SWAM Solo Brass
User Manual

v3.5.1

Audio Modeling

Table Of Contents

Before you start

Although these instruments are intuitive and easy to play "out-of-the-box", getting excellent results requires a certain amount of practice and experience. Please read this user manual carefully. It contains very important information that will help you achieve the best results in as short a time as possible. In addition, you can listen to the demos on the Audio Modeling website at audiomodeling.com/media, and on Audio Modeling YouTube channel at youtube.com/c/AudioModeling .

The latest version of all SWAM manuals can be found at audiomodeling.com/manuals.
Release Notes are available at audiomodeling.com/support/release-notes.

All SWAM instruments are designed to be PLAYED in real time by shaping the sound like a real instrumentalist would.

The Desktop version will function on any modern computer (see Specifications), using any host application which supports VST, VST3, Audio Units or AAX plug-in formats, or running as a standalone application. An example host software could be a sequencer or a digital audio workstation (DAW) such as Camelot Pro, Ableton Live, Cubase, Logic, Pro Tools, LUNA, etc.
The iOS version is currently available for iPad only (see Specifications to check what OS version is supported). On this mobile platform, SWAM products come as Standalone, AUv3 plug-ins and Inter-App Audio (IAA) formats. Example host and DAW softwares are Camelot Pro, GarageBand, Cubasis and AUM.
These instruments use Audio Modeling's proprietary SWAM (Synchronous Wave Acoustic Modeling) technology conceived by Stefano Lucato. Combined with Physical Modeling, they provide exceptional playability and realism. The sound is not produced by playing back samples, using pre-recorded articulations; these are complex virtual instruments, capable of shaping almost any kind of articulation and phrasing in real time. They can be played using any MIDI device such as a keyboard, breath or wind controller.
Indeed, it is essential that the instruments are controlled using a suitably capable set of MIDI controllers, as described in this manual.

NOTE: As with a real musical instrument, SWAM instruments allow continuous movement across the full range of dynamics — from *pp* to *ff* — without producing any phasing artifacts.
To accomplish this, it's necessary to use a suitable continuous physical MIDI controller such as an expression or volume pedal (usually CC11 or CC7 MIDI messages), a breath or wind controller (usually CC2 MIDI messages) or one of the many other expressive controllers on the market today.

WITHOUT SUCH A CONTROLLER, THE INSTRUMENT WILL NOT WORK WHEN PLAYED IN REALTIME. Instead, it will display the warning "Expression controller not received. Please move your expression controller."
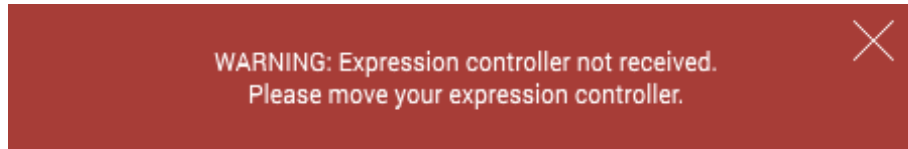
Other physical MIDI controllers, like sliders, knobs or a modulation wheel, can be used for this purpose, although they often do not provide the level of control required for optimal results. Please refer to other sections of this manual for further details.
When used for studio production, it's necessary to provide either a MIDI Expression curve or Automation.

Note: the MIDI note naming convention we use is based on Middle C = C3, corresponding to MIDI note number 60. It's possible to switch to Middle C = C4 from the Options page.

Licensing

macOS and Windows

The License Key we provide can be activated on up to four computers at the same time. Refer to the Installation paragraph for instructions on how to authorize SWAM products.

To move an authorization to a different computer, please go to the Customer Portal at my.audiomodeling.com and delete it from the activations list of the corresponding License Key.

The full terms and conditions can be found in the End User License Agreement (EULA) provided with the product. Please refer to the "Installation Path" paragraph of this user manual to locate the EULA on your system.

iPadOS

Licensing on iPadOS is managed by Apple. Please refer to AppStore and Apple terms and conditions.

Specifications

macOS 10.10 (Yosemite) – 12.4 (Monterey) *
- Standalone, Audio Units, VST, VST3, AAX 64bit
- NKS (Native Instruments Komplete Kontrol)

Windows 10, Windows 11
- Standalone, VST, VST3, AAX 64bit
- NKS (Native Instruments Komplete Kontrol)

iPadOS 11 – 15
- Standalone, AUv3, IAA

Apple Silicon architecture supported natively, except for AAX plugins

Required space after installation: 16 MB per single instrument, 80 MB for each whole family, 240 MB for the complete Solo Brass bundle.
RAM occupancy: about 15 MB for each instrument instance.

Installation

macOS and Windows

Product Registration and Installation
1) login to our Customer Portal (https://my.audiomodeling.com); create a new account if you have never signed up
2) select "Register a new product"
3) type the License Key or Redeem code provided, select "Next"
4) the portal will send an email to you. Click the confirmation link on the email
5) download, install and launch the "Audio Modeling Software Center", available at https://audiomodeling.com/support/install-and-update, to download and authorize the products on your computer.

If you installed a previous version
The updates are managed through the Audio Modeling Software Center.

NOTE: the products can be activated "online" only, i.e. your computer must be connected to the Internet at the time of authorization. If you need to work offline, just connect to the Internet for the time required for the authorization, then disconnect once the authorization is complete.
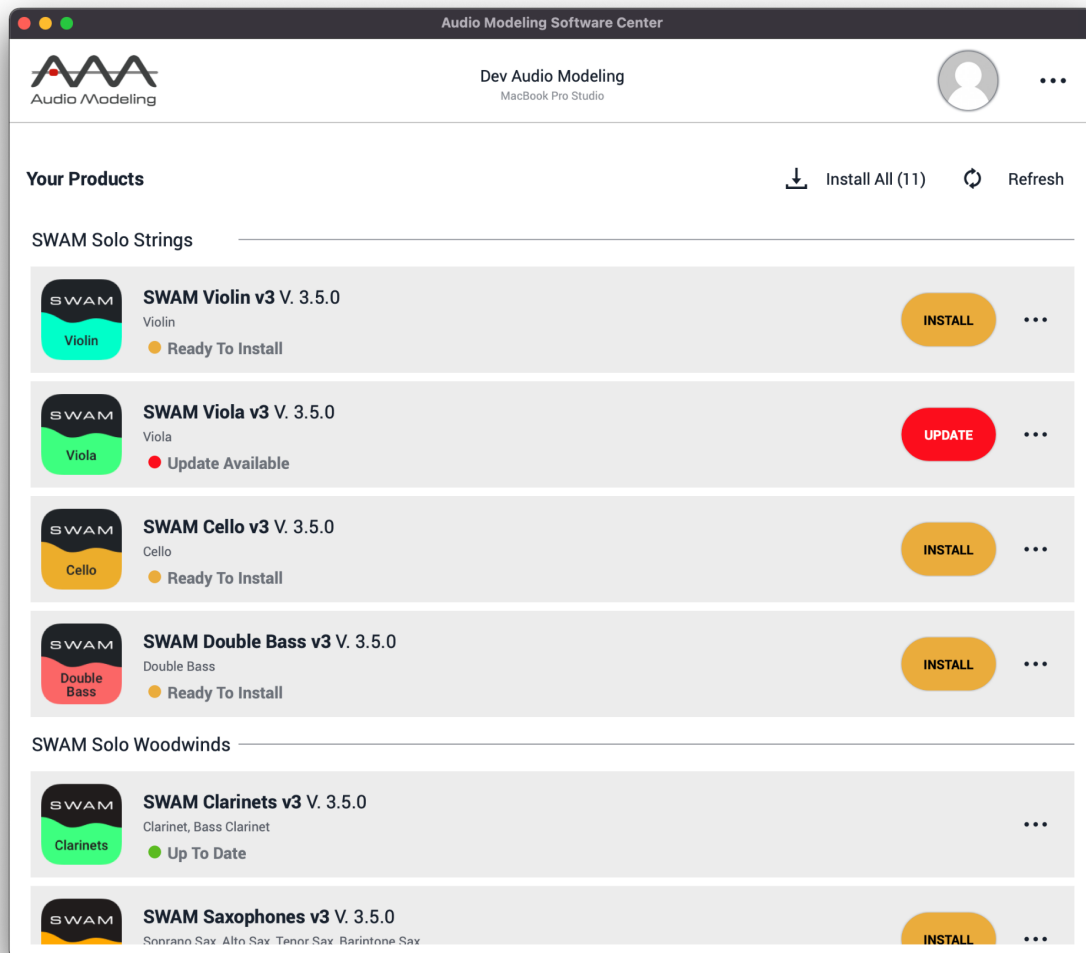
Installation paths

macOS

- **Standalone app**, End User License Agreement, Uninstaller are located in the folder chosen in the Audio Modeling Software Center, by default: /Applications/Audio Modeling/(Product name)
- **Audio Units plug-ins** are located under: /Library/Audio/Plug-Ins/Components
- **VST3 plug-ins** are located under: /Library/Audio/Plug-Ins/VST3
- **VST plug-ins** are located under: /Library/Audio/Plug-Ins/VST
- **AAX plug-ins** are located under: /Library/Application Support/Avid/Audio/Plug-Ins
- **Default presets** and auxiliary resources are stored under: ~/Library/Audio Modeling/SWAMv3

Windows

- **Standalone app**, End User License Agreement, Uninstaller are located in the folder chosen in the Audio Modeling Software Center, by default: C:\Program Files\Audio Modeling\(Product name)
- **VST3 plug-ins**: the installation path is defined in the Audio Modeling Software Center, default: C:\Program Files\Common Files\VST3
- **VST plug-ins**: the installation path is defined in the Audio Modeling Software Center, default: C:\Program Files\VSTPlugins
- **AAX plug-ins** are located under: C:\Program Files\Common Files\Avid\Audio\Plug-Ins
- **Default presets** and auxiliary resources are stored under: %AppData%\Audio Modeling\SWAMv3

iPadOS

Installation and updates are managed through the AppStore.

Hardware Requirements

CPU load

The realism and expressiveness of the SWAM instrument set can be CPU intensive. It therefore requires a modern computer with at least a 1.6 GHz Core 2 Duo CPU for a single instance of any SWAM instrument. Additional instances will require both a more powerful processor and a low-latency audio driver/device (e.g. ASIO), especially to play the instrument in real time.
Less powerful systems may also prove satisfactory, but may require larger buffer sizes, which incur higher latencies.

Note: This may not necessarily result in an actual problem for music production. Using the freeze feature or bouncing the single MIDI tracks to audio provides a useful remedy.

Audio interface (sound card)

A good quality audio interface with suitable low-latency drivers is required. On Windows, ASIO drivers are recommended. Suggested settings for buffer size at 44.1 or 48 kHz are 128, 256, or 512 samples (larger buffers provide higher latency, but less CPU load). Onboard audio devices are often suitable on modern computers and iPad.

MIDI devices

SWAM instruments (like any other virtual instrument) can be successfully used without the need for any additional hardware by drawing the controller curves and programming the notes directly in the host sequencer. However, a much more "human" and interactive configuration is recommended, especially when playing in real time, using external MIDI devices: a MIDI keyboard with at least 5 octaves, mod wheel & pitch bend, connected to the computer via USB or an external MIDI interface equipped with a set of physical continuous MIDI controllers (usually knobs or sliders) to control effects like bow pressure, bow position, tremolo, harmonics, etc.
Although the dynamics can be controlled by another physical controller (knob, slider, ribbon, XY-pad), a pedal is highly recommended. As an alternative, a breath controller, such as a Yamaha BC3, TEControl BC and BBC2, Photon by IMOXPLUS, or Hornberg Research HB1, can be used. Woodwind or Brass players may prefer to use a wind controller such as a Yamaha WX or YDS-150, Akai EWI (USB, 4000S or 5000), Aodyo Sylphyo, EMEO, Roland Aerophone, Synthophone, EVI (Electronic Valve Instrument), NuRAD, WARBL, Travel Sax - all of them provide excellent results. MIDI Polyphonic Expression devices like the Seaboard and Lightpad by ROLI, LinnStrument by Roger Linn Design, or the Instrument 1 by Artiphon are fully supported.

Alternative controllers include Neova Ring by Enhancia, Toucé by Expressive E, Sensel Morph, Joué, and Leap Motion by Ultraleap.

Note: On EWI 4000s or similar please do not set the option to mix the pitch-bend or vibrato to breath sensor ("Pb" or "bo" options on EWI 4000s). This can produce unnatural vibrato behavior. SWAM engine applies the right behavioral models to the relationships between pitch and dynamics based on the physics of the instrument. These relationships are different for each musical instrument.

Software Requirements

macOS and Windows

Standalone
We provide a Standalone version of each instrument, please check the Installation Path paragraph of this User Manual to locate the applications.

Plugins
A DAW (Digital Audio Workstation) or other host capable of running VST2.4, VST3, Audio Units or AAX plugins is needed to run the SWAM instruments. If you do not have a host application capable of running VST or AU plugins, you can install a free host application such as Camelot Free for desktop (camelotpro.com).
A list of compatible hosts and DAWs can be found on our Knowledge base:
audiomodeling.com/support.

iPadOS

Standalone
We provide a Standalone App of each SWAM Solo Brass instrument.

Plugins
A DAW (Digital Audio Workstation) or other host capable of running SWAM Solo Brass instruments as AUv3 or IAA plugins is needed.
If you do not have a host application capable of running AUv3 plugins, you can get our Camelot Pro live performance host on the AppStore.

Using an appropriate range of Expression

This is an extremely important aspect for getting the optimal expressiveness and realism with virtual instruments.

All real physical instruments require a much greater degree of effort to achieve the highest possible dynamics for that instrument. This is not the case for most physical MIDI controllers; it is indeed very easy to push an expression pedal, or a slider, to the maximum and leave it there forever. Oddly enough, even breath and wind controllers tend to jump very easily to the highest dynamics (unless carefully set), so that the most expressive range (mp to mf) is seldom exploited. This results all too often in the virtual instrument being played in an excessive range of dynamics, leading unavoidably to a poor, unrealistic performance.

Please keep in mind that the key to expressiveness and realism is a proper use of dynamics. Always monitor the input expression value on the main display and adjust the dynamics accordingly. A useful trick is to set the overall monitoring volume fairly high. This automatically prevents any inclination toward over using the higher levels of dynamics.

The Expression slider on the main GUI becomes "hot", i.e. with a red halo surrounding it, if the level of expression stays constantly above 75%. When you see such a red alert warning, please consider avoiding such extensive use of higher dynamics.
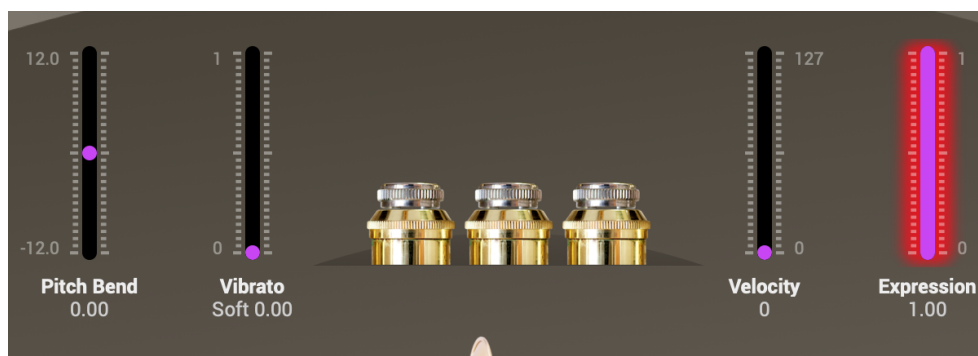
It's also important to optimize the general volume of your loudspeakers/headphones at an average value of Expression. Too low an output level would easily induce the user to use high Expression levels, usually yielding excessively "biting" sounds.

Introduction

SWAM Solo Brass is a collection of solo brass instruments conceived and developed by Stefano Lucato and the Audio Modeling team. These instruments are based on Physical Modeling technology and do not make use of any samples.

SWAM Solo Brass collection includes **fifteen brass instruments**, grouped in three product families:
- <u>SWAM Trumpets</u>:
  - Flugelhorn (E♭), Flugelhorn, Trumpet, Trumpet (C), Piccolo Trumpet.
- <u>SWAM Trombones</u>:
  - Double Bass Trombone, Bass Trombone, Tenor Bass Trombone, Tenor Trombone, Alto Trombone.
- <u>SWAM Horns and Tubas:</u>
  - Bass Tuba, Tuba (E♭), Euphonium, French Horn (F), French Horn (B♭).

SWAM Solo Brass instruments come as a Standalone application, VST, VST3, Audio Units and AAX plugins for Desktop, and Standalone App, AUv3 and IAA plugins for iPadOS.

Any SWAM Solo Brass product can be set to emulate both Valves and Slide (i.e. Coulisse) instruments. Have you ever wanted to play a French Horn with a slide? With Physical Modeling that's possible! Of course, the default settings at startup set the instrument to its traditional configuration.

In addition to standard SWAM controls such as staccato / legato (with velocity- or CC-controlled portamento time), dynamic expression and vibrato depth and frequency, there are several additional parameters to control the instrument behavior which are specific to the brass instruments.
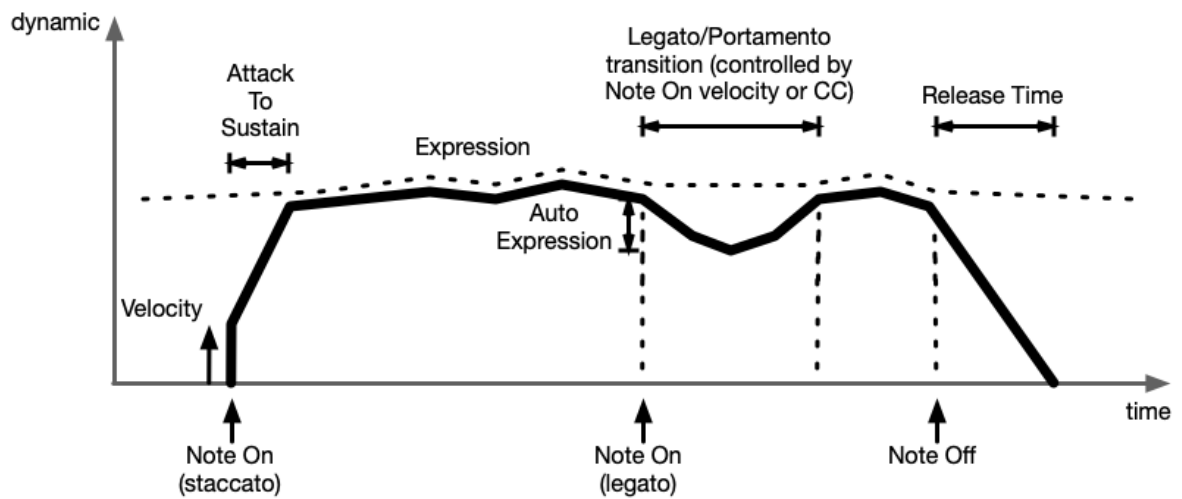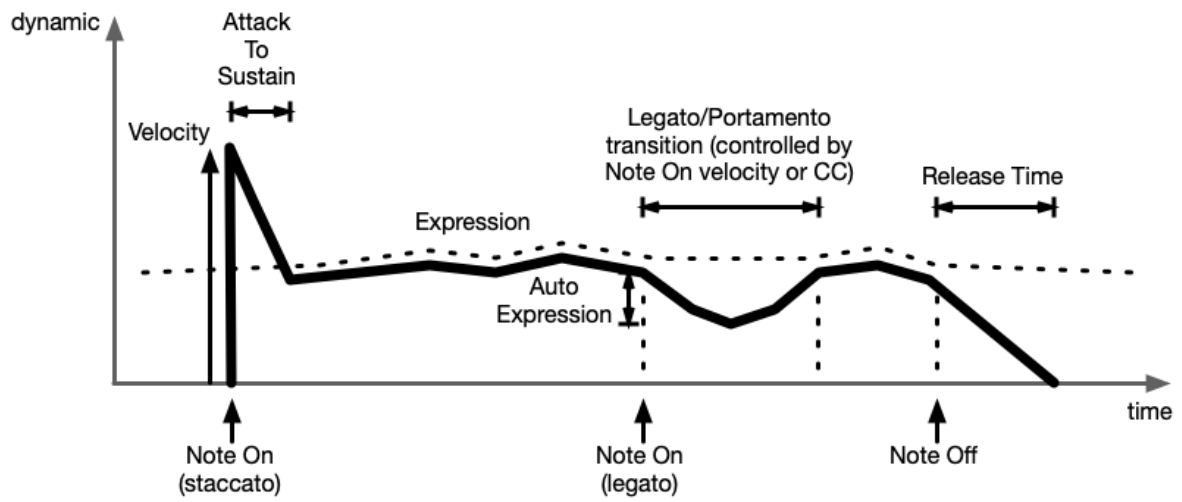
Each instrument has three "Pipe Gestures" for each "Pipe Model":

Valves	1. Normal Valve (transitions emphasize overtones).
	2. Half Valve Transitions.
	3. Half Valve.
Slide (i.e. Coulisse)	1. Fixed Slide (transitions emphasize overtones).
	2. Slide Follow Real (bend).
	3. Slide Follow +/-7 (extended).

