SWAM Solo Woodwinds
User Manual

v3.0.0

Saxophones, Clarinets, Double Reeds, Flutes

Audio Modeling

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

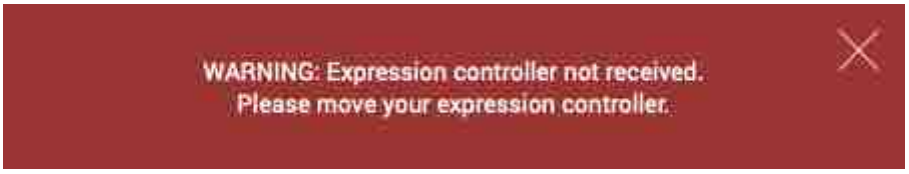
SWAM instruments are designed to be PLAYED by shaping the sound in real time, as a real instrumentalist would.

The Desktop version will function on any modern computer (see Specifications), using any host application which supports VST, VST3, Audio Units, or AAX plugins, or running as a standalone application. Some examples of host software would be a sequencer or 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 (check Specifications for supported OS versions.). On this mobile platform, SWAM products come as Standalone, AUv3 plugins, and Inter-App Audio (IAA) formats. Some examples of host and DAW software 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 modelling, SWAM provides exceptional playability and realism. The sound is not produced by playing back samples of 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 SWAM instruments are controlled using a suitably capable set of MIDI controllers, as described in this manual.

NOTE: As with a traditional acoustic musical instrument, SWAM instruments allow playing continuously over 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 set to send CC11 or CC7 MIDI messages), a breath or wind controller (usually sending 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 REAL TIME. 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 on a DAW, it's necessary to provide either a MIDI Expression controller curve or parameter automation.

Note: the MIDI note naming convention we use is based on Middle C = C3, corresponding to MIDI note number 60.

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 section 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" section of this user manual to locate the EULA on your system.

Specifications

Operating Systems and Formats

macOS 10.10 (Yosemite) – 11.6 (Big Sur)*

- Standalone, Audio Units, VST, VST3, AAX 64bit
- NKS (Native Kontrol Standard)

Windows 10 and 11

- Standalone, VST, VST3, AAX 64bit
- NKS (Native Kontrol Standard)

iPadOS 11 – 15

- Standalone, AUv3, IAA

** Silicon architecture supported through Rosetta 2*

Required space after installation

- SWAM Saxophones
    - Disk space: 500 MB
    - RAM: 100 MB for each instrument instance
- SWAM Clarinets
    - Disk space: 260 MB
    - RAM: 100 MB for each instrument instance
- SWAM Flutes
    - Disk space: 400 MB
    - RAM: 60 MB for each instrument instance
- SWAM Double Reeds
    - Disk space: 475 MB
    - RAM: 100 MB for each instrument instance

Note: disk space has been computed with all plugin formats installed

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 product. 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.

Installation

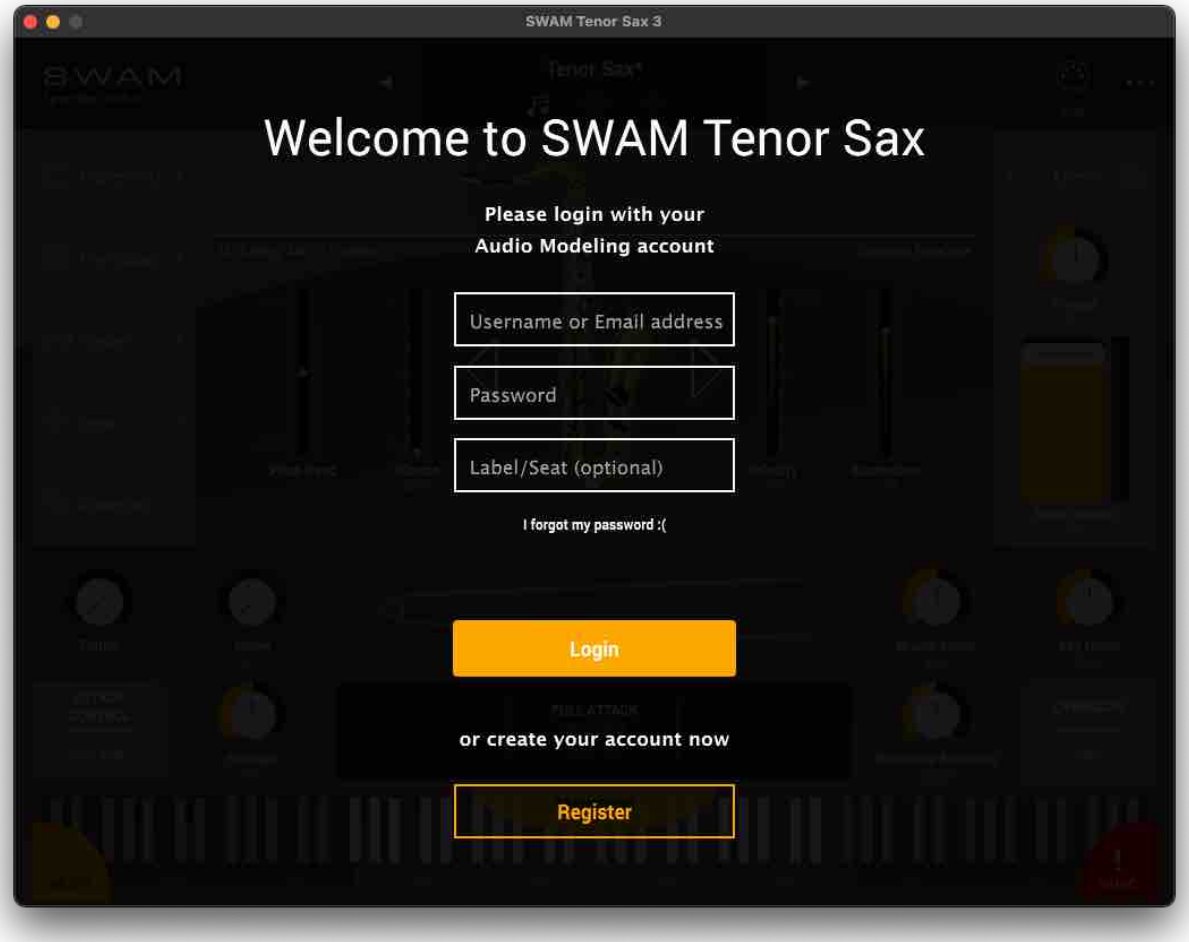
Product Registration
1) Login to our Customer Portal (https://my.audiomodeling.com); create a new account if you have never signed up.
2) Select “Register a new product.”
3) Type the License Key or Redeem Code provided, then select “Next."
4) The portal will send you an email. Click the confirmation link on the email.
5) Select “Licenses & Download” to get the latest installer and User Manual, and to manage your activations.

Installation
Unzip/open the archive and run the installer.

If you installed a previous version
You can safely run the installer without launching the uninstaller.

Activation
After installation, use your Customer Portal **credentials** and press "Login" to authorize the product.

You can optionally fill the **Label/Seat** field that helps to identify where the authorization has been made (e.g. "Laptop" or "Studio"). This label is visible on the Customer Portal, next to the authorization entry corresponding to the user's license key.



NOTE: The product 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 authorization, then disconnect once authorization is complete.

Installation paths

macOS

- Standalone app, End User License Agreement, Uninstaller are located under: /Applications/Audio Modeling/(Product name)
- Audio Units plugins are located under: /Library/Audio/Plug-Ins/Components
- VST3 plugins are located under: /Library/Audio/Plug-Ins/VST3
- VST plugins are located under: /Library/Audio/Plug-Ins/VST
- AAX plugins are located under: /Library/Application Support/Avid/Audio/Plug-Ins
- Default presets and auxiliary resources are stored under: /Users/Shared/Audio Modeling/SWAMv3

Windows

- Standalone app, End User License Agreement, Uninstaller are located under: C:\Program Files\Audio Modeling\(Product name)
- VST3 plugins: the installation path will be asked for during the installation
- VST plugins: the installation path will be asked for during the installation
- AAX plugins are located under: C:\Program Files\Common Files\Avid\Audio\Plug-Ins
- Default presets and auxiliary resources are stored under: C:\Users\Public\Documents\Audio Modeling\SWAMv3

iPadOS

Installation and updates are managed through the AppStore.

Hardware Requirements

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 controller curves and programming 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 five octaves, mod wheel and pitch bend, connected to the computer via USB or an external MIDI device equipped with a set of physical continuous MIDI controllers (usually knobs or sliders) to control playing techniques like bow pressure, bow position, tremolo, harmonics, etc.

Although 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, or Travel Sax - all of which 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 section 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 in our Knowledge Base:
audiomodeling.com/support.

iPadOS

Standalone
We provide a Standalone app of each SWAM Solo String instrument.

Plug-ins
A DAW (Digital Audio Workstation) or other host capable of running SWAM Solo String 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.

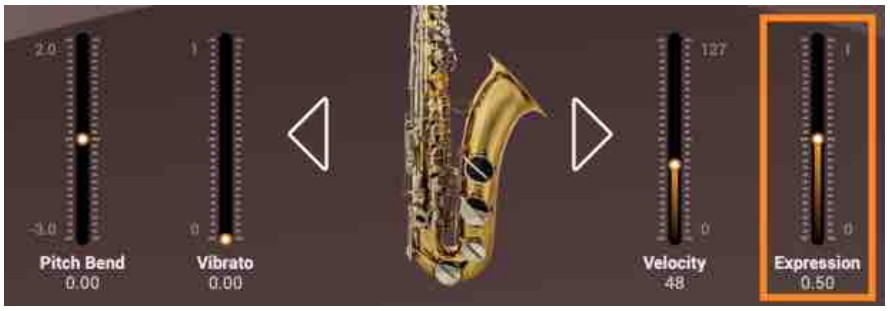
Using an appropriate range of Expression

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

All real physical instruments require much greater physical 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 its maximum position 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 at the highest extreme of dynamics, leading unavoidably to a poor, unrealistic performance.

