its audio is off and its controls are grayed out.
- **Brown segment**: Represents the signal level range that is raised by the upward compression, from the minimum level to the threshold. You can click the segment to turn the frequency band's upward compression on or off. When the compression is off, the segment is darker and audio at these levels will stay untouched.
- **Gray handle**: Represents the thresholds for both the upward compression (brown bar) and the downward compression (green bar). Dragging horizontally adjusts both thresholds. For example, dragging to the left decreases the thresholds so the upward compression will raise less of the soft signal, while the downward compression will attenuate more of the loud signal.
- **Green segment**: Represents the signal level range that is attenuated by the downward compression, from the threshold to the maximum level of 0 dB. You can click the segment to turn the frequency band's downward compression on or off. When the compression is off, the segment is darker and audio at these levels will stay untouched.
- **Out**: Adjusts the output level of the frequency band.

Phaser

The Phaser is a modulation effect that uses a series of all-pass filters to change the phase at a given frequency. Applying modulation creates characteristic sweeping sounds. Mixing the effect signal with the input creates peaks and troughs in the frequency spectrum. **Stages** sets the number of notches and peaks, and **Feedback** makes them more pronounced.

For classic stomp-box style phaser effects, relatively low feedback settings should be used, with positive feedback polarity. More complex sounds can be achieved with a higher number of all-pass stages. You can choose between different sound colors typically found in phaser effects.

The Phaser contains the following controls and options:



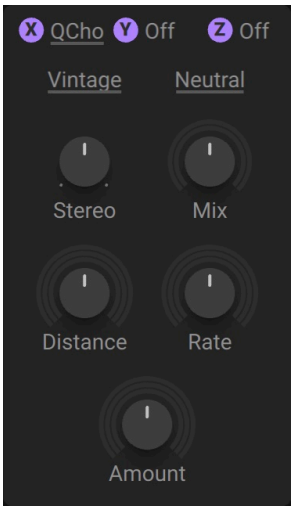
- **Stages**: Selects the number of all-pass (AP) filter stages (2, 4, 5, 6, 8). Additionally, there are two modes that offer Barber Pole phasing. In these modes, the traditional LFO modulation controls are replaced by a Freq control that is used to create infinite upwards-downwards motion through the frequency spectrum. The AR mode features audio-rate modulation.
- **Mode**: Selects one of five modes that determine the type of modulation and the internal routing of the phaser. The available controls vary depending on the selected mode.
  - **Parallel**: The LFO modulation is identical for the left and right channels while the audio inputs are still true stereo. This mode is best suited for the classic stompbox phaser sound.
  - **Wide**: The LFO modulating the flanger is identical for the left and right side, but one side is slightly offset, resulting in a wider, stereophonic sound. The modulation itself remains monophonic.
  - **90°**: The LFO phase is shifted by 90 degrees on one side, producing a bigger difference between the left and right channels. This results in a wider, more stereophonic sound.
  - **180°**: The LFO modulating the flanger is shifted by 180 degrees (inverse modulation) on one side, resulting in an even wider stereophonic sound. In Barber mode the movement is inversed between both sides.
  - **Manual**:In Manual mode, the internal LFOs are switched off and you have individual control over the frequency parameter of both channels. Applying different modulations to the left and right sides produces dramatic effects.
- **Color**: Switches between different settings for the sound color of the phaser. **Stomp** produces classic stomp-box tones. **Narrow** focuses its tone on the peaks and troughs produced by the phaser, making it suitable for darker, bass-heavy sounds. **Neutral** has a clean tone.
- **Mix**: Blends between the input signal and the effect signal, effectively adjusting the amount of phasing. Turning the control fully to the left bypasses the effect. The center position produces the strongest notches. The results highly depend on the number of stages and the feedback polarity, with typical sweet spots around center position or when turned fully to the right.
- **FB**: Controls how much feedback is applied to the signal. The more feedback the stronger the all-pass filters will resonate. This is similar to your typical low-pass resonance filter. The more resonance, the more the frequency peaks, and gaps are modeled out of the sound spectrum. For a classic phaser sound, set the range between 30%-70%.

- **FB +/-**: Switches the polarity of the feedback signal between positive and negative (inverted) feedback. Positive feedback produces round, bass-heavy sounds. Negative feedback produces funky, formant-style sounds. Combine with **2** and **4** all-pass (AP) filter stages for a more pronounced effect.
- **Freq**: Adjusts the center frequency of the Phaser. The modulation of the Phaser's internal LFO is applied around this center frequency. In Barber mode, Freq controls the rate of the upwards/downwards movement through the frequency spectrum.
- **Rate**: Adjusts the rate of the Phaser's internal LFO. In Barber mode, the LFO rate changes according to the Freq control.
- **LFO Shape**: Select one of four modulation shapes (Triangle, Round, Ramp Up, Ramp Down).
- **Amount**: Sets the range of how much the LFO is animating the all-pass filters. This control is only available when an LFO is active.

Quad Chorus

Choruses are used to enrich sounds by adding spatial movement and giving them an ensemble-like quality. The Chorus is true stereo.

The Quad Chorus contains the following controls and options:



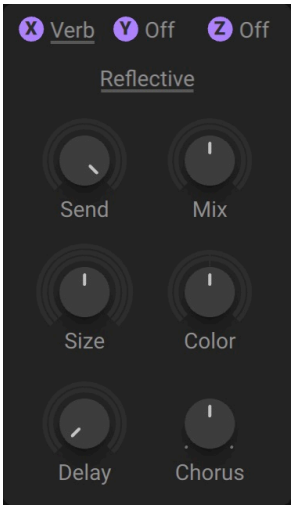
- **Mode**: Selects one of five modes that determine how the four delay lines are internally routed and modulated. The modes are based on classic chorus effects.
  - **TriVintage**: Modeled after a famous device, this mode use only three of the available four delays. It can reproduce the classic sound of a triphase chorus, but also offers additional controls, expanded ranges, and stereo possibilities.
  - **Quadron**: Follows the same principles as TriVintage mode, but is optimized for a stereo signal. It can be used for subtle to over the top chorusing.
  - **Random**: This mode uses random walk generators instead of the internal LFOs. This avoids audible modulation patterns, making it ideal for subtle chorusing.
  - **Even**: Offers a special combination of two synced LFO's, spread and applied to four delay lines.
  - **Manual**: Gives you direct access to the delays at the core of the chorus. You can use this to achieve subtle spatialization or modulate the delay times for more dramatic effects.
- **Flavor**: Selects one from five different settings (Neutral, Light, Controlled, Warm, Dark) that determine the coloring of the chorus. Which flavor fits best is highly dependent on what you want to achieve, but their names suggest the general character of each setting.

- **Mix**: Blends between the input signal and the effect signal, effectively adjusting the amount of chorusing. Turning the control fully to the left bypasses the effect. The sweet spot often lies around the center position.
- **Stereo**: Adjusts the width of the stereo field. Turn left for a narrow stereo field, and turn right to widen the stereo field of the chorused signal.
- **Distance**: The time distance of the modulated delay lines to the original sound. Turn the control right for longer settings that will result in a recognizable delay effect. It can also produce interesting results for auxiliary modulation when the internal LFOs are not used. The Distance control is not available in **Manual** mode.
- **Rate**: Sets the Modulation Rate of the internal LFOs. The LFO shapes cannot be chosen, as they are an integral part of the models. The Rate control is not available in Manual mode.
- **Amount**: Sets the range of how much the LFO is animating the delay lines. The Amount control is not available in **Manual** mode.
- **Time L1, R1, L2, R2**: Adjusts the delay times of the four delays at the core of the chorus. The Time controls are only available in **Manual** mode.

Reverb

The Reverb offers a range of modes that mimic different room types and spaces, designed for various kinds of applications.

The Reverb contains the following controls and options:



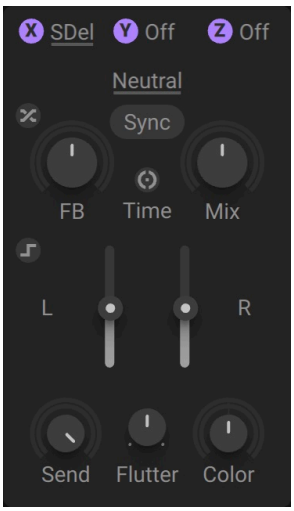
- **Modes**: Selects from 17 different reverb algorithms that determine the sound character and behavior of the effect.
- **Send**: Determines the amount of input signal that will be routed into the reverb engine.
- **Mix**: Blends between the input signal and the effect signal, determining how much of the reverb effect is mixed with the dry signal. Turn the control fully left to bypass the effect, or turn right to mix in the reverb.
- **Size**: Adjusts the size of the simulated room, or reverb effect. This control affects the duration of the reverb tail.
- **Color**: Adjusts the coloration of the reverb using an internal filter to subtly change the sound from dull to bright.
- **Delay**: Determines the pre-delay of the reverb effect. No delay is added when the control is turned fully left.

- **Chorus**: Applies a chorusing effect to the reverb. This can add movement and depth to the sound, producing a lively reverb that evolves over time.

Stereo Delay

The Stereo Delay offers individual time control over the left and right channels, making it an extremely powerful and versatile stereo delay effect.