Pitch-bend

The pitch-bend controller modifies the emulated lip-tension, which adjusts the pitch of the generated tone, whilst notes control either the Valve combinations or Slide position, depending on the Pipe Model in use.

For example, if "Pipe Gesture" is set to "Fixed Slide", a large variation of pitch-bend will produce a large pitch sweep within a fixed pipe (the typical "elephant" effect).

Note that the emulated brass player can achieve much wider pitch bend ranges than any physical player can!

Valve/Slide Speed

It is possible to control the speed of transition for Valves and Slide through the parameter "Valve/Slide Speed". This time is measured in milliseconds.

One can also set the amount of Half Valve "contamination" during valve transitions using the parameter "Half Valve Amount".

Finally, it is possible to control the Valve combinations and Slide position manually (of course, this requires much more knowledge of how the instruments behave) through the parameter "Pipe Selection". By default this is set to "auto" and the correct Valve combination or Slide position is obtained from the current MIDI note).

Legato priority

On brass instruments it is possible to play the same note with different Valve combinations or Slide positions. If "Legato priority" is ON, the Physical Model will maintain the same combination or position as long as the target note is compatible with the currently selected position.

Pedal notes

On brass instruments, the first nominal note is one octave higher than the lowest possible note allowed by the full pipe length. Since valve combinations or slide positions are just 7, it's not possible to play 12 semitones on the very lowest range. To do so, an additional valve is added to the model when the "Pedal Notes" switch is ON in order to allow the use of all notes in the lowest octave.

Timbre adjustments

It is possible to adjust timbre through a variety of parameters on the "Timbre" page: "Bell Resonance", "Breath Noise", "Dirtiness" and "Timbral Correction", where it's even possible to select and adjust the gain of up to harmonics of the produced sound.

"Dynamic Sens." adjusts the amount that the Expression level changes the spectral character of the sound in the higher harmonics. The higher this parameter is set, the more "Brassy" the sound will be.

Mutes

Mutes and cups are represented within the instruments by physical models, rather than impulse response presets which means that you can tweak, build and reshape them to find the desired character!
On the Timbre page you can control the "Mute/Cup Size" and "Mute/Cup Tone".

Vibrato

With these totally physically-modeled instruments it is possible to play three different vibrato styles by simply combining the Vibrato Amount (which is by default assigned to the ModWheel) and Expression:

- Classical Vibrato: use a low Vibrato Amount for the whole Expression range.
- Jazzy Vibrato: use a high Vibrato Amount during Expression diminuendo at the end of a note, just before release, for the low to mid note range.
- Shake Vibrato: use a high Vibrato Amount during high Expression for mid to high note range.

Note: you can select the vibrato maximum range acting on the "Vibrato Style" parameter available in the "Advanced" section.

Main window

The main window shows the most important parameters, instrument monitors and animations.

Instrument parameters

All parameters have been grouped in six categories:

- Expressivity: parameters that allow the physical player's expressivity to affect the instrument.
- Play Modes: parameters that act on the details of how the emulated player plays the instrument.
- Timbre: parameters that affect the instrument's timbre.
- Pitch: Master Tuning, Pitch, Transposition and microtonal settings.
- Advanced: additional parameters, especially for expert users.
- Effects: audio signal processing applied at the final stage.

The most common and important parameters are presented on the main GUI.

Main controls

- <u>Mute</u> (left/right arrows)
  - No Mute: there is no mute in the instrument's bell.
  - Straight Mute: adds a straight mute into the instrument's bell.
  - HarmWah Mute: adds a harm-wah mute in front of the instrument's bell.
  - Cup Mute: adds a cup mute in front of the instrument's bell.
  - Hand Mute: simulates a hand in front (or inside) the instrument's bell.

    The HarmWah, CupWah and Hand Mutes can be controlled in real-time through the "Mute Control" parameter on the Expressivity page.
- <u>Mute Control</u>: controls the typical 'wah' effect when the Mute is set to HarmWah, CupWah or Hand Mute. This parameter can be controlled in real time from a MIDI device by mapping it to MIDI CC, After Touch or NRPN messages.
  Note: Mute Control has no effect when Mute is set to "No Mute" and "Straight Mute".

- <u>Pipe Model</u> *(locked on iPad)*
  - Valves: the instrument model is controlled by Valves.
  - Slide: the instrument model is controlled by a Slide (aka Coulisse).
- <u>Pipe Gesture</u>
  The Pipe Gesture is selected by the Pipe Model switch, available on the main page or in the Play Modes page.
  - Valve:
    - Norm Valve: standard valve playing mode.
    - Half Valve Trans. (Half Valve Transitions): standard valve playing mode, with half-valve transitions. This emulates a slow-moving transition between the valve states.
    - Half Valve: half valve playing mode. This emulates the player not completely opening or closing the valves.
  - Slide:
    - Fixed Slide: fixed slide control during pitch-bend changes. Pitch is altered only by the player's lips, using a fixed slide position.
    - SlideFlw Real (Slide-following, realistic): realistic control of the slide during pitch-bend. The pitch of the player's lips is tuned to a multiple of the pipe length, until it reaches the maximum or minimum slide position. Additional bending will be made by lips only.
    - SlideFlw +/-7 (Slide following, enhanced) enables the player to move the slide up to +/- 7 semitones during pitch-bend, without taking into account the real, physical, limitations of minimum and maximum slide position that are present in a physical instrument. Beyond this range, additional bending will be made by lips only.
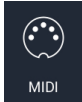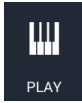
- Pipe Selection *(locked on iPad)*
  - Manual: the valves or slide must be controlled by correct use of MIDI CC controls. The MIDI CCs used can be assigned to "Valve 1", "Valve 2", "Valve 3", "Slide Position" parameters in the Controller Mapping page.
  - Auto: valves and slide position are selected automatically at each note-on
- Unison Anti-Phasing (for unison ensembles): when playing two or more of the same instrument simultaneously this value must be different for each instrument in order to avoid phasing effects.
  Note: this does not affect the timbre of the instrument, it affects the phase response and, slightly, the tuning variation over time. Set this parameter when you build an ensemble with multiple instances of the same instrument only.
- Valves / Slide: shows a graphical representation of the instrument Valves / Slide position.
- RESET:
  - Initialize: reset sound engine parameters and MIDI mapping
  - Advanced:
    - Reload "current preset": reload the current selected preset, losing all changes made from the latest saved settings
    - Sound Engine: reset or load sound engine parameters
    - MIDI Mapping: reset or load MIDI mapping settings
    - Micro Tuning: reset or load micro tuning settings
- PANIC: use this in case of stuck notes

IMPORTANT NOTE: The fingering for the valves and the slide position displayed on the GUI is our CUSTOM fingering/position, it does not necessarily coincide with the real one, as our current math model is based on ideal straight pipes, rather than cylindrical pipes.

Audio section

- Effects : open the onboard FX section applied to the final stage of the signal flow.
- Pan Pot: pans the output signal left and right.
- Volume: main output volume.

Header section

- SWAM logo : selection of the SWAM logo open the Settings section

- Main menu icon : opens the main menu page that provides access to:
  - Save & Load
  - Reset
  - Controller Mapping
  - Parameter Lock
  - Import
  - Export
  - Settings

- MIDI Mapping icon : open MIDI mapping management section.

- Playing Surface icon (only for iPadOS version) : open the playing surface for playing the instrument on the iPad glass.

List of locked parameters on iPadOS version

Currently, the following parameters are "locked" on the iPad version:

- Pipe Model
- Half Valve Amount
- Valve/Slide Speed
- Pipe Selection
- Valve 1
- Valve 2
- Valve 3
- Valve 4
- Slide Position
- Mute Size

- Mute Tone
- Panpot Type
- Dynamic Pitch
- Auto Expression
- Vibr. Rand. Rate
- Vibrato Fade In
- Dynamic Resonance
- Random Lips
- Harmonic B Gain

Unlocking through In-App Purchase will be provided in future.

Expressivity
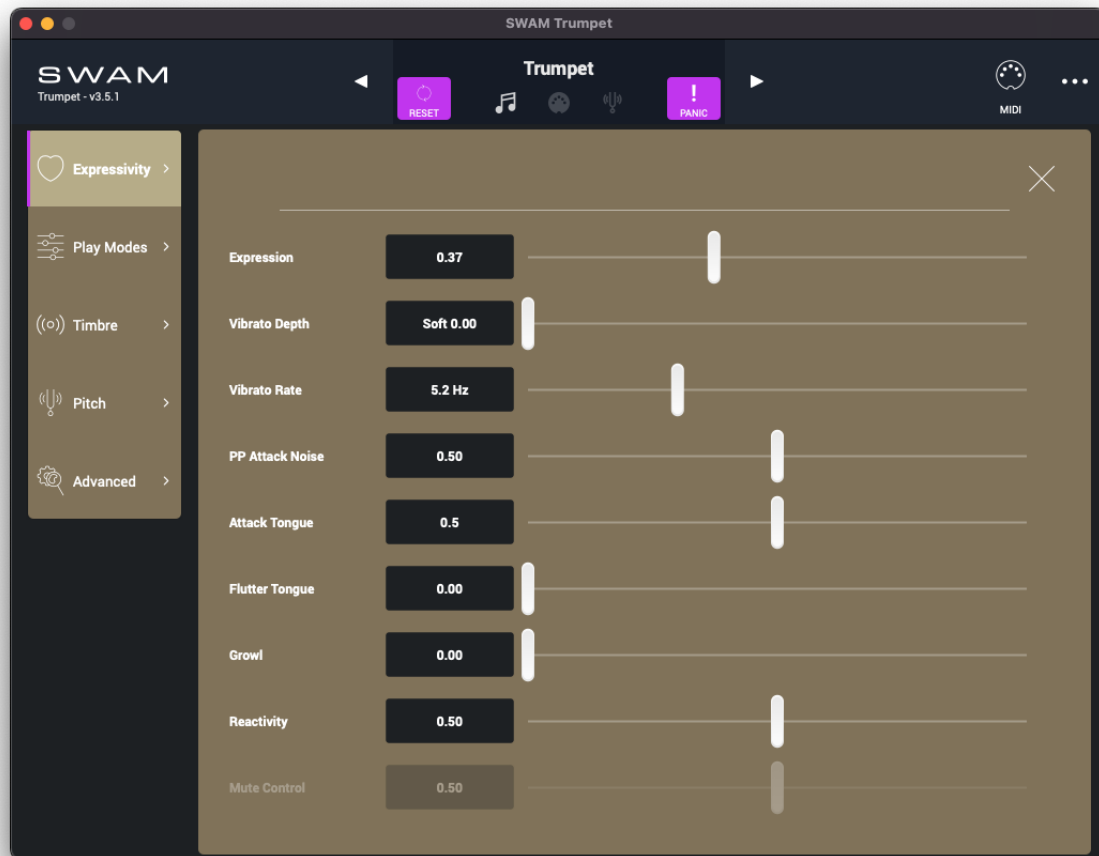
- **Expression**: main expressive control. This model set/show how hard the player is blowing into the physical model, i.e the breath intensity.
- **Vibrato Depth**: controls the amount of vibrato or shake. Vibrato is modelled as rapid changes to the shape of the lips of the player (the embouchure) or their contact with the mouthpiece, and of the breath intensity:
  - Soft vibrato (< 0.5).
  - Shake (>= 0.5).
- **Vibrato Rate**: controls the average frequency of the Vibrato applied to the model.
- **PP Attack Noise**: controls the amount of attack noise audible on very low dynamic.
- **Attack Tongue**: the amount of percussive tonguing on mid- to high-velocity note-on events. It is ignored when Attack Control is set to Expression (see Advanced section).
- **Flutter Tongue**: controls the intensity of flutter-tonguing - a technique where the player moves their tongue rapidly, producing a growling or 'rolling-rrrrr' effect.
- **Growl**: controls the growl intensity, which models the player producing growling noises within their windpipe.

- Reactivity: amount of harmonic transitions enhancement. For example, natural pipe subharmonic fluttering during valve transitions, attacks or fast dynamic changes.
  This effect can be heard mostly on low-range instruments (Bass Trombone, Double Bass Trombone, French Horns, Tubas, ...). A resonant pipe interacts with the player lips: the more the pipe is able to "reflect back" the sound wave, the more the lips interact with the sound wave and create turbulence.
- Mute Control: controls the mute applied to the instrument, as in the Main GUI (i.e. mute distance).

Play Modes
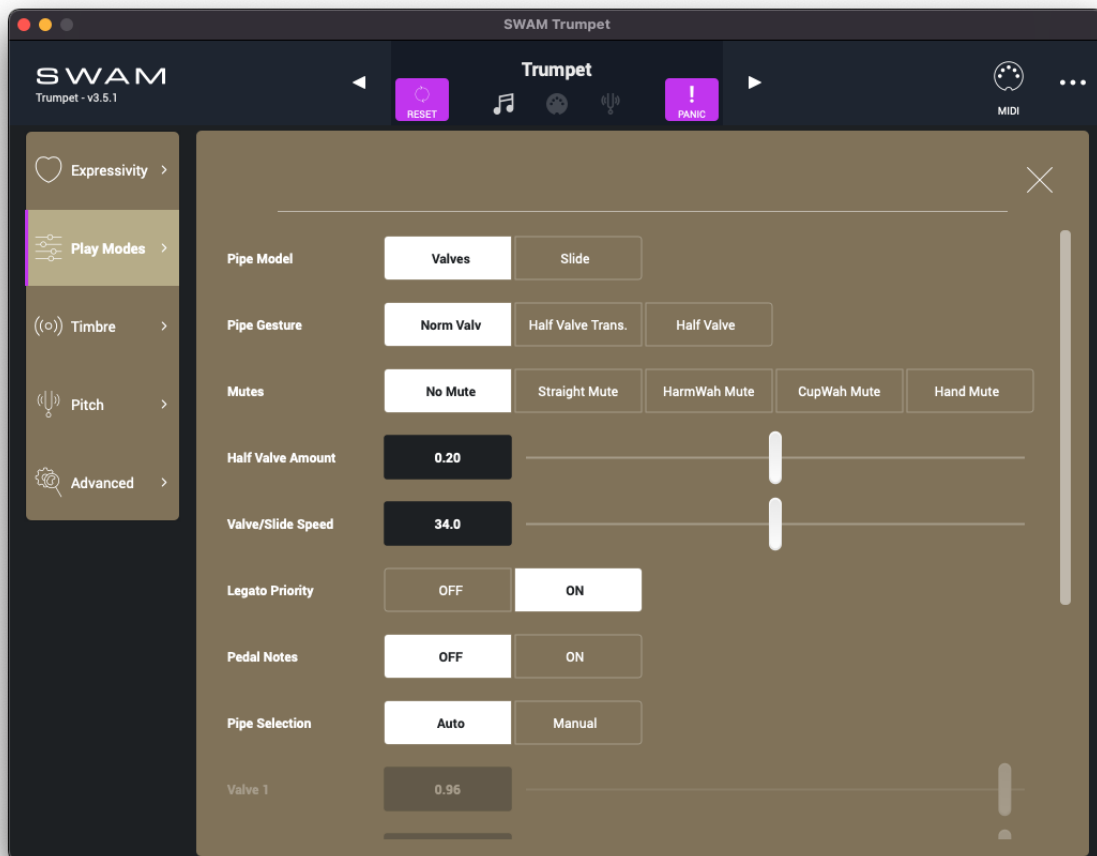
- Pipe Model: same as in the Main GUI.
- Pipe Gesture: same as in the Main GUI.
- Mutes: same as in the Main GUI.
- Half Valve Amount *(locked on iPad)*: the amount (from 0 to 1) of pipe "contamination" when Pipe Gesture is set to "Half Valve" or "Half Valve Trans."
- Valve/Slide Speed *(locked on iPad)*: speed at which the Valve or Slide changes position.

- Legato Priority
  - OFF - no priority - always changes the valve combination or slide position to best suit the note being played.
  - ON - when possible, maintains the same pipe length (valve combination or slide position) during legato passages.
- Pedal Notes
  - OFF = No pedal notes available
  - ON = Makes it possible to play pedal notes one octave below the lowest nominal note of the instrument. This is possible by modelling an additional Valve.
- Pipe Selection: same as in the Main GUI.
- Valve 1 *(locked on iPad)*: controls the position of the first valve (when Pipe Selection = Manual).
- Valve 2 *(locked on iPad)*: controls the position of the second valve (when Pipe Selection = Manual).
- Valve 3 *(locked on iPad)*: controls the position of the third valve (when Pipe Selection = Manual).
- Slide Position *(locked on iPad)*: control the position of the slide (when Pipe Selection = Manual).
- Fall Down: triggers a fall down articulation
- Doit: triggers a "doit" articulation

IMPORTANT NOTE: The fingering for the valves and the slide position is our CUSTOM fingering/position, it does not necessarily coincide with the real one, as our current math model is based on straight pipes, rather than cylindrical pipes.