Please keep in mind that the key to expressiveness and realism is the 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 overusing the higher levels of 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.



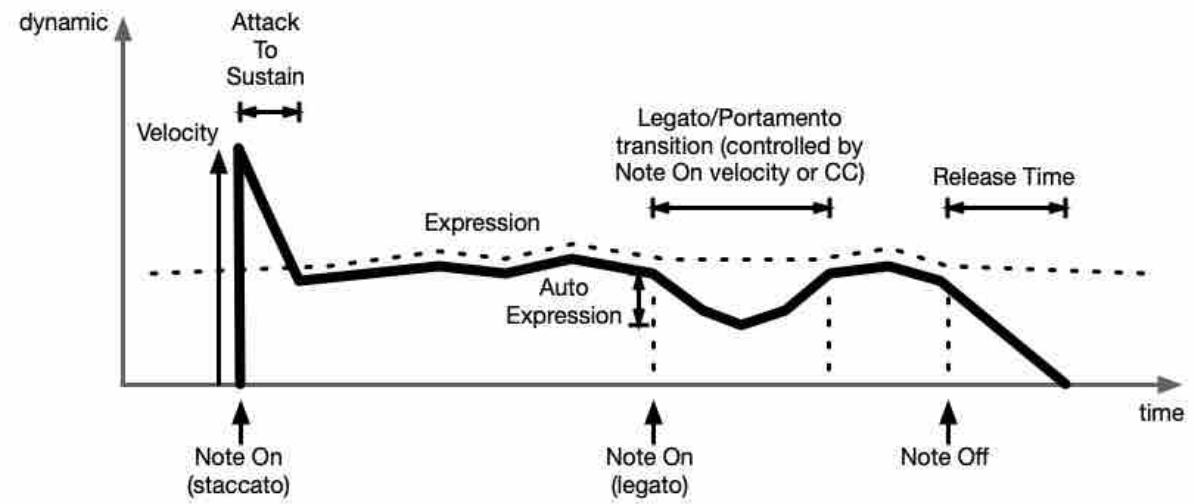
Introduction

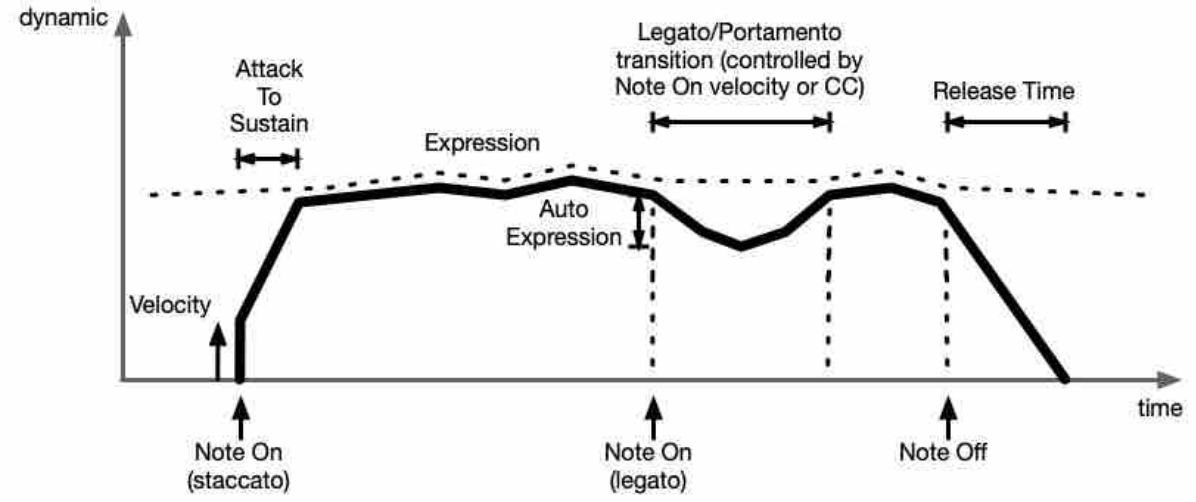
SWAM Solo Woodwinds is a collection of solo instruments conceived and developed by Stefano Lucato and the Audio Modeling team. These instruments are based on a hybrid technology that combines Sample Morphing technique and Physical Modeling synthesis.
SWAM stands for Synchronous Waves Acoustic Modeling, and it is a proprietary technology that exploits the knowledge of phase and length of each waveform period.

The SWAM Solo Woodwinds collection includes four products: Saxophones, Clarinets, Double Reeds, and Flutes.

Each product provides multiple instruments, each one comes as a Standalone application, VST, VST3, Audio Units and AAX plugins for desktop; and Standalone App, AUv3 and IAA plugins for iPadOS.

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 instrument behavior which are specific to woodwind playing techniques.





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 Micro Tuning 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

- Instrument (left/right arrows)
  Use the arrows to select different instrument timbres (corresponding to different instruments or microphone placements).
- Flutter: flutter tongue intensity.
- Growl: growl intensity. For a "cleaner" sound, this should be set to zero.
- Breath Noise: breath noise intensity.
- Key Noise: key noise intensity.
- Pipe Model:
  - Keys: the instrument model is controlled by Keys.
  - Slide: the instrument model is controlled by a Slide.
- Formant: changes the formants, thus the timbre of the instrument.
- Harmonic Structure: spectral characteristics of the instrument (balance between odd and even harmonics).
- Overblow: clicking this option triggers overblow on any quick changes to the dynamics.
- 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.

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.

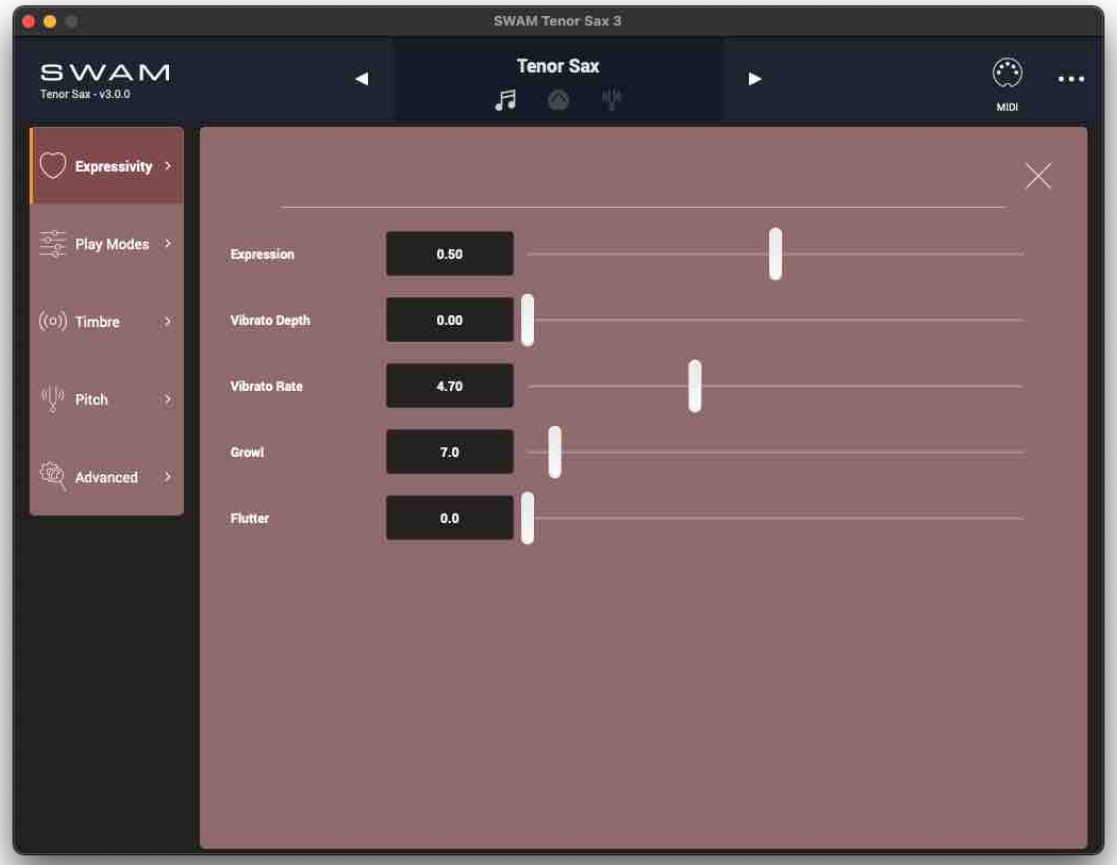
List of locked parameters on iPadOS version

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

- Chromatic
- Legato Mode
- Overblow Thresh
- Harmonic Structure
- Formant
- Modal Res. Gain
- Random Dynamic
- Dynamic Harmonic (only for Saxophones, Double Reeds and Clarinets)
- Flutter (only for Saxophones, Double Reeds and Clarinets)
- Pipe Split (only for Flutes)
- Dynamic Pitch
- Attack To Sustain
- Auto Expression
- Vibr. Rand. Rate
- Panpot Type
- Harmonic Gain