The Stereo Delay contains the following controls and options:



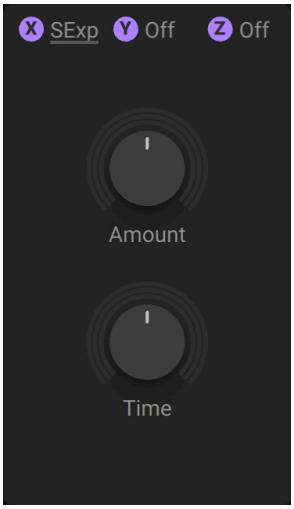
- **Route**: Switches the routing of the internal feedback. When Parallel is selected, the left and right delays are each fed back into their own inputs, so they do not interact. When Cross is selected, the left delay is fed back into the right delay, and vice versa. This creates different reflection patterns that are typically longer and more complex.
- **Color**: Selects from three sound characters, Neutral, Warm, and Hot. Neutral has a clean sound with minimal resonances and distortion. Warm has a warmer sound with mild resonances. Hot has strong resonances and distortion.
- **FB**: Adjusts the level of the delay feedback, effectively controlling the number of echo repetitions, each gradually fading out as new ones are produced. Shorter delay times typically cause repetitions to fade out faster than longer delay times. Stereo Delay rescales the levels of the repetitions so that the decay is time independent.
- **Mix**: Blends between the input signal and the effect signal. Turn the control fully left to bypass the effect, and right to mix in the delay.
- **Sync**: Switches between two delay modes, **Sync** and **Free**. In **Sync** mode, the delay time control is quantized and scans through five synchronized delay times. You can change individual delay times by clicking and dragging up or down. The delay time smoothly follows tempo changes and can be modulated without artifacts. In **Free** mode, the delay time is not synchronized.
- **Mono**: Switches the delay time to a single control for both channels, while the effects will still operate in stereo.
- **Latch**: This button enables you to recall the delay times with note-on messages received from the synth engine. This means you will only hear the change of delay times when a new note is pressed. This enables you to synchronize the delay changes to actual notes playing and is available in both **Sync** and **Free** modes.
- **Time**: Adjusts the delay time. Depending on the selected Sync mode, the delay time is either synchronized to the tempo of the DAW and set in note divisions, or freely adjusted in milliseconds.

- **Send**: Determines the amount of input signal that will be routed into the delay engine.
- **Flutter**: Moves the delay time slightly, creating a more lively effect and avoiding fixed phase relationships to the input signal. This control can be likened to a subtle chorusing.
- **Color**: Adjusts the internal filters of the delay circuitry. Turn the control left for a strong low-pass effect that becomes weaker towards the center position. At the center position the color is neutral. Turn the control right to increase the high-pass filtering.

Stereo Expander

Stereo Expander builds on the Dimension Expander effect from the original Massive. It is cleaner, more versatile, and more efficient. It can be used to create room-style spatial effects and has a clear, diffused sound character.

The Stereo Expander contains the following controls and options:



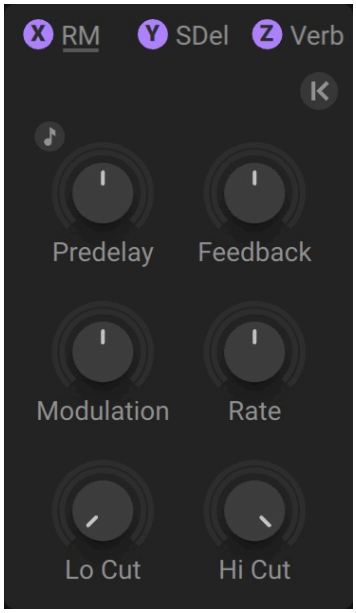
- **Amount**: Adjusts the strength of the effect.
- **Time**: Adjusts the delay time of the effect. Turning the control right increases the delay time, making the sound appear more distant.

Raum

Raum offers three reverb algorithms covering a vast range of sounds, from tight ambiences to otherworldly soundscapes. It expands on the traditional notion of a reverb by adding predelay feedback and unusual modulation capabilities.

Raum contains the following controls and options:





1. **Page**: Toggles the view between two sets of controls. The second page has controls for predelay, modulation, and filtering.
2. **Mode**: Selects one of three reverb algorithms (Grounded, Airy, Cosmic), ranging from tight, natural ambiences to otherworldly soundscapes.
3. **Density**: Switches between two density modes for the reflection pattern of the reverb. Dense produces a uniform reverb tail, while Sparse produces dispersed and clearly discernible reflections.
4. **Decay**: Adjusts the length of the reverb tail. Turning the control to the right changes the reverb time from short to long. Only available in **Grounded** and **Airy** mode.
5. **Size**: Adjusts the swell and reflection pattern of the reverb, creating the impression of differently sized spaces. Turning the control to the right changes the size from small to large.
6. **Reverb**: Adjusts the amount of reverb added to the effect signal, allowing you to balance the reverb against the predelay repetitions.
7. **Send**: Determines the amount of input signal that will be routed into the Raum engine.
8. **Mix**: Blends between the input signal and the effect signal by means of an equal-power crossfade.
9. **Predelay**: Adjusts the duration of the predelay, which is the time it takes for the reverb to set in. Increasing the predelay adds separation between the input signal and the reverb signal.
10. **Sync**: Synchronizes the predelay to the host tempo and replaces the Predelay control with the Numerator, Denominator, and Sync Mode controls.
    - **Numerator**: Sets the number of notes of the tempo-synced predelay time. Only available when Sync is activated.
    - **Denominator**: Sets the note value of the tempo-synced predelay time. Only available when Sync is activated.
    - **Sync Mode**: Sets the subdivision applied to the tempo-synced predelay time (Straight, Dotted, Triplet, Quintuplet, Septuplet). Only available when Sync is activated.
11. **Feedback**: Adjusts the level of the signal fed back from the output of the predelay to its input, increasing the number of delay repetitions. Turning the control to the right creates echo effects that are then processed by the selected reverb algorithm. A built-in limiter controls the level when high feedback settings are used with loud input signals.

12. **Modulation**: Adjusts the amount of movement added to the reverb by changing internal parameters of the reverb over time. Turning the control to the right takes the reverb from lush to strongly detuned sounds.
13. **Rate**: Sets the speed of the movement added by the Modulation control, from slow drifting to fast warbling.
14. **Diffusion**: Adjusts the texture of the reverb reflections. Turning the control to the right softens the early reflections and produces a smooth onset of the reverb.
15. **Lo Cut**: Attenuates the low-frequency content of the reverb and the predelay's feedback signal. Turning the control to the right increases the attenuation, and turning it fully left switches the filter off.
16. **Damp**: Adjusts the tonal quality of the reverb from bright to dark. Turning the control to the right attenuates the high-frequency content of the reverb.
17. **Hi Cut**: Attenuates the high-frequency content of the reverb and the predelay's feedback signal. Turning the control to the left increases the attenuation, and turning it fully right switches the filter off.

Replika Shimmer

Replika Shimmer combines delay, pitch shifting, and reverb to create classic shimmer effects and beyond. Pitch shifting can be applied either to the output of the delay for echoes with constant harmonization, or in the delay's feedback loop for echoes with cascading pitches. Diffusion adds a reverb-like quality to the delay repetitions.

Replika Shimmer contains the following controls and options:





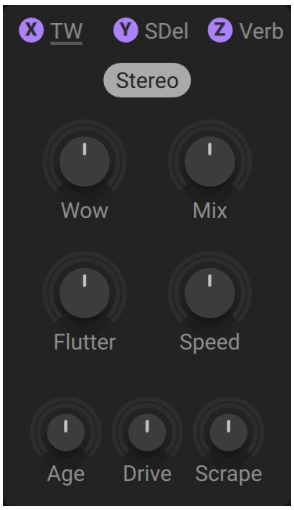
1. **Page**: Toggles the view between two sets of controls. The second page has controls for diffusion and filtering of the echoes.
2. **Mix**: Blends between the input signal and the effect signal.
3. **Shimmer**: Blends between the unprocessed and the pitch-shifted delay signal, setting the intensity of the pitch shifting applied to the delay. Depending on the Shimmer Feedback setting, the pitch shifting is applied either to the output of the delay or in its feedback path.

4. **Shimmer Feedback**: Switches the routing of the pitch shifting. When off, pitch shifting is applied to the output of the delay, resulting in harmonized echoes with a constant pitch. When on, pitch shifting is applied in the delay's feedback loop, resulting in echo cascades that progressively shift the pitch of each repetition.
5. **Interval**: Sets the amount of pitch shifting applied to the delay, in the range of -12 to +12 semitones.
6. **Time**: Adjusts the delay time in milliseconds.
7. **Feedback**: Adjusts the level of the signal that is fed back to the delay's input. Increasing the feedback level creates more delay repeats that decay over time.
8. **Diffusion**: Adjusts the amount of diffusion applied to the delay signal, resulting in a reverb effect. High settings make the delay appear out of sync, so low settings are recommended if the rhythmic timing of the delay is essential.
9. **DiffSize**: Adjusts the swell, reflection pattern, and decay of the diffusion, giving the impression of differently sized spaces.
10. **Movement**: Adjusts the depth and speed of the modulation applied to the diffusion, shifting the timing and pitch of the reflections for a wide reverb effect.
11. **Lo Cut**: Attenuates the low-frequency content in the feedback path of the delay. Turned fully left the filter is off, and turning it to the right results in a brighter tone of the delay repeats.
12. **Hi Cut**: Attenuates the high-frequency content in the feedback path of the delay. Turned fully right the filter is off, and turning it to the left results in a darker tone of the delay repeats.

Tape Wobble

Tape Wobble emulates the sound of analog tape machines, characterized by wow and flutter, saturation, noise, and a limited high-frequency response. Use it to apply classic lo-fi effects, particularly on sustained notes, pads, and melodies.