Timbre
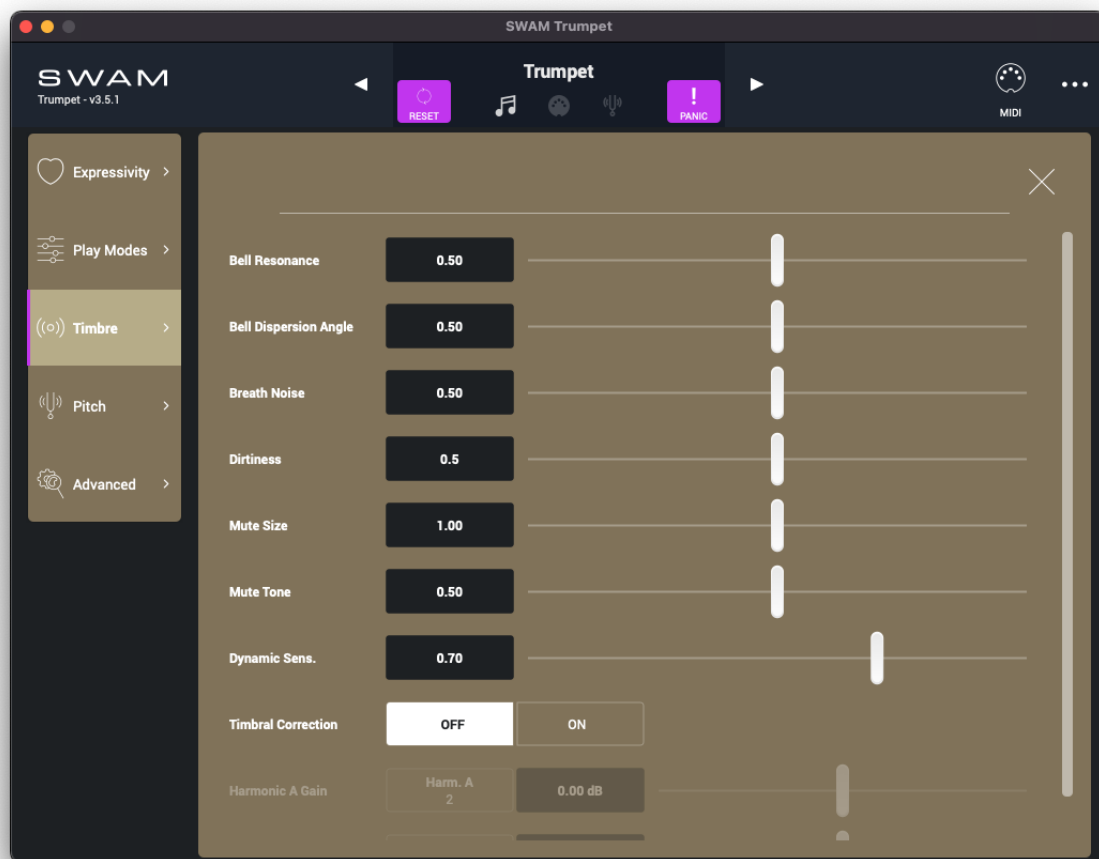
- <u>Bell Resonance</u>: the resonance gain of the bell.
- <u>Bell Dispersion Angle</u>: it's related to the direction of the bell. When the value is minimum, the instrument has a more direct sound and less Early Reflections. When the value is maximum, the instrument is not directed towards the listener and the sound is more affected by Early Reflections.
- <u>Breath Noise</u>: the amount of breath noise (this becomes more audible when notes are played with low Expression values.)
- <u>Dirtiness</u>: the amount of sound jitter produced by a random component of the modeled lips' vibration (this is more audible when notes are played with high Expression values).
- <u>Mute Size</u> *(locked on iPad)*: the size of the mute/cup, if selected (see "Mutes").
- <u>Mute Tone</u> *(locked on iPad)*: the tone of the mute/cup, if selected (see "Mutes").
- <u>Dynamic Sens.</u>: Dynamic Sensitivity - this controls the scaling of the overall dynamic of the sound produced, which is affected by the Expression, the strength of the attacks, and other elements. Note that this is different to simply rescaling the

Expression using a MIDI remapping, as Expression does not affect the attacks (unless "Attack Control" is set to "Expression") and some transitions.

- <u>Timbral Correction</u>: enables or disables the Harmonics Timbral Shaping (see next).
  - <u>Harm. Select A</u>: the harmonic number to be equalized by Harmonic Gain A
 - <u>Harmonic Gain A</u>: the gain amount for harmonic selected by Harm. Select A
  - <u>Harm. Select B</u>: the harmonic number to be equalized by Harmonic Gain B
  - <u>Harmonic Gain B</u> *(locked on iPad)*: the gain amount for harmonic selected by Harm. Select B

Pitch

Master Tuning
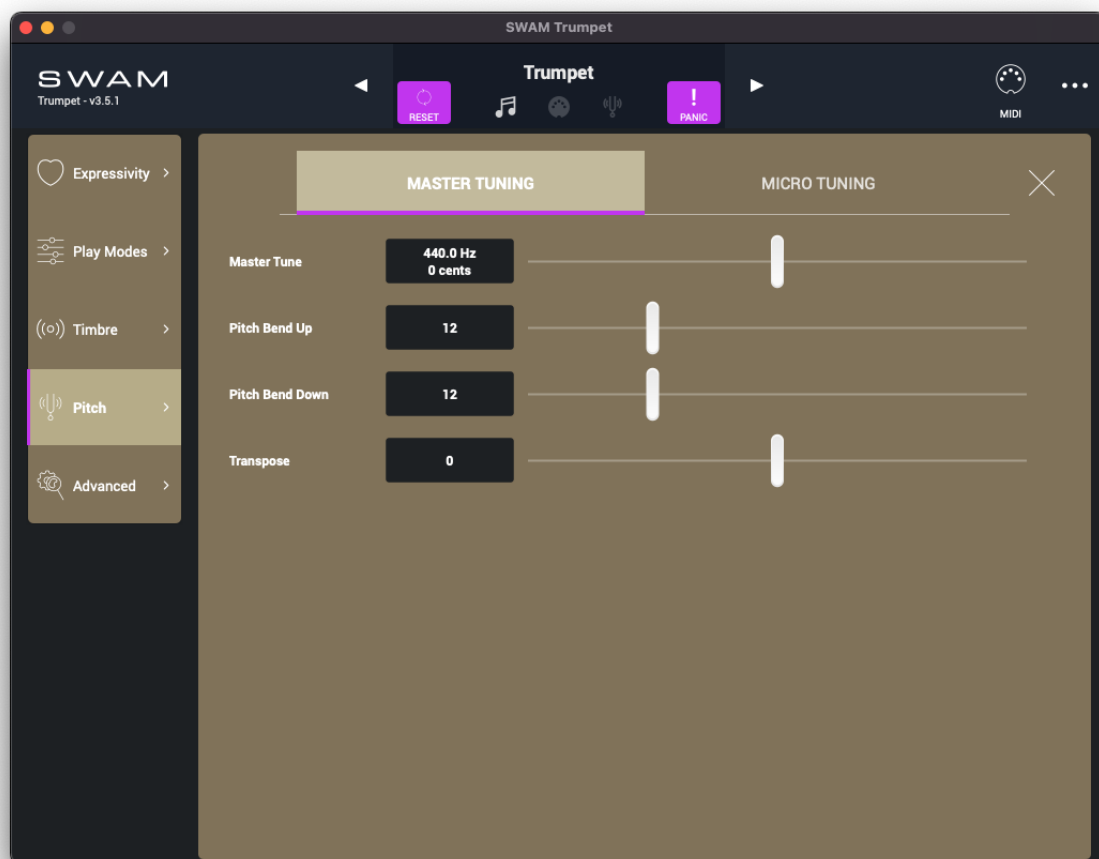
- <u>Master Tune</u>: master tuning of the instrument displayed both in *Hz* and *cents*.
- <u>Pitch Bend Up</u>: the maximum amount of upwards pitch bend, in *semitones*.
- <u>Pitch Bend Down</u>: the maximum amount of downwards pitch-bend, in *semitones*.
- <u>Transpose</u>: the amount to transpose the instrument, in *semitones*

Microtuning
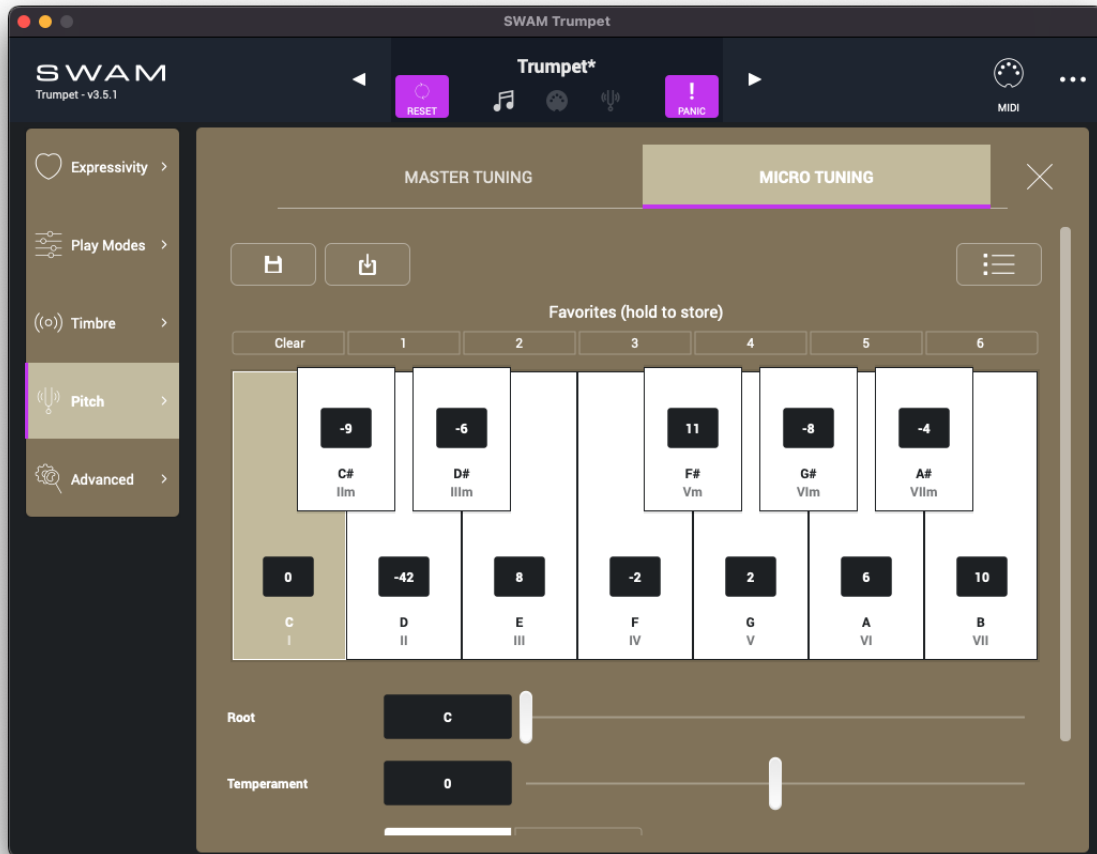
- **Save icon** : save the current Microtuning settings as User preset

- **Import icon** : import a Microtuning preset as User preset

- **Preset list icon** : open the list of Microtuning presets. User presets are listed after the Factory presets

- **Favorites**: it is possible to store up to 7 different settings. Click and hold the preset slot to store the current configuration; click on any preset slot to recall the preset. Click on the **Clear** button to reset the current configuration to the default state

- **Microtuning Keys:**
    - **Activation**: Click on any key to toggle the detune, by the amount shown on the button.

- - **Edit**: Click on the detune value to adjust. The value is presented in cents (hundredths of a semitone)
- **Root**: select the root note of Microtuning scale
- **Temperament**: if set higher than zero, this applies a kind of "spread intonation":
  - it does not affect the pitch in the middle of the instrument
  - the higher the pitch, the more upward detuning is applied
  - the lower the pitch, the more downward detuning is applied

This means that the overall intonation of the instrument can be "spaced apart".

If set lower than zero, it does the opposite: it applies a kind of "compressed intonation"

- **MAQAM** (by Mazeka Toys - mazekatoys.com):
  - OFF: remove the factory MIDI MAQAM configuration
  - ON: apply MAQAM factory mapping (note: all mappings to parameters assigned to CC from 102 to 114 will be removed). This allows the use of a MAQAM remote controller to apply Microtuning and Transposition on the fly. Note: be sure MAQAM is connected properly through a MIDI interface so that MIDI events can reach the SWAM application or plugin.
- **MAQAM Transpose**:
  - Note: control keyboard transpose
  - Root: control micro tuning transpose

Audio Modeling

Applying microtuning through SysEx

It's possible to control Microtuning through MIDI SysEx messages. SWAM responds to two protocols: Custom protocol and Yamaha PSR A3000 arranger protocol.

Custom Protocol

This protocol allows to change both Microtuning and Transposition on the fly through SysEx messages.

1) Microtuning message

Each message is 4 bytes:

```
1st byte: Beginning of the sysex (F0)
2nd byte: Note value (00=C, 02=C#, 04=D, ..., 12=A, 14=A#, 16=B)
3rd byte: Detuning value (00 = 0, 4E = -50)
4th byte: end of sysex (F7)

F0 10 10 F7: reset all notes to not detuned
```

Examples:

```
F0 00 4E F7: Note C = -50 cents
F0 10 4E F7: Note G# = -50 cents
F0 16 00 F7: Note B = 0 cents
```

2) Transpose message

Each message is 3 bytes:

```
1st byte = Beginning of sysex (F0)
2nd byte = Transpose value (37=-9, 38=-8, 39=-7, 3A=-6 ... 40=0 ... 48=+8, 49=+9)
3rd byte = End of sysex (F7)

F0 10 F7: reset transpose to 0
```

Yamaha PSR A3000 arranger protocol

Each message is 9 bytes:

```
1st byte: Begining of the sysex (F0)
2nd byte: Manufacturer ID - Yamaha (43)
3rd byte: Device ID
4th byte: Model ID - PSR A3000 (4C)
5th byte: Address High (08)
6th byte: Address Mid (00)
7th byte: Address Low - Note value (41=C, 42=C#, 43=D, ..., 4C = B)
8th byte: Detuning value (04=-60, 05=-59, 06=-58, ..., 40=0, ..., 7B=+59, 7C=+60)
9th byte: End of sysex (F7)
```

Examples:

```
F0 43 10 4C 08 00 41 5E F7: Note C = +30 cents
F0 43 10 4C 08 00 41 18 F7: Note C = -40 cents
F0 43 10 4C 08 00 4A 0E F7: Note A = -50 cents
```

Advanced

Instrument
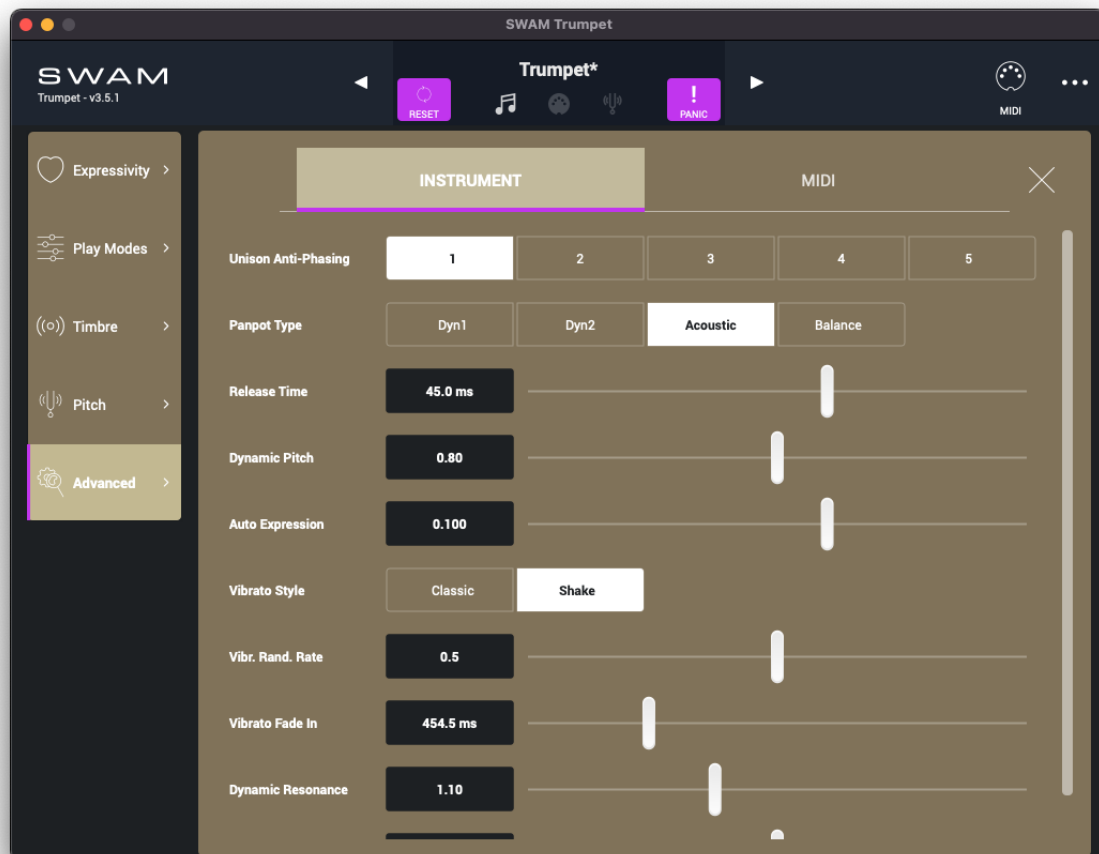
- <u>Unison Anti-Phasing</u> (for unison ensembles): same as in the Main GUI.
- <u>Panpot Type</u> *(locked on iPad)*
  - Dyn1, Dyn2 - emulates small movements of the player.
  - Acoustic - adjusts the position of the instrument in the sound field, but does not affect the reverb.
  - Balance - affects both the instrument and the reverb.
- <u>Release Time</u>: the time (measured in milliseconds) that breath continues for after note-off.
- <u>Dynamic Pitch</u> *(locked on iPad)*: how much the pitch varies during a fast change of expression.
- <u>Auto Expression</u> *(locked on iPad)*: controls the amount of automatic expression applied during transitions between notes.
- <u>Vibrato Style</u>
  - Classic - limit the vibrato amount (i.e. for classical brass instruments)

- ○ Shake - allows to make shake effects controls vibrato amount parameter
- Vibr. Rand. Rate (Vibrato Random Rate) *(locked on iPad)*: controls how much randomness is applied to the rate of vibrato.
- Vibrato Fade In *(locked on iPad)*: how long (in milliseconds) it takes for the vibrato to reach the final amount after each note-on.
- Dynamic Resonance *(locked on iPad)*: any brass instrument has a main resonant frequency band. Dynamic resonance it's the amount of variation of gain and center frequency of the resonant frequency in function of the Expression.
- Random Lips *(locked on iPad)*: controls how much randomness is applied to the tuning and tension of the player's modeled lips.

