USER MANUAL

PIANO V

ARTURIA
YOUR EXPERIENCE · YOUR SOUND

Direction	
Frédéric Brun	Kevin Molcard

Development	
Pierre Pfister (project manager)	Pierre-Lin Laneyrie
Samuel Limier (lead)	Valentin Lepetit
Stefano D'Angelo	Germain Marzin
Baptiste Aubry	Mathieu Nocenti
Corentin Comte	Benjamin Renard
Baptiste Le Goff	

Design	
Glen Darcey	Sebastien Rochard
Morgan Perrier	Greg Vezon

Sound Design	
Jean-Baptiste Arthus	Valentin Lepetit
Jean-Michel Blanchet	Victor Morello
Glen Darcey	Pierre Pfister
Marion Demeulemeester	Vintage Synth Pads (Impulse Responses)
Frank Lecomte	

Manual	
Randy Lee	Léonard Sauget
Tomoya Fukuchi	Jason Valax

Special Thanks	
Alejandro Cajica	Miguel Moreno
Chuck Capsis	Ken Flux Pierce
Koshdukai	Richard Poher
Ben Eggehorn	Daniel Saban
David Farmer	Carlos Tejeda
Jeff Haler	Chad Wagner
Bruce Mariage	Sean Weitzmann
Sergio Martinez	Thierry Westermeyer
Shaba Martinez	

Table of contents

1   INTRODUCTION

We'd like to thank you for purchasing Piano V, our virtual acoustic piano. You now possess not one, but nine authentic piano models, and you can carry all of them under your arm wherever you go! We are confident Piano V will become the foundation of many great tracks in your studio and the path to unforgettable moments on stage.

It is difficult to overstate the impact the piano has had upon the world of music. Nearly every church, every concert hall, every school, and untold millions of homes on every continent possess at least one piano, if not more. From the simplest of songs to the most complex of concertos, the piano has been the compositional tool, the compelling accompaniment, and the soaring soloist for over four centuries.

We are certain Piano V will take you places you never dreamed you could go with a piano, both physically and creatively!

1.1   What is Piano V?

Piano V is the newest addition to our extensive family of virtual instruments. Not only have we faithfully modeled the sound and behavior of this essential instrument, we have taken it far beyond what a physical piano can do.

We conducted an extensive analysis of every component that makes the piano what it is, and with Piano V we allow you to combine these components into variations so subtle and so extreme as to bring the impossible to life.

Piano V runs both as a standalone instrument on Windows and Mac OS X and as a plug-in in all major formats inside your DAW. It has easy MIDI learn functionality for hands-on control of most parameters, and as a plug-in also allows parameter automation for greater creative control.

1.2   History of the piano

The hammered dulcimer is probably one of the earliest ancestors of the piano. Its origins can be traced back to the Middle Ages, and it continues to be used in the modern era. However, its age-old limitations may have spurred the existence of the piano, due to an increasing demand for instruments that could play chords, not just the dulcimer's usual maximum of two notes at once.

Enter the harpsichord and the clavichord, each with its own strengths and weaknesses. The harpsichord allowed the user to play chords, but since its method of generating notes involved plucking a string with a quill when a key was pressed, it was not possible to control the dynamics of the notes. They always played at the same volume unless the player engaged a second set of strings by pulling a lever. All things taken together, the harpsichord was loud enough to be heard even in a large ensemble setting, but it was not able to be played with much subtlety.

The clavichord solved some of the problems faced by the dulcimer and harpsichord but had others of its own. It did allow the user to play multiple notes at once, and to play them dynamically (i.e., louder and softer), but the instrument was too quiet to be used in a concert setting.

And thus the stage was set for the arrival of a new instrument. First invented around the year 1700 by Bartolomeo Christofori, the *pianoforte* (literally, "soft loud") combined the best features of both the harpsichord and clavichord: it could be played with great sensitivity and intensity, with a tone and power that could hold its own in any musical ensemble.

The first pianofortes (*piano*, for short) were small by today's standards, having keyboards that spanned only 5 octaves. What's more, the sustain pedal mechanism was not available for a number of decades, itself going through multiple variations until the player was able to operate it by foot instead of by hand or with a knee.

Additional variations have included the number of pedals and their functions, the composition of the materials used for the hammers and strings, and the types of metal used for the soundboards.

But perhaps the most critical sonic development was the use of multiple strings for the higher notes. This idea also went through various stages until the piano arrived at its current configuration: one string per note in the bass, two per note in the middle, and three per note in the higher registers. The doubling and tripling of those strings keeps their notes from being overwhelmed by the bass notes.

1.3   The sound is always in style

The piano is rivalled perhaps only by the acoustic guitar as the instrument with the most direct connection between the musician and the music. One person, one instrument, no amplification: it is the perfect combination for personal expression and musical intimacy.

The only thing the guitar has in its favor over the piano is that you can take one with you anywhere and make just as much music in a forest as you can on the streets. But then again, with a laptop computer, a controller keyboard like the Arturia KeyStep, and Piano V, that advantage has been virtually eliminated.

The sound of a piano can be found in nearly any style of music. It is equally at home in living rooms and saloons, concert halls and jazz clubs, recording studios and cathedrals. A random sample of the music of Western culture would produce an eclectic list of piano-centric compositions such as:

- The Beatles: "Oh! Darling", "Hey Jude"
- Ludwig van Beethoven: "Moonlight Sonata", "Für Elise"
- Dave Brubeck: "Blue Rondo A La Turk"
- Ray Charles: "Georgia On My Mind", "Hit The Road, Jack"
- Steely Dan: "Aja"

- Earth, Wind & Fire: "After The Love Has Gone"
- Emerson, Lake & Palmer: "Karn Evil 9: Second Impression"
- George Gershwin: "Rhapsody in Blue"
- Scott Joplin: "Maple Leaf Rag"
- Jerry Lee Lewis: "Whole Lotta Shakin' Goin' On"
- Trent Reznor: "What If We Could?", "Hand Covers Bruise"
- Cat Stevens: "Morning Has Broken"

This diverse and influential group all have one thing in common: the piano.

1.4   To piano and beyond!

We've been relentless in our pursuit of the most accurate recreation of a piano that can be achieved in software. And we believe we have succeeded.

But as always, once we had harnessed the underlying power of the piano we knew we could also unleash that power in ways that are physically impossible. Everything from the composition of the hammers and their position, to the type of piano and its condition, to the number and placement of microphones, to the size of the room housing the piano, can be changed instantly and all at once.

Here's an overview of the features at your disposal:

- Nine virtual piano models available, from traditional to unusual
- Two types: Upright and Grand
- Change every parameter instantly by selecting a new preset.
- Instant access to tone-shaping features that normally require a technician to adjust:
  - Master tuning, detuning and stretch tuning
  - Hammer type and position, relative to the strings
  - Noise levels for the hammers, dampers, and pedals
  - Soundboard resonance
  - Velocity curve shaping and presets
- Lid position (open, slightly open, and closed)
- Microphone placement and level
- Multiple convolution reverb models
- Master EQ

2   ACTIVATION & FIRST START

2.1   Register and Activate

Piano V works on computers equipped with Windows 7 or later and Mac OS X 10.8 or later. You can use the stand-alone version or use **Piano V** as an Audio Units, AAX, VST2 or VST3 instrument.

Once Piano V has been installed, the next step is to register the software.

The registration process will require you to enter the serial number and the unlock code you received with the product.

In order to proceed, go to this web page and follow the instructions:

http://www.arturia.com/register

Note: If you don't have an Arturia account yet, you will need to create one. The process is quick, but it does require that you can access your email address during the registration process.

Once you have acquired an Arturia account you will be able to register the product.

2.2   Initial setup

2.2.1   Audio and MIDI settings: Windows

At the top left of the Piano V application is a pull-down menu. It contains various setup options. Initially you will need to go to this menu and choose the Audio Settings option to get sound and MIDI flowing in and out.
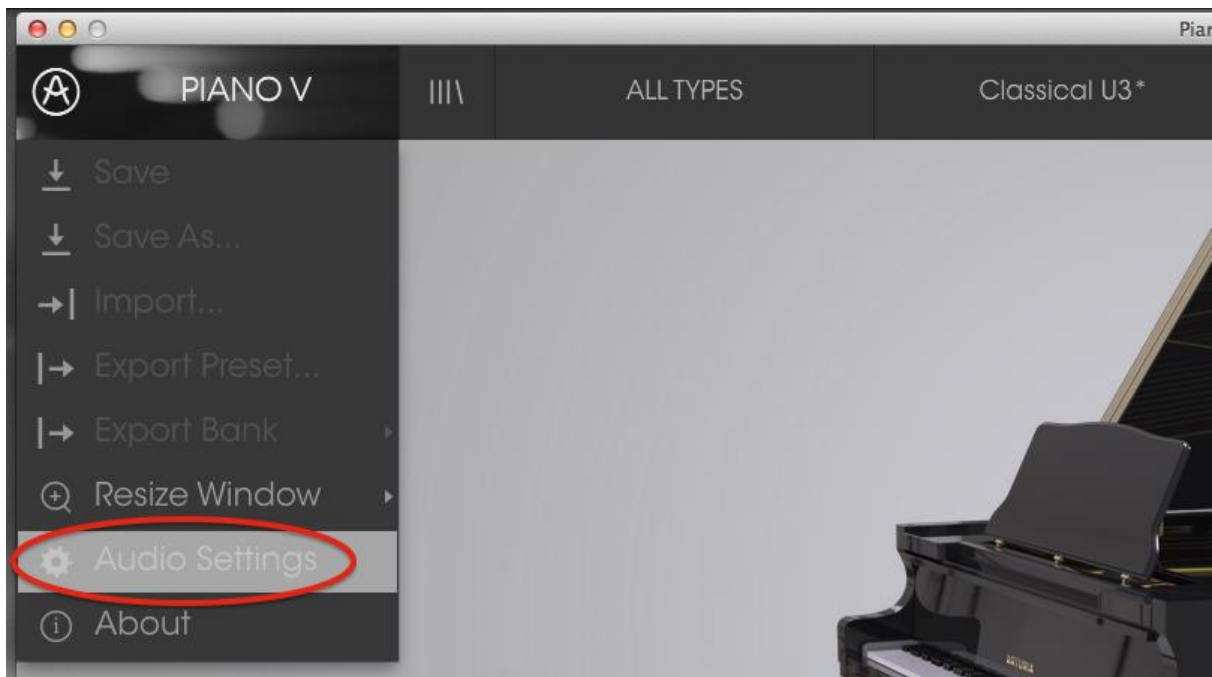
Piano V main menu