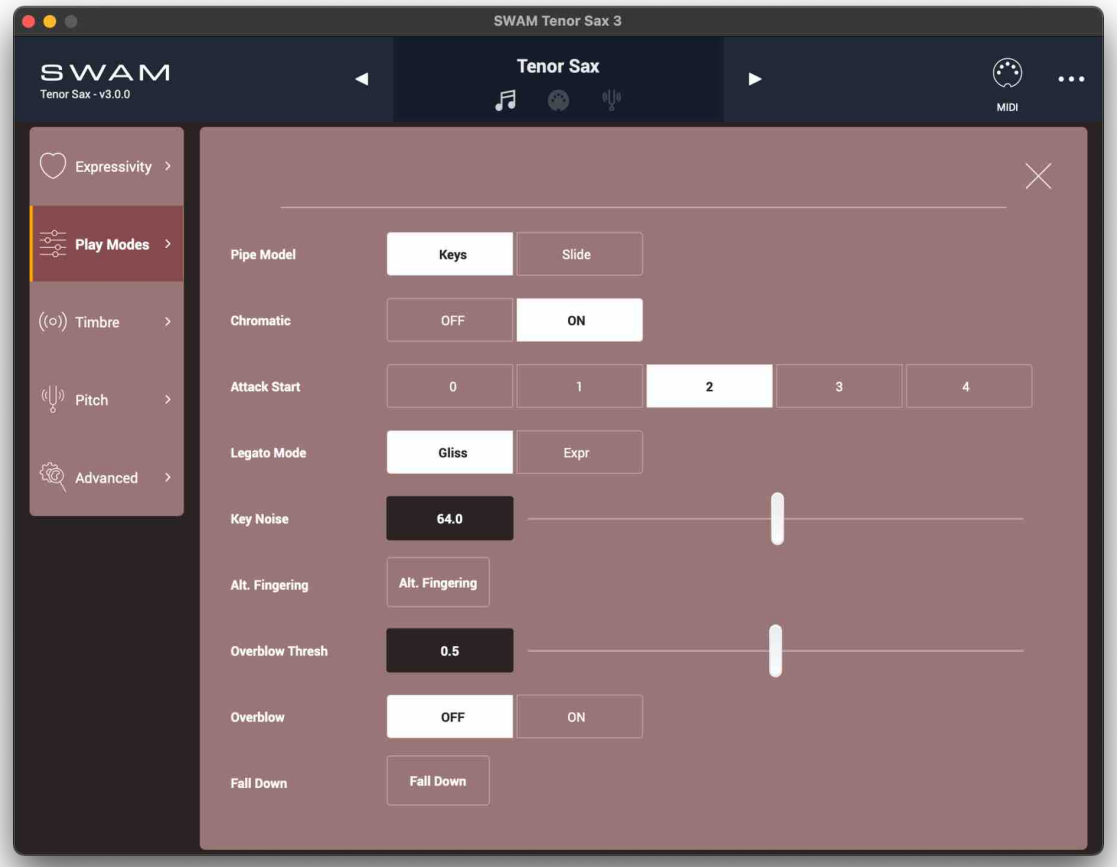
Unlocking through In-App Purchase will be provided in future.

Expressivity



- Expression: main expressive control.
- Vibrato Depth: controls the amount of vibrato.
- Vibrato Rate: controls the average frequency of the vibrato applied to the model.
- Growl: growl intensity. For a "cleaner" sound, this should be set to zero.
- Flutter: flutter tongue intensity.

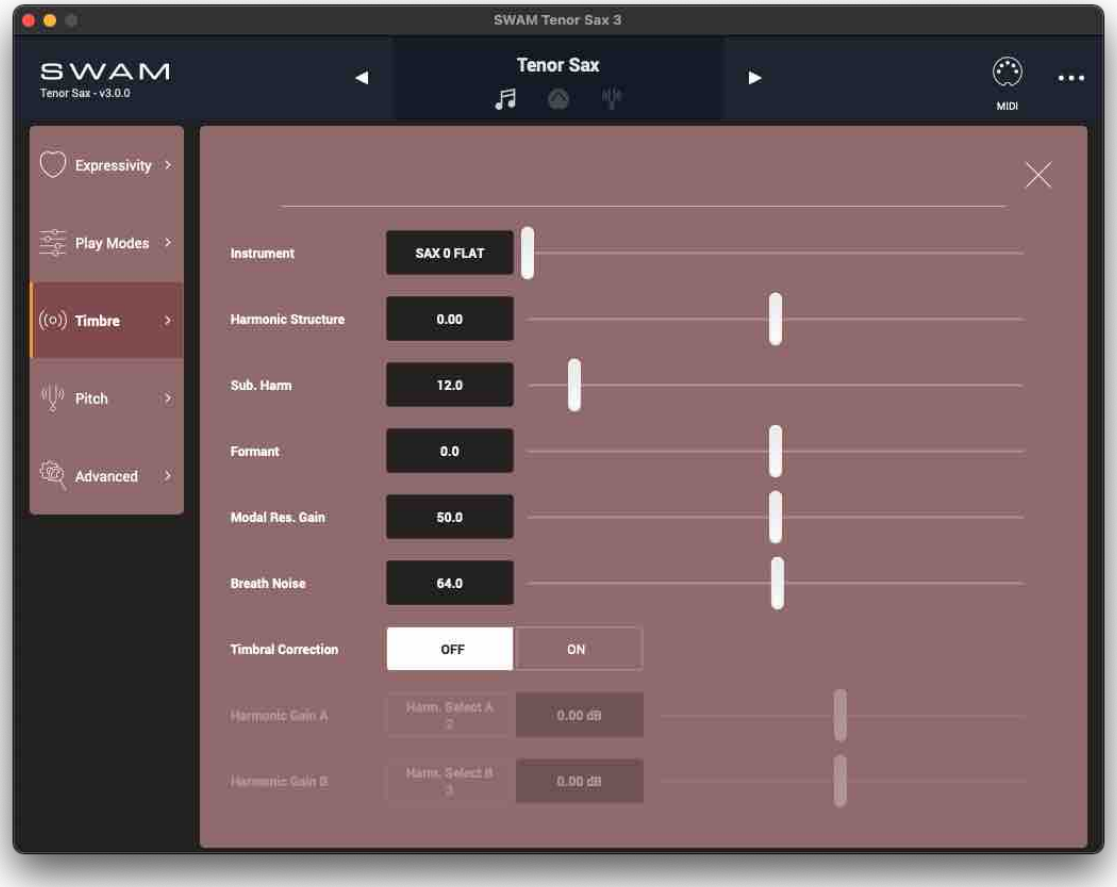
Play Modes



- Pipe Model: same as in the Main GUI.
- Chromatic
  - OFF
  - ON: activates an automatic chromatic scale during slow portamentos on larger intervals.
- Attack Start: progressively cuts the attack for a more immediate attack response. Only by setting this to "0" can the complete original attack be played.
- Legato Mode: two different types of legato can be selected:
  - Gliss legato with portamento (glissando).
  - Expr straight legato (no portamento).
- Key Noise: key noise intensity.
- Alt. Fingering: (Saxophones)
- Overblow Threshold: crossfade between a brief squeak on attack ("S"), or a longer overblow ("O"), if overblow is triggered by a CC. Not active if the overblow is triggered by the keyswitch [Squeak does not apply for Flutes].
- Overblow: clicking this option triggers overblow on any quick changes to the dynamics.

- Fall Down: clicking on this button triggers a fall. This effect is also assigned to keyswitch C1.