MIDI
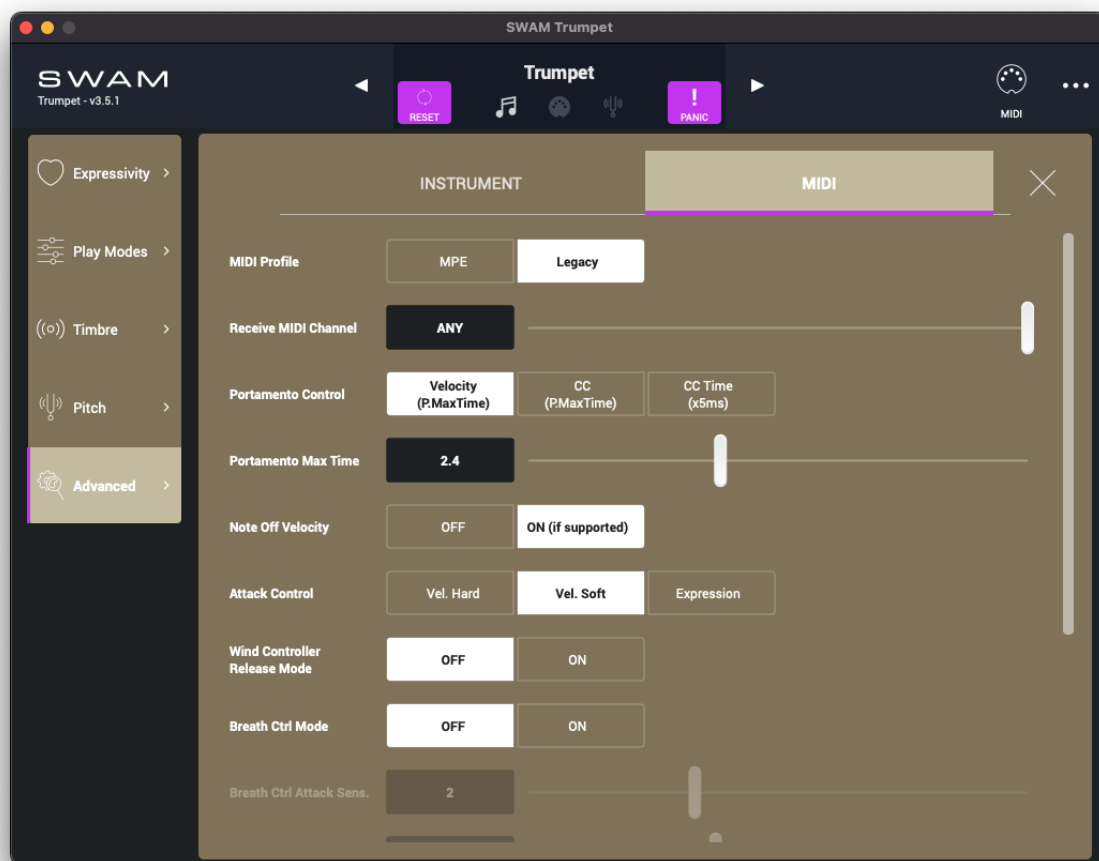
- MIDI Profile:
  - ○ MPE: for MIDI Polyphonic Expression compatible devices.
  - ○ Legacy: MIDI 1.0 devices.
- Receive MIDI Channel: is the MIDI channel the sound generator receives notes and controllers that affects the sound (default is ANY). Note that this can be different

from Key Switches MIDI Channel, so it is possible to control Key Switches from a different device. For MPE Devices this is forced to ANY.

- Portamento Control:
  - Velocity: the portamento time is controlled by the note-on velocity of overlapping notes.
  - CC: the portamento time is controlled by a MIDI Continuous Control (such as Control Change, AfterTouch, NRPN)
  - CC Time (x5ms): the portamento time is controlled by a MIDI Continuous Control (such as Control Change, AfterTouch, NRPN) - you have to assign "Portamento Time" parameter (in External Controller Mapping view) to a MIDI controller.
- Portamento Max Time: controls the portamento time, set to OFF to disable portamento (no portamento when this value is < 1,5).
- Note Off Velocity (if supported):
  - OFF: fixed note-off velocity at 112
  - ON: get legato retrigger velocity from note off velocity
- Attack Control - how the attack of the note is controlled:
  - Vel. Hard - controlled strongly by the note-on velocity.
  - Vel. Soft - controlled weakly by the note-on velocity.
  - Expression - controlled by the shape of expression control.
- Wind Controller Release Mode: set Release Time to minimum value and disables the Release Time parameter. Useful especially for Wind Controllers, as they send Note-Off events when Expression reaches the minimum value. This way the instrument is more reactive, e.g. when double or triple-tonguing.
- Breath Ctrl Mode (Breath Control Mode):
  - OFF
  - ON: suitable for Breath Controllers, allows the player to produce another note attack, using the breath envelope, while holding a note.
- Breath Ctrl Hi-Res Threshold: (Breath Control Hi-Resolution Threshold) set the threshold for the note-on to be triggered when using MIDI Hi-Resolution messages for the Expression parameter, when Breath Control Mode is ON.
- Breath Ctrl Attack Sens.: (Breath Control Attack Sensitivity) controls the sensitivity of the note-on attack strength for notes triggered in Breath Control Mode.
- Pitch Bend Curve
  - ON: non-linear pitch-bend, for better pitch control especially when using a physical controller which is separate to the playing surface, so there is no correspondence between the controller and the note positions.
  - OFF: linear pitch-bend (recommended for devices which integrate the pitch bend control with the playing surface, so the pitch-bend movements on the surface correspond directly with notes. Many current MPE devices fall into this category).
- KS MIDI Channel (Key Switches MIDI Channel): select which MIDI channel will be used to receive key switch information. Select from channel 1 to 16 or ANY.

- **KS Octave** (Key Switches Octave Transpose): allows you to transpose the Key Switches to begin in the octave from C-1 to C2, or turn off key switches (OFF).
- **KS Velocity Remap** (Key Switches Velocity Remapping): since some Key Switches are velocity-dependent, this parameter controls the distribution of the thresholds between states.

Effects
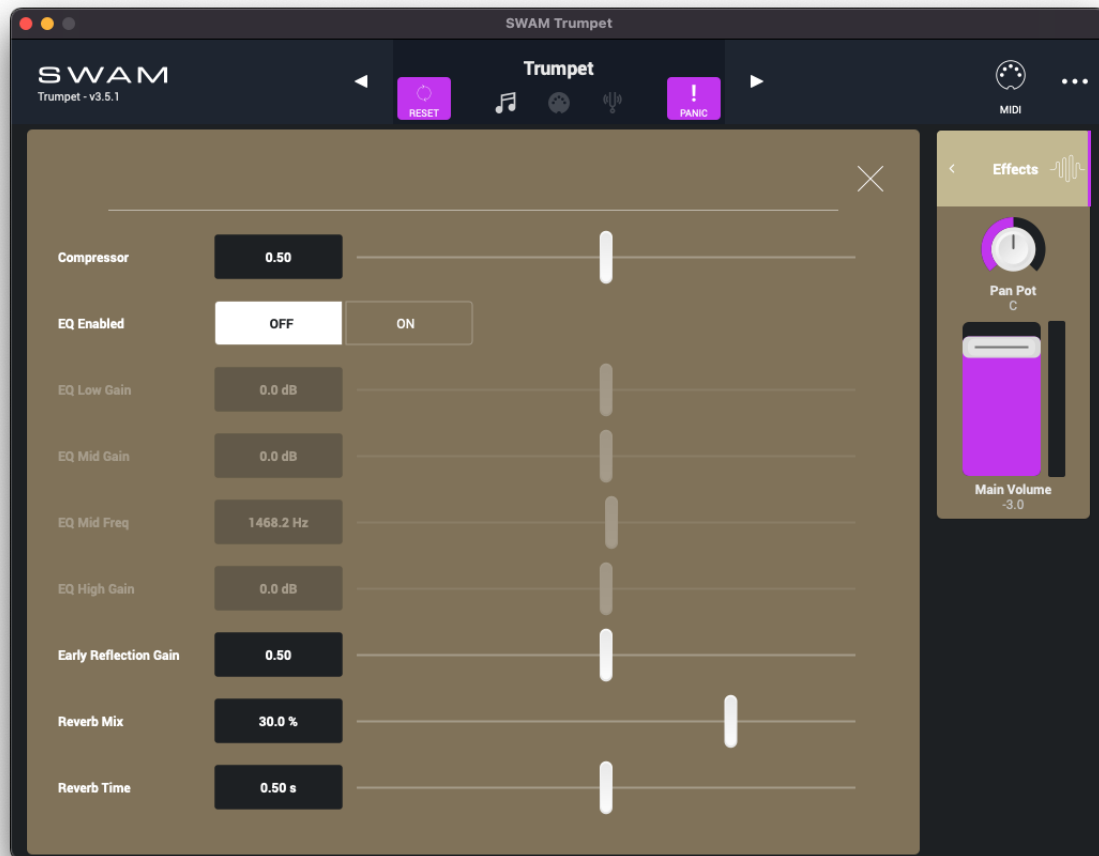
- <u>Compressor</u>: controls how much the dynamic compressor will change the volume output.
- <u>EQ Enabled</u>: enables or disables the Equalizer (see next).
- <u>EQ Low Gain, EQ Mid Gain, EQ Mid Freq, EQ High Gain</u>: Equalizer parameters. Note that ranges are different for each instrument. They have been calibrated for the harmonic contents of each instrument.
- <u>Early Reflection Amount</u>: amount of Early Reflections, useful especially for Horns.
- <u>Reverb Mix</u>: controls the amount of reverb added to the dry signal.
- <u>Reverb Time</u>: controls how long the decay time of reverb tail is.

Controller Mapping

The MIDI Controller Mapping section allows the user to manage the mapping between an external MIDI controller and the instrument parameters.

To access this page, click on the MIDI mapping icon on the top header

In this view/context, the parameters assigned to a controller are highlighted with a purple area with dashed borders; parameters which are not assigned are highlighted with a green area. Parameters not highlighted are not available for mapping. It is possible to browse the entire interface in this mode to select and manage any parameter for mapping.

- To map or edit a parameter mapping, click directly on the parameter to access the mapping screen for that parameter.
- Click on the "MIDI Mapping list" button in the top header to view the list of all parameters, their mapping status and to manage the sound engine parameters that have a direct effect on playability results with different controller types.
- Click on the "X" button in the top header to exit from Controller Mapping mode.

Mapping Screen

Assigned parameter status
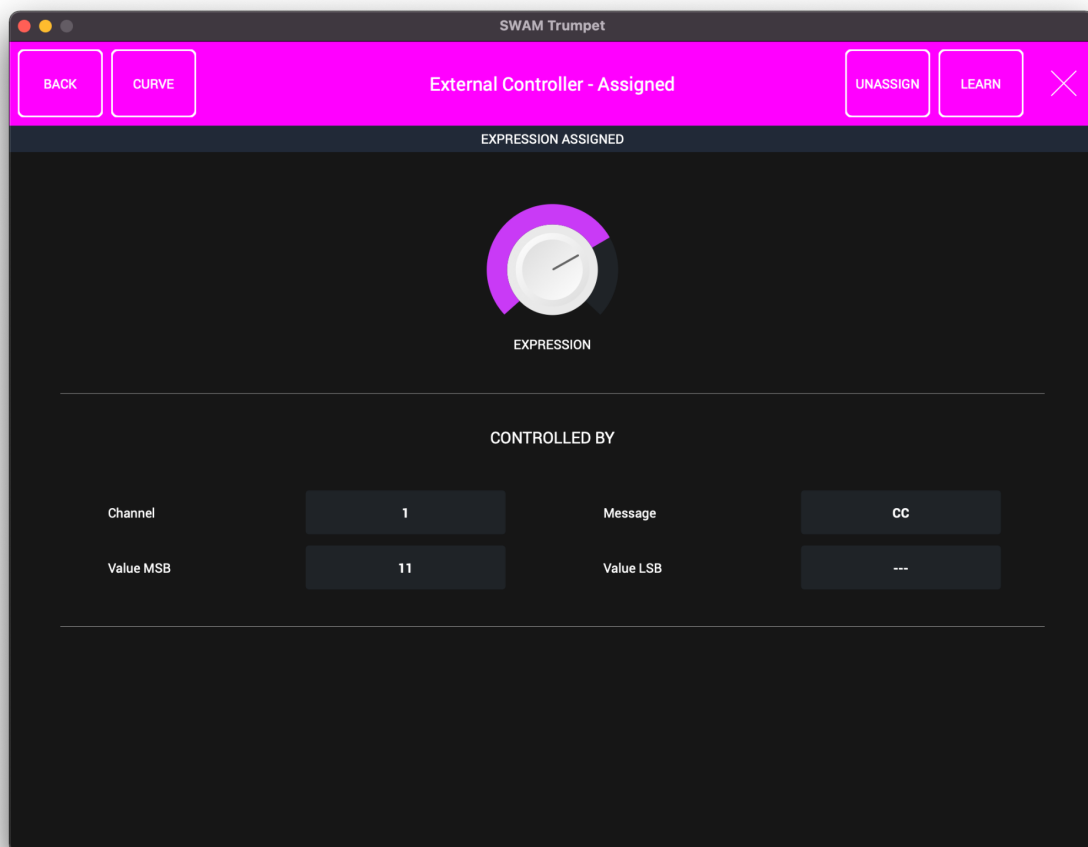
- <u>Back:</u> goes back to the previous screen
- <u>CURVE</u>: show the MIDI remapping curve for the selected mapping
- <u>UNASSIGN</u>: removes the current mapping and goes back to MIDI Learn mode
- <u>LEARN:</u> turns ON/OFF the MIDI LEARN to edit or remap the current parameter
- <u>X</u>: close the mapping screen and turn off the MIDI Mapping Mode

- Controlled By section:
  - Channel: change which MIDI channel this controller will be affected by, from 1 to 16, or ANY.
  - Message: MIDI message type:
    - CC: Control Change (1 byte value).
    - CC-HIRES: two coupled Control Change messages, MSB and LSB.
    - AT: Aftertouch (1 byte value).
    - NRPN: Non-Registered Parameter Number.
  - CC# MSB: available only for Message = CC, CC-HIRES, NRPN:
    - if Message = CC, MSB is the CC number.
    - if Message = CC-HIRES, MSB is the Most Significant Byte of the two-byte hi-resolution message, from CC0 to CC31.
    - if Message = NRPN, MSB is the Most Significant Byte of the two-byte NRPN message.
  - CC# LSB: available only for Message = CC-HIRES, NRPN:
    - if Message = CC-HIRES, LSB is the Least Significant Byte of the two-byte hi-resolution message, from CC32 to CC63.
    - if Message = NRPN, LSB is the Least Significant Byte of the two-byte NRPN message.

NOTE:
- *CC means "Control Change", it is a standard MIDI message used to control a wide variety of functions in a synthesizer or software instrument. The value of a CC is represented by a 7-bit byte, allowing a total of 128 values of resolution.*
- *AT means "Aftertouch". Some MIDI devices have the ability to sense the amount of pressure which is being applied to the keys or the touch surface while they are depressed. This pressure information, commonly called "Aftertouch", may be used to control some aspects of the sound produced by a synthesizer or software instrument. AT is a standard 7-bit MIDI message, allowing a total of 128 values of resolution.*
- *CC-HIRES messages are a combination of two CC messages coupled together, thus providing a resolution of 14-bit, i.e. 16384 levels, for the represente values.*
- *NRPN, i.e. "Non-Registered Parameter Number", extends the number of controllers available via MIDI. They are typically used to send parameter data to a synthesizer and software instruments in order to edit sound patches or other data, providing a resolution of 14-bit, i.e. 16384 levels, for the represente values.*
- *MSB means "Most Significant Byte". For CC and AT messages, it is the only byte representing the control value. For CC-HIRES and NRPN messages, it is the most significant part of the two-byte message.*
- *LSB means "Least Significant Byte" and is only for CC-HIRES and NRPN messages. It is the least significant part of the two-byte message.*

For more details on what CC, NRPN, MSB, LSB, please refer to MIDI specifications at https://midi.org

- **CURVE** : click on the button to show the mapping curve. The curve can be used to adjust the controller-to-parameter behavior with:
  - **Input Min** (left arrow): the minimum threshold on the controller input value. Values below this value will produce the "Out Min" value (or the "Out Max" value, if the curve is "inverted").
  - **Input Max** (right arrow): the maximum threshold on the controller input value. Values above this value will produce the "Out Max" value (or the "Out Min" value, if the curve is "inverted").
  - **Output Min** (bottom arrow): the minimum output value.
  - **Output Max** (upper arrow): the maximum output value.
  - **Shape**: controls the shape of the remapping curve (be aware, small changes can produce high variations, depending on the Symmetry parameter).
  - **Symmetry**: controls the symmetry of the remapping curve.
  - **DISABLE CURVE**: bypass the remapping curve
  - **BIPOLAR**: useful for "bipolar" controls, i.e. where 64 is considered the "zero" of the controller. The parameter of the remapping curve are referred to just one side and the applied to the "negative", antisymmetric side
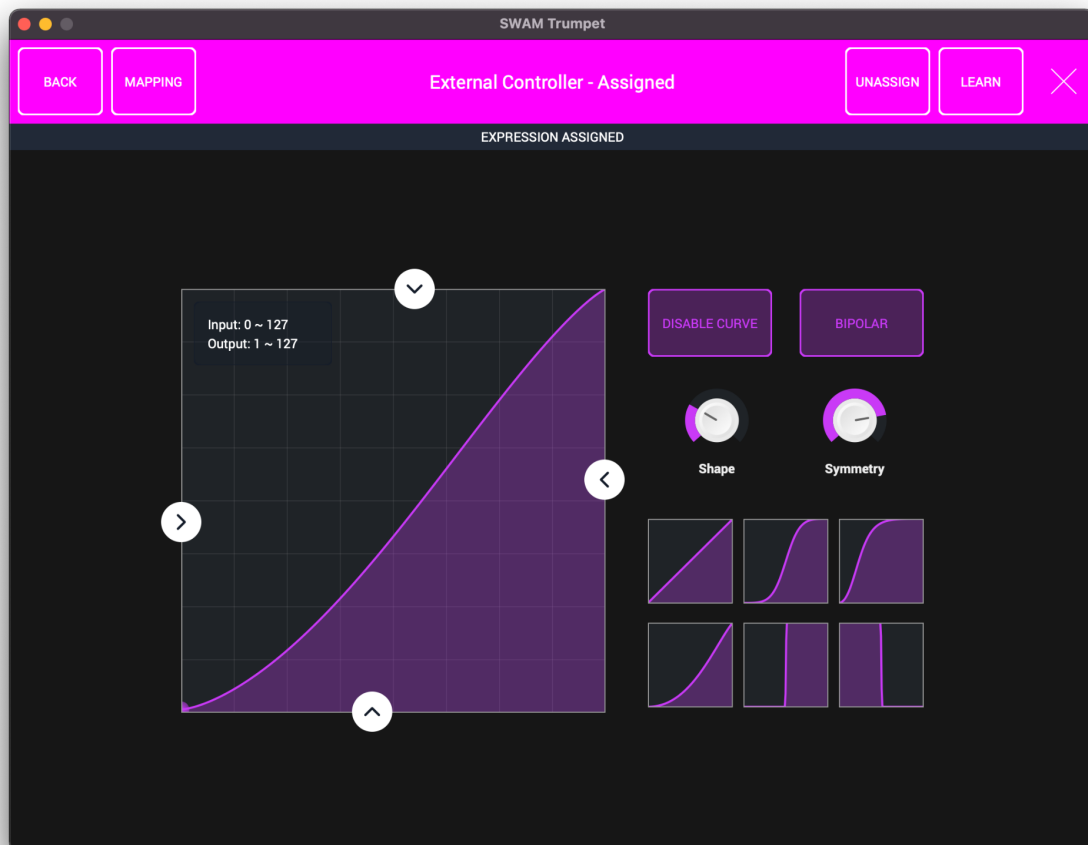
Unassigned parameter status