You will then see the Audio MIDI settings window. This works in the same way on both Windows and Mac OS X, although the names of the devices available to you will depend on the hardware you are using.
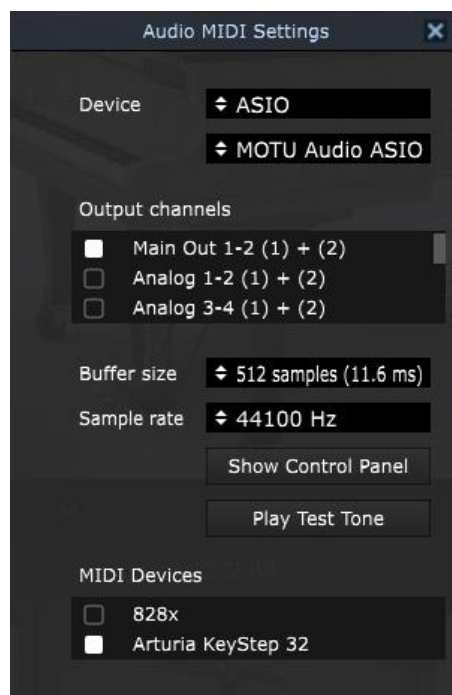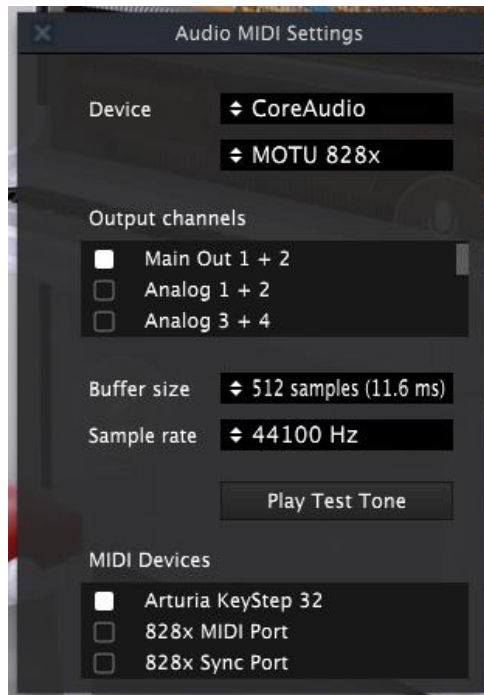

Audio and MIDI settings window

Starting from the top you have the following options:

- **Device** lets you choose which audio driver you want to use to route sound out of the instrument. This might be your computer's own driver like Windows Audio, or an ASIO driver. The name of your hardware interface may appear in this field.

- The **Multi-Core** button instructs Piano V to take advantage of multi-core processing as it generates the sounds. If the CPU meter in the lower tool bar is nearing its maximum you may want to use this feature. But some DAWs are not able to use multicore rendering, so you can disable this feature if necessary.

- **Output Channels** lets you select which of the available outputs will be used to route audio out. If you only have two outputs, only two will appear as options. If you have more than two you can select a specific pair of outputs.

- The **Buffer Size** menu lets you select the size of the audio buffer your computer uses to calculate sound. A smaller buffer means lower latency between pressing a key and hearing the note. A larger buffer means a lower CPU load as the computer has more time to think, but can result in a small latency. Find the optimum buffer size for your system. A fast, modern computer should easily be able to operate at 256 or 128 sample buffer size without creating pops or clicks in the sound. If you are getting clicks, try raising the buffer a little. The latency is displayed on the right hand side of this menu.

- The **Sample Rate** menu lets you set the sample rate at which audio is sent out of the instrument. The options here will depend on the capability of your audio interface hardware though even most computers' own hardware can operate at up to 48kHz which is perfectly fine. Higher sample rates use more CPU power so unless you have a good reason to go up to 96kHz, then 44.1k or 48k is usually fine.

- The **Show Control Panel** button will jump to the system control panel for whatever audio device is selected.

- **Play Test Tone** helps you to troubleshoot audio issues by confirming whether sound can be heard through the correct device.

- Your connected MIDI devices will appear in the **MIDI Devices** area. Click the check box to accept MIDI from the device you want to use to trigger the instrument. In standalone mode, Piano V listens for all MIDI channels so there's no need to specify a channel. You can specify more than one MIDI device at once.

2.2.2   Audio and MIDI settings: Mac OS X

The process is very similar to initial setup for Windows and the menu is accessed in the same way. The difference is that OS X uses CoreAudio to handle audio routing

and the audio device selection is made in the second dropdown menu. Apart from that, the options work the same way as described in the Windows section.

OS X Audio and MIDI settings window

2.2.3   Piano V as a plug-in

Piano V comes in VST, AU and AAX plug-in formats for use in all major DAW software such as Cubase, Logic, Pro Tools and so on. You can load it as a plug-in instrument and its interface and settings work the same way as in standalone mode, with a couple of differences.

- You can automate numerous parameters using your DAW's automation system.
- You can use more than one instance of Piano V in a DAW project. In standalone mode you can only use one at once.
- Any additional audio effects your DAW has available may be used to process the sound, including delay, chorus, filters, etc.
- You can route Piano V's audio outputs more creatively inside your DAW using the DAW's own audio routing system.

3 USER INTERFACE

Piano V is packed with great features, and in this chapter we'll make sure you know what each one does. We think you'll be amazed by the huge range of sounds that can be made with this instrument.

And while Piano V is very flexible, there's nothing complicated about it. That will always be the main focus of every Arturia product: to unleash your creativity while remaining easy to use.

3.1 Virtual keyboard

The virtual keyboard allows you to play a sound without the need for an external MIDI device. Simply click on a virtual key to hear the currently selected sound. You can also drag the cursor across the keys to hear a glissando.

Clicking near the front edge of the key results in a higher velocity note; clicking near the back of the key produces a soft velocity.
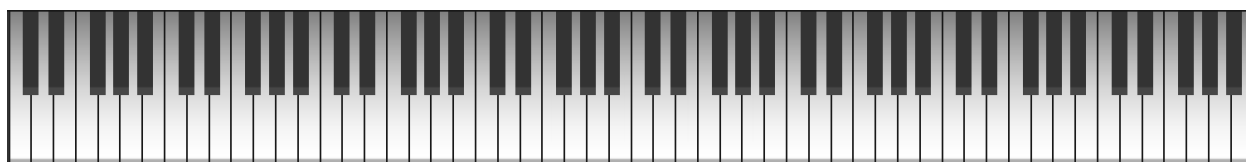

The virtual keyboard of Piano V

3.2 The tool bar

The toolbar that runs along the top edge of the instrument both in standalone and plug-in mode provides access to many useful features. Let's look at them in detail.

The first seven of these options can be found by clicking on the Piano V section at the very top left hand corner of the instrument window.

We'll go through each of these functions in the following sections.

3.2.1 Save Preset

This option will overwrite the active preset with any changes you have made, so if you want to keep the source preset also, use the Save As option instead. See section 3.2.2 for information about this.
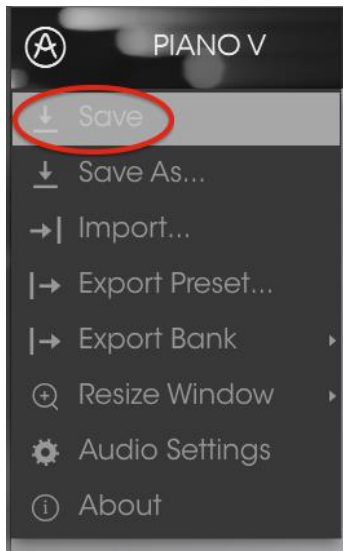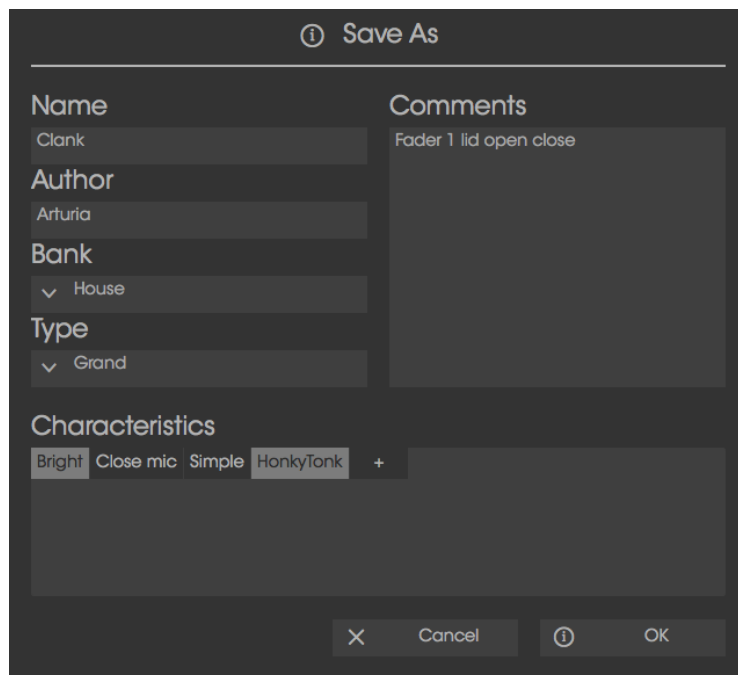
Save Preset

3.2.2 Save Preset As...

If you select this option you are presented with a window where you can enter information about the preset. In addition to naming it you can enter the Author name, select a Bank and Type, select tags that describe the sound, and even create your own Bank, Type, and Characteristics. This information can be read by the preset browser and is useful for searching the preset banks later.