Tape Wobble contains the following controls and options:



1. **Stereo**: Switches the Wow and Flutter modulation between Mono and Stereo. In Stereo, a phase offset is applied to the modulation of the left and right channels, widening the effect.
2. **Wow**: Adjusts the amount of wow, a slow fluctuation in pitch caused by sticky tape and a worn-out tape transport.
3. **Mix**: Blends between the input signal and the effect signal by means of an equal-power crossfade.

4. **Flutter**: Adjusts the amount of flutter, a fast fluctuation in pitch caused by bent capstans and faulty motor parts.
5. **Speed**: Adjusts the rate of the Wow and Flutter modulation.
6. **Age**: Enhances the characteristics of an aging tape by reducing high-frequency content and introducing tape hiss.
7. **Drive**: Adjusts the amount of tape saturation, from a clean sound to overdrive.
8. **Scrape**: Adjusts the amount of high-frequency scraping, which occurs when the tape vibrates as it passes over the playback head.

19. Modulators

Modulators are used to add movement to your sound by changing controls over time. Modulator 1 is a dedicated Amplifier envelope. Each of the other eight Modulators can be switched between Modulation Envelope, Exciter Envelope, Switcher LFO, and Random LFO.

Modulators can be used to apply LFOs or envelopes to shape the contour of a sound and create movement. By combining multiple Modulators and using the flexible modulation assignment, you can create highly dynamic sounds with intricate

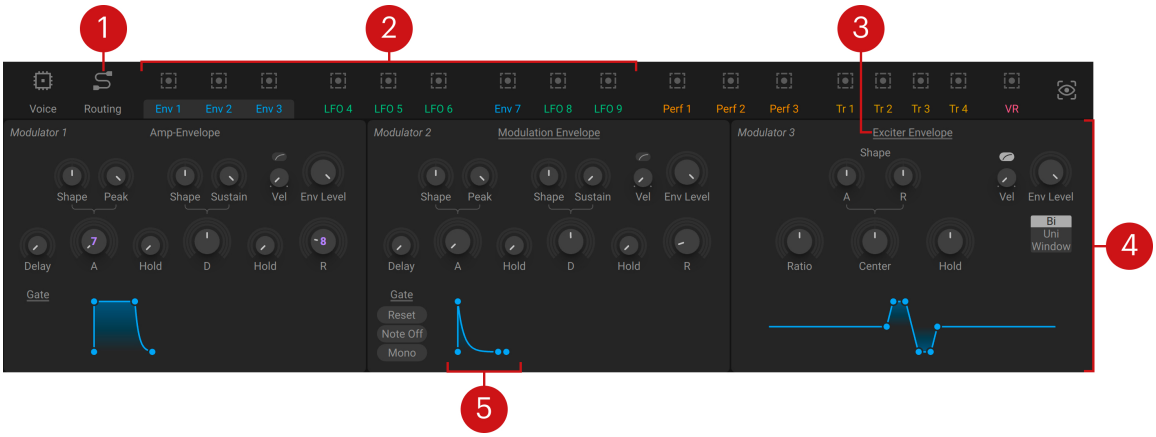
You can access and assign the Modulators from the Navigation bar using the tabs labeled according to the Modulator's function and number. Envelopes are blue, and LFOs are green. You can find more information about assigning Modulators in Assigning modulation.

The Performers and Trackers are special Modulators that you can use in place of, or in combination with the envelopes and LFOs. Performers are based on sequenced modulation shapes, while Trackers facilitate advanced MIDI and keyboard tracking.

Editing Modulators is not available in Massive XL Player.

Modulators overview

The Modulators consist of the following elements:



1. **Routing**: Two Modulation modules can be accessed via the Routing page, allowing you to use Modulators as generators in the signal path. You can find more information in Modulation modules.
2. **Modulators**: The type and name of each Modulator is displayed here. Envelopes are blue and LFOs are green. You can view and edit Modulators in groups of three by clicking on the names. Clicking the target icon above the Modulator lets you assign it to controls. You can find more information in Assigning modulation.
3. **Modulator menu**: Selects from four Modulators that you can load in any of the slots, including the **Modulation Envelope**, **Exciter Envelope**, **Switcher LFO**, and the **Random LFO**.
4. **Editor**: The Editor gives you access to all Modulator controls. You can view and edit Modulators in groups of three by clicking on the names in the Navigation bar.

5. **Controls and displays**: The lower section lets you view and edit Modulators in groups of three. You can use the controls to adjust the shape, rate, and behavior of the Modulators. The envelope displays visualize the envelope shape, and can be used to directly adjust envelope parameters.

If a Modulator is assigned to a control in an active module, the modulation it produces is visualized using a miniature scope in the Navigation bar for as long as you play a note. The scope is a real-time display showing a representation of the modulation rate and shape.

Amp Envelope

The Amp Envelope controls the level of the Amplifier according to MIDI note events and therefore the overall volume contour of your sound. **Shape** controls as well as additional **Delay** and **Hold** stages let you fine-tune how your sound evolves over time. The three envelope modes change the envelope's response to note events and make it possible to create cycling envelopes.

Envelopes are fundamental to shaping the contour of your sound. Typical use cases include controlling the volume level, shaping tone and color by modulating the Filter, or changing the pitch. Envelopes can also be used creatively, for example by modulating wavetable controls, effects, or the rate and shape of other Modulators.

The Amp Envelope contains the following controls and options:



- **Delay**: Adjusts the time it takes the envelope to start after a note is played by adding a delay before the attack stage. Adding a delay lets you offset multiple envelopes in time to create double-attack effects, for example.
- **Attack**: Adjusts the time it takes the envelope to rise from zero to maximum level at the start of each note you play. When turned fully to the left, the envelope rises instantly, producing a sharp transient. Turning the control to the right smoothens the attack.
- **Attack Shape**: Adjusts the curve of the attack stage from exponential to linear to logarithmic.
- **Attack Peak**: Adjusts the maximum level reached once the attack stage is completed. The range of this control depends on the **Velocity** setting.
- **Hold 1**: Adjusts the time the maximum level is held at the end of the attack stage and before the start of the decay stage.
- **Decay**: Adjusts the time it takes the envelope to fall from the maximum level to the sustain level once the attack stage is completed. When turned fully to the left, the transition is instant. Turning the control to the right smoothens the transition.

- **Decay Shape**: Adjusts the curve of the decay stage from exponential to linear to logarithmic.
- **Sustain**: Adjusts the level the envelope stays on after the attack and decay phases are completed, and for as long as you hold a note (when **Gate** mode is selected).
- **Hold 2**: Adjusts the time the sustain level is held at the end of the **Sustain** stage and before the start of the **Release** stage.
- **Release**: Adjusts the time it takes the envelope to fall from the sustain level to zero at the end of each note you play. When turned fully to the left, the envelope falls instantly, cutting out abruptly. Turning the control to the right smoothens the release.
- **Velocity**: Adjusts the velocity sensitivity of the envelope. Turning the control to the right will make the amplitude of the envelope follow MIDI note velocity. When turned fully to the right, the amplitude of the envelope is fully proportional to the velocity of the incoming notes.
  - **Velocity shape**: Switches the slope of the Velocity control between linear (Lin) and logarithmic (Log).
- **Env Level**: Adjusts the overall level of the modulation produced by the envelope. The Amplifier level is always fully modulated by the Amp Envelope and independent from **Env Level**.
- **Mode**: Defines the envelope's response to MIDI notes. **Gate** mode follows the envelope according to note duration. **OneShot** completes the envelope independently of note duration. **LoopGate** loops the **Attack** and **Decay** stages throughout note duration. **LoopGate** requires **Sustain** to be set to 0%.
- **Display**: Visualizes the envelope shape and lets you adjust envelope controls by clicking and dragging the points and segments.

Modulation Envelope

The Modulation Envelope produces modulation according to MIDI note events and can be used to add movement to any control. **Shape** controls as well as additional **Delay** and **Hold** stages let you fine-tune how your sound evolves over time. The four envelope modes change the envelope's response to note events and make it possible to create cycling envelopes.

Envelopes are fundamental to shaping the contour of your sound. Typical use cases include controlling the volume level, shaping tone and color by modulating the Filter, or changing the pitch. Envelopes can also be used creatively, for example by modulating wavetable controls, effects, or the rate and shape of other Modulators.

The Modulation Envelope contains the following controls and options:



- **Delay**: Adjusts the time it takes the envelope to start after a note is played by adding a delay before the attack stage. Adding a delay lets you offset multiple envelopes in time to create double-attack effects, for example.