Any click on an unassigned parameter goes to this screen.
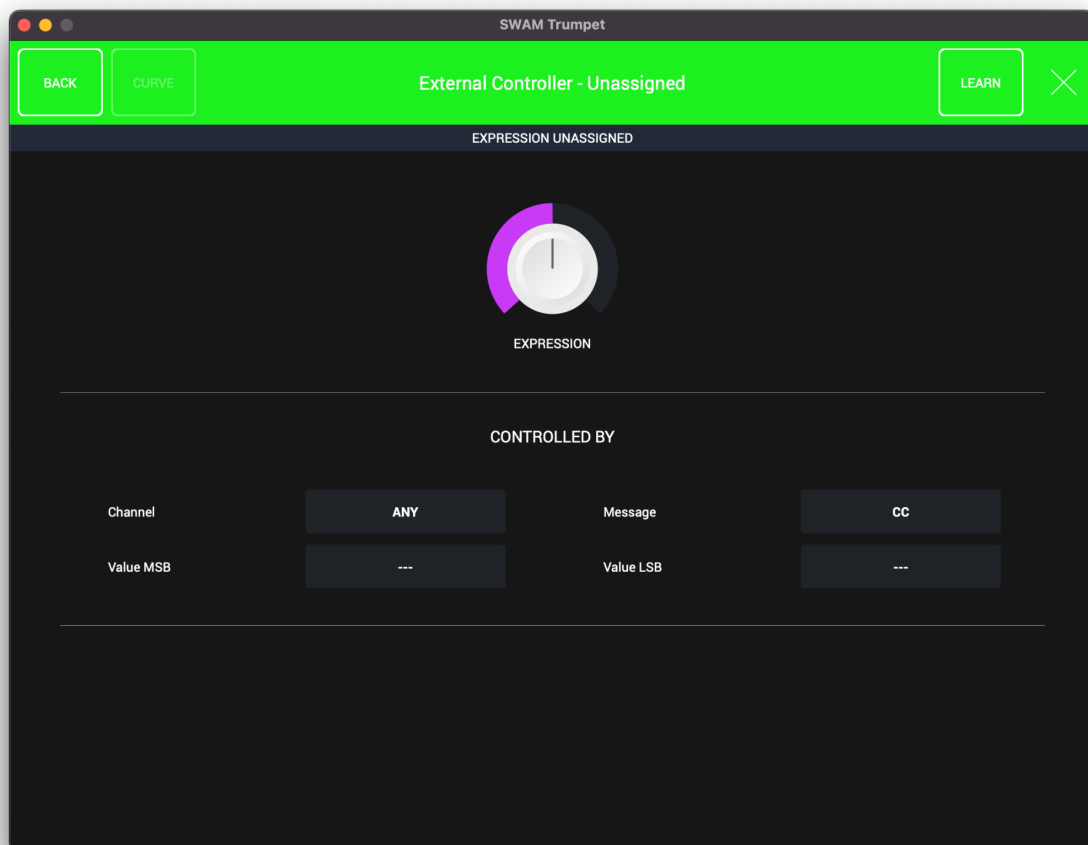
If "LEARN" is active, SWAM automatically listens for MIDI input messages while in LEARN MODE. Move the controller you want to connect to automatically complete the mapping.

The area "Controlled by" will be automatically filled in by MIDI Learn but can still be edited by manual input as well.
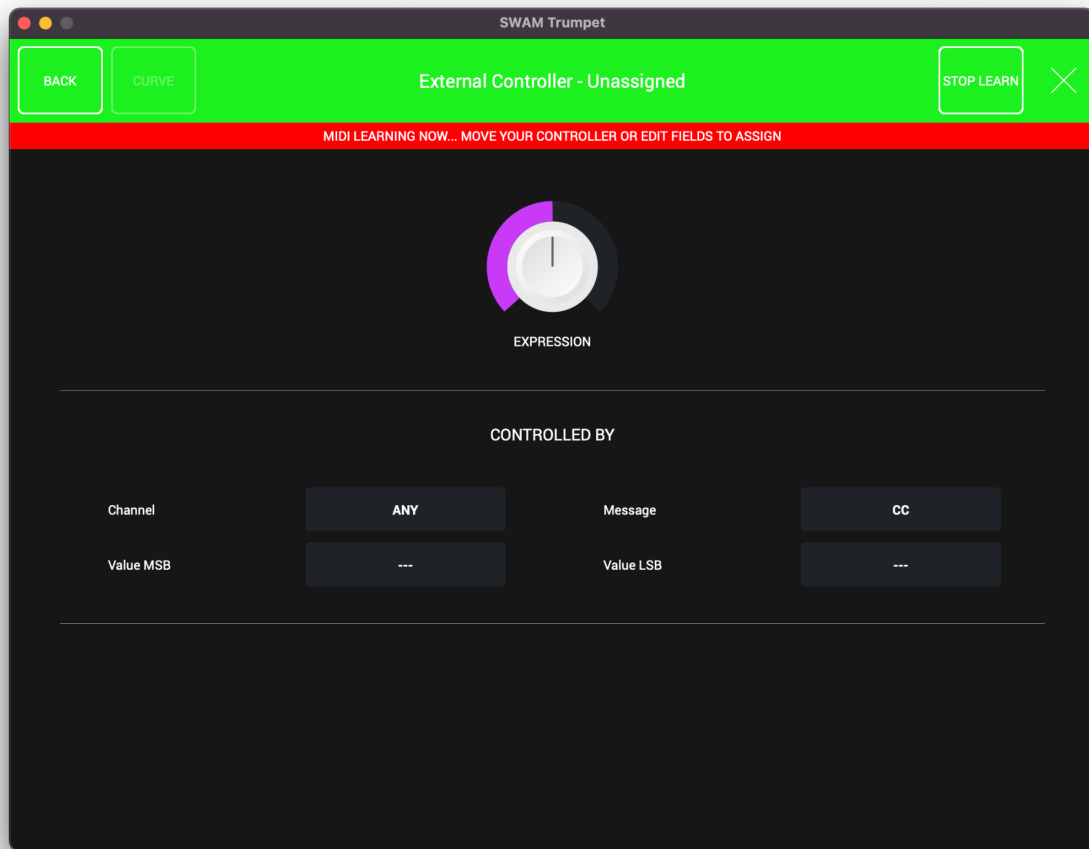
MIDI Inputs quick access

For the Standalone version, a quick access to the MIDI input devices is available from the

MIDI Mapping ![MIDI icon] by clicking on the "INPUTS" icon ![INPUTS icon]
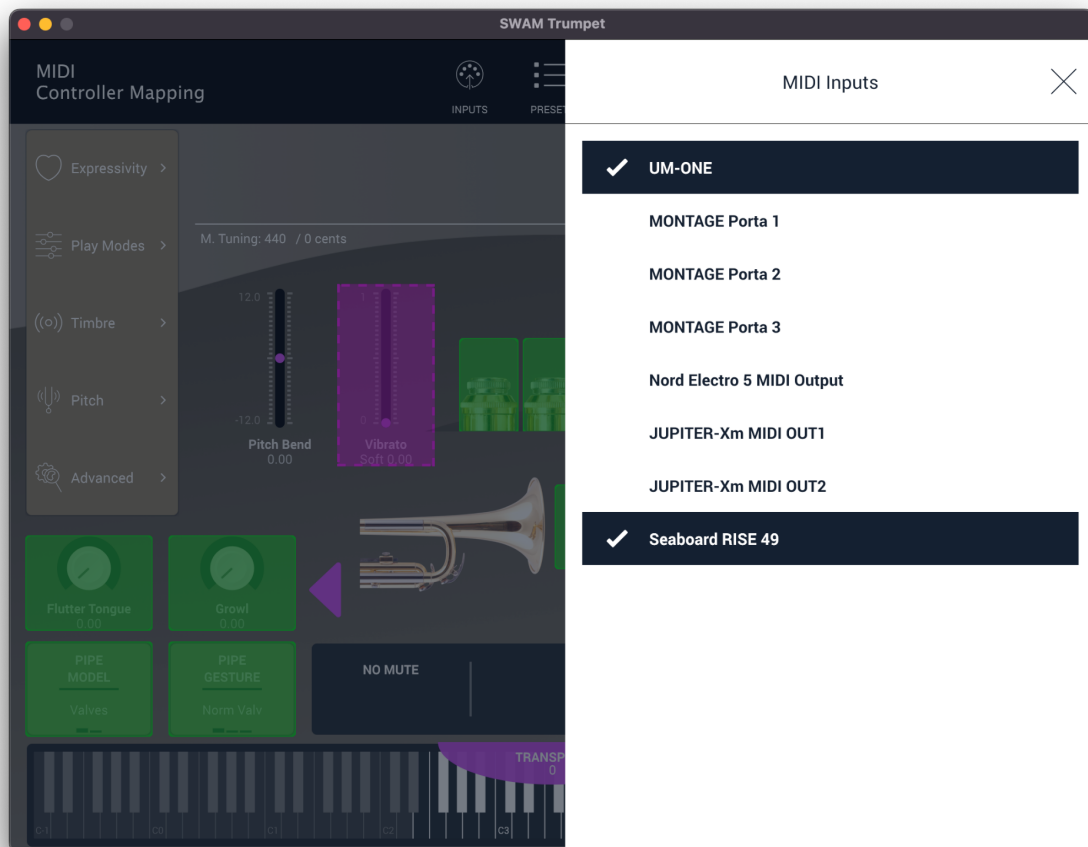
MIDI Mapping Presets

It is possible to recall a predefined set of both pre-defined assignments for well known MIDI

Controllers and User MIDI assignments through the PRESETS icon .
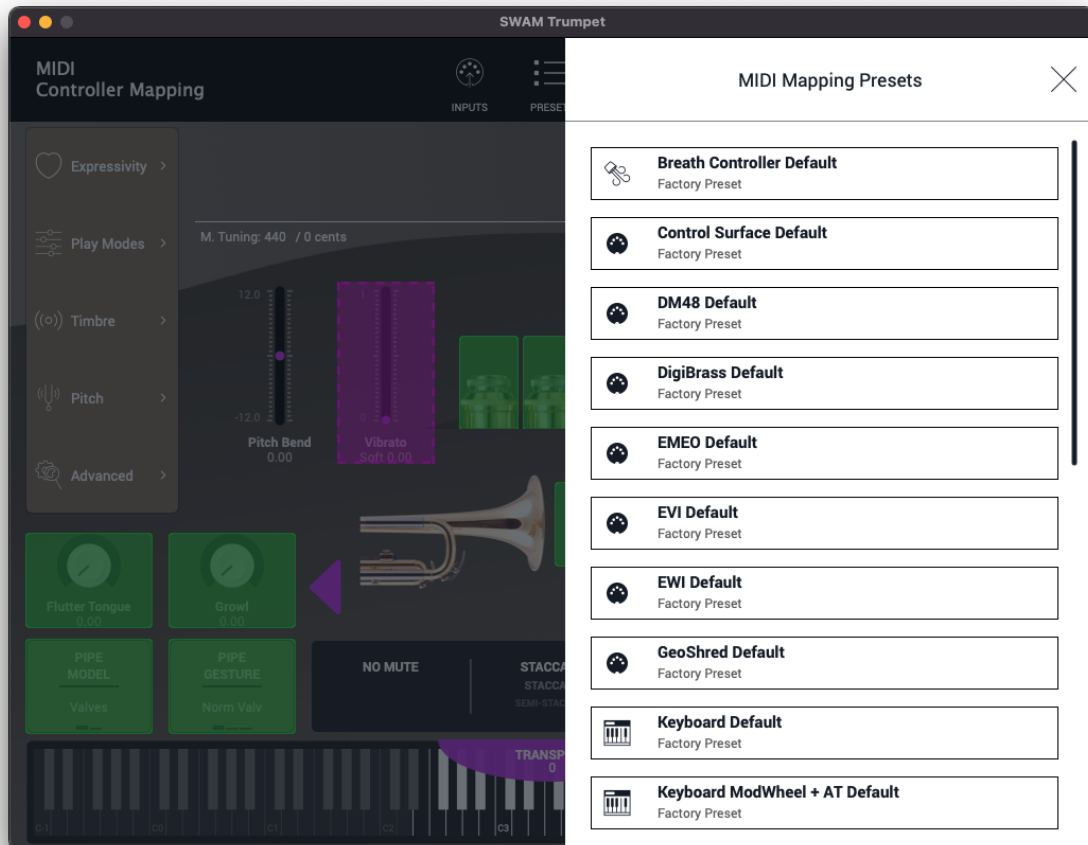
These entries allow us to recall predefined sets of assignments without impacting on the Sound parameters. This is useful when switching between different physical MIDI controllers without losing the timbre and sound behavior obtained acting on the Sound parameters.

MIDI Mapping List

The "MIDI Mapping List" screen recaps all the mapping settings, providing the big picture of all mappings and the configuration of auxiliary parameters.

The screen is organized in two tabs:

- External Controller Mapping: this is the list of all the parameters that can be mapped individually by the process described above. Click on any row to create a new assignment, or to edit an existing assignment.
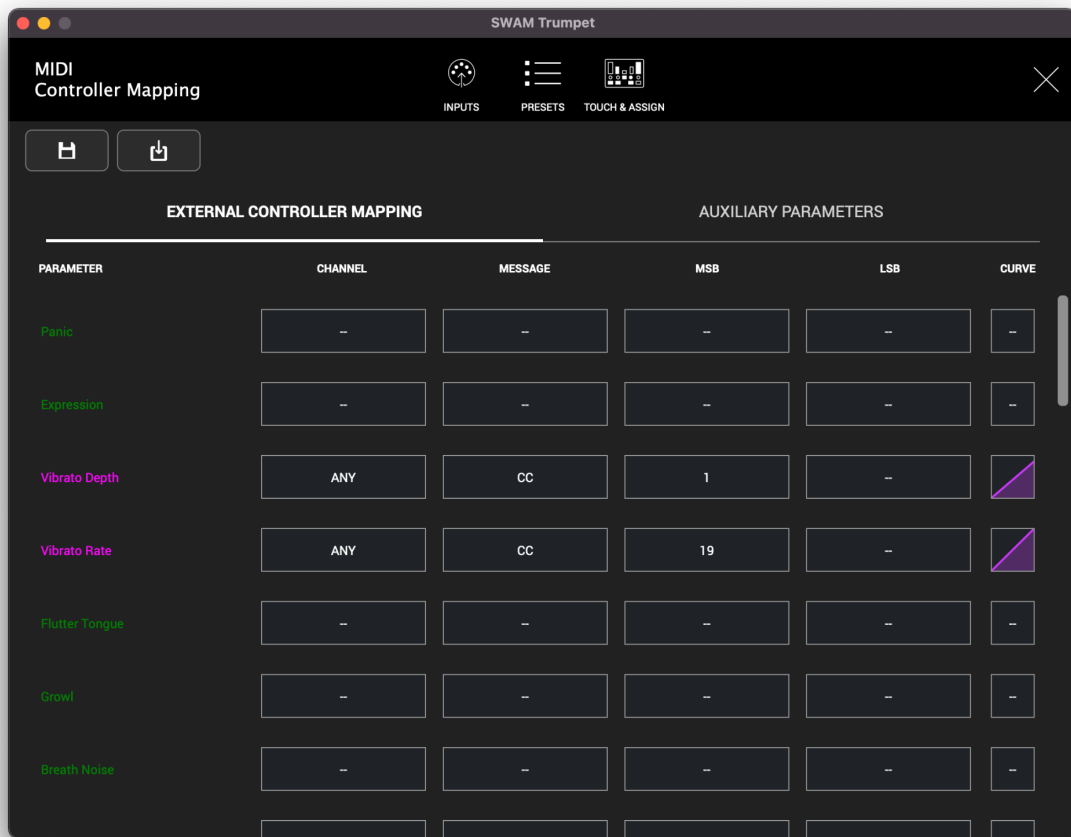
- Auxiliary Parameters: settings and parameters that have a key role in managing the sound engine's response to different controllers. Most of the entries can be found in the "Pitch" and the "Advanced" sections as well. These parameters are saved along with the External Controller mapping entries to ensure consistent controller presets.
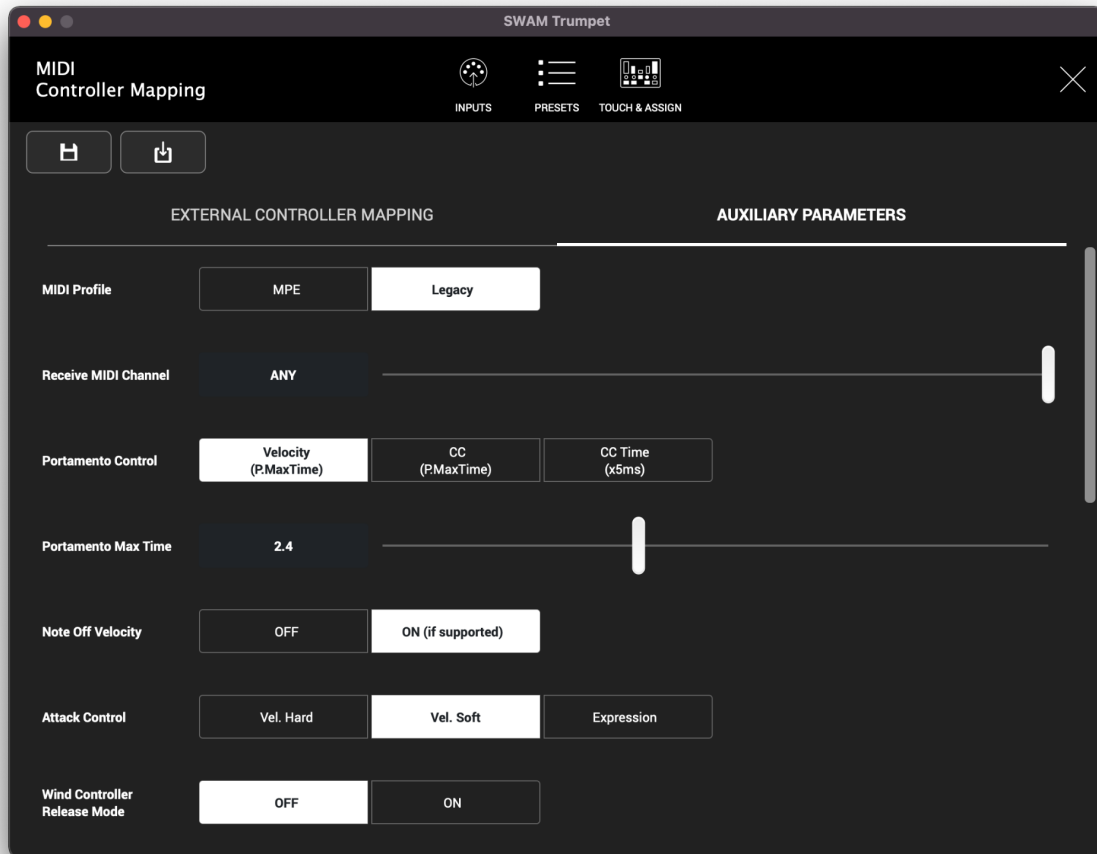
It's possible to save a custom "MIDI Mapping Preset" from the save button and import a custom "MIDI Mapping Preset" from load button . The imported preset will be listed on the MIDI Mapping Preset list (see MIDI Mapping Presets section for reference).