You can also enter freeform text comments in the Comments field, which is handy for providing a more detailed description.
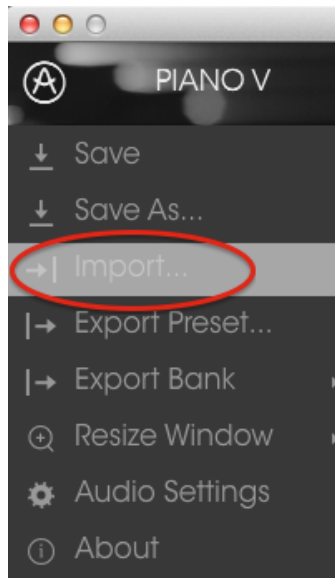

The Save As window

3.2.3 Import Preset

This command lets you import a preset file, which can be either a single preset or an entire bank of presets. Both types are stored in the .pianox format.

After selecting this option the default path to these files will appear in the window, but you can navigate to whichever folder you are using.

The Import Preset window

3.2.4 Export Preset

You can export and share a single preset using this command. The default path to these files will appear in the window, but you can create a folder at another location if you like.

3.2.5 Export Bank

This option can be used to export an entire bank of sounds from the instrument, which is useful for backing up or sharing presets.

Selecting a Bank to export

3.2.6 Resize Window options

The Piano V window can be resized from 60% to 200% of its original size without any visual artifacts. On a smaller screen such as a laptop you might want to reduce the interface size so it doesn't dominate the display. On a larger screen or a second monitor you can increase the size to get a better view of the controls. The controls work the same at any zoom level but the smaller ones can be harder to see at the smaller magnification values.
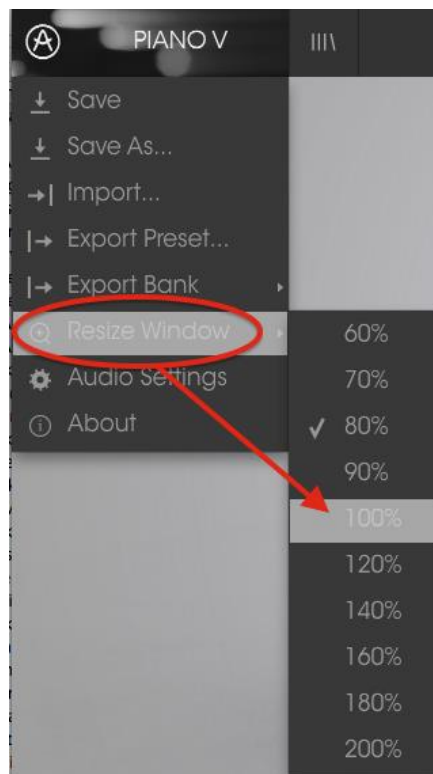

The Resize Window menu

3.2.7   Audio Settings

Here you manage the way the instrument transmits sound and receives MIDI. See section 2.2 of the manual for full details on this.

3.2.8   Preset browser overview

The Preset browser is invoked by clicking the toolbar button that has four vertical lines. See section 3.3 of the manual for full details on this. The Filter, name field and left / right arrows in the toolbar all assist with preset selection.
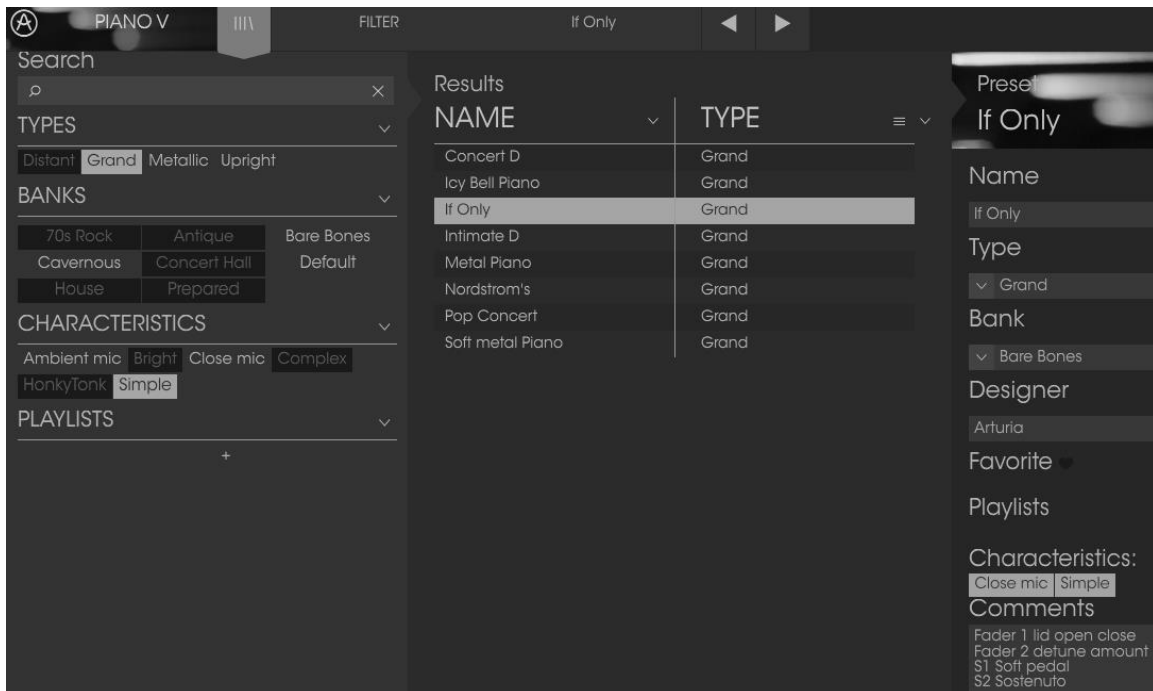

The Preset Browser

3.2.9   MIDI Learn assignment

The MIDI plug icon at the far right side of the toolbar places the instrument into MIDI learn mode. MIDI-assignable parameters will be shown in purple, which means you can map physical buttons, knobs, faders or pedals to those destinations inside the instrument. A typical example might be to map a real expression pedal to the Master Gain control, or buttons on a controller to the Preset selection arrows so you can change the preset from your hardware keyboard.
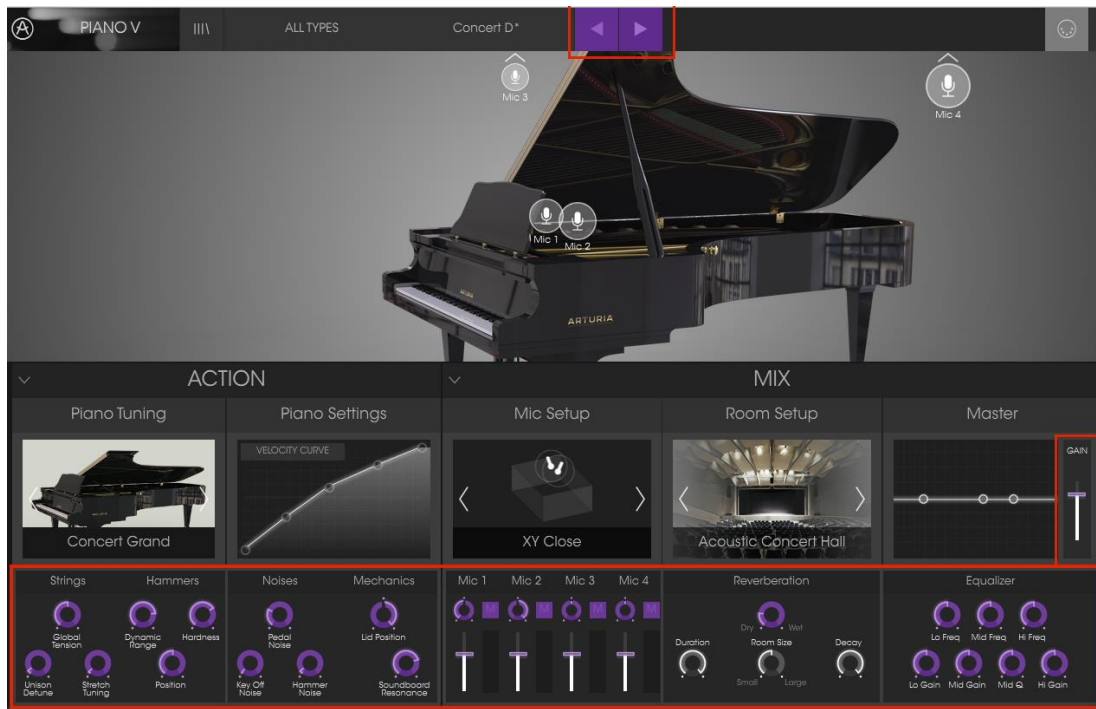
MIDI Learn mode

The Pedals and the Panic button can be mapped also:
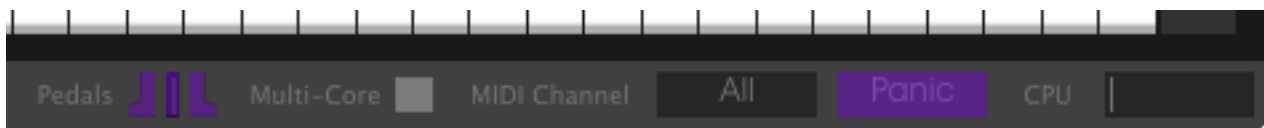
MIDI Learn mode: Lower tool bar assignable parameters

3.2.9.1 Assigning / unassigning controls

If you click on a purple area you'll put that control into learning mode. Move a physical knob, fader, or button and the target goes red, indicating that a link has been made between the hardware control and the software parameter. There's a popup window that displays which two things are being linked and an Unassign button that will disconnect the two.
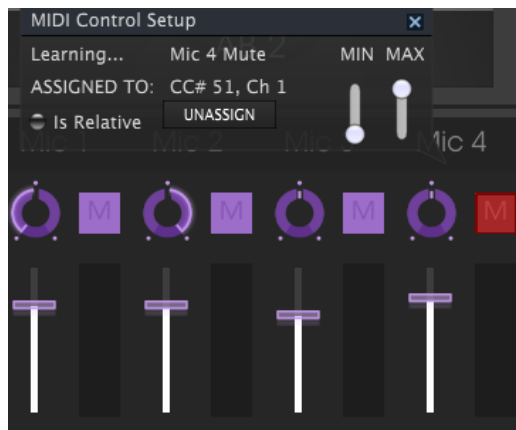
Mic 4 Mute switch selected and assigned

3.2.9.2 Min / Max value sliders

There are also minimum and maximum value sliders that you can use to restrict the parameter change range to something other than 0%-100%. For example you might want the Master Gain to be controllable via hardware from 30% to 90%. If you made this setting (Min set to 0.30 and Max set to 0.90) your physical knob would be unable to alter the volume lower than 30% or higher than 90%, no matter how far you turned it. This is very useful for making sure you can't accidentally make the sound too quiet or too loud when performing.