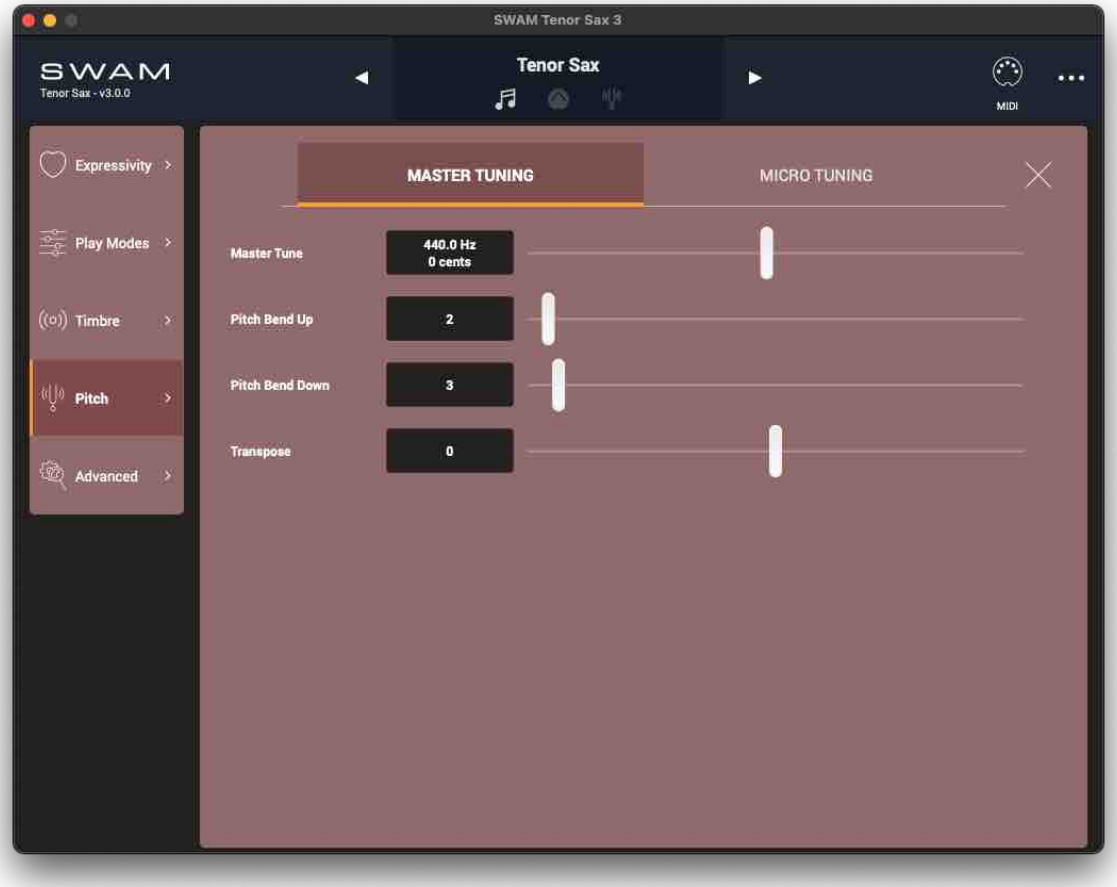
Timbre



- Instrument: changes the instrument timbre (corresponding to different instruments or microphone placements).
- Harmonic Structure: spectral characteristics of the instrument (balance between odd and even harmonics).
- Sub. Harm: subharmonic intensity. [The Sub Harm parameter is not available for the Flutes].
- Formant: changes the formants, and thus the timbre, of the instrument.
- Modal Res. Gain: changes the amount of lower harmonics persistence.
- Breath Noise: breath noise intensity.
- Timbral Correction: enables or disables the Harmonics Timbral Shaping.
  - Harmonic A Gain: the gain amount for harmonic selected by "Harm. A"
  - Harmonic B Gain *(locked on iPad)*: the gain amount for harmonic selected by "Harm. B"

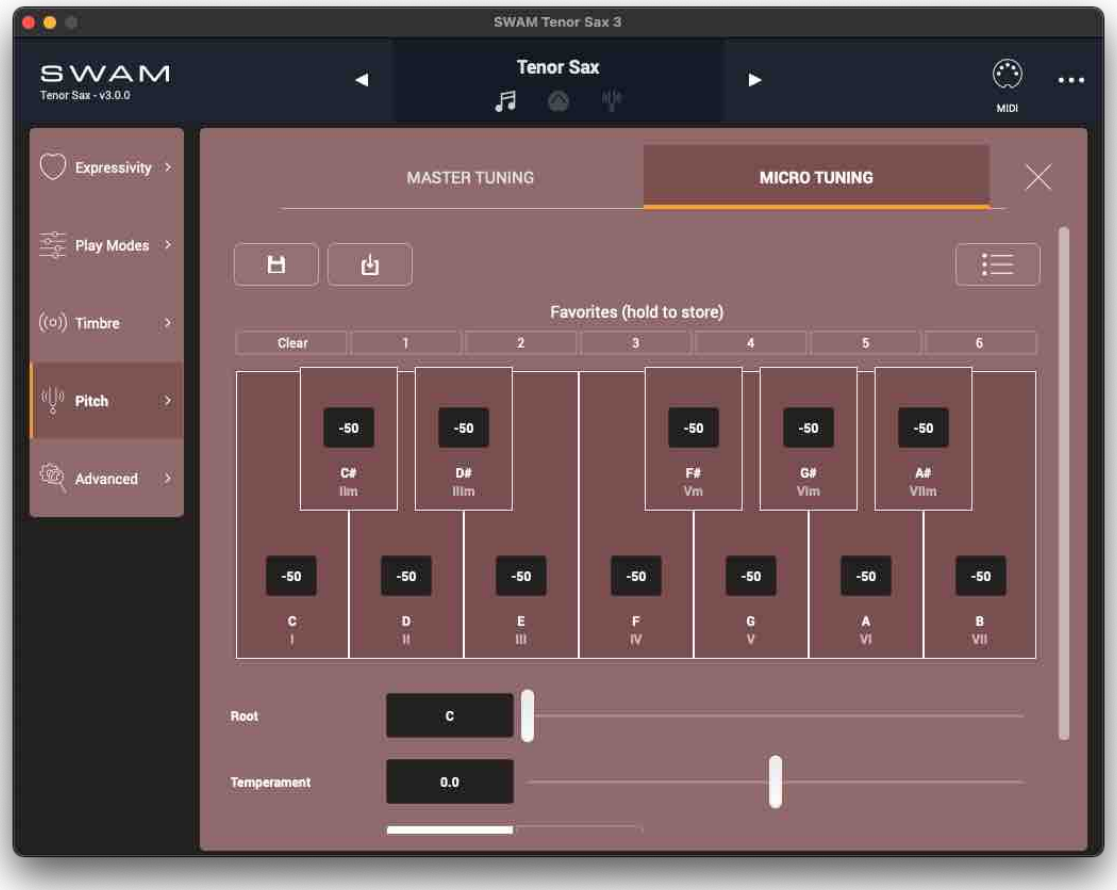
Pitch

Master Tuning



- Master Tune: master tuning of the instrument displayed both in *Hz* and *cents*.
- Pitch Bend Up: the maximum amount of upward pitch bend, in *semitones*.
- Pitch Bend Down: the maximum amount of downward pitch bend, in *semitones*.
- Transpose: the amount to transpose the instrument, in *semitones*

Micro Tuning



- Save icon  : save the current Micro Tuning settings as a User preset
- Import icon  : import a Micro Tuning preset as User preset
- Preset list icon  : open the list of Micro Tuning presets. User presets are listed after the Factory presets
- Favorites: it is possible to store up to seven 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
- Micro Tuning 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 the micro tuning 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 micro tuning 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.

Applying micro tuning through SysEx

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

Custom Protocol

This protocol allows changing both micro tuning and transposition on the fly through SysEx messages.

1) Micro tuning 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:

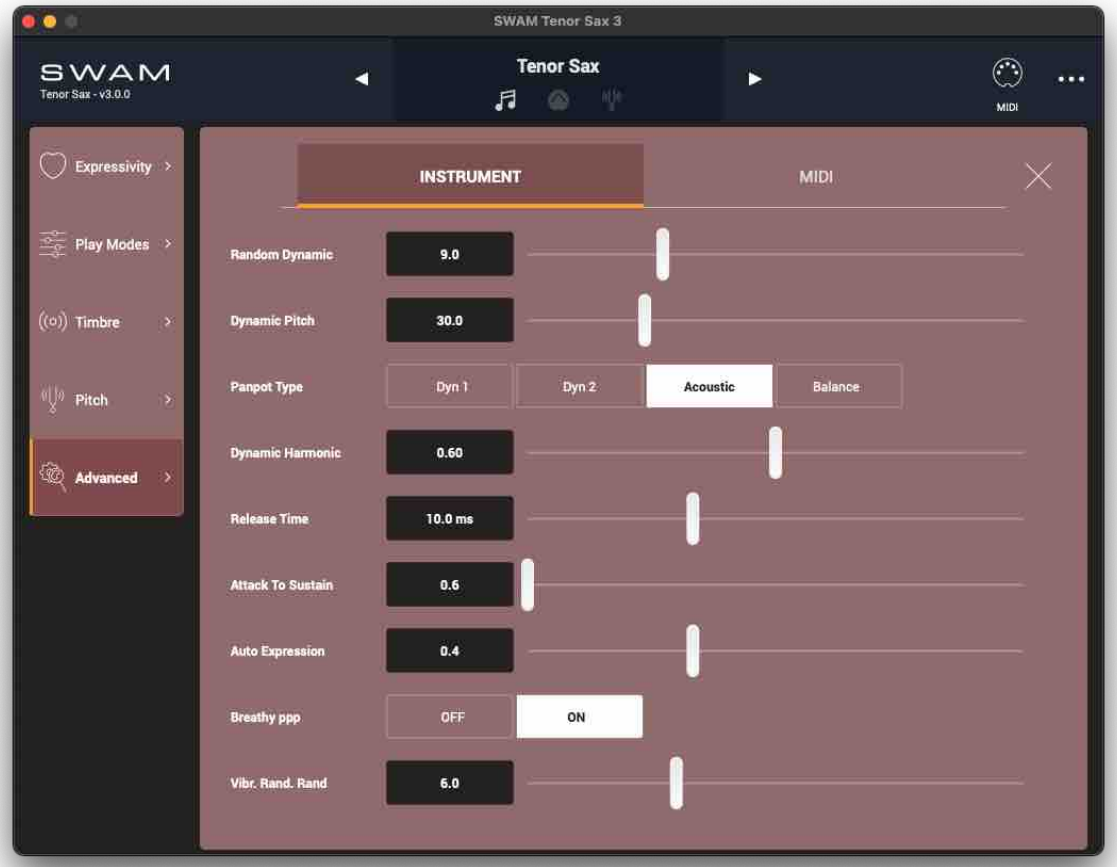
```
1st byte: Beginning of sysex (F0)
2nd byte: Manufacturer ID - Yamaha (43)
3rd byte: Device ID
4th byte: Model ID - PSR A3000 (4C)
5th byte: Address High (08)
6th byte: Address Mid (00)
7th byte: Address Low - Note value (41=C, 42=C#, 43=D, ..., 4C = B)
8th byte: Detuning value (04=-60, 05=-59, 06=-58,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

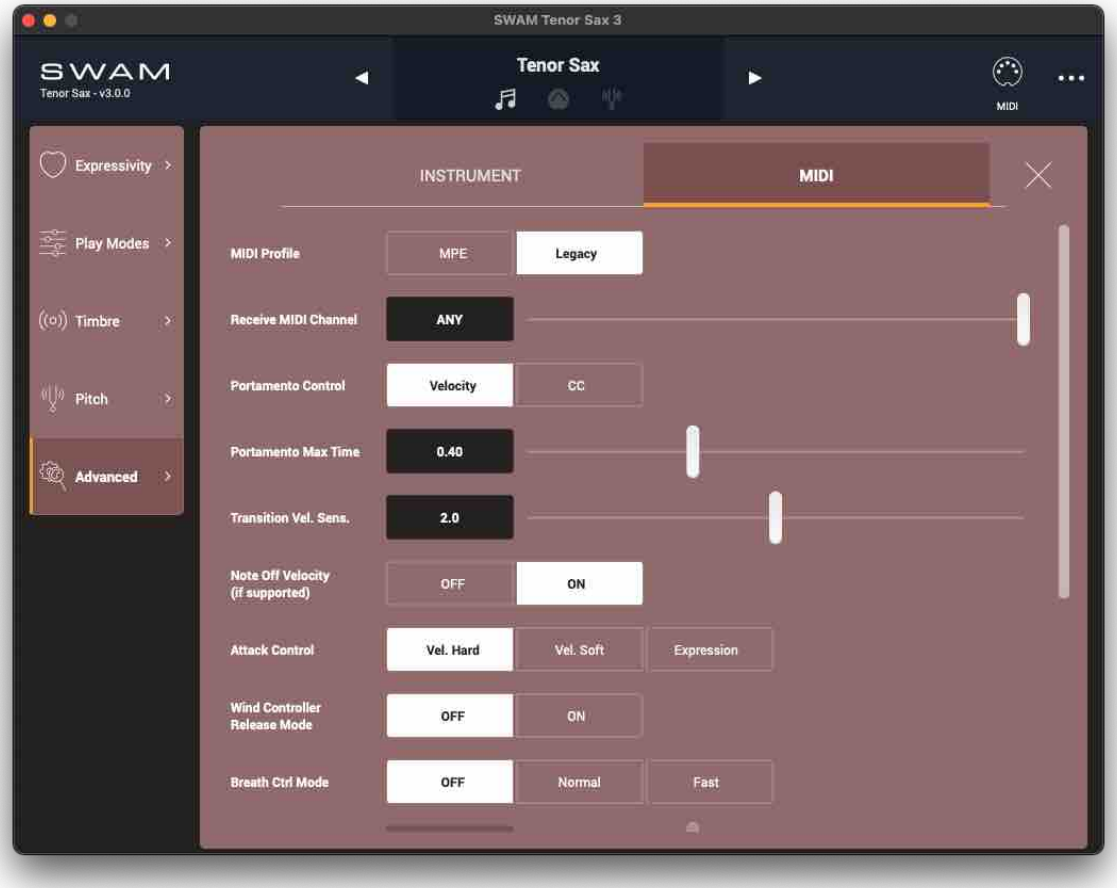
Instrument



- Random Dynamic: controls random modulation of dynamics and pitch.
- Dynamic Pitch: amount of pitch modulation applied while changing the dynamics.
- Panpot Type *(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.
- Dynamic Harmonic:
- Release Time: release time on note off.
- Attack To Sustain: affects the velocity-dependent duration of the transition from attack to sustain.
- Auto Expression: the slider controls the depth of legato transitions.

- Breathy ppp: adds a breathy, noisy pianissimo layer useful when playing certain jazzy styles. Acting on this option triggers a complete reload of all audio resources, so any currently active note will be terminated.
- Vibr. Rand. Rate: randomization of vibrato intensity and rate.

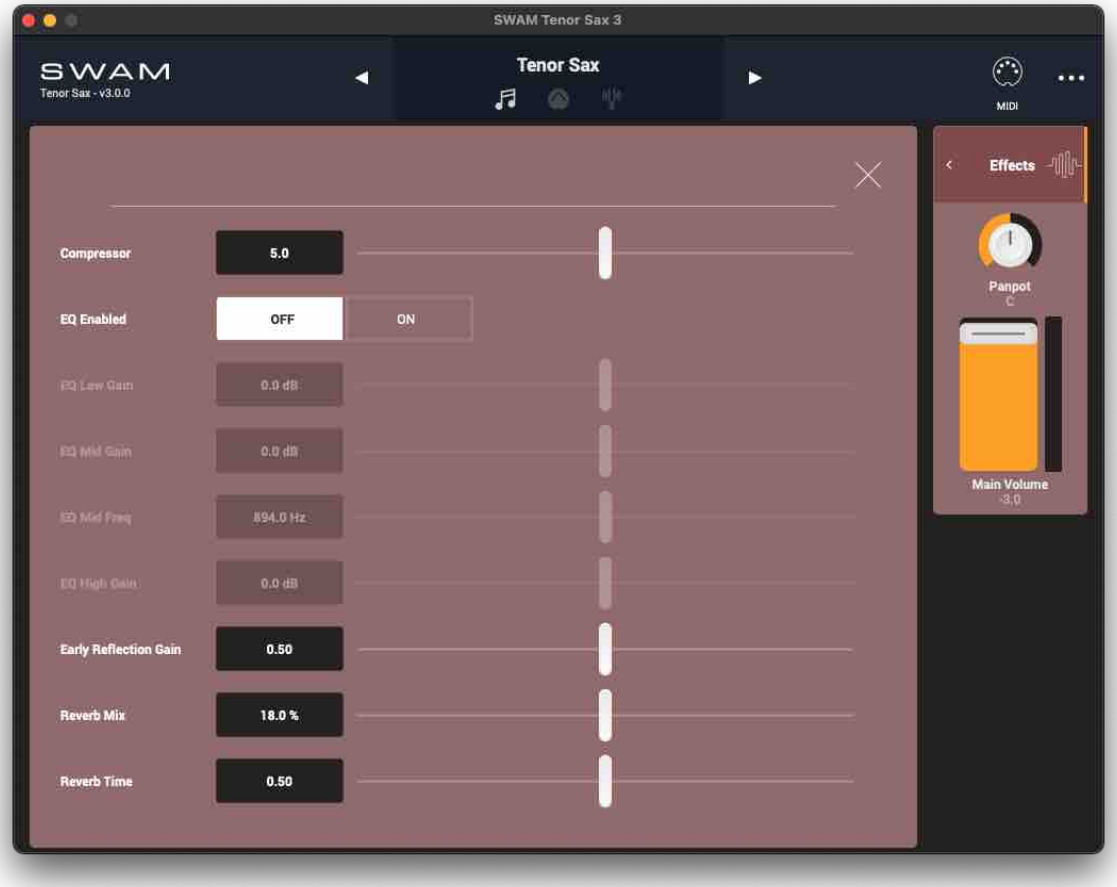
MIDI



- MIDI Profile:
  - MPE: for MIDI Polyphonic Expression compatible devices.
  - Legacy: MIDI 1.0 devices.
- Receive MIDI Channel: is the MIDI channel over which the sound generator receives notes and controllers that affect the sound (default is ANY). Note that this can be different from the keyswitches MIDI channel, so it is possible to control keyswitches 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)
- Portamento Max Time: controls the portamento time, set to OFF to disable portamento (no portamento when this value is < 0,15).
- Transition Vel. Sens: controls the relationship between velocity and portamento duration when Portamento Control is set to 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: overrides the current Release Time value with the lowest 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 setting makes the instrument more responsive, 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 by using the breath envelope while holding a note.
- Breath Ctrl Hi-Res Threshold: when Breath Control Mode is set to ON, (Breath Control Hi-Resolution Threshold) sets the threshold for a note on event to be triggered when using MIDI Hi-Resolution messages for the Expression parameter.