Main menu
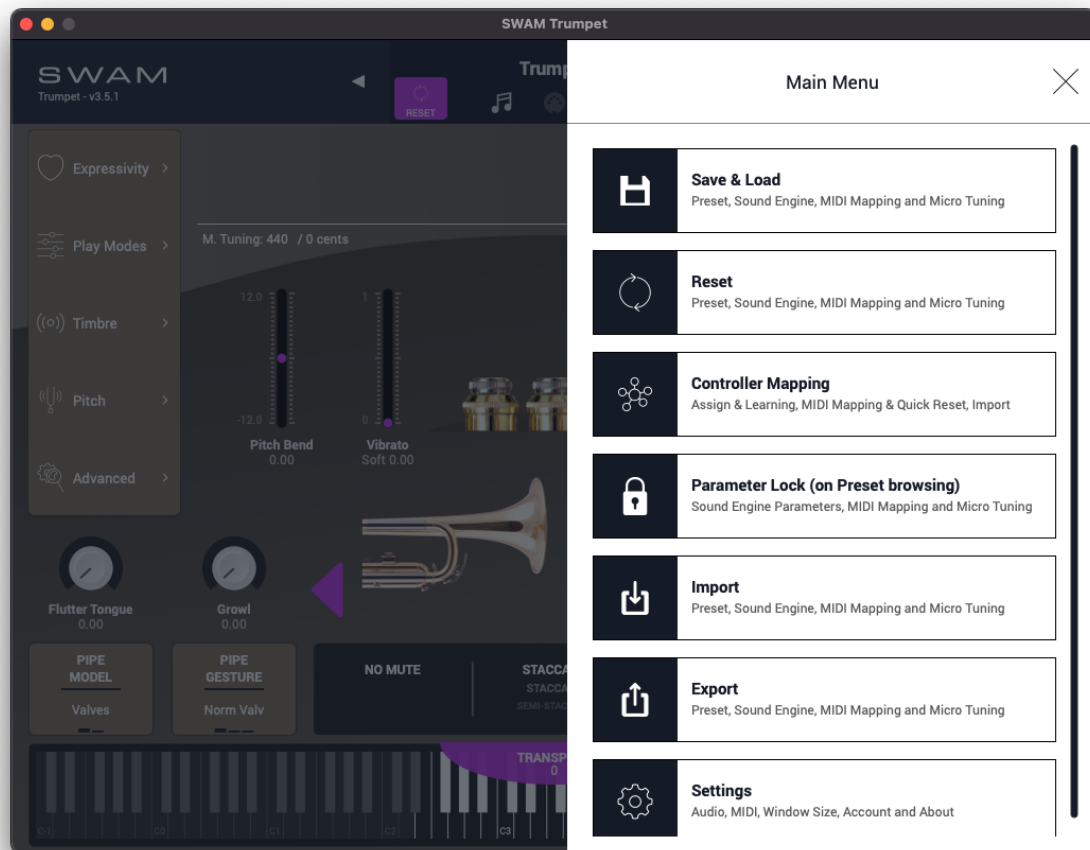
The Main Menu is available when clicking on the top-right icon.

- Save & Load: open the Preset Management window.
- Reset:
  - Initialize: reset sound engine parameters
  - Advanced:
    - Reload "current preset": reload the current selected preset, losing all changes made from the latest
    - Sound Engine: reset or load sound engine parameters
    - MIDI Mapping: reset or load MIDI mapping settings
    - Micro Tuning: reset or load micro tuning settings
- Controller Mapping:
  - Assign & Learn: open MIDI mapping management section
  - MIDI Mapping & Quick Reset: open MIDI parameters list & Quick Reset

- ○ Import: controller mapping from file
- Parameter Lock:
  - ○ Sound Engine Parameters: freeze the sound when browsing your Presets
  - ○ External Controller Mapping: keep the same MIDI Controller Mapping with different Presets
  - ○ Micro Tuning Settings: keep the same micro tuning settings with different Presets
- Import:
  - ○ Preset: load a .swam preset file
  - ○ Sound Engine Parameters: load a .swamse preset file
  - ○ MIDI Mapping: load a .swamec preset file.
  - ○ Micro Tuning: load a .swammt preset file
- Export:
  - ○ Preset: save the current instrument state as a .swam preset file
  - ○ Sound Engine Parameters: save sound engine parameters as a .swamse preset file
  - ○ MIDI Mapping: save external controller settings as a .swamec preset file
  - ○ Micro Tuning: save micro tuning settings as a .swammt preset file
- Settings:
  - ○ Audio: open the "Audio Setup" window (available for the Standalone App only).
  - ○ MIDI: open the "MIDI Setup" window (available for the Standalone App only).
  - ○ Window Size: show a small popup window that allows to set the GUI orientation and zoom factor.
  - ○ Account & License: open the "Account & License" window.
  - ○ About: open the "About" page, where it's possible to check the version and build number, access to the online resources and show the Credits

Preset Management
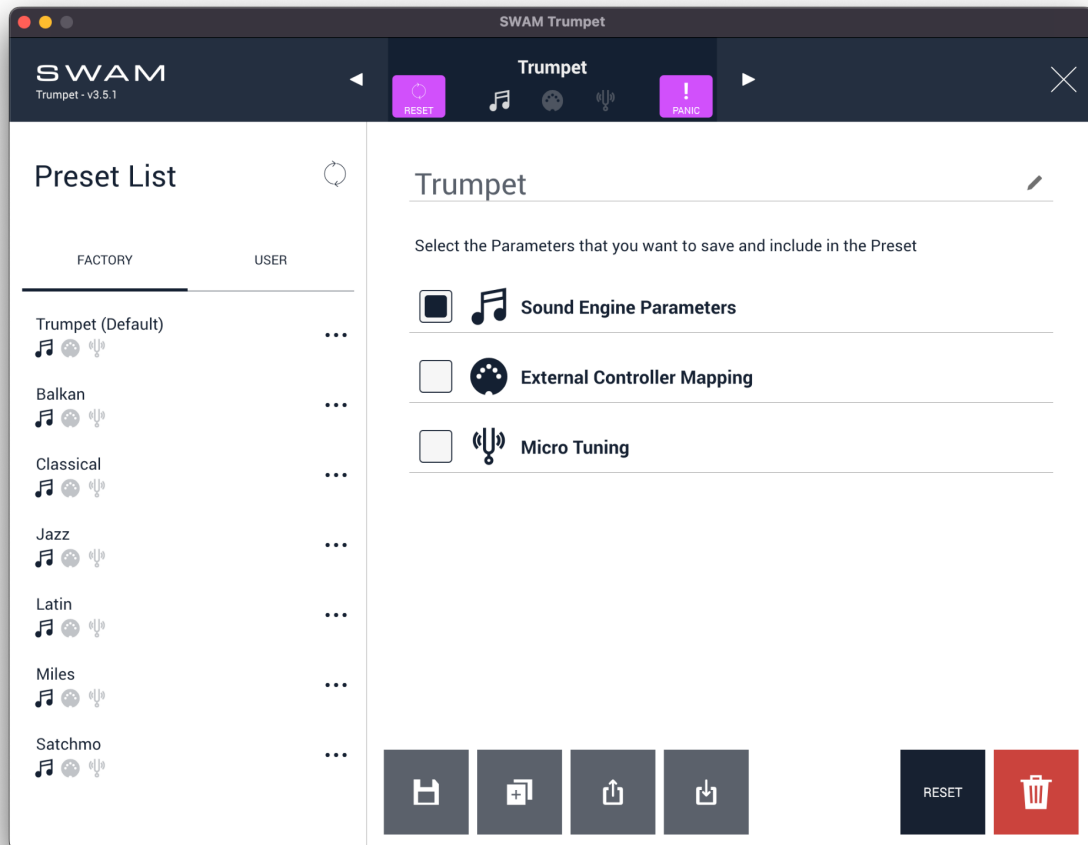
- <u>Preset List</u>: on the left hand side it is possible to select presets. The SWAM presets are organized into two groups: Factory and User. User presets can be added, edited and deleted. Factory presets cannot be edited or deleted; any save action performed on a Factory preset generates a User preset.

Default startup Preset

Any preset can be selected to become the "default" one, i.e. the one loaded at startup: just click on [...] next to the preset name and choose "Set as default".

Classic trumpet ✎

Select the Parameters that you want to save and include in the Preset

☒ ♫ **Sound Engine Parameters**

☐ 🎨 **External Controller Mapping**

☐ 〔i〕 **Micro Tuning**

- Shows the preset components, such as Sound engine parameters, Controller Mapping and Micro Tuning settings. From this area it is possible to choose the group of parameters that you want to include in the SWAM preset.

- 💾 Save: save current preset.

- 🗗 Duplicate: duplicate current preset to create a new one.

- ⬆ Export preset: open export options.
  NOTE: compatibility of preset exports with future releases is not guaranteed. It is strongly recommended that users archive custom presets in a custom folder at a different location to the default preset folder.

- ⬇ Import preset: open import options.

- RESET RESET: reset parameters to the default state.

- 🗑 DELETE: delete the user-selected preset.

Parameter Lock
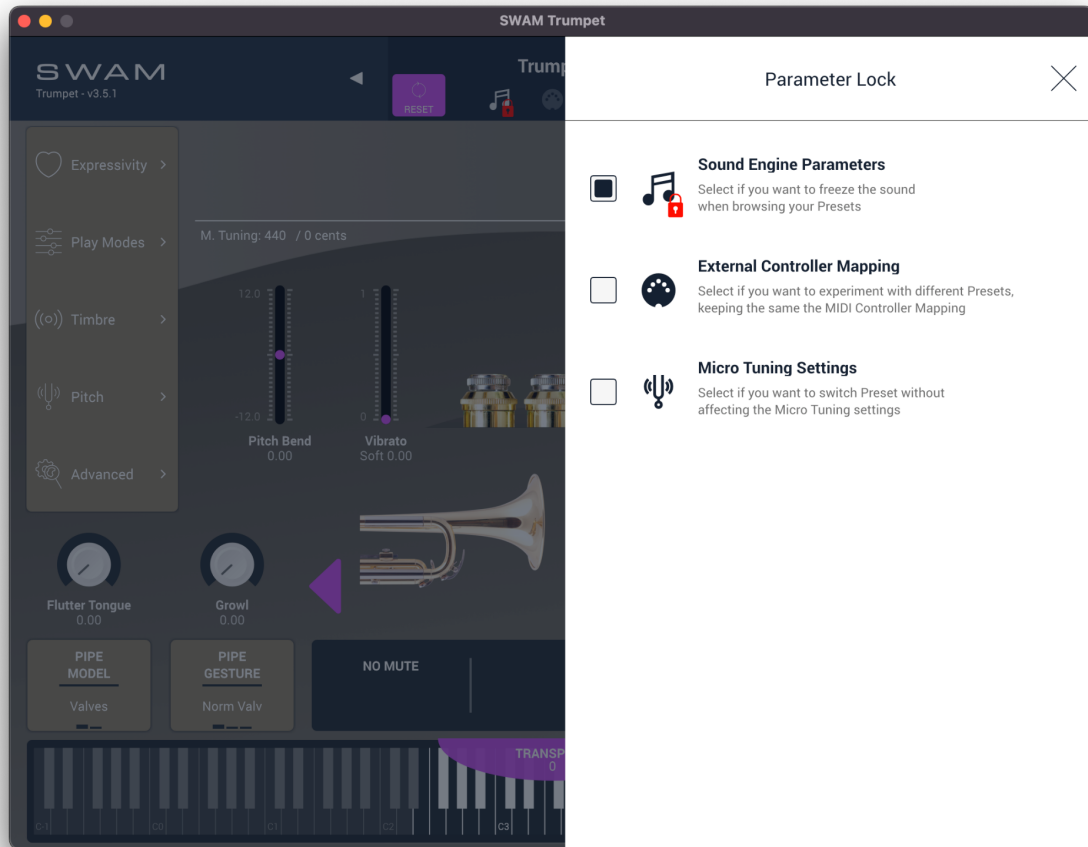
The Parameter Lock function is available when long press on the current preset label:
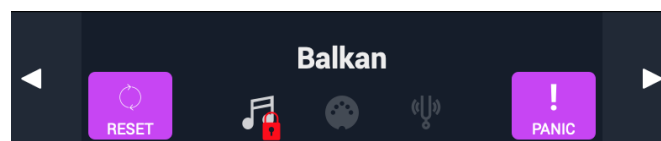

Switch presets without affecting the category of parameters that is locked.
- Select "Sound Engine Parameters" if you want to freeze the sound when browsing your presets
- Select "External Controller Mapping" if you want to experiment with different presets, keeping the same MIDI controller mapping
- Select "Micro Tuning Settings" if you want to switch presets without affecting the micro tuning settings

Settings

Audio Settings
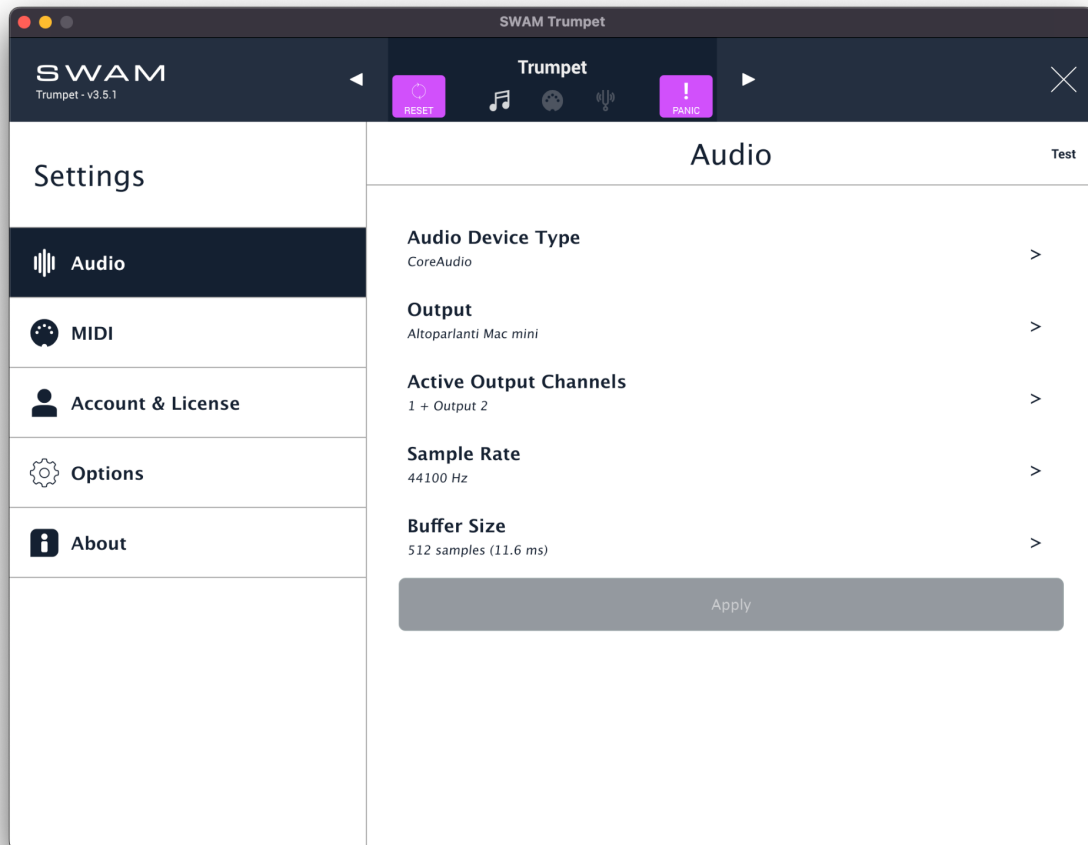
The Audio Settings page is available for Standalone version only, and allows to select the proper Audio device, Output port, Active channels, Sample Rate and Buffer Size.
For real time playing, a combination of Buffer Size and Sample Rate should provide a maximum latency of about 10 ms.

MIDI Settings
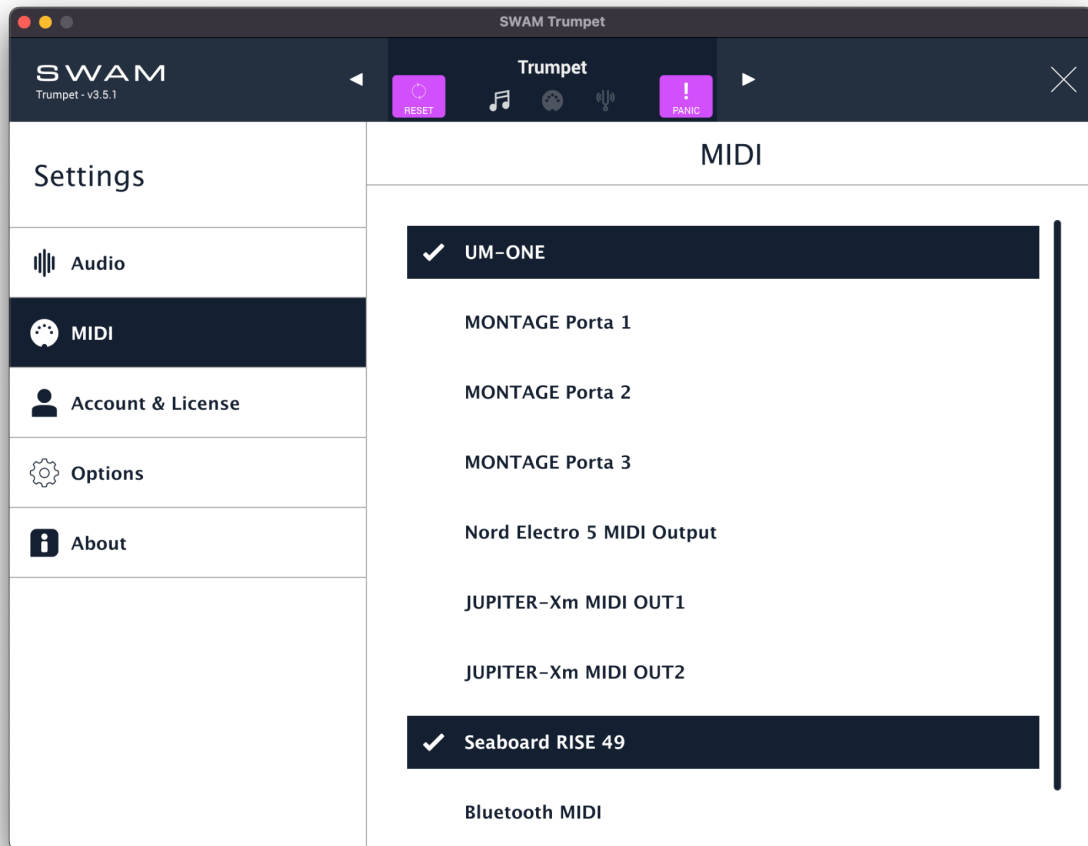
The MIDI Settings page is available for Standalone version only and allows you to select one or more MIDI devices to control the instrument.

It's also possible to use a Bluetooth MIDI device by selecting "Bluetooth MIDI".