In the case of switches which only have two positions (on or off), those would normally be assigned to buttons on your controller. But it is possible to toggle those with a fader or other control if you like.

3.2.9.3 Relative control option

The final option in this window is a button labelled "Is Relative". It is optimized for use with a specific type of control: one which sends only a few values to indicate the direction and speed at which a knob is turning, as opposed to sending a full range of values in a linear fashion (0-127, for example).

To be specific, a "relative" knob will send values 61-63 when turned in a negative direction and values 65-67 when turned in a positive direction. The turn speed determines the parameter response. Refer to the documentation of your hardware controller to see if it has this capability. If so, be sure to switch this parameter on when setting up its MIDI assignments.

When configured this way, movements of the physical control (usually a knob) will change the software parameter by starting at its current setting, rather than being an "absolute" control and snapping it to some other value as soon as you start to move it.

This can be a great feature when controlling things like volume, filter, or effect controls, since you won't usually want them to jump noticeably from their current setting when they are modified.

3.2.9.4 Reserved MIDI CC numbers

Certain MIDI Continuous Controller (MIDI CC) numbers are reserved and cannot be reassigned to other controls. These are:

- PitchBend
- Ctrl Sustain On/Off (CC #64)
- Ctrl Sustenuto On/Off (CC #66)
- Ctrl Soft Pedal On/Off (CC# 67)
- Ctrl All Notes Off (CC #123)

All other MIDI CC numbers may be used to control any assignable parameter in Piano V.

3.2.10 MIDI controller configuration

There's a small arrow at the far right hand side of the toolbar that deals with MIDI controller configurations. This allows you to manage the different sets of MIDI maps you may have set up for controlling the instrument's parameters from MIDI hardware. You can copy the current MIDI assignment setup or delete it, import a configuration file or export the currently active one.

This is a quick way to set up different hardware MIDI keyboards or controllers with Piano V without having to build all the assignments from scratch each time you swap hardware.
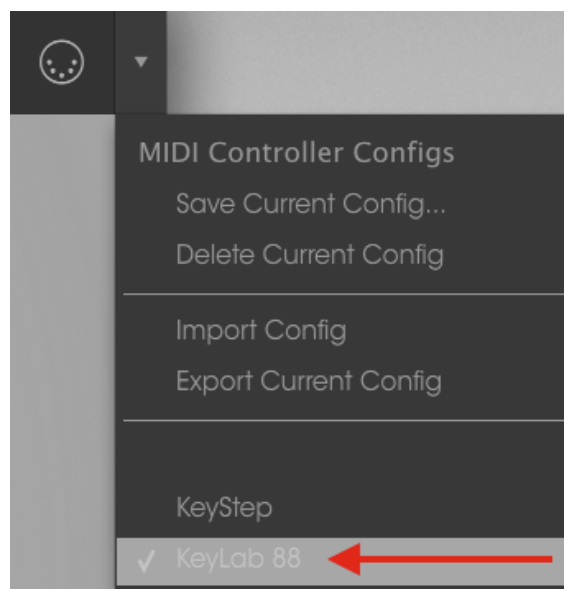
Note the check mark next to one of the controller names: that indicates that the KeyLab 88 configuration is currently active.

3.2.11 The lower toolbar

At the left hand side of the lower toolbar you will see a readout showing the value or state of whatever control you are modifying. It will also display the current value of a parameter without editing it: just hover the cursor over the related control and the value will appear as pictured below.
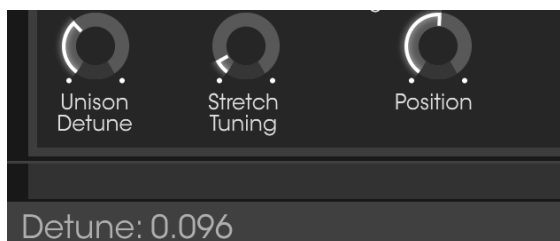
Displaying the current control's value

At the right hand side of the lower toolbar are several small windows and buttons. These are very important features, so let's take a closer look at them.

3.2.11.1 Pedals

The three different pedal types found on most pianos are available in the lower tool bar: Soft, Sostenuto, and Sustain. They allow you to toggle these features even without a controller keyboard attached to your computer.

The toolbar pedals, inactive   *Soft and Sustain pedals active*

The Sostenuto pedal

The functions of the sustain and soft pedals will be immediately obvious, but unless you've worked with a sostenuto pedal it could be confusing at first.

A sostenuto pedal is like a "targeted sustain" pedal: it will sustain only the notes you define for it and will let the others continue to work normally. Follow these steps and you will see how it works.

- Make sure the other pedals are not being pressed.
- Play a note and keep holding down the key.
- Click the Sostenuto pedal icon (the middle one).
- Release the key. It should continue to sustain.
- Play a glissando across the keys in the area of the note you pressed earlier. Only that note will sustain; the others will play but will not sustain.

There are many compositions that utilize the Sostenuto pedal. And now you can write some of your own!

3.2.11.2 Multi-Core

The Multi-Core feature, enabled

When this field is lit (light gray) it means the Multi-Core feature has been enabled in the preferences. See section 2.2.1 for a description of the Multi-Core feature.

3.2.11.3 MIDI Channel setting

This window indicates the current MIDI Channel setting. Click on it and it will expand to show the full range of values you can select (All, 1-16).
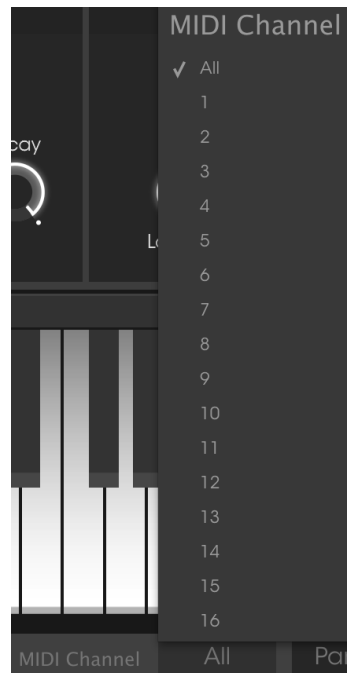
3.2.11.4 Panic button

The Panic button can be pressed to reset all MIDI signals in the event of stuck notes or other issues. The Panic button is also MIDI-assignable.

3.2.11.5 CPU meter

The CPU meter is used to monitor how much of your computer's CPU is being used by the instrument.

3.3 The Preset browser

The preset browser is how you search, load and manage sounds in Piano V. It has a couple of different views but they all access the same banks of presets.

To access the search view click on the browser button (the icon looks a bit like books on a library shelf).
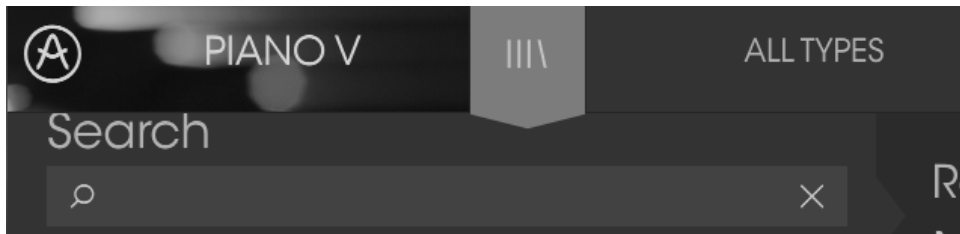
The Preset Browser button

3.3.1 Searching presets

The Search screen has a number of sections. By clicking on the Search field at the top left you can quickly enter any search term to filter the preset list by patch name. The Results column is updated to show the results of your search. Press the X button in the search field to clear the search.
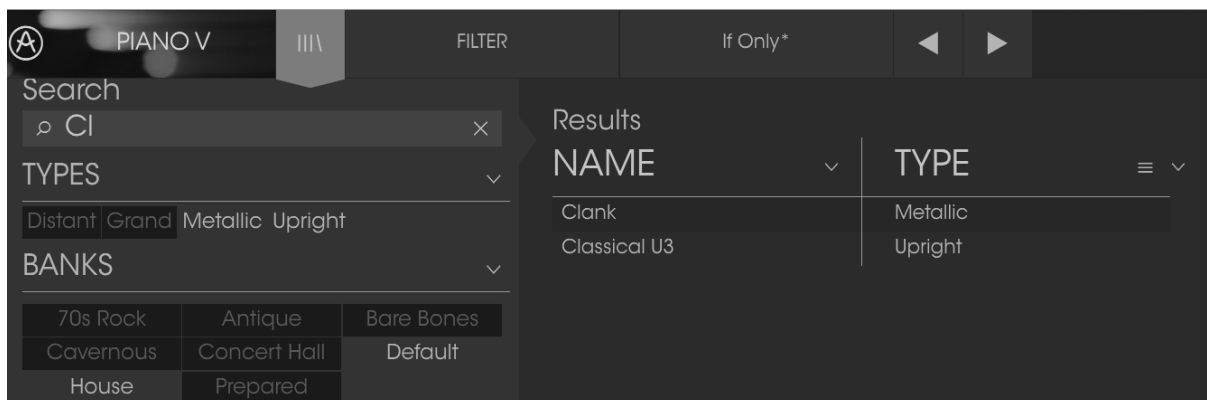