- 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 provides better pitch control when using a physical controller which is separate from the keyboard or other playing surface, when there is no correspondence between the controller and the note positions.
    - OFF: linear pitch bend (recommended for devices which integrate pitch bend control with the playing surface, so that pitch bend movements on the surface correspond directly with notes. Many current MPE devices fall into this category).
- KS MIDI Channel (Keyswitches MIDI Channel): select the MIDI channel to receive keyswitch information. Select from channel 1 to 16 or ANY.
- KS Octave (Keyswitches Octave Transpose): allows you to transpose = keyswitches to begin in the octave from C-1 to C2, or turn off keyswitches (OFF).
- KS Velocity Remap (Keyswitches Velocity Remapping): since some keyswitches are velocity-dependent, this parameter controls the distribution of the thresholds between states.

Effects



- Compressor: controls how much dynamic compression is applied to the output.
- EQ Enabled: enables or disables the Equalizer (see next).
- EQ Low Gain, EQ Mid Gain, EQ Mid Freq, EQ High Gain: Equalizer parameters. Note that frequency ranges differ between instruments, as they have been calibrated for the harmonic contents of each instrument.
- Early Reflection Amount: amount of Early Reflections mixed in, useful especially for Horns.
- Reverb Mix: controls the amount of reverb added to the dry signal.
- Reverb Time: controls the decay time of the reverb tail.

Controller Mapping

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

Click on the MIDI mapping icon in the header 

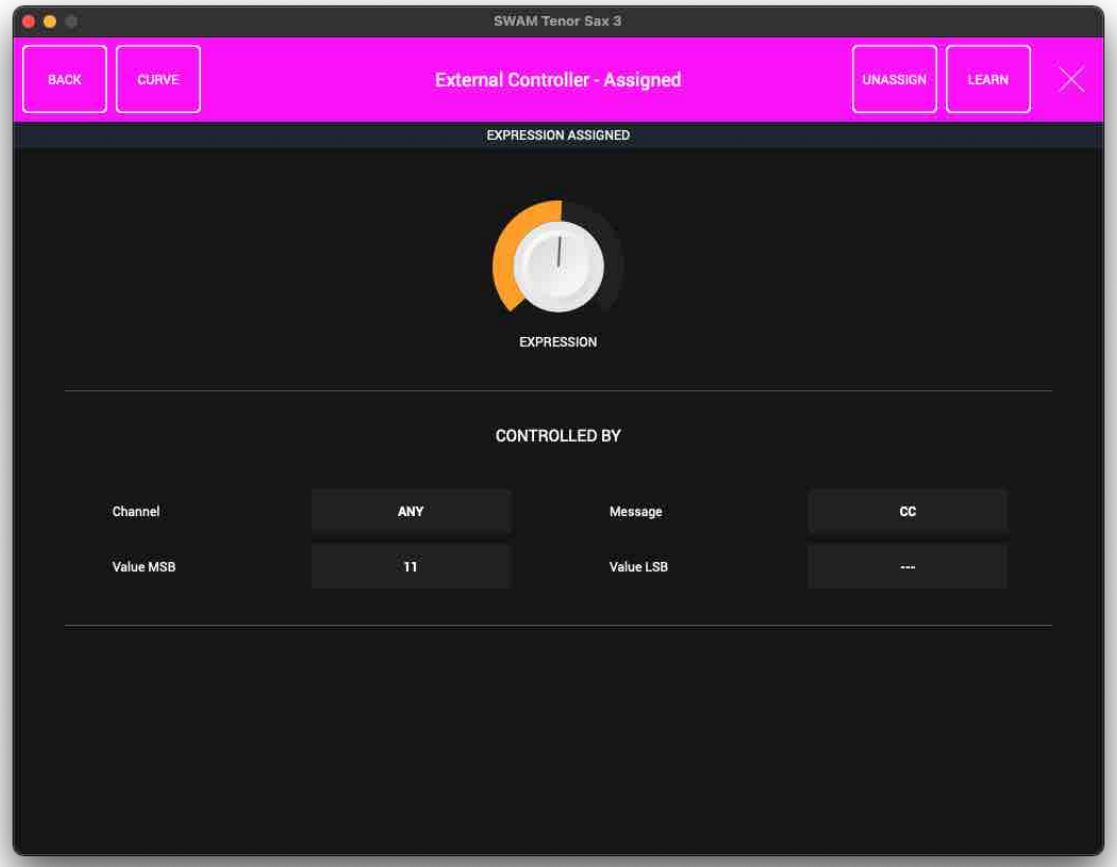
header to enter the "Touch & Assign" mode.

In this view, parameters to which a controller has been assigned are highlighted as a purple area with dashed borders; while parameters to which no controller has been assigned are highlighted as a green area. Parameters not highlighted at all are not available for mapping. In this mode, it is possible to browse every view in the entire interface to configure and map any available parameter.

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

Mapping Screen

Assigned parameter status