- **Attack**: Adjusts the time it takes the envelope to rise from zero to maximum level at the start of each note you play. When turned fully to the left, the envelope rises instantly, producing a sharp transient. Turning the control to the right smoothens the attack.
- **Attack Shape**: Adjusts the curve of the attack stage from exponential to linear to logarithmic.
- **Attack Peak**: Adjusts the maximum level reached once the attack stage is completed. The range of this control depends on the **Velocity** setting.
- **Hold 1**: Adjusts the time the maximum level is held at the end of the attack stage and before the start of the decay stage.
- **Decay**: Adjusts the time it takes the envelope to fall from the maximum level to the sustain level once the attack stage is completed. When turned fully to the left, the transition is instant. Turning the control to the right smoothens the transition.
- **Decay Shape**: Adjusts the curve of the decay stage from exponential to linear to logarithmic.
- **Sustain**: Adjusts the level the envelope stays on after the attack and decay phases are completed, and for as long as you hold a note (when **Gate** mode is selected).
- **Hold 2**: Adjusts the time the sustain level is held at the end of the **Sustain** stage and before the start of the **Release** stage.
- **Release**: Adjusts the time it takes the envelope to fall from the sustain level to zero at the end of each note you play. When turned fully to the left, the envelope falls instantly, cutting out abruptly. Turning the control to the right smoothens the release.
- **Velocity**: Adjusts the velocity sensitivity of the envelope. Turning the control to the right will make the amplitude of the envelope follow MIDI note velocity. When turned fully to the right, the amplitude of the envelope is fully proportional to the velocity of the incoming notes.
  - **Velocity shape**: Switches the slope of the Velocity control between linear (Lin) and logarithmic (Log).
- **Env Level**: Adjusts the overall level of the modulation produced by the envelope.
- **Mode**: Defines the envelope's response to MIDI notes. **Gate** mode follows the envelope according to note duration. **OneShot** completes the envelope independently of note duration. **LoopGate** loops the attack and decay stages throughout note duration. **Loop** continuously loops the attack and decay stages. **Loop** modes require **Sustain** to be set to 0%.
- **Reset**: Forces the envelope to restart each time a note is played.
- **Note Off**: Starts the envelope at the end of the notes you play (MIDI note off event), for example when a key is released.
- **Mono**: Switches the envelope to monophonic behavior, applying only a single instance of the envelope to all active voices.
- **Display**: Visualizes the envelope shape and lets you adjust envelope controls by clicking and dragging the points and segments.

Exciter Envelope

The Exciter envelope is a particularly fast envelope that has been designed to trigger the Comb filter as a resonator in physical modeling. It is also effective for creating percussive sounds with short attack and release times.

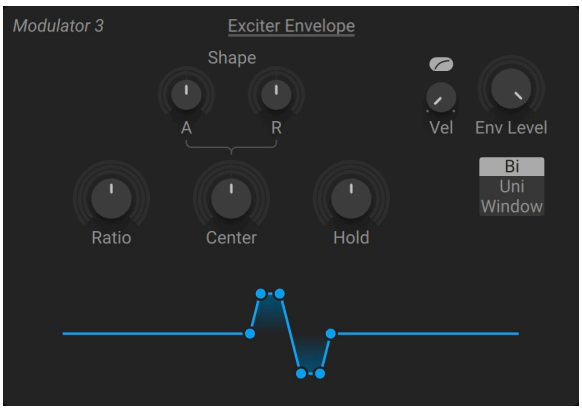
Unlike a standard ADSR envelope generator, the Exciter envelope is a single-cycle Attack-Release envelope with a defined center point and a **Hold** stage that maintains the peak level from **Attack** to **Release**. The envelope times are tracking the pitch of the notes you play, ensuring consistent behavior across pitches in physical modeling configurations.

To use this envelope as an exciter for the Comb filter, it must be assigned to one of the Modulation modules on the Routing page, routed to the Comb filter and then the filter routed to the output. This enables you to set the Comb filter into oscillation and create tones from the **Feedback**. A low **Ratio** setting produces the short envelope burst needed to create sound from the filter. You can find more information in Comb.



You can also use the Exciter envelope to briefly trigger self-oscillation of resonant filters at high **Res** settings. This so-called filter pinging produces a damped sine wave that can be played via MIDI by using key tracking (**KTR**). The **SVF** filter types are especially suitable for this purpose.

The Exciter Envelope contains the following controls and options:



- **Ratio**: Controls the length of the envelope. Turning the knob right, increases the value, resulting in a longer envelope. The envelope times track the pitch of the notes you play.
- **Center**: Tilts the envelope towards the **Attack** stage when turned left, or towards the **Release** stage when turned right.
- **Attack Shape**: Changes the curve of the attack (**A**) stage of the envelope from parabolic to logarithmic.
- **Release Shape**: Changes the curve of the release (**R**) stage of the envelope from parabolic to logarithmic.
- **Hold**: Increases the width of the peak stage of the envelope, determining how long the level of this stage will be held.
- **Velocity**: Adjusts the velocity sensitivity of the envelope. Turning the control to the right will make the amplitude of the envelope follow MIDI note velocity. When turned fully to the right, the amplitude of the envelope is fully proportional to the velocity of the incoming notes.
  - **Velocity shape**: Switches the slope of the Velocity control between linear (Lin) and logarithmic (Log).
- **Env Level**: Adjusts the overall level of the envelope.
- **Polarity**: Switches the envelope between **Bi** (bipolar), **Uni** (unipolar), and **Window** output. **Bi** has an output range of -100% to +100%. **Uni** has a range of 0 to 100%. **Window** has a range of 0 to 100% with mirrored attack and release stages and only one set of controls.
- **Display**: Visualizes the envelope shape and lets you adjust envelope controls by clicking and dragging the points and segments.

Switcher LFO

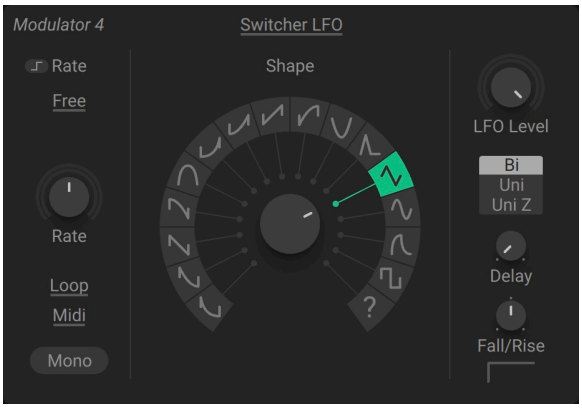
The Switcher LFO is a flexible low-frequency oscillator that produces cycling modulation, with controls for the shape and speed of the modulation. **Shape** offers 16 different waveforms, and the **Rate** can be synchronized to the tempo of your DAW. The Play modes let the LFO play continuously or one cycle only, and set the LFO's response to the notes you play.

LFOs (low frequency oscillators) produce cycling, rhythmic modulation with variable waveforms, adding a sense of motion and depth to a sound. Common use cases include modulating pitch to create vibrato, or modulating the volume level to create tremolo. LFOs can also be used creatively, for example by modulating wavetable controls, effects, or the rate and shape of other Modulators.



Setting Time mode to **Osc** and assigning the LFO to a Modulation module on the Routing page turns the Switcher LFO into an extra sound source that tracks the pitch of the Wavetable oscillators.

The Switcher LFO contains the following controls and options:



- **Latch Rate**: Captures the **Rate** value at the start of each note and holds it until the next note is played, so changes from direct control or modulation are only applied once per MIDI note.
- **Time mode**: Selects one of three modes for setting the LFO rate. **Sync** lets you switch between time signatures relative to the tempo of your DAW using the Tempo slider. **Free** allows for continuous adjustment using the **Rate** control. **Osc** switches the LFO to audio rate and tracks MIDI pitch, with **Rate** controlling a negative pitch offset.
- **Rate**: Adjusts the frequency of the LFO in Hz. The Rate control is available if Time mode is set to **Free** or **Osc**. In **Osc** mode, a rate of 100% will track MIDI pitch, and a rate of 0% will add a pitch offset of -96 semitones.
- **Tempo slider**: Switches between five time signatures (**Sync 1-5**) that synchronize the LFO rate to the tempo of your DAW. The Tempo slider is available if Time mode is set to **Sync**.
  - **Sync 1-5**: Lets you define the time signatures used by the Tempo slider when Time mode is set to **Sync**. You can change the values by clicking and dragging up or down.
- **Shape**: Selects one of sixteen waveforms for the LFO. The new shape is updated with each cycle, producing seamless transitions and interesting shapes when modulated.
- **Latch Shape**: Captures the **Shape** value at the start of each note and holds it until the next note is played, so the LFO waveform will not change for as long as you play a note even when modulated. Latch Shape is not available if Play mode is set to **Loop**.
- **LFO Level**: Adjusts the overall level of the modulation produced by the LFO.

- **Polarity**: Switches the LFO between **Bi** (bipolar) and **Uni** (unipolar) output. **Bi** has an output range of -100% to +100% and the waveform starts at 0%. **Uni** has a range of 0 to 100% and the waveform starts at 50%. **Uni Z** has a range of 0 to 100% and the waveform starts at 0%, changing the LFO's reset behavior.
- **Delay**: Applies a delay to the onset of the LFO. When turned fully left, no delay time is applied and the LFO starts immediately. Turning the knob right increases the delay time.
- **Fall/Rise**: Fades the LFO in or out at the start of each note. At center position, the LFO is always on. Turning the control to the right creates a fade-in at the start of each note. Turning the control to the left creates a fade-out at the start of each note.
- **Mono**: When deactivated, the LFO is polyphonic. Each incoming note receives its own LFO. When activated, the LFO is monophonic and all incoming notes receive the same LFO, regardless of pitch.
- **Trigger mode**: Switches between **Midi** and **Remote** modes for resetting and latching the LFOs. **Midi** resets and latches when receiving MIDI notes. **Remote** resets and latches when you change key switches in the Remote Octave.
- **Play mode**: Selects from six modes that change the basic behavior of the LFO, **Loop**, **Loop RST**, **Loop GTE**, **Loop REL**, **1shot**, **1shot REL**.
  - **Loop** cycles through the waveform infinitely, regardless of whether MIDI notes are received or not.
  - **Loop RST** (Loop Restart) cycles through the waveform infinitely but resets the waveform cycle when a MIDI note is received.
  - **Loop GTE** (Loop Gate) cycles through the waveform infinitely but resets the waveform cycle when a MIDI note is received, and stops the LFO as soon as the note is released.
  - **Loop REL** (Loop Release) cycles through the waveform infinitely but stops the LFO as soon as a MIDI note is received. When the note is released, the LFO resets and starts cycling again. This mode requires long envelope release times.
  - **1shot** (One Shot) plays a single cycle of the waveform when a MIDI note is received. **1shot** mode will always restart the LFO and go to zero after the cycle, regardless of the LFO settings, ensuring predictable results with any LFO waveform.
  - **1shot REL** (One Shot Release) plays a single cycle of the waveform when a MIDI note is released. **1shot** mode will always restart the LFO and go to zero after the cycle, regardless of the LFO settings, ensuring predictable results with any LFO waveform. This mode requires long envelope release times.