Filter by typing text in the Search field

3.3.2 Using tags as a filter

You can also search using different tags. So for example by clicking on the Metallic option in the Types field you can show only presets that match that tag. The tag fields can be shown or hidden by using the small down arrow buttons in their title fields. Results columns can be sorted by clicking the same arrow button in their own section.
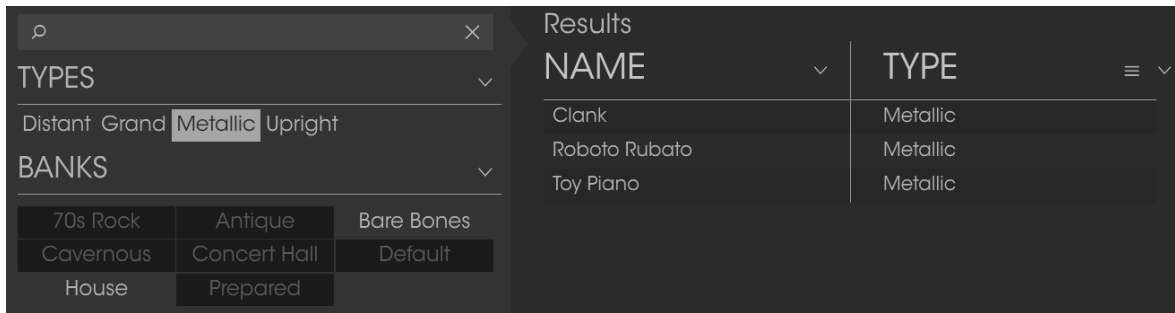
You can use multiple search fields to perform narrower searches. So by entering a text search and also specifying type, bank and characteristics options you could see only the presets that match those exact criteria. Deselect any tag in any area to remove that criteria and widen the search without having to go back and start again. Using "Ctrl + click" (Windows) or "Cmd + click" (Mac) will allow you to select multiple elements in the same area.
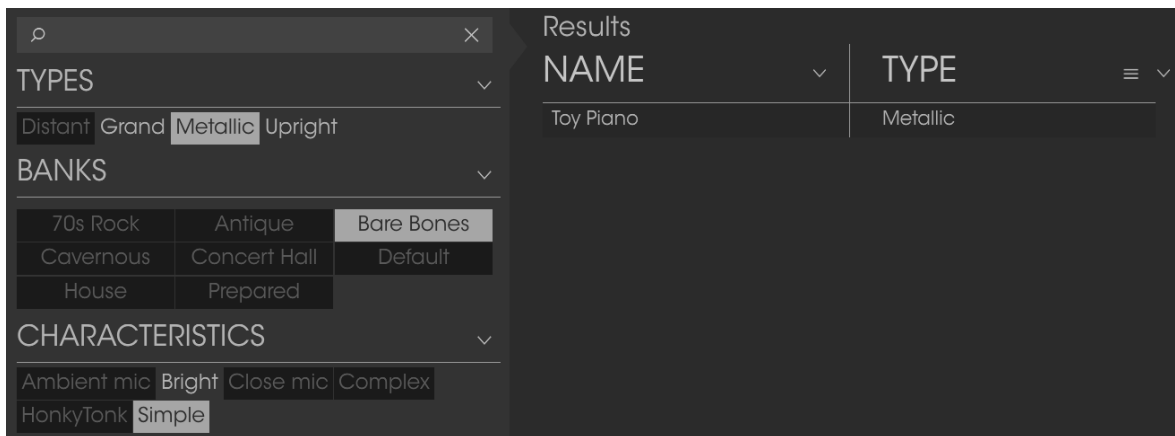
The second Results column can be switched to show Type, Sound Designer, Favorite or Bank tags depending on how you like to search. Click on its options menu button just next to its sort arrow.
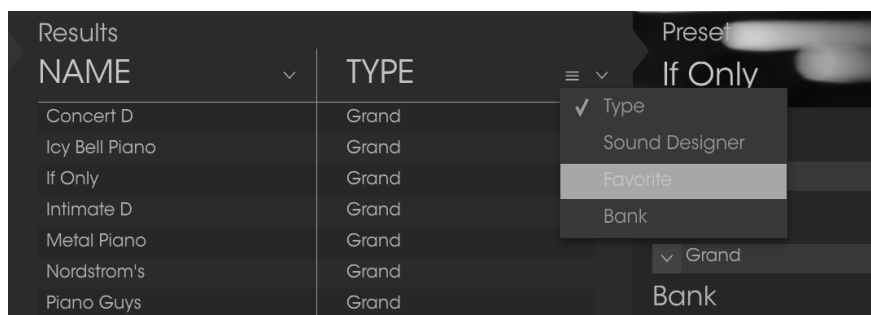

3.3.3   The Preset Info section

The Info column on the right side of the search field shows you information about any preset. The information for User presets may be changed here: Name, Type, Favorite, etc.

However, if you want to alter the information for a Factory preset you must first use the Save As command to re-save it as a User preset. After this the Info section will gain Edit and Delete buttons at the bottom of the window.

Click Edit and then make the desired changes, either by typing in one of the fields or by using a pull-down menu to change the Bank or Type. You can even add new Characteristics by clicking the + sign at the end of that list. Click Save when you are done.
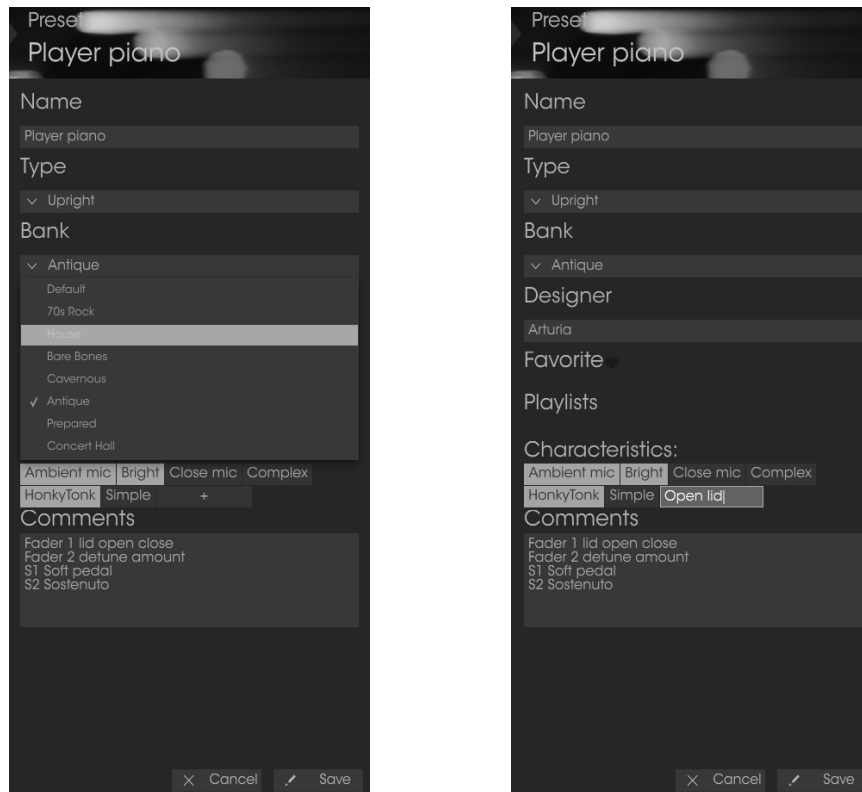
3.3.4   Preset selection: other methods

The pull-down menu to the right of the Search menu provides a different way to select presets. The first option in this menu is called Filter, and it will display the presets that fit the search terms you used in the Search field. So if you searched for "Pop" in the main search area, the results of that search will appear here.

Similarly, if you previously selected **Type: Upright** and **Banks: Antique** in the Search field you would see the results of that search in this area instead.
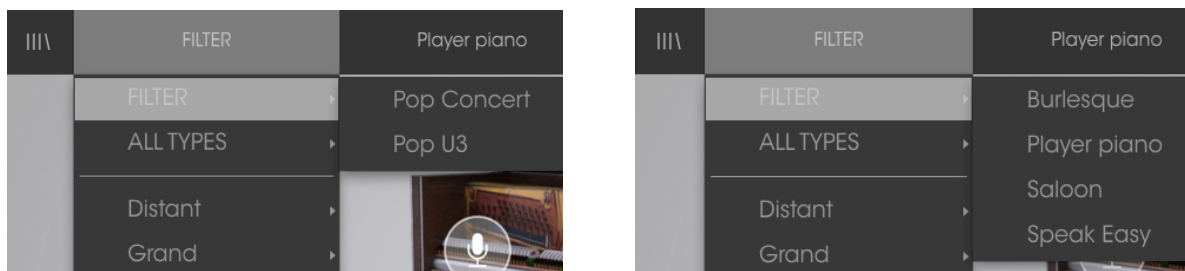
Filter results may differ based on Search criteria

Selecting the All Types option in the pull-down menu will bypass the Search criteria and show the entire list of presets.

The Categories below the line also ignore the Search criteria and display the presets based on their Type: Grand, Upright, Rock, and so on.
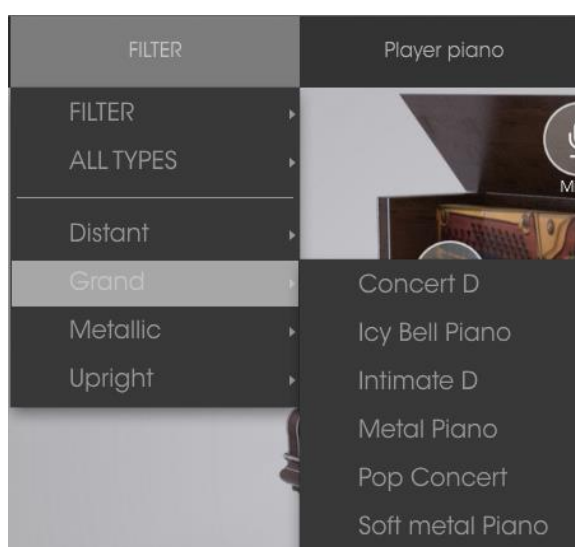
Selecting a preset by its Type

Clicking on the name field in the center of the toolbar will show you a list of all available presets. The list will also take into account any selections you have made in the Search field. So if you have pre-selected a Characteristic such as "Funky" this shortcut menu will only show you presets that match that tag.