- Back: returns to the previous screen
- CURVE: show the MIDI remapping curve for the selected mapping
- UNASSIGN: removes the current mapping and enters MIDI Learn mode
- LEARN: turns ON/OFF the MIDI LEARN function to edit or remap the current parameter
- X: close the mapping screen and turn off Controller Mapping Mode

- Controlled By section:
  - Channel: set the MIDI channel over which controller data will be received, from 1 to 16, or ANY.
  - Message: MIDI message type of the received controller data:
    - 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.

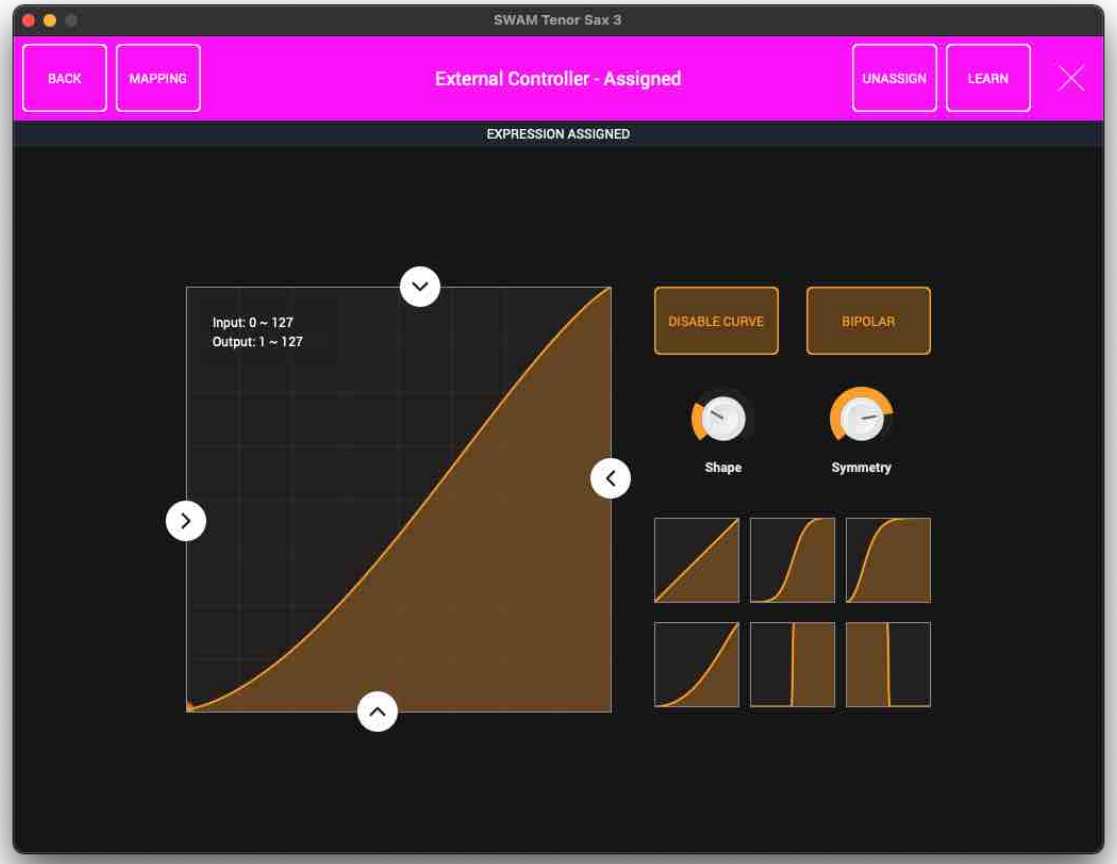
NOTE:

- *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 seven-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 being held down. This pressure information, commonly called "Aftertouch,"may be used to control 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 14-bit resolution, 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, and provide 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 largest-value portion (coarse resolution) of the two-byte message.*
- *LSB means "Least Significant Byte" and is only for CC-HIRES and NRPN messages. It is the smallest-value portion (fine resolution) of the two-byte message.*

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

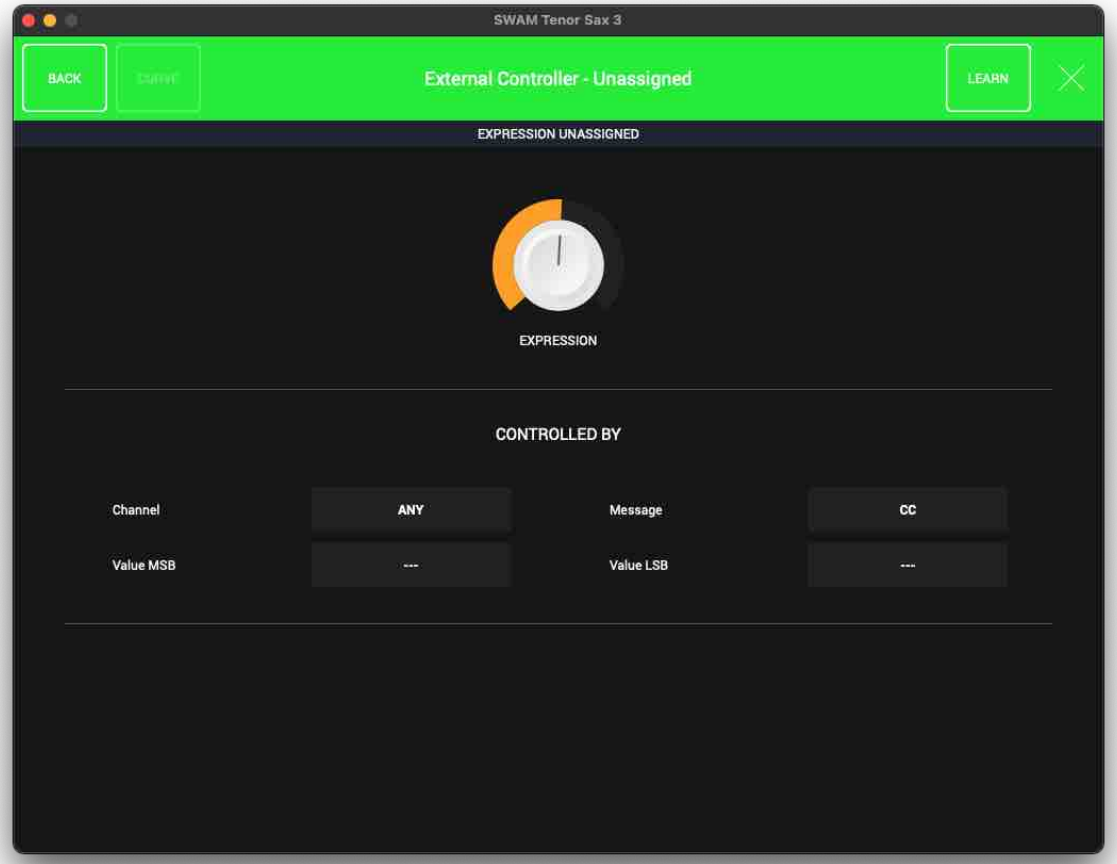
- CURVE : click on the button to show the mapping curve, which displays how input values from the controller are transformed into parameter values. The controller (input) and parameter (output) ranges are shown in the upper left corner of the curve display. . The curve can be modified using these adjustments:
    - Input Min (left arrow): sets the minimum controller value that will cause an increase in the parameter above the assigned Output Min value (or the Output Max value, if the curve is inverted).Drag the arrow to change the value.
    - Input Max (right arrow): sets the controller value that will produce the maximum parameter value, as defined by the Output Max setting (or the Output Min value of the curve is inverted). Drag the arrow to change the value.
    - Output Min (bottom arrow): the minimum output value. Drag the arrow to change the value.
    - Output Max (upper arrow): the maximum output value. Drag the arrow to change the value.