When in **Sync** mode, try modulating the **Rate** with another Switcher LFO. While sweeping through the positions on the slide, experiment in programming subtle variations in time divisions.

Random LFO

The Random LFO is a specialized low-frequency oscillator that produces random modulation, with controls for the amount and rate of randomness. **Amp Jitter** and **Freq Jitter** fine-tune the random fluctuations, and the **Rate** can be synchronized to the tempo of your DAW. The Play modes let you reset the LFO and repeat the same random waveform every time you play a note.

LFOs (low frequency oscillators) produce cycling, rhythmic modulation with variable waveforms, adding a sense of motion and depth to a sound. Common use cases include modulating pitch to create vibrato, or modulating the volume level to create tremolo. LFOs can also be used creatively, for example by modulating wavetable controls, effects, or the rate and shape of other Modulators.

Activating **Audio Noise** and assigning the LFO to a Modulation module on the Routing page turns the Random LFO into an extra noise source.

The Random LFO contains the following controls and options:



1. **Time mode**: Selects one of three modes for setting the LFO rate. **Sync** lets you switch between time signatures relative to the tempo of your DAW using the Tempo slider. **Free** allows for continuous adjustment using the **Rate** control. **Osc** switches the LFO to audio rate and tracks MIDI pitch, with **Rate** controlling a negative pitch offset.
2. **Rate**: Adjusts the frequency of the LFO in Hz. The Rate control is available if Time mode is set to **Free** or **Osc**. In **Osc** mode, a rate of 100% will track MIDI pitch, and a rate of 0% will add a pitch offset of -96 semitones.
3. **Tempo slider**: Switches between five time signatures (**Sync 1-5**) that synchronize the LFO rate to the tempo of your DAW. The Tempo slider is available if Time mode is set to **Sync**.
4. **Sync 1-5**: Lets you define the time signatures used by the Tempo slider when Time mode is set to **Sync**. You can change the values by clicking and dragging up or down.
5. **Latch Rate**: Captures the **Rate** value at the start of each note and holds it until the next note is played, so changes from direct control or modulation are only applied once per MIDI note.
6. **Amp Jitter**: Adjusts the amount of random modulation applied to the amplitude of the signal. Turned fully left, the basic waveform of the LFO is unaltered. Turning the knob right increases the amount of unpredictable values. When turned fully right, a completely random value is produced with each cycle.
7. **Freq Jitter**: Adjusts the amount of random modulation applied to the frequency of the signal. Turned fully left, the basic waveform of the LFO is unaltered. Turning the knob right increases the random frequency fluctuation. This can produce results similar to white noise, if **Amp Jitter** is set to a low value. **Freq Jitter** is only available in **Free** and **Osc** modes.
8. **Threshold**: Forces random values below the Threshold to zero, which can be used to thin out the noise. Only has an effect if the Amp Jitter is turned up.
9. **Seed**: Changes the seed that feeds the randomization introduced by **Amp Jitter** and **Freq Jitter**. This control is only available in the play modes **Loop RST**, **Loop GTE**, and **Loop REL**. Adjusting **Seed** produces a new random waveform, starting with the next reset event. You can use this to explore different random waveforms and repeat them with every new note.
10. **Shape**: Adjusts the shape and smoothness of the ties between values. Technically speaking, it's applying a linear interpolation to the values. When turned fully left, a smooth interpolation is produced and when turned right, hard steps are created.
11. **Audio Noises**: Turns the LFO into an audio rate noise generator. You can use it as an additional sound source by assigning it to the Modulation modules in the Routing.

12. **LFO Level**: Amplifies the output of the LFO. Turning the knob right increases the amplification level.
13. **Polarity**: Switches the LFO between **Bi** (bipolar) and **Uni** (unipolar). **Bi** has an output range of -100% to +100% and the waveform starts at 0%. **Uni** has a range of 0 to 100% and the waveform starts at 50%.
14. **Delay**: Applies a delay to the onset of the LFO. When turned fully left, no delay time is applied and the LFO starts immediately. Turning the knob right increases the delay time.
15. **Fall/Rise**: Fades the LFO in or out at the start of each note. At center position, the LFO is always on. Turning the control to the right creates a fade-in at the start of each note. Turning the control to the left creates a fade-out at the start of each note.
16. **Mono**: When deactivated, the LFO is polyphonic. Each incoming note receives its own LFO. When activated, the LFO is monophonic and all incoming notes receive the same LFO, regardless of pitch.
17. **Trigger mode**: Switches between **Midi** and **Remote** modes for resetting and latching the LFOs. **Midi** resets and latches when receiving MIDI notes. **Remote** resets and latches when you change key switches in the Remote Octave.
18. **Play mode**: Selects from six modes that change the basic behavior of the LFO, **Loop**, **Loop RST**, **Loop GTE**, **Loop REL**, **1shot**, **1shot REL**.
    - **Loop** cycles through the waveform infinitely, regardless of whether MIDI notes are received or not. Turning **Amp Jitter** and **Freq Jitter** to the right will randomize the waveform.
    - **Loop RST** (Loop Restart) cycles through the waveform infinitely but resets the waveform cycle when a MIDI note is received. Turning **Amp Jitter** and **Freq Jitter** to the right will randomize the waveform, but the cycle will start with the same random waveform again.
    - **Loop GTE** (Loop Gate) cycles through the waveform infinitely but resets the waveform cycle when a MIDI note is received, and stops as soon as the note is released. Turning **Amp Jitter** and **Freq Jitter** to the right will introduce random changes to the waveform, but it will start with the same random waveform again when a note is received.
    - **Loop REL** (Loop Release) cycles through the waveform infinitely but stops the LFO as soon as a MIDI note is received. When the note is released, the LFO resets and starts cycling again. This mode requires long envelope release times. Turning **Amp Jitter** and **Freq Jitter** to the right will randomize the waveform, but the cycle will start with the same random waveform again.
    - **1shot** (One Shot) plays a single cycle of the waveform when a MIDI note is received. **1shot** mode will always restart the LFO and go to zero after the cycle, regardless of the LFO settings, ensuring predictable results with any LFO waveform.
    - **1shot REL** (One Shot Release) plays a single cycle of the waveform when a MIDI note is released. **1shot** mode will always restart the LFO and go to zero after the cycle, regardless of the LFO settings, ensuring predictable results with any LFO waveform. This mode requires long envelope release times.



To get started, try applying the Random LFO to the **Pitch** of an oscillator, or the wavetable position. Turn the **Shape** control toward the square shape to create rhythmic variations in pitch and timbre. Experiment with all the settings to hear the range of noises and random voltages you can create.

20. Performers

The three Performers are special Modulators based on sequenced modulation shapes. They generate complex, rhythmical movement and musical gestures that you can apply to any control.

Basic and Custom grids as well as flexible drawing tools let you quickly draw modulation shapes in the editor. Basic grids can lead to fast results, while the Custom and Overlay grids enable complex rhythms and shapes.

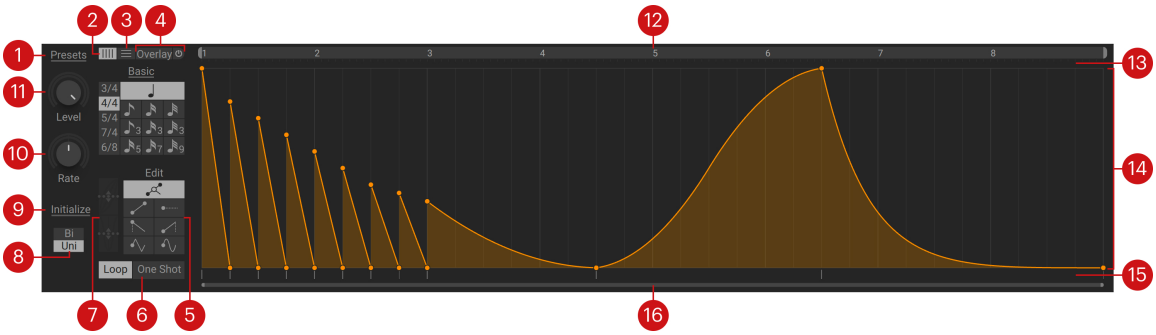
You can access and assign the Performers from the Navigation bar using the orange tabs labeled **Perf 1** – **Perf 3**. You can find more information about assigning Modulators in Assigning modulation.

The Performers can be controlled by the Remote Octave, which lets you switch between up to 12 patterns using key switches from your keyboard or in the Remote Octave Bar. You can find more information in Remote Octave.

> Editing the Performers is not available in Massive XL Player.

Performers overview

The Performers contain the following elements and controls:



1. **Shapes**: Opens the Performer menu that lets you load factory shapes, or save your own user shapes.
2. **Grid** (X-axis): Displays options for setting the rhythmic grid for drawing modulation shapes using Basic or Custom grids.
   - **Basic/Custom grid**: Switches between the **Basic** and the **Custom** grid. You can find more information in Grid.
3. **Resolution** (Y-axis): Displays options for setting the resolution of the modulation from -24 to +24 steps (Range set to **Bi**) or 0 to +24 (Range set to **Uni**).
   - **Snap to Grid**: Forces all values to the steps even when making fine-adjustments using right-click and drag.