Account & License
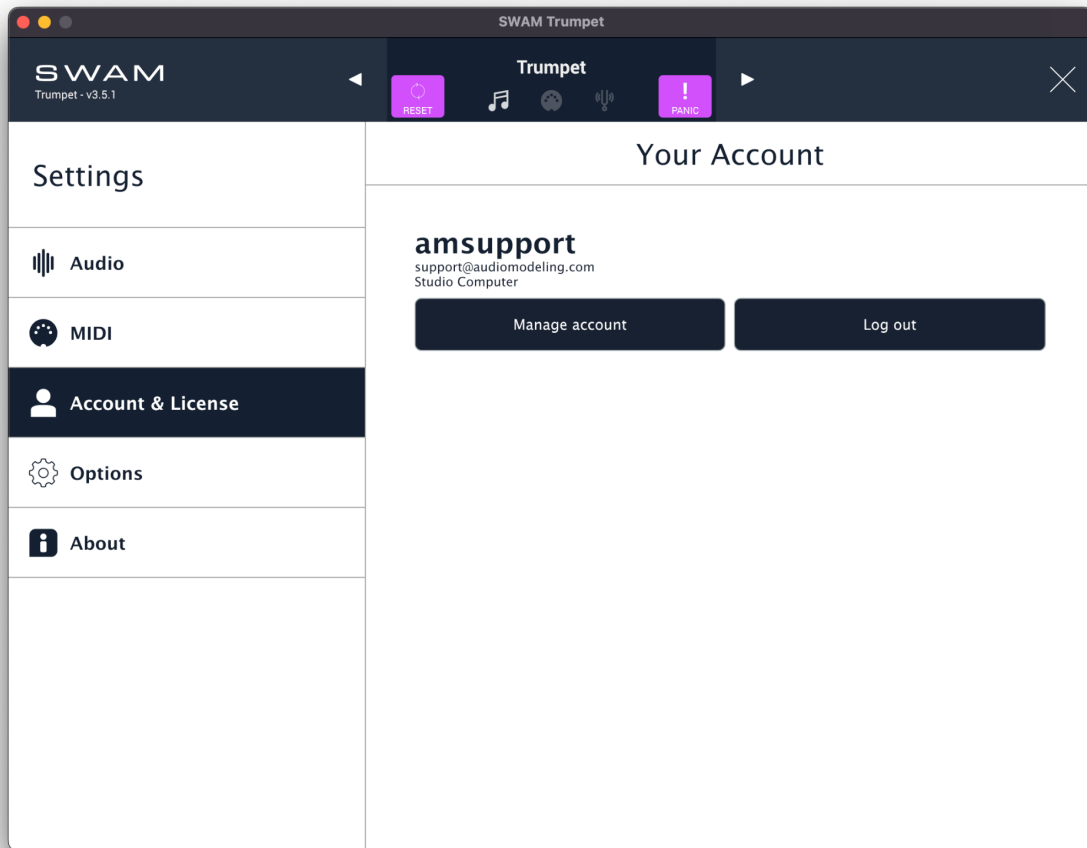
The Account & License shows the user currently logged in.
- Manage account: opens the Audio Modeling Customer Portal in a Web Browser
- Log out: logs the user out from the application

Options
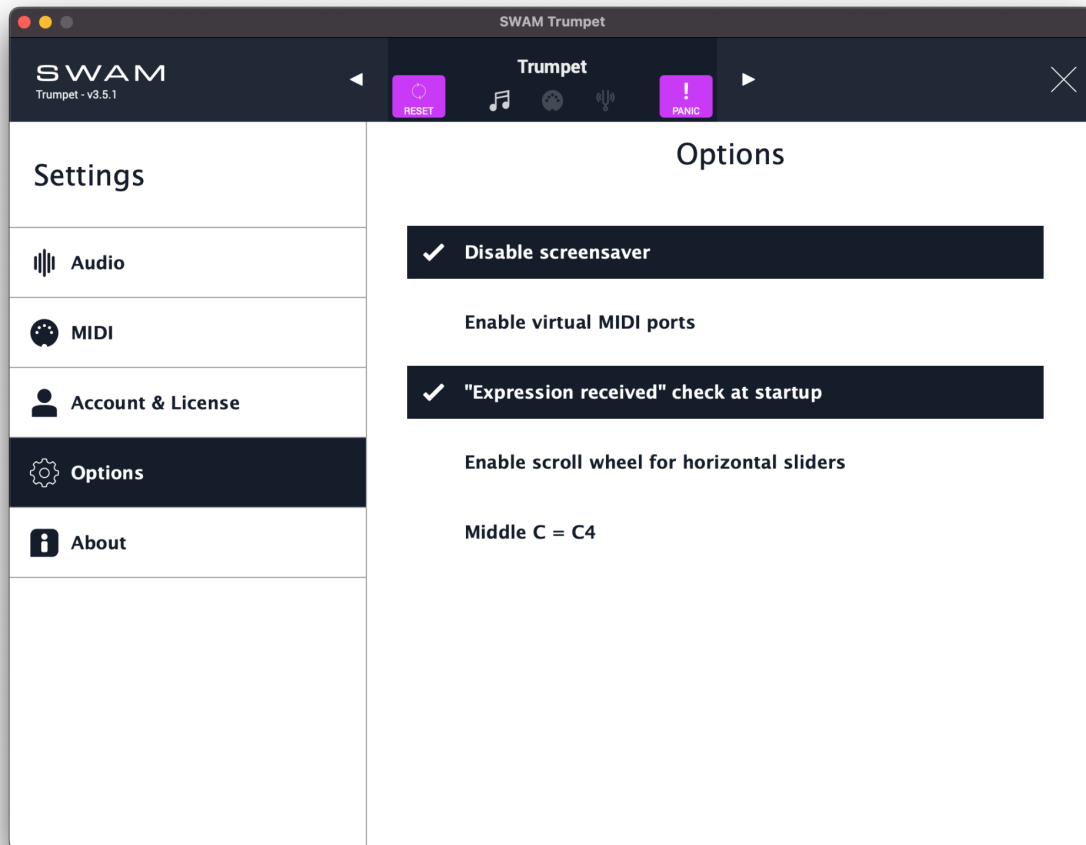
- **Disable screensaver**: avoid screensaver activation when the App is open
- **Enable virtual MIDI ports** (macOS and iPadOS only): enable an Input and Output virtual MIDI port to control the instrument from an external App, or use the SWAM App to control another music App
- **"Expression received" check at startup**: when selected, warns the user to check the controller mapped to the Expression parameter if a note is received before an Expression event (for Desktop version only)
- **Enable scroll wheel for horizontal sliders**: allow the use of the scroll wheel for changing slider values
- **Middle C4**: set octave notation so that Middle C is C4, corresponding to MIDI note number 60. If deselected, Middle C is C3.

About
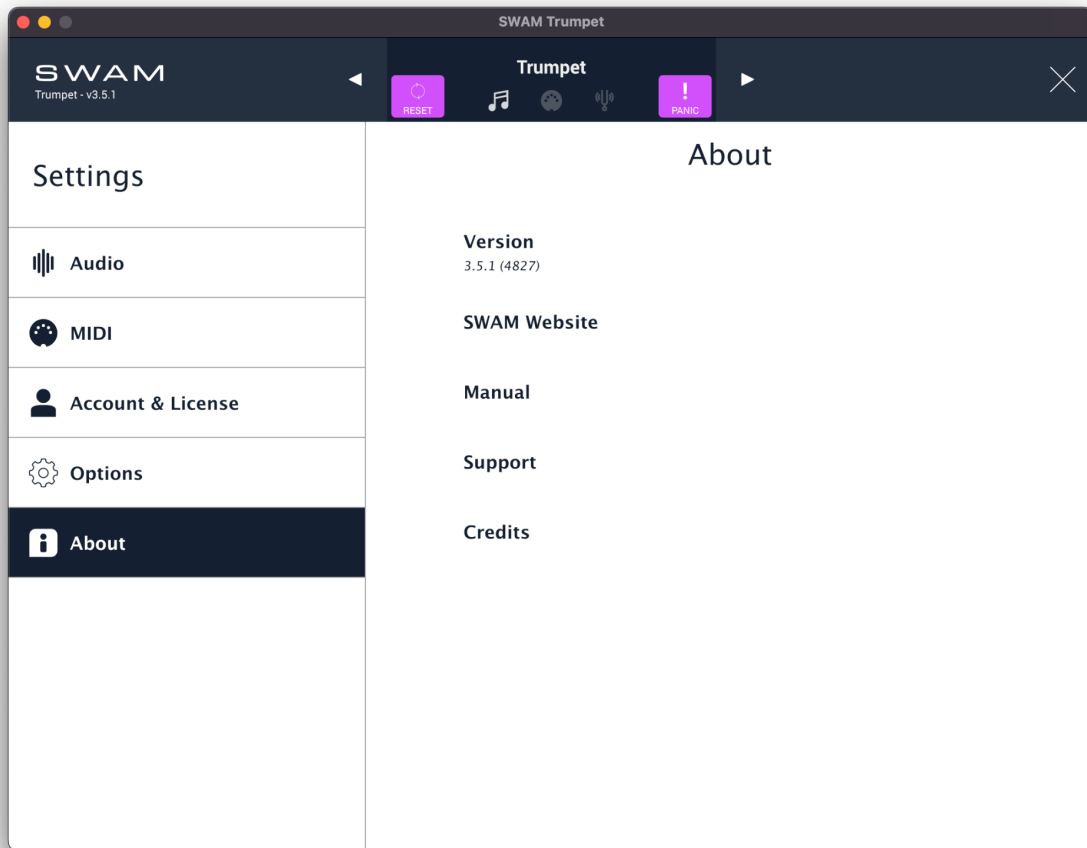
The About page shows the current version and build number, as well as a few other options:

- Version: the current version and build number of the App. On Desktop, click on "Version" to open the Customer Portal and check for updates.
- SWAM Website: opens the SWAM section of the Audio Modeling website in a Web Browser.
- Manual: opens the online User Manual page in a Web Browser.
- Support: opens the Support Center page in a Web Browser.
- Credits: shows the credits page

Control Surface (for iPadOS only)

On iPadOS version, you will find the "PLAY"icon [PLAY] to access a dedicated Touch Control Surface:

The control surface has the following purposes:
- provide an onboard screen keyboard to perform at basic level without using any external controller
- provide a visual feedback representation of the sound evolution (Dynamic Envelope)
- provide direct controls of the most useful performance parameters (expression, mute selection, control faders

NOTE: To record and playback on a DAW what has been played on the Control Surface, the "Control Surface Default" MIDI preset must be selected (ref. "MIDI Mapping Presets" paragraph).

The dynamic areas can be selected just by tapping on the tab bar name:

Controls

This view provides 6 faders that are very handy for the live performance to tweak the sound in real time or add subtle expressive details when needed. Play and tweak them in real time using the onboard keyboard, or use them as an extra control surface when playing with an external controller.

Mutes
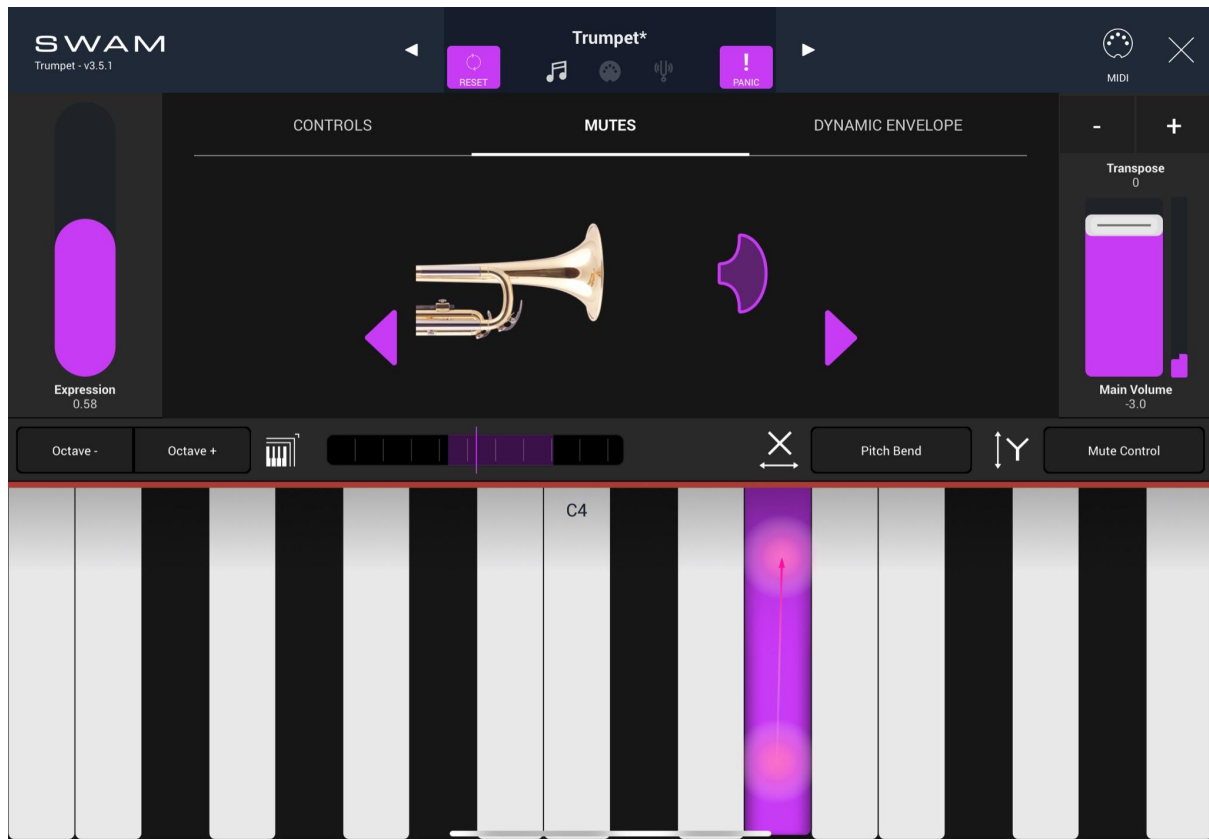
This view shows the mute selector. Use the arrows to select the mute type (or get rid of it) and control the mute distance touching the mute with your finger.

Dynamic Envelope
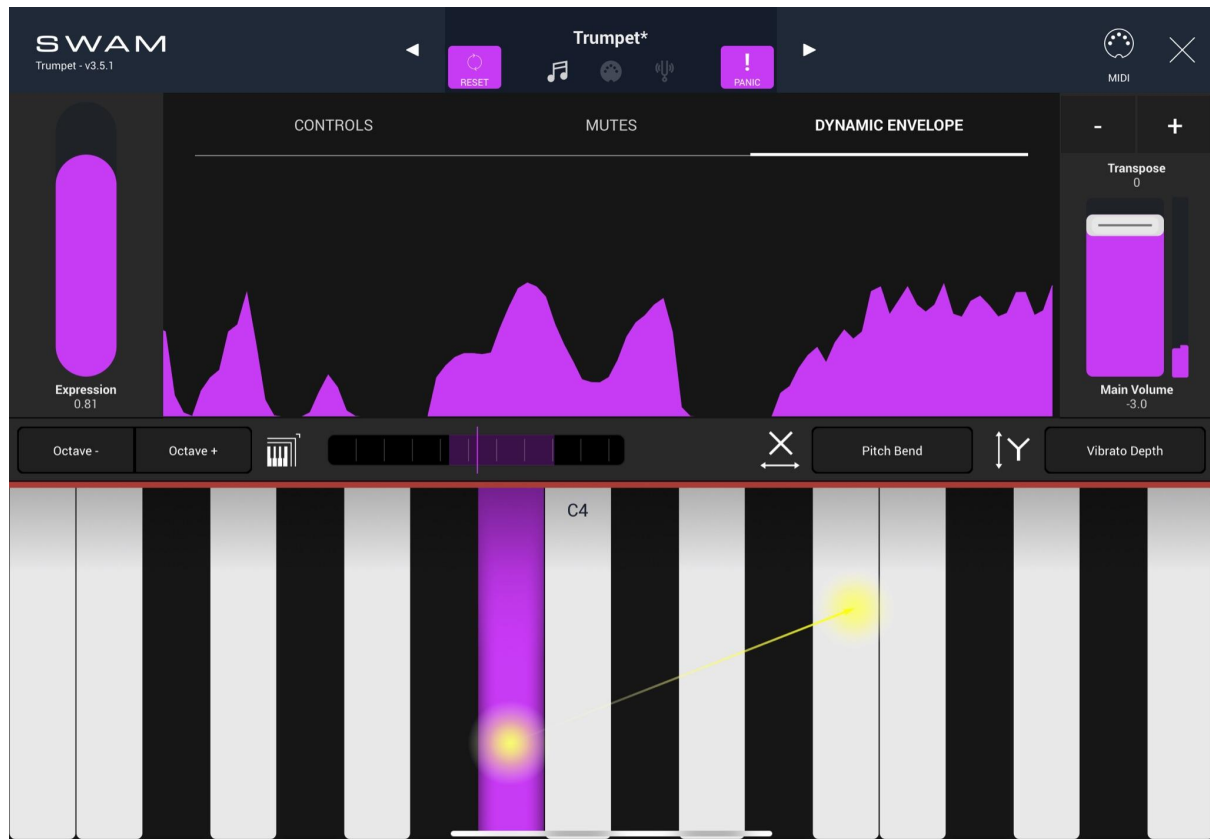
This view shows the evolutions of the sound in real time. The more you move the expression and other parameters the more interesting and expressive SWAM plays. Move the expression and hear the sound nuances, use the Dynamic Envelope to have visual feedback.