The left and right arrows in the toolbar cycle up and down through the preset list: either the full list, or the filtered list that resulted from the use of one or more search terms.
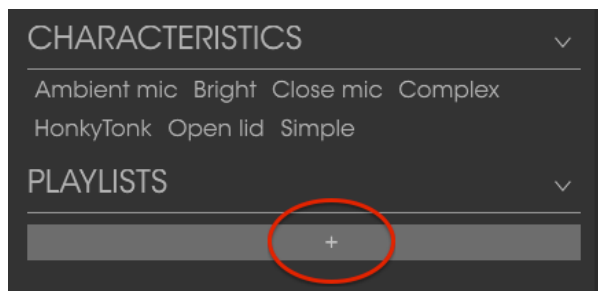
3.3.5   Playlists

In the lower left corner of the Preset Browser window is a feature titled Playlists. This is used to collect presets into different groups for different purposes, such as a set list for a particular performance or a batch of presets related to a particular studio project.

3.3.5.1 Add a playlist

To create a playlist, click the plus sign at the bottom:
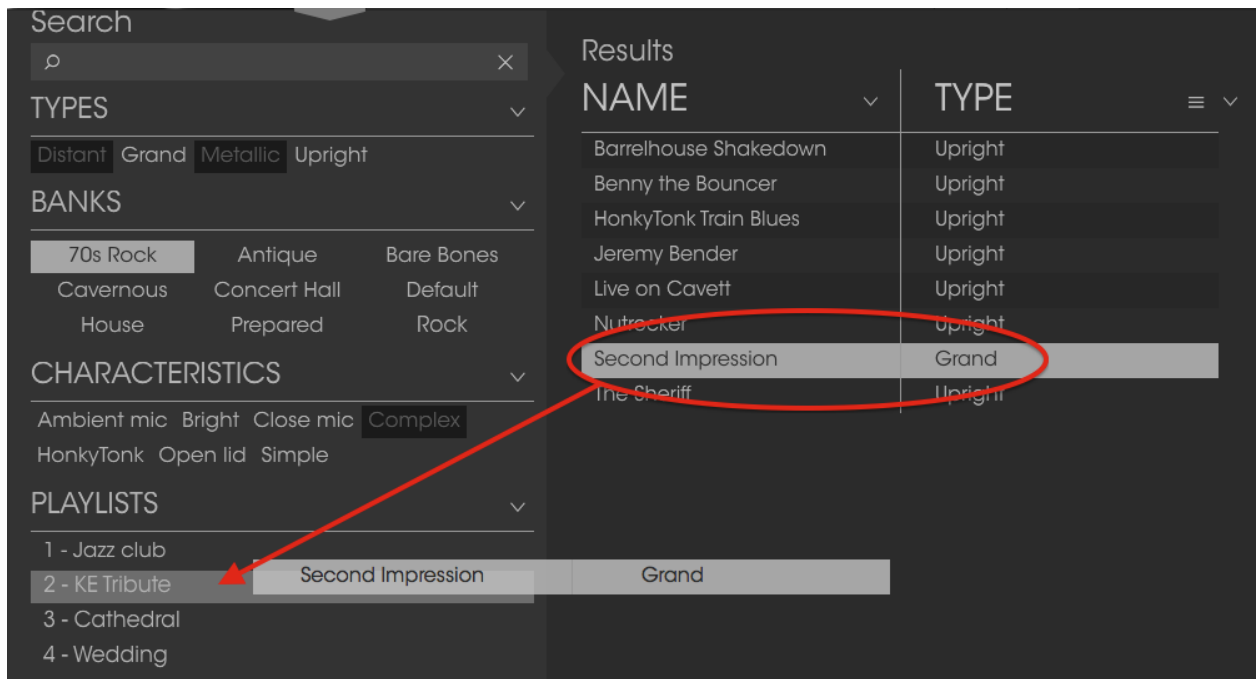

Give the playlist a name and it will appear in the Playlists menu. You can rename the playlist at any time; just click the pencil icon at the end of its row.

3.3.5.2 Add a preset

You can use all of the options in the Search window to locate the presets you want to have in your playlist. Once you have found the right preset, click and drag it onto the playlist name.

Click and drag from the Search Results list onto one of the playlists

To view the contents of a playlist, click on the playlist name.

3.3.5.3 Re-order the presets

Presets may be reorganized within a playlist. For example, to move a preset from slot 1 to slot 3, drag and drop the preset to the desired location.
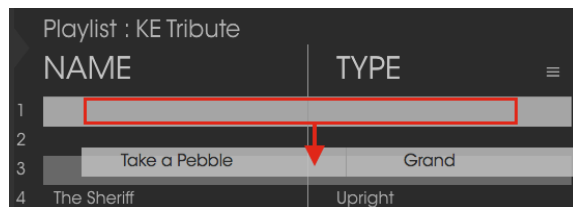
This will move the preset into the new location.

3.3.5.4 Remove a preset

To delete a preset from a playlist, click the x at the end of the preset row.

Click the X to remove a preset from a playlist

3.3.5.5 Delete a playlist

To delete an entire playlist, click the x at the end of the playlist row. This will only delete the playlist; it will not delete any of the presets inside the playlist.
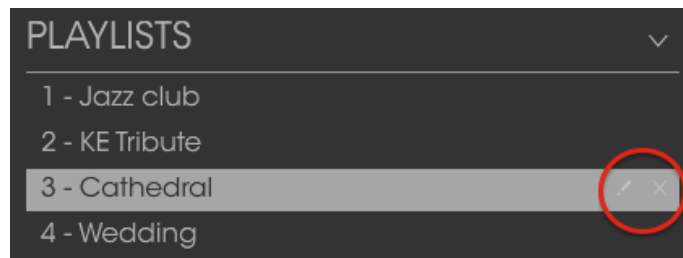
Click the X to delete a playlist

3.4 The Action window

Placed below the large piano graphic are five windows, divided into two groups: Action and Mix. Click on the "up" arrow in each group to expand and view its contents.

Click to expand the Action window

3.4.1 Piano model

The first window inside the Piano Tuning tab allows you to select one of nine different piano models by clicking the arrows to the left or right of the smaller piano graphics.

Piano model selection window

The piano graphics will change to give a visual representation of the source instrument.

There is more to each model than its appearance, though. We have painstakingly modeled every nuance of these nine instruments, from the resonance of their materials to the way their sound changes in relation to the placement of the microphones in each configuration.

Another way to select a different model is to click the piano label, which will open a menu containing all nine choices.
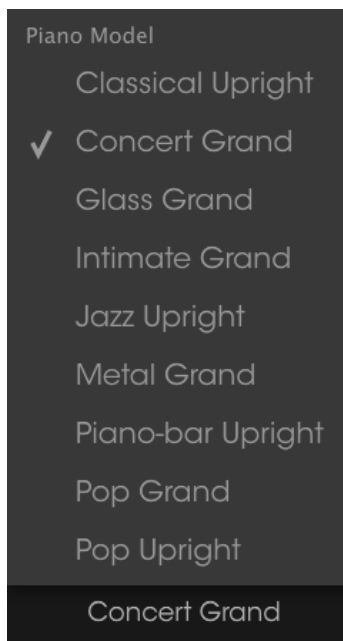
Piano model selection menu

A check mark indicates the current model. Make a selection and the menu will close.

3.4.2   Strings

The tuning of the piano strings may be varied by three different parameters: Global Tension, Unison Detune, and Stretch Tuning.

Tuning controls

3.4.2.1 Global Tension

All taken together, the 236 strings on a piano exert over 17 tons of force on the soundboard. This control allows you to lessen or increase the tension on the soundboard, which in turn lowers or raises the overall pitch of the instrument.

3.4.2.2 Unison Detune

The higher notes on a piano have more than one string per note, which allows them to be heard as easily as the larger, louder bass notes. This parameter lets you specify the amount of detuning between those strings.

This control does not affect the lowest notes, since they only have a single string. It also has a greater impact on the higher notes than the middle notes, as the middle notes have only two strings per note while the higher notes have three.

3.4.2.3 Stretch Tuning

One advantage concert grand pianos have over upright pianos, and even over 'baby' grands, is that their strings can be longer. We won't delve into the physics involved, but one result of this is a lower degree of 'inharmonicity'; i.e., the overtones of the longer strings are closer mathematically to the fundamental frequencies. This also holds true for the notes and intervals above them, which in turn means that the fundamentals and overtones are more closely related across the piano. This leads to a purer, more pleasing sound overall.

But it is the inharmonicity of the shorter strings which gives baby grands and upright pianos their distinctive sound. So for these instruments the technician must employ a technique known as 'stretch tuning' in order to minimize the beating of fundamentals and overtones against each other.

The Stretch Tuning control allows you to specify the amount the upper notes will be tuned sharp relative to the bass notes. This is all part of giving you the most authentic piano experience possible.

3.4.3 Hammers

The hammers are an important component of the sound of a piano. A technician will often spend much time 'regulating the action', making sure all of the hammers have a consistent distance from the strings and are striking the strings at a similar point. And if the felt tips of one or more hammers have deteriorated, this will have an adverse effect on the consistency of tone across the keyboard. Those hammers must be replaced.

Piano V gives you a uniform set of hammers to work with in the first place, and then you are able to modify the behavior of all of the hammers at the same time.
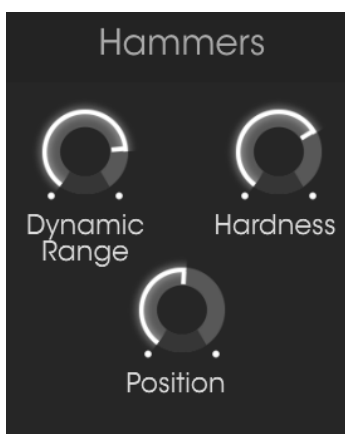
Hammer Controls

3.4.3.1 Dynamic Range

This parameter models what happens when the hammers are moved closer to or farther from the strings. The closer they are to the strings, the less dynamic range there will be.

When the dynamic range is narrow, notes played softly will be relatively loud and their overtones will be heard more clearly. When the dynamic range is wide, softer notes will be harder to hear.

3.4.3.2 Hardness

When the felt on a hammer is new it is very soft, and notes played softly will not have as many overtones. As the hammers age the felt becomes harder, and notes played softly have more overtones. In a very old or poorly maintained piano it may difficult to play notes that are not bright.

This parameter simulates the condition of the hammers at all stages, from soft to hard.

3.4.3.3 Position

The point at which the hammers strike the strings has an effect on the brilliance of the tone. This parameter emulates what happens when the position of the hammers is changed.