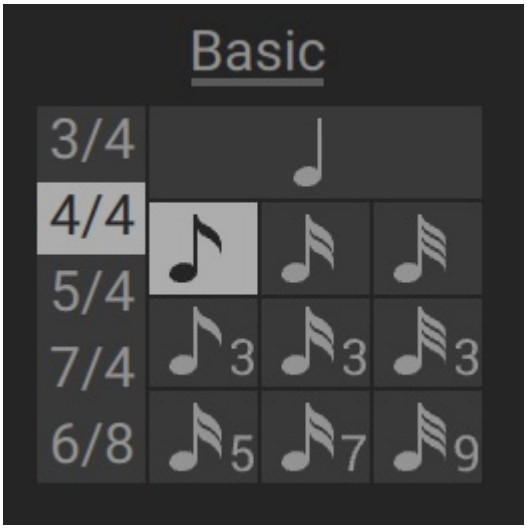
4. **Overlay**: Displays options for setting up the Overlay grid that lets you draw modulation with wide grid segments and odd divisions. You can adjust its placement and width using the handles in the Select zone. The Overlay on/off switch needs to be activated for the options to become available.
   - **Overlay on/off**: Switches the Overlay grid on or off.
   - **Overlay Divisions**: Sets the number of grid divisions.
   - **Overlay stretch controls**: Speed up or slow down the grid by clicking and dragging up or down.
5. **Drawing tools**: Let you draw different modulation shapes in the editor. You can find more information Drawing tools.
6. **Play mode**: Switches the playback between **Loop** and **One Shot**. **Loop** cycles continuously through the active section in the editor. **One Shot** plays the active section once after a note or remote octave key switch is received (depending on the **Launch** setting in the Remote Octave).
7. **Stretch tools**: Stretches or compresses the modulation shape across three or more selected points by clicking and dragging up or down. The upper tool stretches or compresses from left to right. The lower tool stretches or compresses inwards or outwards.
8. **Polarity**: Switches the Performer between **Bi** (bipolar) and **Uni** (unipolar) output. **Bi** has an output range of -100% to +100%. **Uni** has a range of 0 to 100%.
9. **Initialize**: Clears the modulation shape and resets the Performer's polarity to bipolar (**Initialize Bi**) or unipolar (**Initialize Uni**).
10. **Rate**: Adjusts the speed of the Performer relative to the tempo of your DAW. At center position, the Performer plays at the same tempo as your DAW. Turning the control to the left divides the tempo, turning it to the right multiplies it.
11. **Level**: Adjusts the overall level of the modulation produced by the Performer.
12. **Active section**: Sets the section of the modulation shape in the editor that will be played back by the Performer. You can click and drag the handles to set the start and end points, or click and drag the whole section to move it. Double-clicking sets the active section to the entire visible area of the editor.

    You can loop the active section or play it back only once by changing the Performer's **Play mode**. Playback can be reset or started either when a note or a remote octave key switch is received (depending on the **Launch** setting in the Remote Octave).
13. **Select zone**: Lets you select multiple points in the modulation shape by clicking and dragging left or right across the editor. You can find more information in Editing modulation shapes.
14. **Editor**: Lets you draw modulation shapes directly onto the flexible grid using the drawing tools.
15. **Segment Edit zone**: Lets you adjust single or multiple segments in the modulation shape. Right-click and drag to fine-adjust segments. Double-click a segment or multi-selection to delete it.
16. **Zoom bar**: Zooms in and out of the editor by clicking and dragging the handles. Double-clicking zooms into the first bar in the editor.

Grid

The grid (X-axis) defines the time divisions and note values that make up the rhythmic grid for drawing modulation shapes in the editor. You can use the **Basic** or the **Custom** grid. The grid determines the length, while the drawing tools determine the shape of the elements you draw.





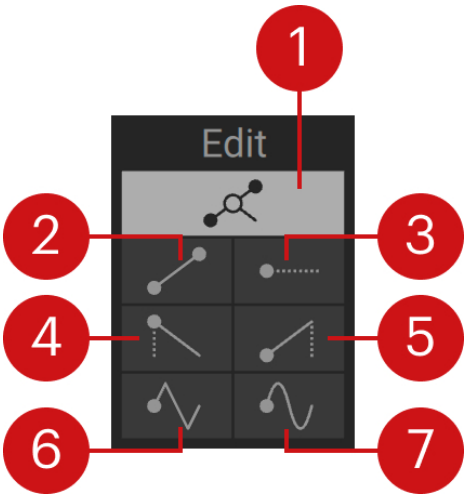
- **Basic grid**: Sets the time signature and rhythmic resolution of the grid from quarter notes down to 32nd note divisions. The Basic grid is the default option for drawing modulation shapes in the editor.
- **Custom grid**: Sets complex time signatures in up to eight different sections, or **Beats per Bar**. Each section can have its own custom **Beat Length** and number of **Subdivisions**.

> ⓘ You can safely switch between the Basic and Custom grid without losing your modulation pattern.

Drawing tools

The drawing tools let you draw different modulation shapes in the editor. The drawing tools determine the shape, while the grid determines the lengths of elements you draw.

The drawing tools contain the following options:



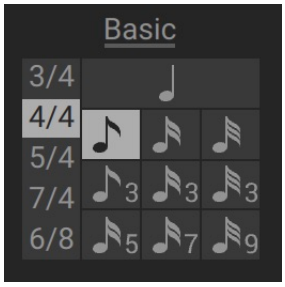
1. **Edit**: Adds modulation points when clicking anywhere in the editor. Adjacent points are connected by straight lines.
2. **Line**: Draws points connected by straight lines from the start to the end point of each grid segment.
3. **Step**: Draws points with static values that extend to the end of each grid segment.
4. **Ramp A**: Draws descending ramps according to the lengths of the grid segments.
5. **Ramp B**: Draws ascending ramps according to the lengths of the grid segments.
6. **Triangle**: Draws triangle shapes according to the lengths of the grid segments.
7. **Sine**: Draws sine shapes according to the lengths of the grid segments.

Drawing modulation shapes

Select one of the drawing tools to start painting a modulation shape in the editor. As you draw shapes, they will snap to the selected time signature and note value of the grid.

To draw a modulation shape in the editor:

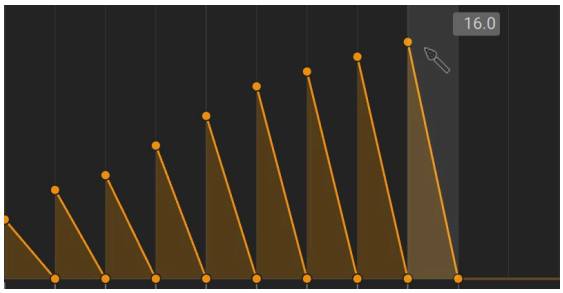
1. Select a time signature and grid note value.



2. Select a drawing tool.



3. Click and drag the mouse across the grid in the editor to draw a modulation shape. Dragging up and down adjusts the modulation values.



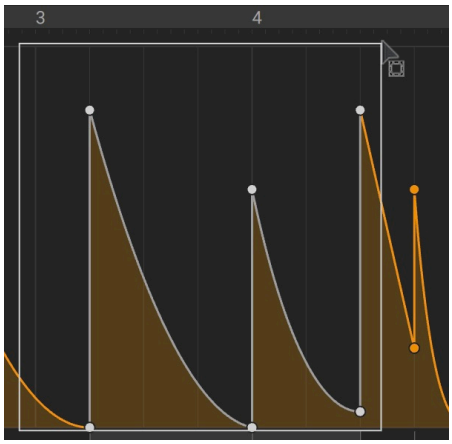
The Performers only play when they are assigned to a an active control. You can find more information in Assigning modulation.

Editing modulation shapes

The editor in the Performers lets you select, delete, move, and bend modulation using click and drag workflows.

Selecting modulation points

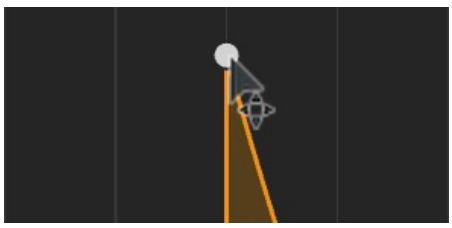
▶ To select modulation points, click and drag across them in the Select zone at the top of the editor.



Deleting modulation points, segments, or shapes

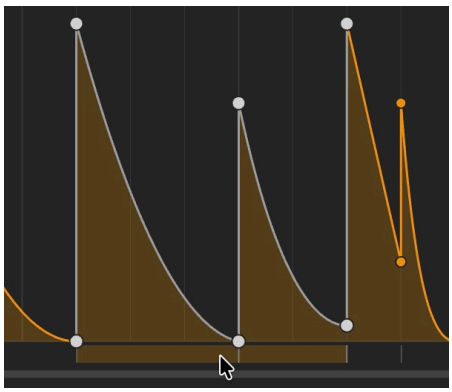
You can delete single or multiple modulation points.

▶ To delete a single modulation point, double-click the modulation point.



To delete multiple modulation points:

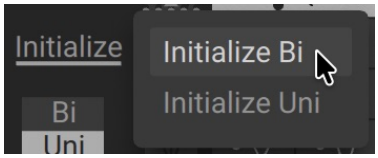
1. Select the points that you want to delete using the Select zone at the top of the editor.
2. Double-click the segment for the selected points in the Segment Edit zone at the bottom of the editor.