Control Surface Keyboard setup

The keyboard has a toolbar with a dedicated controls to:
- Shift the pitch by Octave (Octave - and + buttons)
- manage the Keyboard size: you can select a smaller size to have more keys on screen
  - Small (show 1 octave - 13 keys)
  - Medium (show 1.5 octave - 18 keys)
  - Large (show 2 octave - 25 keys)
- Scroll the keyboard: drag the ribbon to adjust the starting point of the keyboard
- X and Y direction assignment: configure the modulation behavior for finger movement on horizontal and vertical directions

X: Pitch Bend control by x-axis

Tap on it to show pitch-bend range or to unassign pitch-bend control
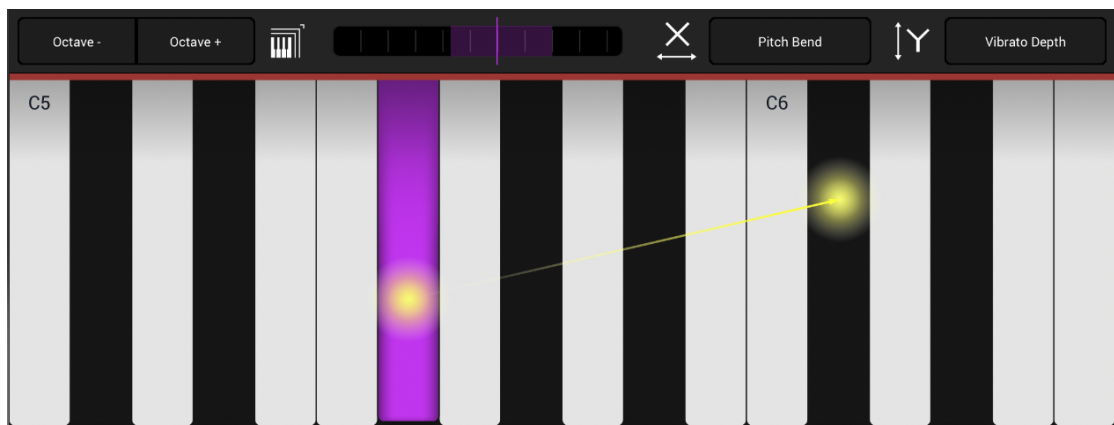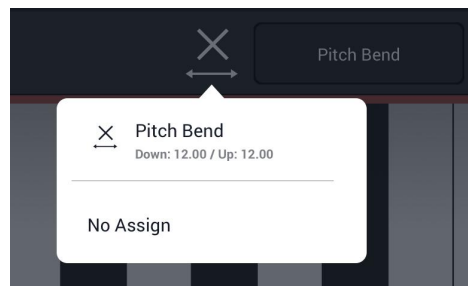
Y: parameter control by y-axis

Tap on it to change parameter assignment to y-axis gesture (by default assigned to Vibrato Depth parameter), and to check what MIDI mapping is assigned to the controlled parameter. A shortcut to the MIDI mapping page is provided to easily change MIDI mapping for the controlled parameter. This is useful when using the Control surface for recording MIDI on a DAW or controlling an external instrument
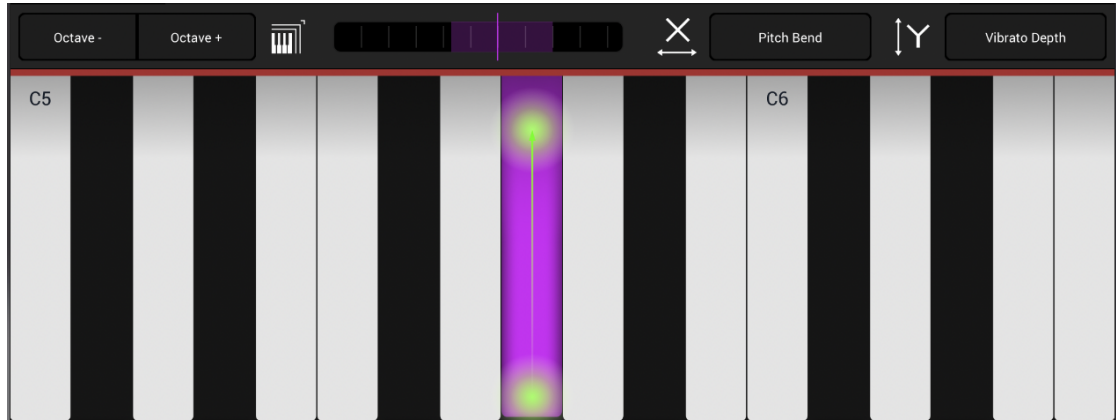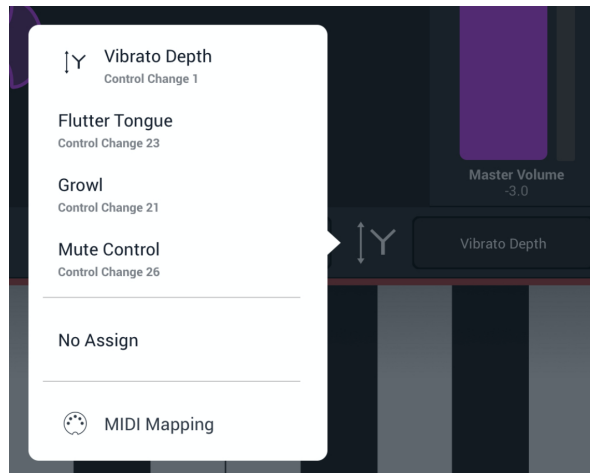
KeySwitches

Depending on the "KS Octave" parameter, Key Switches can be positioned beginning at any octave from C-1 to C2, or they can be disabled.

By default, the Key Switches are positioned starting from C1 (MIDI note 24)where C3 = Middle C (MIDI note 60). You can change the MIDI channel from which Key Switches receive note-events through the "KS Channel" setting. This can be useful when controlling Key Switches from a separate keyboard.

The Key Switch state depends on the note-on velocity. The velocity curve can be adjusted using the "KS Velocity Remap" parameter.
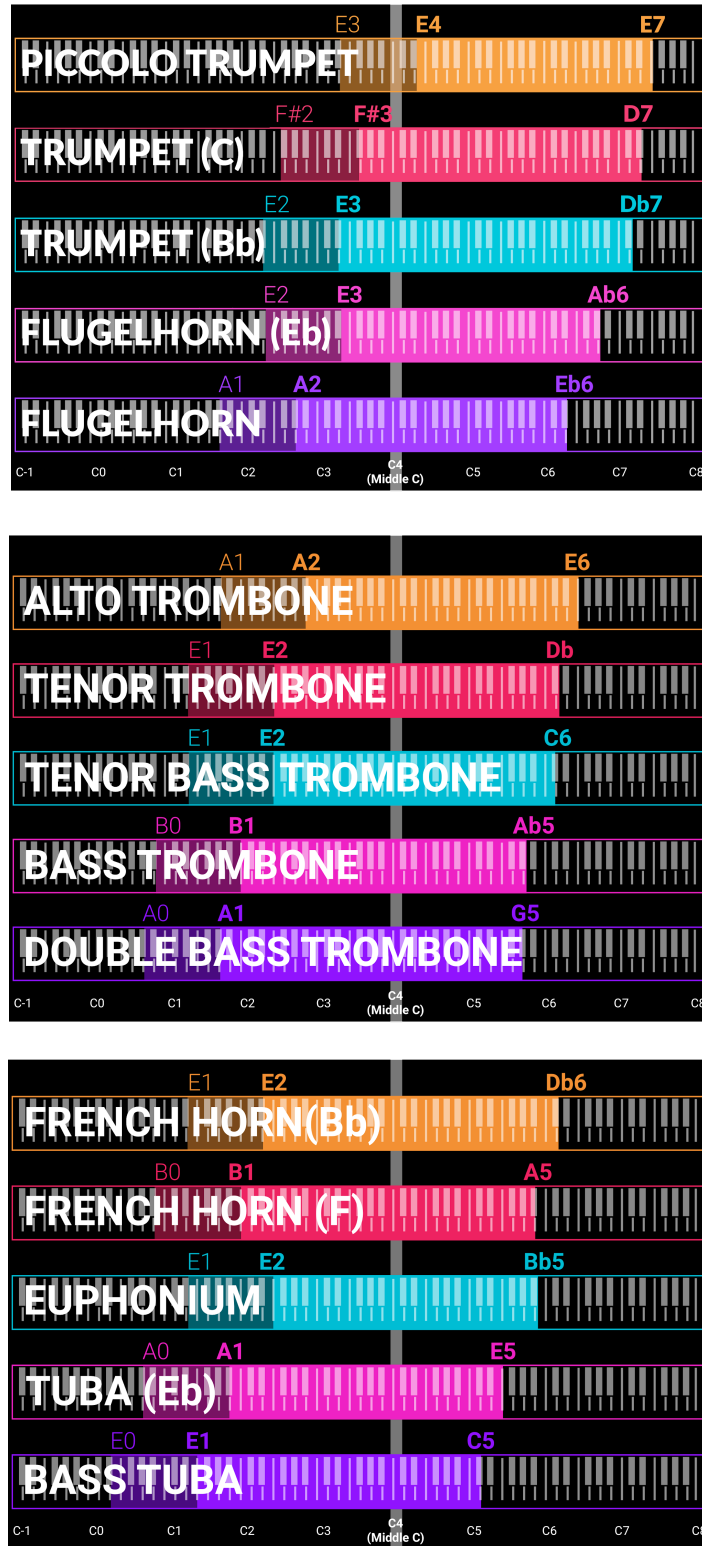
The Key Switches provided are:
- C = **Pipe Gesture**, depending on the selected Pipe Model at the next note-on:

Valves	Low Velocity = Norm Valve (overtones transitions).
	Mid Velocity = Half Valve Transitions.
	High Velocity = Half Valve.
Slide	Low Velocity = Fixed Slide (overtones transitions).
	Mid Velocity = Slide Follow Real (bend).
	High Velocity = Slide Follow +/-7 (extended).

- C# = **Fall Down**. Perform an immediate Fall Down starting from the currently playing note (where the pitch and volume drop rapidly):
  - Velocity controls Fall Down speed.
- D = **Doit**. Perform an immediate Doit starting from the currently played note (where the pitch rises rapidly and the volume decays):
  - Velocity controls Doit speed.
- D# = **Legato Priority** (at next note-on):
  - Low Velocity = OFF
  - High Velocity = ON
- E = **Force Hold Compatible Pipe**
  - While this key is held, the instrument tries to maintain the same pipe length for all notes played (valid for both legato and staccato).
- F = **Pipe Selection**. Controls "Pipe Selection" parameter. Helpful for anticipating the best slide position or valves combination before the next note on:
  - Low Velocity = Auto
  - High Velocity = Manual

All parameters controlled by the Key Switches can be controlled by MIDI Control Change, After Touch and NRPN messages as well through the **Controller Mapping** section.
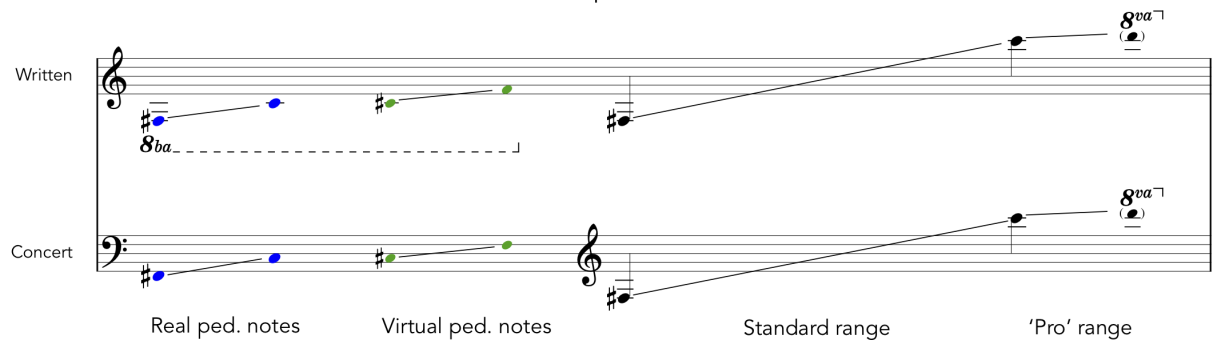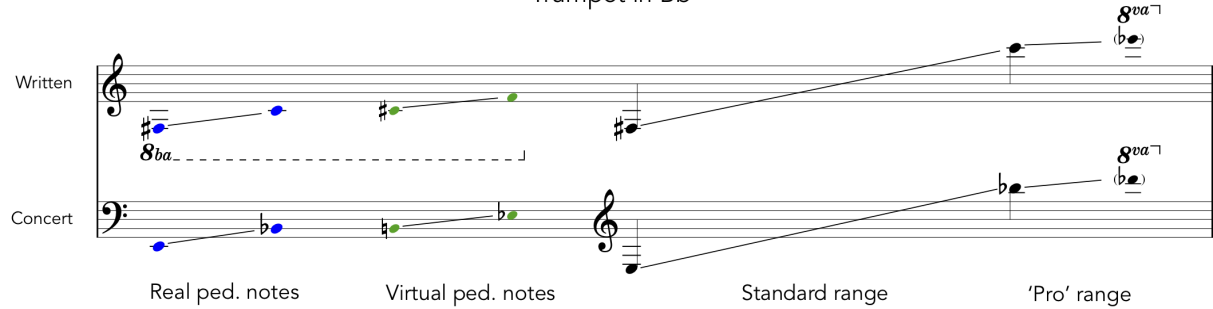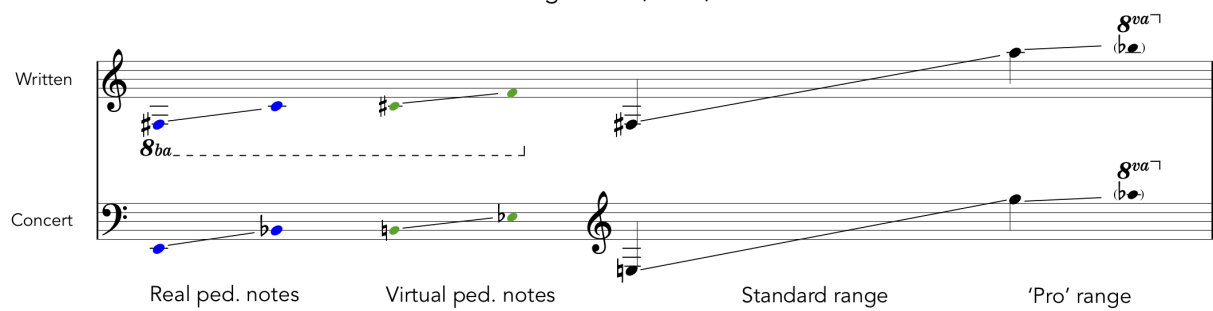
Instrument ranges

Piccolo Trumpet

Concert
Real ped. notes   4th valve notes   Standard range   'Pro' range

Trumpet in C

Written
Concert
Real ped. notes   Virtual ped. notes   Standard range   'Pro' range

Trumpet in Bb

Written
Concert
Real ped. notes   Virtual ped. notes   Standard range   'Pro' range

Flugelhorn (in Bb)

Written
Concert
Real ped. notes   Virtual ped. notes   Standard range   'Pro' range

Flugelhorn in Eb

Written

Concert

Real ped. notes Virtual ped. notes Standard range 'Pro' range

Alto Trombone *

Written & Concert

Real ped. notes Virtual ped. notes Standard range 'Pro' range

* Alto trombone parts are often written in alto clef, pedal notes are seldom used

Tenor Trombone

Written & Concert

Real ped. notes Virtual ped. notes Standard range 'Pro' range

Tenor Bass Trombone

Written & Concert

pedal notes F valve sounds Standard range 'Pro' range
           *

* on the real instrument B1 is obtained with a fake position
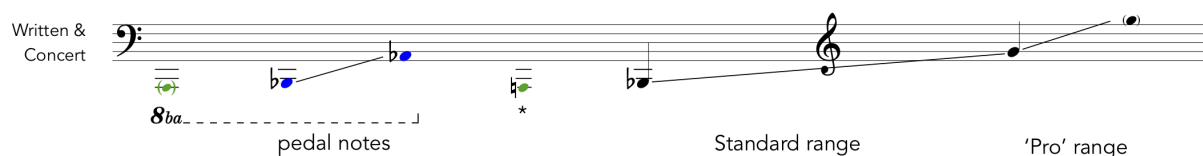
Bass Trombone

Written & Concert

pedal notes Standard range 'Pro' range
        *

* on the real instrument B1 is obtained with a fake position, B0 does not exist

Double Bass Trombone

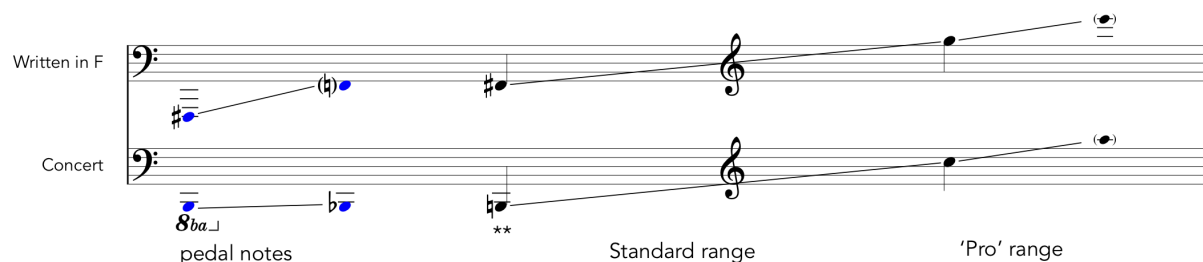pedal notes   Standard range   'Pro' range

* on the real instrument A1 is a pedal note, Bb1 can be a pedal note or not, A0 does not exist
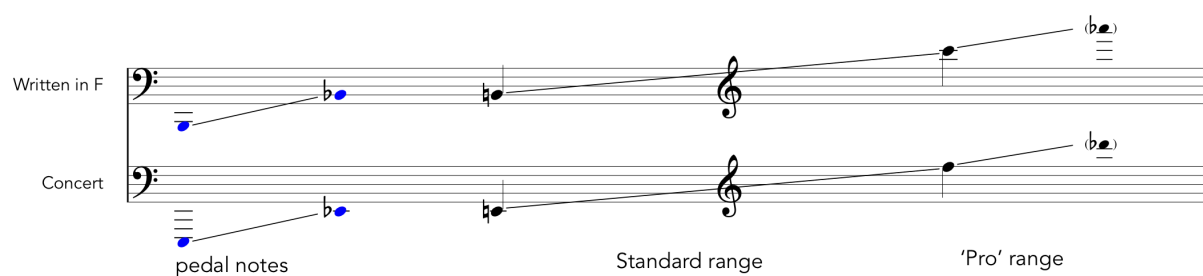
French Horn in F *

pedal notes   Standard range   'Pro' range

* The modern Double French Horn has two sets of tubing, one in F and one in Bb   **notes under B1 are seldom used

Horn in Bb *

pedal notes   Standard range   'Pro' range

* The modern Double French Horn has two sets of tubing, one in F and one in Bb

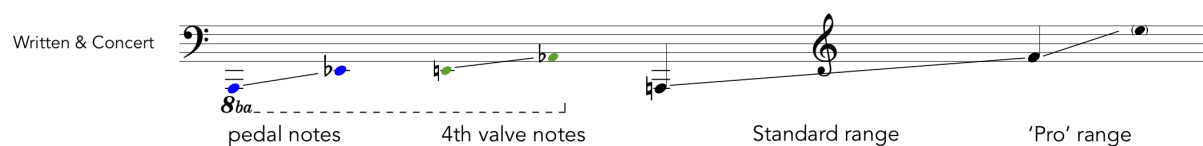## Euphonium

pedal notes   4th valve notes   Standard range   'Pro' range
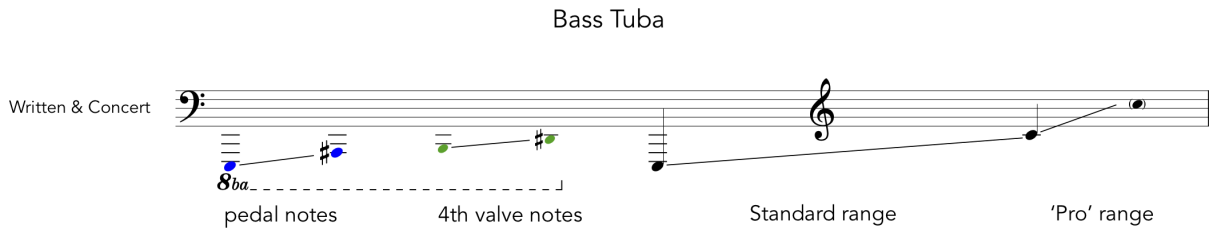
Tuba in Eb

pedal notes   4th valve notes   Standard range   'Pro' range

Bass Tuba

Written & Concert

pedal notes   4th valve notes   Standard range   'Pro' range

Known issues

- Window resizing for plug-ins: on some hosts and DAWs, it's required to close and reopen the plug-in window to apply the new size.

Technical Support

Before requesting technical support, please make sure you have carefully read the User Manual and the FAQs on our Support Center at audiomodeling.com/support.
There, you'll quickly find appropriate answers to most questions.

Should you still need technical support, please contact the SWAM support team at support@audiomodeling.com or open a Ticket through our Support Center.

Note: Please ensure you enter your email address carefully — it's not possible for us to reply to an incorrect email address.

When requesting technical support, please don't forget to provide as much system information as possible, including your type of computer, OS, audio interface, host application, software version, etc. If the problem can be replicated, a MIDI and/or an audio file is usually very helpful.

In order to provide effective and quick support, please include a reference to either the user account, order number or one of the License Keys.