Low values move the hammers closer to the end of the string, making the sound brighter. Higher values simulate hitting the string closer to the middle, which produces a darker tone.

3.4.4   Velocity curve

The first window under the Piano Settings tab contains the velocity curve editor.

The velocity curve editor

As notes are played on the keyboard vertical lines will appear inside the velocity curve editor window, indicating the velocity at which each note was played. The length of the line represents the amplitude of that particular note.

A number of preset curves are provided, and you can easily create your own.

3.4.4.1 Selecting a curve

To audition the existing velocity curves, click on the menu bar inside the editor window. A drop-down menu will appear with a list of presets and the Save As / Delete options.
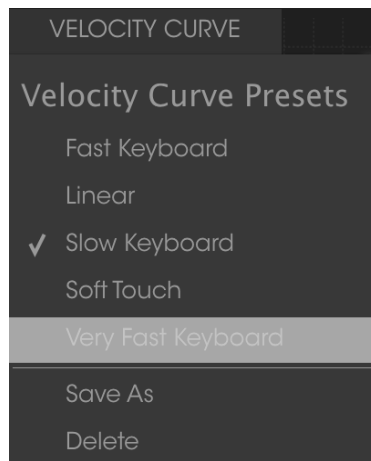
The Velocity Curve menu

A check mark next to a preset curve indicates that it is the currently selected curve. Click on a different curve name to select that curve. The menu will close and the new curve will appear in the editor window.

If you have edited a velocity curve and would like to save it, use the Save As option and follow the prompts. After you name it and save it your new curve will appear in the Velocity Curve Presets list in alphabetical order.

If you want to delete one of the preset curves, first make sure it has been selected in the Velocity Curve Presets list (there should be a check mark by its name). When you are certain the curve you want to delete has been selected, click the word Delete in the Velocity Curve menu. It will be removed from the Velocity Curve Presets list.

3.4.4.2 Editing a velocity curve

Each velocity curve has five points which can be edited. Think of the editor window as an X/Y grid, with the Velocity value along the X axis and Amplitude along the Y axis.
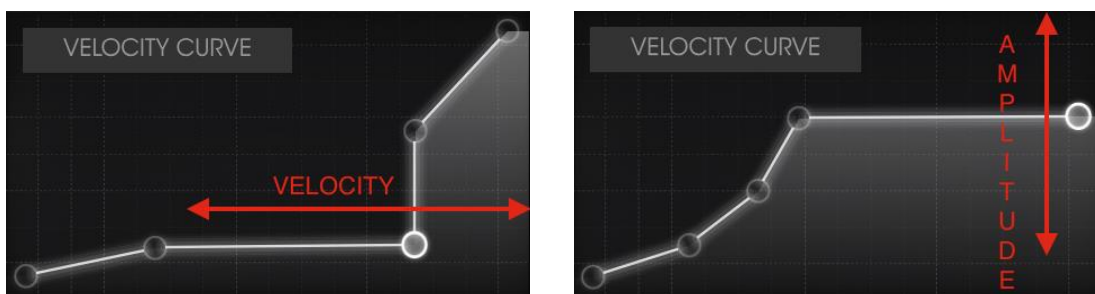
Velocity curves: Velocity (X axis) and Amplitude (Y axis)

Click and drag a velocity point to move it to a different location. Double-click on a velocity point to remove it. To add it again, click anywhere inside the X/Y grid.

Here are some important things to remember about editing velocity curves:

- There can be as many as 5 velocity points but no fewer than 2.
- The first and fifth points can only be edited vertically and cannot be removed.
- The three middle points can be placed anywhere within the X/Y grid.
- The three middle points can be removed and added again.

Using a combination of these features it is possible to create an infinite number of velocity curves. Here are three examples:

*Cross-switch low*   *Cross-fade high*   *Inverted response*

3.4.5   Noises

Each mechanism that helps produce the sound of an instrument adds its own distinctive rattle or rumble in the background. To eliminate these noises entirely would "sterilize" the sound, making it seem unnatural.

Piano V can dial in just the right level of mechanical noise, but it also lets you to go to either extreme!
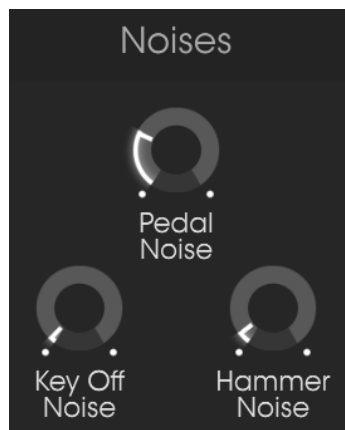
The Noise controls

3.4.5.1 Pedal Noise

When the sustain pedal is pressed it lifts all of the hammers from the strings at the same time. The slight amount of friction of the felt fibers pulling away from the strings makes them resonate softly. With the Pedal Noise control you can specify exactly how much of this effect you want each preset to have.

3.4.5.2 Key Off Noise

This control sets the amount of noise the hammers will make as they return to their starting point after a key is released.

3.4.5.3 Hammer Noise

The hammers make a distinctive "thunk" when they hit the strings, though the sound is most obvious on the highest notes. This parameter allows you to control how much of this noise will happen when a note is played.

3.4.6   Mechanics
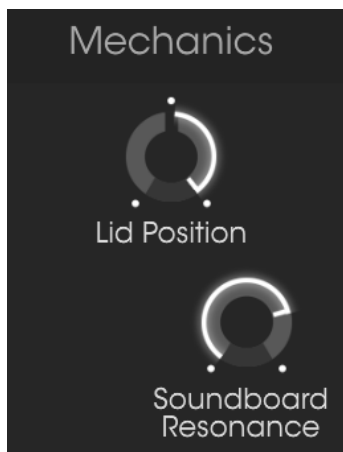
The Mechanic controls

3.4.6.1 Lid Position

A piano sounds completely different with its lid closed than it does when the lid is open. This is true for upright pianos as well. Piano V gives you three lid positions for each piano model: closed, slightly open, and open.

3.4.6.2 Soundboard Resonance

This parameter adjusts the sustain time of the piano by simulating changes in the characteristics of the soundboard. A more resonant soundboard will sustain longer, while a less resonant soundboard will not sustain as long.

3.5   The Mix window

Placed below the large piano graphic are five windows, divided into two groups: Action and Mix. Click on the "up" arrow in each group to expand and view its contents.
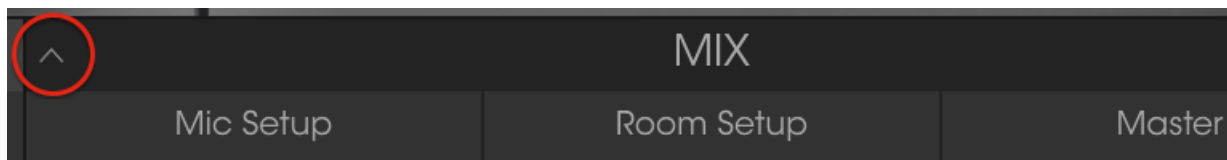
Click to expand the Mix window

3.5.1 Mic setup

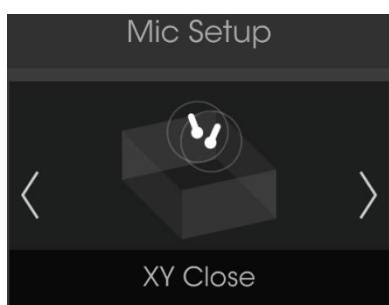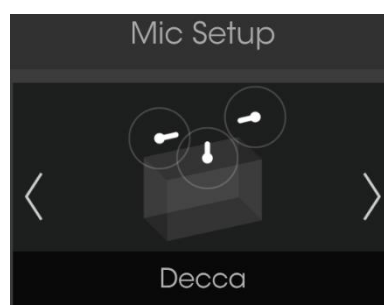The first window inside the Mic Setup tab allows you to select one of various microphone configurations by clicking the arrows to the left or right of the 3D graphics. There are four configurations for grand pianos and three for upright pianos.

Mic setup: Grand piano   *Mic setup: Upright piano*

The graphics will change to give a visual representation of the microphone configuration. Note that these graphics show only two or three microphone images, while in actuality four microphones were modeled for each configuration. The larger piano graphic shows the placement of all four mics.

Another way to select a different configuration model is to click the configuration label, which will open a menu containing all available choices for that model.
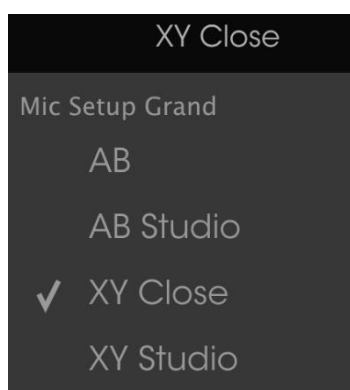
Mic config menu: Grand   *Mic config menu: Upright*
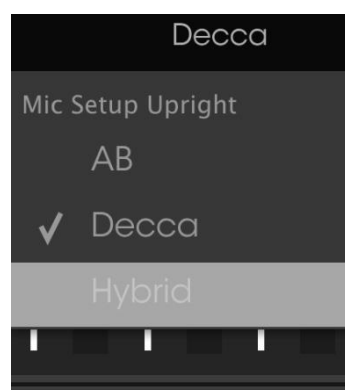
A check mark indicates the current model. Make a selection and the menu will close.

3.5.2 Mic mixer

Immediately below the mic configuration selection window is the microphone mixer window. It allows you to set the relative levels and stereo positions of each microphone. Use the larger piano graphic to give you an idea of the starting positions of each mic.

The microphone mixer

It is also possible to mute one or more microphones, which is a quick way to inspect what each microphone is contributing to the overall mix. You can also use this to disable the close mics and leave only the ambient mics active, for a more distant piano sound.
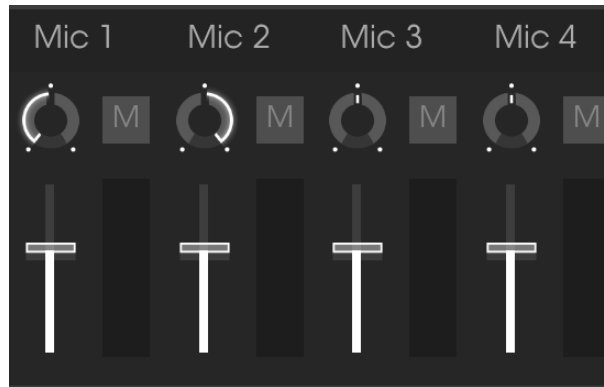
All mixer parameters are stored with the preset, and they are also MIDI-assignable.