Alternatively, you can click and drag a modulation point left or right and move across existing points to remove them.

To delete the entire modulation shape:

▶ Click **Initialize** and select **Initialize Bi** or **Initialize Uni**.

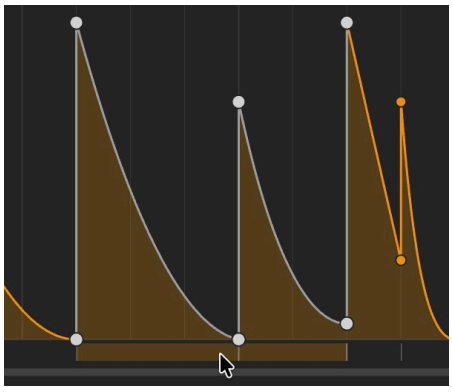


Alternatively, you can double-click the pattern in the Remote Octave overview to delete the modulation shape. Double-clicking underneath each column deletes the modulation shapes in all three Performers.

Moving modulation segments

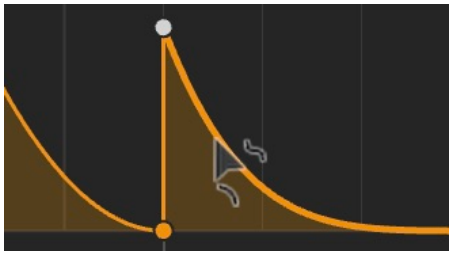
To move multiple modulation points as a segment:

1. Select the points that you want to move using the Select zone at the top of the editor.
2. Click and drag the segment for your selection in the Segment Edit zone at the bottom of the editor. Right-clicking and dragging lets you fine-adjust the position without snapping to the grid.



Bending modulation curves

▶ Click and drag a line in the modulation shape up or down to change its curve.

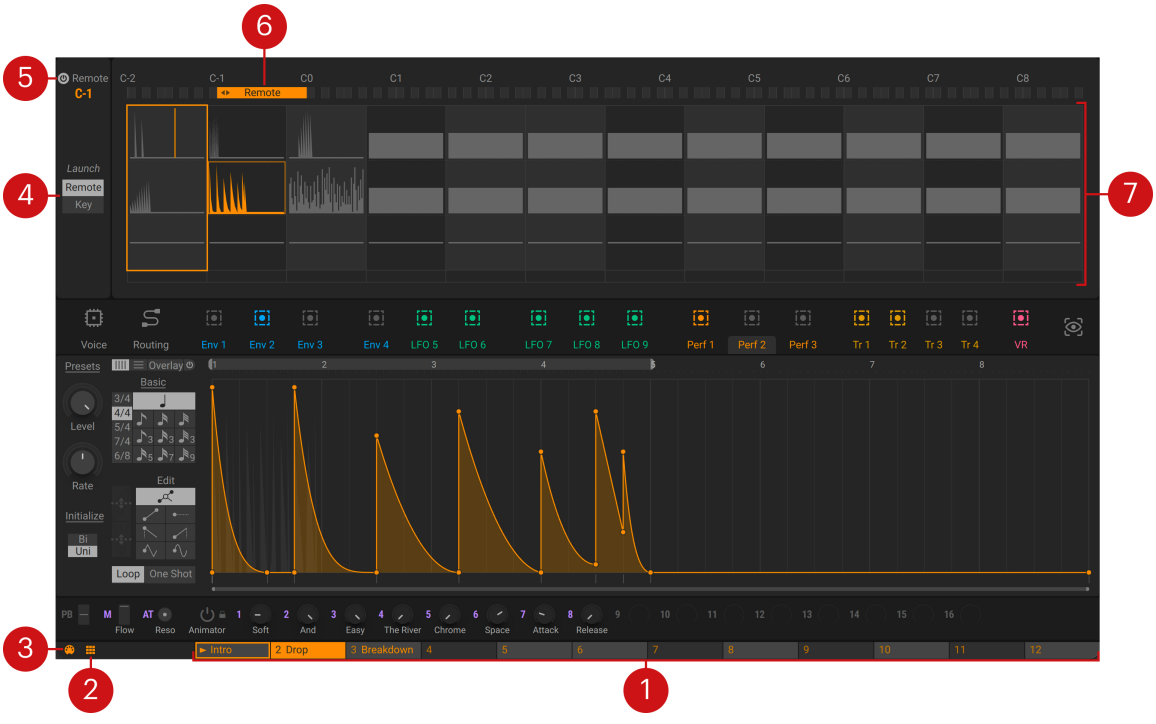


Remote Octave

The Remote Octave is a keyboard zone that lets you trigger up to 12 patterns with modulation shapes for the three Performers. You can switch between them using MIDI notes or by selecting one of the 12 key switches in the Remote Octave bar. You can use the Remote Octave to perform patterns on the fly, or for programming sequences in your DAW.

In the Remote Octave view, you can view, copy, swap, and delete the 12 patterns for all three Performers. You can also set up how the Performers are reset or restarted, and how the Remote Octave key switches are mapped to your keyboard.

The Remote Octave contains the following elements and controls:



1. **Remote Octave key switches**: Plays the patterns for each key switch, and selects them for editing in the Performers. The 12 key switches correspond to the chromatic keys of the keyboard zone. The selected key switch is highlighted in orange. The currently playing key switch is highlighted with an orange outline. You can rename patterns by double-clicking and entering a name.
2. **Remote Octave view**: Opens the Remote Octave view that lets you manage patterns in an set playback options for the Performer.

3. **MIDI on/off**: Switches the MIDI input of the Remote Octave on or off, letting you edit modulation shapes in a Performer without the risk of remote switching from a keyboard or sequencer.
4. **Launch**: Resets or starts the playback of all Performers either when a Remote Octave key switch (**Remote**) or a note (**Key**) is received.
5. **Keyboard zone on/off**: Switches the Remote Octave keyboard zone on or off. When switched off, you can still play patterns by clicking the Remote Octave key switches in the Remote Octave bar.
6. **Keyboard zone**: Shifts the key range used for the Remote Octave in octaves across the keyboard by dragging the handle left or right.
7. **Pattern overview**: Shows an overview of all Performer patterns, and lets you select, copy, or swap patterns. The currently playing key switch is highlighted with an orange outline around its column of patterns. The pattern selected for editing is highlighted using a fine orange outline.
    - You can copy a pattern using drag and drop onto a different slot.
    - You can swap patterns using right-click drag and drop between two slots.

21. Trackers

The four Trackers are special Modulators for advanced MIDI and keyboard tracking. They map incoming MIDI control data like pitch and velocity to modulation that you can apply to any parameter, making it possible to exactly define how your sound responds to your playing.

The Trackers let you draw shapes that represent the relationship between the MIDI input and the modulation output. The shapes can be made up of a continuous curve or discreet offset values. Each Tracker uses one of five available MIDI input sources: **Note Pitch**, **Velocity On**, **Velocity Off**, **Gate**, and **Inverse Gate**.

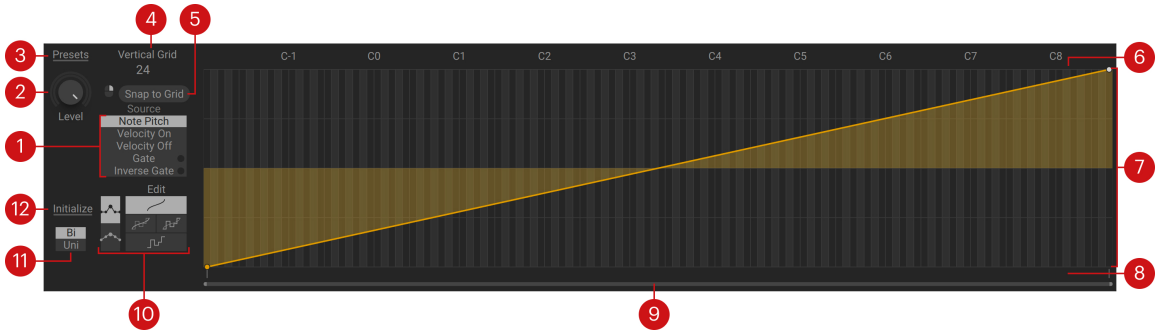
For example, you can use **Note Pitch** to define the response of your sound to the pitch values of incoming MIDI notes. Using a linear, rising ramp as the shape, the modulation will apply common keyboard tracking with low notes producing low values, high notes producing high values, and values increasing linearly across the keyboard range. By adjusting the curve or adding offsets, you can break up this relationship. For instance, inverting the curve would flip the relationship, or adding positive offsets to individual notes would produce higher modulation values only when playing the corresponding keys.

You can access and assign the Trackers from the Navigation bar using the yellow tabs labeled **Tr 1** – **Tr 4**. You can find more information about assigning Modulators in Assigning modulation.

> Editing Trackers is not available in Massive XL Player.

Trackers overview

The Trackers contain the following elements and controls:

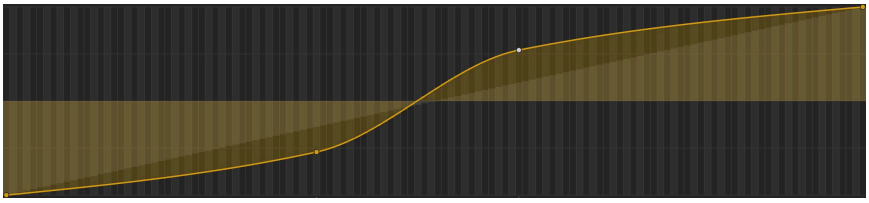


1. **Source**: Selects the type of MIDI control data processed by the Tracker, **Note Pitch**, **Velocity On**, **Velocity Off**, **Gate**, and **Inverse Gate**.
   - **Note Pitch** is the MIDI note value. This option holds the pitch value until another note is played, making it suitable for tracking the pitch of the notes.
   - **Velocity On** is standard, note-on velocity. This option holds the velocity value until another note is played, making it suitable for tracking the velocity of the notes.
   - **Velocity Off** is note-off velocity. This option holds the velocity value until another note is released, making it suitable for tracking the note-off velocity of the notes.
   - **Gate** is standard, note-on velocity. This option resets the velocity value to 0 when a note is released, making it suitable for tracking the velocity of the notes you are playing, but only for as long as a note is held.
   - **Inverse Gate** is note-off velocity. This option resets the velocity value to 0 when another note is played, making it suitable for tracking the note-off velocity of the notes you are playing, but only for as long as no other note is played. You can use **Inverse Gate** for changing envelope controls when a note is released without affecting the notes that follow.
2. **Level**: Adjusts the overall level of the modulation produced by the Tracker.
3. **Shapes**: Opens the Tracker menu that lets you load factory shapes, or save your own user shapes.
4. **Vertical grid**: Sets the vertical resolution of values in the editor. By default, the number of available values is set to 24 (bipolar -24 to +24, unipolar 0 to +24).
5. **Snap to Grid**: Forces edits to the grid value even when making fine adjustments by holding the right-mouse button and dragging.
6. **Select zone**: Lets you select multiple breakpoints by clicking and dragging. The segments between the selected breakpoints can be edited using the Segment Edit zone. Double-clicking resets the selection.
7. **Editor**: Lets you view draw the shape that defines the relationship between the MIDI input on the horizontal axis and the Tracker's modulation output on the vertical axis. The shapes of the other Trackers are shown in the background.
8. **Segment Edit zone** : Lets you edit segments between two breakpoints, or multiple breakpoints according to the selection made using the Select zone. Clicking and dragging moves segments to a new position. Right-clicking and dragging fine-adjusts the position. Double-clicking deletes segments.
9. **Zoom bar**: Zooms and navigates in the editor. Clicking and dragging the handles zooms in and out. Clicking and dragging the bar scrolls the contents. Double-clicking the bar fully zooms out.
10. **Edit mode**: Switches the shape in the editor between a curve, offsets, or a combination of the two. You can find more information in Edit modes.
11. **Polarity**: Switches the Tracker between **Bi** (bipolar) and **Uni** (unipolar) output. **Bi** has an output range of -100% to +100%. **Uni** has a range of 0 to 100%.
12. **Initialize**: Clears the shape and resets the Tracker's polarity to bipolar (**Initialize Bi**) or unipolar (**Initialize Uni**).

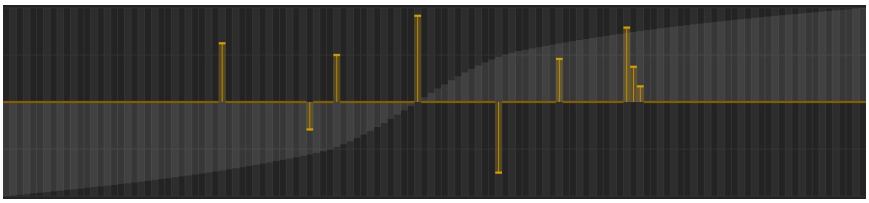
Edit modes

The shape in the editor can be made up of a curve, offsets, or a combination of the two. This determines not only how you interact with the Tracker, but also its modulation output.

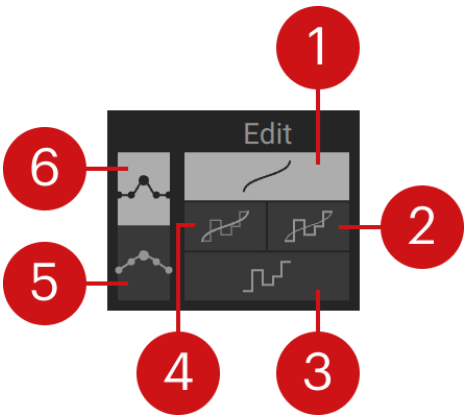
Curves establish the relationship between the MIDI input and the modulation output across the whole keyboard range, making the modulation respond to the MIDI input in a coherent way. Adjacent MIDI input values will produce incrementally changing modulation values. The curve can be drawn using any number of breakpoints, creating separate segments between them:



Offsets establish the relationship between specific values of the MIDI input and the modulation output. This is useful for generating modulation that responds to the MIDI input in very specific, or unexpected ways. Each MIDI input value can produce any modulation value, hence abrupt changes in modulation are possible from one MIDI input value to the next. The offsets can be set for each value individually:



You can switch between curve and offsets using the different Edit modes:



1. **Curve mode**: Only the curve is active and can be edited.
    - Clicking in the editor creates a new breakpoint.
    - Clicking and dragging an existing breakpoint moves it to a new position.
    - Right-clicking and dragging fine-adjusts in one direction without snapping to the grid.
2. **Combined Offset mode**: Both the curve and the offsets are active, however only the offsets can be edited.
    - Clicking and dragging adjusts the offset for multiple values.
    - Right-clicking and dragging sets multiple values to 0.
    - Clicking, holding, and then dragging up and down adjusts the offset for a single value.
    - Right-clicking, holding, and then dragging up and down fine-adjusts a single value without snapping to the grid.

3. **Offset mode**: Only the offsets are active and can be edited.
    - Clicking and dragging adjusts the offset for multiple values.
    - Right-clicking and dragging sets multiple values to 0.
    - Clicking, holding, and then dragging up and down adjusts the offset for a single value.
    - Right-clicking, holding, and then dragging up and down fine-adjusts a single value without snapping to the grid.
4. **Combined Curve mode**: Both the curve and the offsets are active, however only the curve can be edited.
    - Clicking in the editor creates a new breakpoint.
    - Clicking and dragging an existing breakpoint moves it to a new position.
    - Right-clicking and dragging fine-adjusts in one direction without snapping to the grid.
5. **Absolute breakpoint**: Sets the behavior when editing breakpoints to absolute. Moving a breakpoint only affects the breakpoint and its corresponding segments. This option is only available in Curve mode and in Combined Curve mode.
6. **Relative breakpoint**: Sets the behavior when editing breakpoints to relative. Moving a breakpoint also affects the other breakpoints by shifting their position relative to a virtual rubber band. This option is only available in Curve mode and in Combined Curve mode.

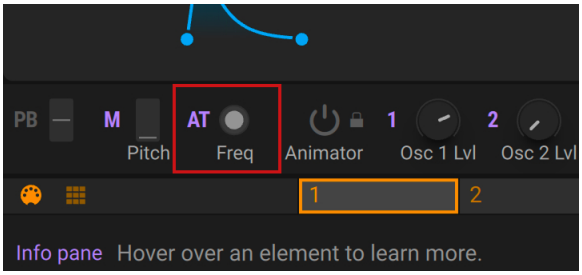
22. Polyphonic aftertouch

Polyphonic aftertouch produces pressure data independently for every single key on a keyboard, letting you modulate individual voices within a chord or melody without affecting the others.

Massive XL automatically detects whether your MIDI keyboard sends regular aftertouch (channel pressure) or polyphonic aftertouch:

- If regular aftertouch is received, the modulation is applied to all voices in the same way.
- If polyphonic aftertouch is received, the modulation produced by each key is applied only to its associated voice.

By assigning Aftertouch to controls you can make your patch respond dynamically to the notes you play. You can assign both regular and polyphonic aftertouch from the Macro bar using the purple **AT** icon. Polyphonic aftertouch requires assignments to modulation slots, and does not work with **1:1 assignments**. You can find more information about assigning Macros in Assigning Macros to multiple parameters.



Aftertouch assignments apply to both types of aftertouch in the same way. Therefore, presets with existing Aftertouch assignments can be played using a MIDI keyboard that features polyphonic aftertouch without additional setup.

Polyphonic aftertouch only works when **Polyphony** is set to **Poly** on the Voice page, and when assigned to modules in the Polyphonic Area. The Performers are monophonic and therefore do not respond to polyphonic aftertouch.

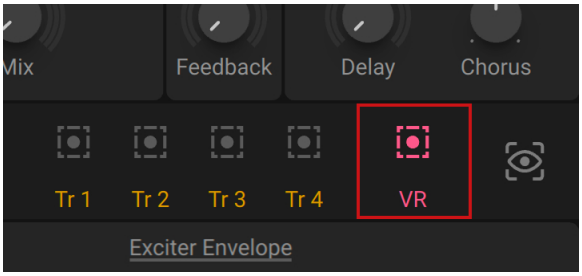
ⓘ Editing Polyphonic aftertouch is not available in Massive XL Player.

23. Voice Randomization

Voice Randomization is a special Modulator that lets you add pseudo-random variation to your sound. It generates a fixed modulation offset per voice that can be applied to controls, giving them a different value depending on which voice is played.

For example, this can be used to create subtle differences in tuning between voices like on an analog synth, or to create dramatic effects by applying high amounts of Voice Randomization to controls across your patch.

You can assign Voice Randomization from the Navigation bar using the pink target icon labeled **VR**. You can find more information about assigning Modulators in Assigning modulation.



Voice Randomization only works when **Polyphony** is set to **Poly** on the Voice page, and when assigned to modules in the Polyphonic Area. The Performers are monophonic and therefore do not respond to Voice Randomization.

Editing Voice Randomization is not available in Massive XL Player.