3.5.3 Reverb selection

Piano V provides 14 different convolution reverbs, which are different from the generic reverbs often found in other software programs. A convolution reverb recreates the characteristics of a particular physical space or electronic device through an extensive computer analysis of each environment. The result is an algorithm that will react to any input signal in the same manner that the original space or device would react.

You can select the models by clicking the arrows on the left and right sides of the reverb window.

The reverb selection window

Another way to select a different reverb model is to click the reverb label, which will open a menu containing all available rooms and devices.
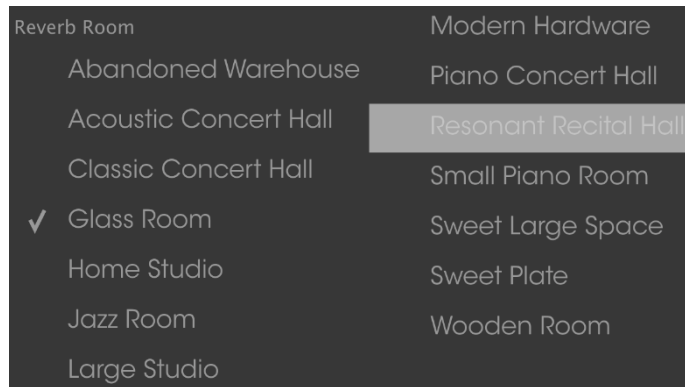
The reverb selection menu

A check mark indicates the current model. Make a selection and the menu will close.

3.5.4   Reverb parameters

The reverb parameters are available for editing immediately below the reverb selection window. The parameters are the same for each reverb model.

Each of these parameters is MIDI-assignable.

3.5.4.1 Reverb mix

This controls the amount of reverb in the sound, from none (Dry) to maximum (Wet).

3.5.4.2 Duration

This parameter determines how long the reverb effect will last.

3.5.4.3 Room Size

Use this parameter to adjust the size of the room containing the piano.

3.5.4.4 Decay

Different from the Duration parameter, the Decay parameter is a high frequency roll-off control. At its maximum setting the high frequency content of the reverb will be present in the mix until the reverb duration period ends.

3.5.5 Master EQ & Gain

The first window inside the Master tab provides two things: a graphical representation of the current EQ settings, and the Master Gain fader.
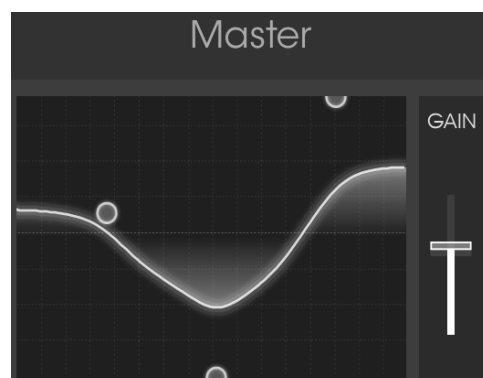
The Master control window

The three EQ points may be dragged to different positions, which adjusts the frequency and gain of the selected EQ point. The Q factor of the mid-point can be set by right-clicking on the appropriate dot and while holding right-click dragging your mouse up or down.

To adjust the master gain, click the fader and drag it up or down. This parameter is MIDI-assignable.

3.5.6   Equalizer parameters

The Equalizer controls

The gain and frequency of each EQ point may be adjusted with greater precision within this window. Also, an additional parameter is available for the mid frequency: the Mid Q (bandwidth). Each of these parameters is MIDI-assignable.

4   END USER LICENSE AGREEMENT

1. General

1.1 In consideration of payment of the Licensee fee, which is a portion of the price you paid, Arturia, as Licensor, grants to you (hereinafter termed "Licensee") a nonexclusive right for the use of software including related media, documentation (for example program descriptions, manuals) and other documents and materials manufactured by Arturia SA ("Product(s)").

All intellectual property rights in the software belong to Arturia SA (hereinafter: "Arturia").

1.2 The following editions of the Product are available: "**Demo**", "**Standard**", "**EDU"** and "**NFR**". Whilst each edition equips the User with the same software, the editions vary as regards both the scope of functions activated in the Product, and the rights of use granted under this EULA.

1.3 By installing the software on your computer you agree to these terms and conditions. If you do not approve these terms and conditions, you must not install this software.

1.4 If you do not approve these terms and conditions, please return the complete Product (including all written matter, packaging and similar material) to the dealer from whom it was originally bought within 14 (fourteen) days after the day of purchase. For purchases from the Arturia Online Store, please contact Arturia on the internet website: www.arturia.com/support/askforhelp/purchase.

1.5 Arturia reserves all rights not expressly granted in the EULA.

2. Right of use

2.1 The Product is protected by copyright. The Licensee may not lease, loan or sub-license the software. The Licensee is not authorized to modify the software.

2.2 Owning any product provided to the Licensee as **"Standard"** version grants the Licensee a non-exclusive right to use the Product in perpetuity including commercial purposes. The Licensee can activate the Product on up to five computers, as long as only one installation is used at any given time. The Licensee must register the Product to Arturia to get access to client support, and to activate his Product. (An internet connection is required to register and activate the Product, either on the computer on which the Product is installed, either on another device able to exchange files with the computer on which the Product is installed). Owning a license of the Products entitles the Licensee to get access to the future updates of this Product.

2.3 Any Products provided to you as **"NFR"** (Not For Resale) version grants the Licensee a non-exclusive right to use the Product for a limited period of time. The Product shall only be used for demonstration, testing and evaluation purposes. NFR Products must not be used for commercial purposes, and must not be resold or transferred. The Licensee can activate the Product on up to five computers, as long

as only one installation is used at any given time. The Licensee must register the Product to Arturia to get access to client support, and to activate his Product. (An internet connection is required to register and activate the Product, either on the computer on which the Product is installed, either on another device able to exchange files with the computer on which the Product is installed). NFR Products are exempt from update, upgrade or crossgrade offers, and cannot be purchased with or exchanged for vouchers or coupons. Furthermore, as an owner of a NFR Product, you are not entitled to any vouchers that ship with the standard version of the Product.

2.4 Any Products labelled or otherwise provided to you as an "**Educational**" version grants the Licensee a non-exclusive right to use the Product in perpetuity. The Product shall only be used by students or those working in educational institutions. This definition includes students, faculty, staff and administration attending and / or working at an educational institutional facility: private / public schools, colleges, universities and similar. These Products must not be used for commercial purposes, and must not be resold or transferred. The Licensee can activate the Product on up to five computers, as long as only one installation is used at any given time. The Licensee must register the Product to Arturia to get access to client support, and to activate his Product. (An internet connection is required to register and activate the Product, either on the computer on which the Product is installed, either on another device able to exchange files with the computer on which the Product is installed). These Products are exempt from upgrade or crossgrade offers, and cannot be purchased with or exchanged for vouchers or coupons. Furthermore, as an owner of an educational Product, you are not entitled to any vouchers that ship with the standard version of the Product.

2.5 Any Products labelled or otherwise provided to you as a "**Demo**" version grants the Licensee a right to use the Product only for demonstration and evaluation purposes. These Products must not be used for commercial purposes, and must not be resold or transferred. These Products are exempt from upgrade or crossgrade offers, and cannot be exchanged for vouchers or coupons.

3. No Unbundling

Bundles (product bundles are an association of software and hardware or software-only products) can only be resold / transferred as a whole. The individual components of a bundle must not be resold / transferred separately.

4. Resell

4.1 Renting or lending the licensed Software to a third party is expressly forbidden. Apart from that and if not provided otherwise within this EULA.

4.2 Except if otherwise stated within this EULA, Licensee may resell the software to a third party or transfer the software permanently free of charge, provided the third party agrees in writing with this EULA and Licensee ceases all use of the software, completely removes all installed copies of the software from his computers and – if the software was not purchased via download – deletes or transfers the original

media delivered with the software to the third party. In addition, Licensee is required to de-register the purchased software with Arturia (more information available on www.arturia.com).

5. In case a sound library is part of the purchased Product the following shall apply in addition to the EULA

The provided samples, instruments and presets can be used for commercial or non-commercial music and audio Productions without the prior permission from Arturia under the terms of this Agreement. The usage of this Product (in particular samples, instruments and presets) for the creation of a sound library or as a sound library for any kind of synthesizer, virtual instrument, sample library, sample-based Product or other musical instrument is strictly prohibited. Individual samples, sound sets or audio loops may not be distributed (commercially or otherwise) standalone. Furthermore, these samples, sound sets or audio may not be repackaged in whole or in part as audio samples, sound libraries or sound effects.

6. Data Protection

Arturia attaches great importance to compliance with legislation on data protection. The User data collected are used exclusively for performing its contractual obligations. No data is passed on to third parties. Further information can be obtained from our Privacy Policy at

www.arturia.com/privacy.

7. Limited Warranty

Arturia warrants that the physical media on which the software is provided is free from defects in materials and workmanship under normal use for a period of thirty (30) days from the date of purchase. The Licensee's invoice shall be evidence of the date of purchase. Any implied warranties on the software are limited to thirty (30) days from the date of purchase. Some states do not allow limitations on duration of an implied warranty, so the above limitation may not apply to the Licensee in this case. All programs and accompanying materials are provided "as is".

8. No Liability for Consequential Damages

Neither Arturia nor anyone else involved in the creation, production, or delivery of this Product shall be liable for any direct, indirect, consequential, or incidental damages arising out of the use of, or inability to use this Product (including without limitation, damages for loss of business profits, business interruption, loss of business information and the like) even if Arturia was previously advised of the possibility of such damages. Some states do not allow limitations on the length of an implied warranty or the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusions may not apply to the Licensee in this case. This

warranty gives the Licensee specific legal rights, and the Licensee may also have other rights which vary from state to state.

Sample rate converter designed by Aleksey Vaneev of Voxengo