    - Shape: controls the shape of the remapping curve (be aware, small changes can produce large variations, depending on the Symmetry parameter).
    - Symmetry: controls the symmetry of the remapping curve.
    - DISABLE CURVE: bypasses the remapping curve.
    - BIPOLAR: useful for bipolar controls, i.e. where a value of 64 is considered the zero point of the controller. The parameter of the remapping curve is referred to just one side and then applied to the negative, antisymmetric side

  Note that either the X or Y axis of the curve can be inverted simply by dragging the arrows affecting the axis to the opposite side of the curve display. In-between settings are also possible, so experiment!



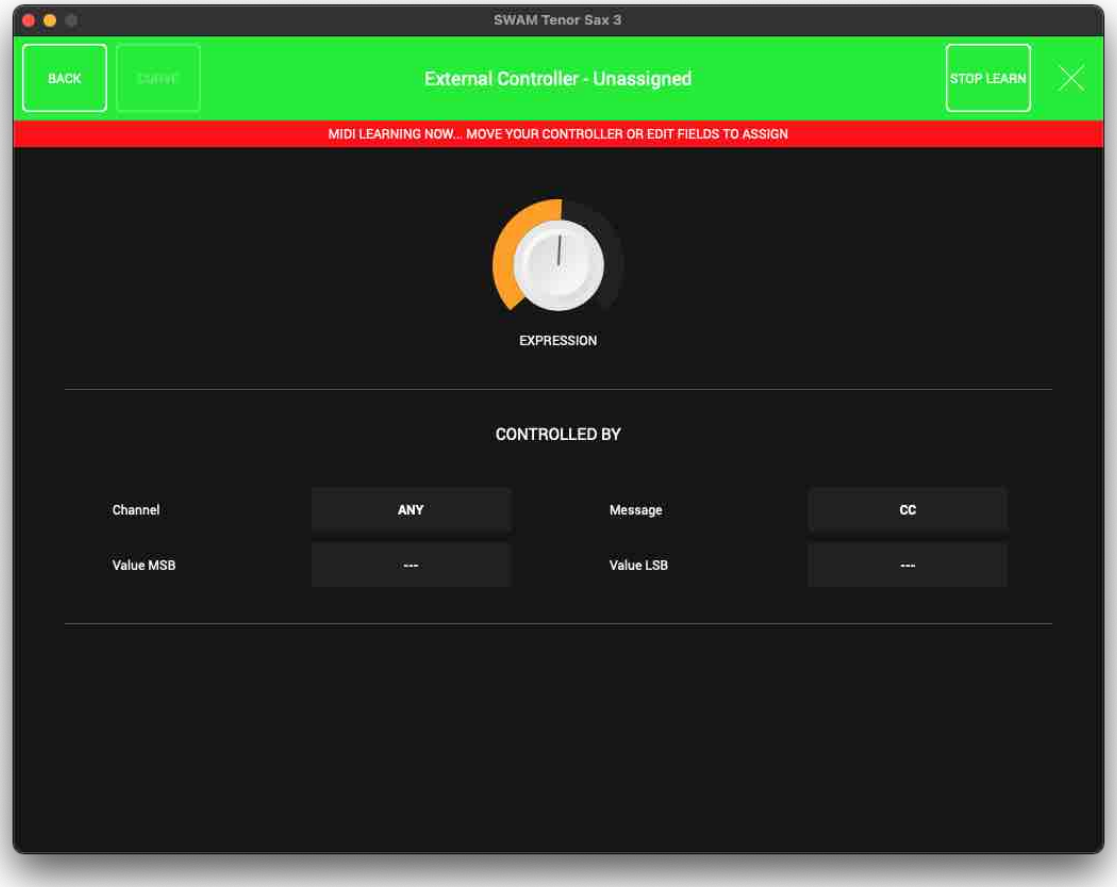
Unassigned parameter status

Any click on an unassigned parameter available for mapping 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 assign to the parameter to automatically complete the mapping.

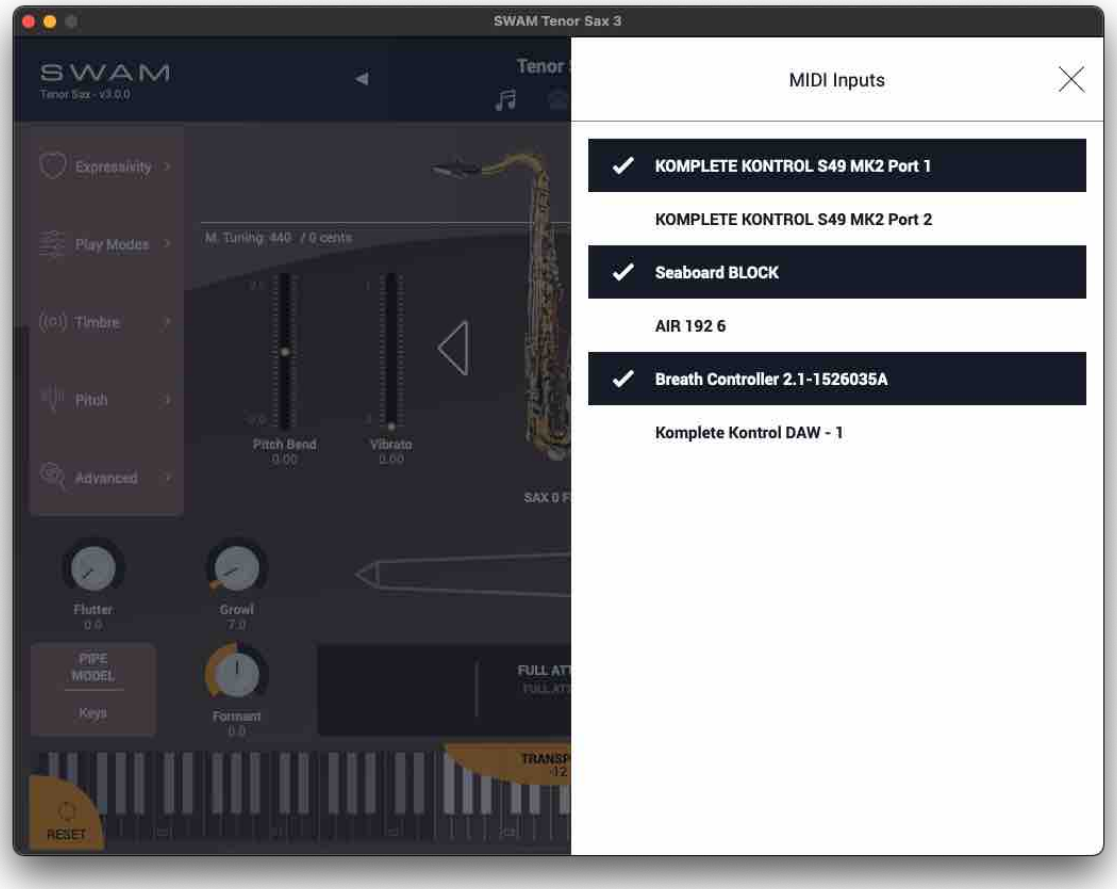
The values in the"Controlled by" area will be automatically filled in by MIDI Learn, but can still be edited manually.



MIDI Inputs quick access

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

view by clicking on the “INPUTS” icon 



MIDI Mapping Presets

The PRESETS icon offers access to both factory presets of mappings for well-known physical MIDI controllers, and user-created mapping presets. 

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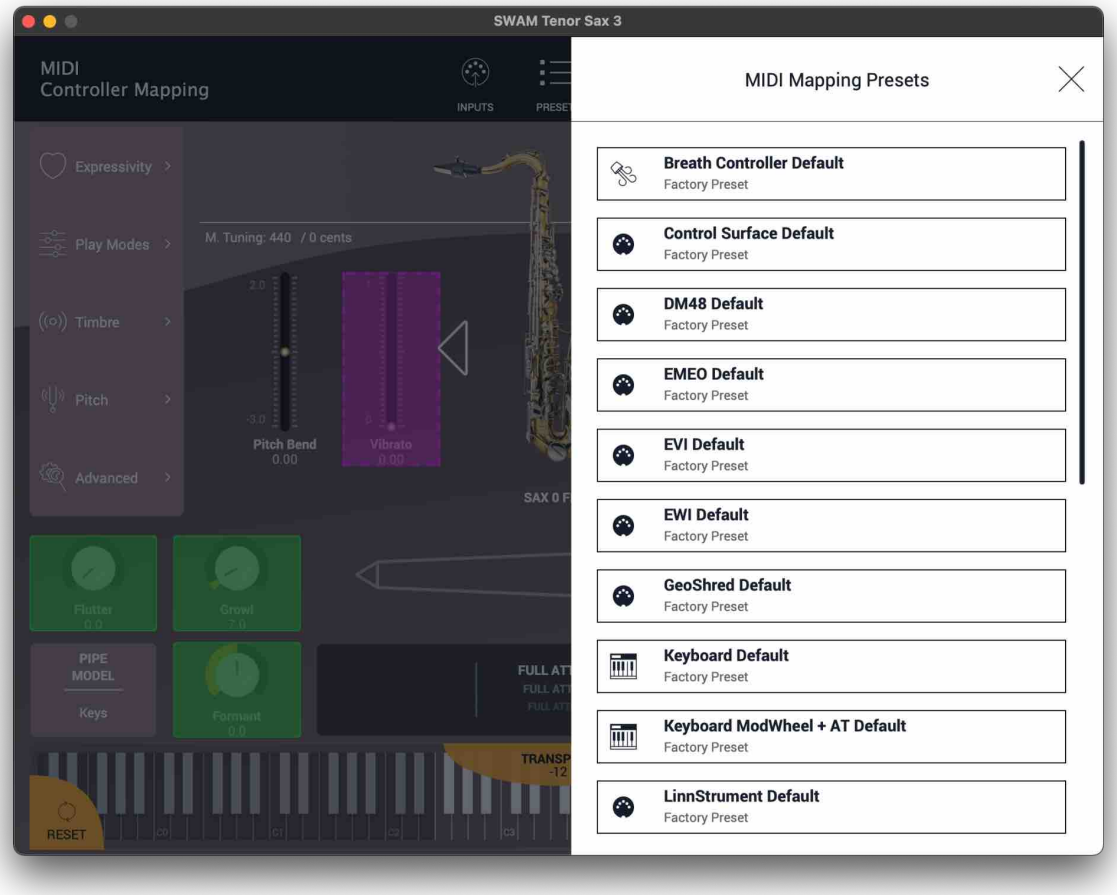


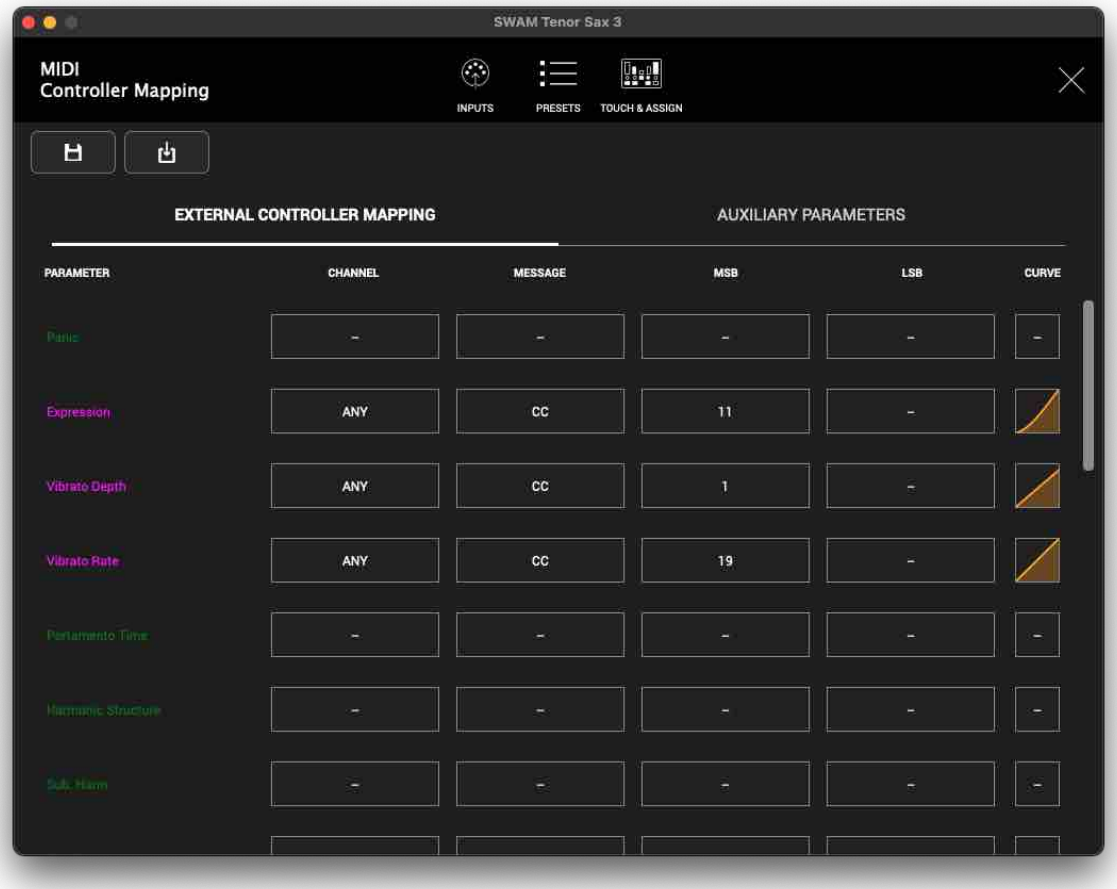
Loading a preset does not change current sound parameters. . This is useful for switching between different physical MIDI controllers without losing the timbre and sound behavior defined by the existing parameters.

Mapping Table

The "MAPPING TABLE" screen provides the big picture of all mappings and the configuration of auxiliary parameters. To access this view, click on the "MIDI" icon and then on the "MAPPING TABLE" icon.

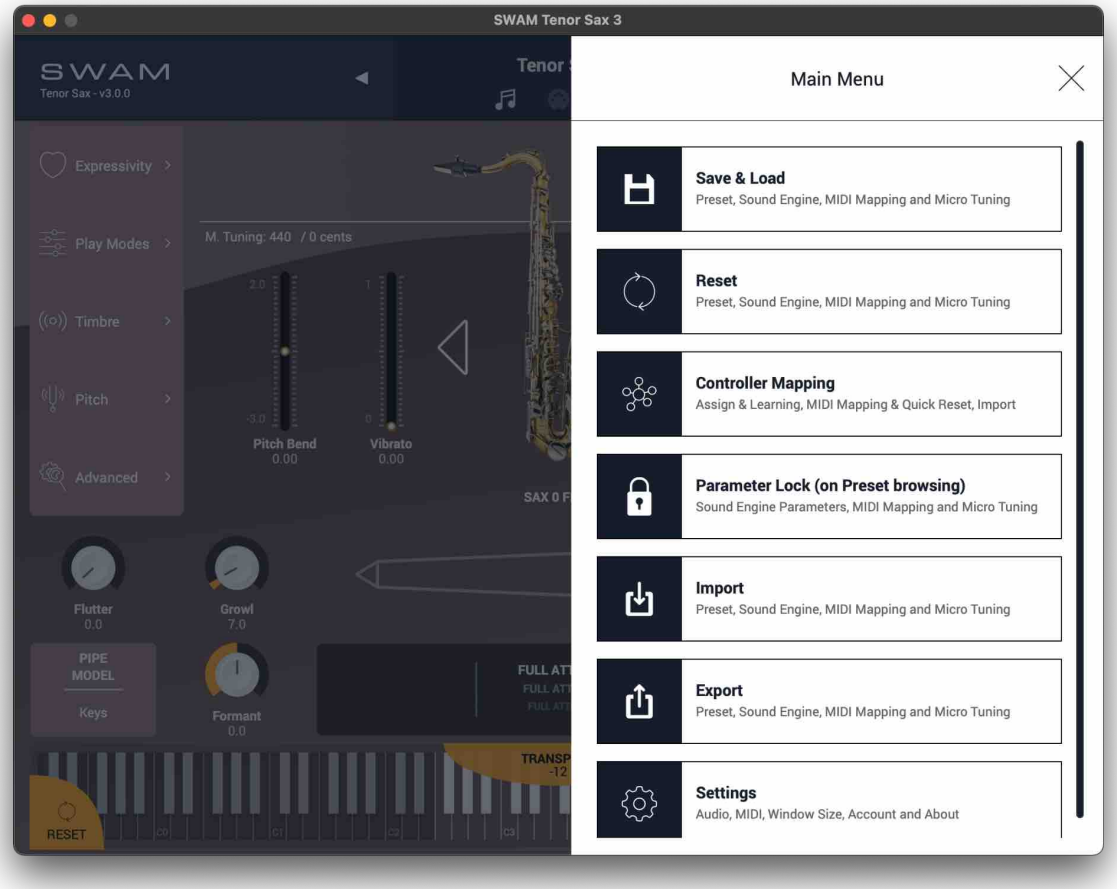
The screen is organized in two tabs:

- External Controller Mapping: this is a list of all parameters that can be mapped individually by the process described above. Click any row to create a new assignment, or 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 "Advanced" sections as well. These parameters are saved along with the External Controller mapping entries to ensure consistent controller presets.

Main menu

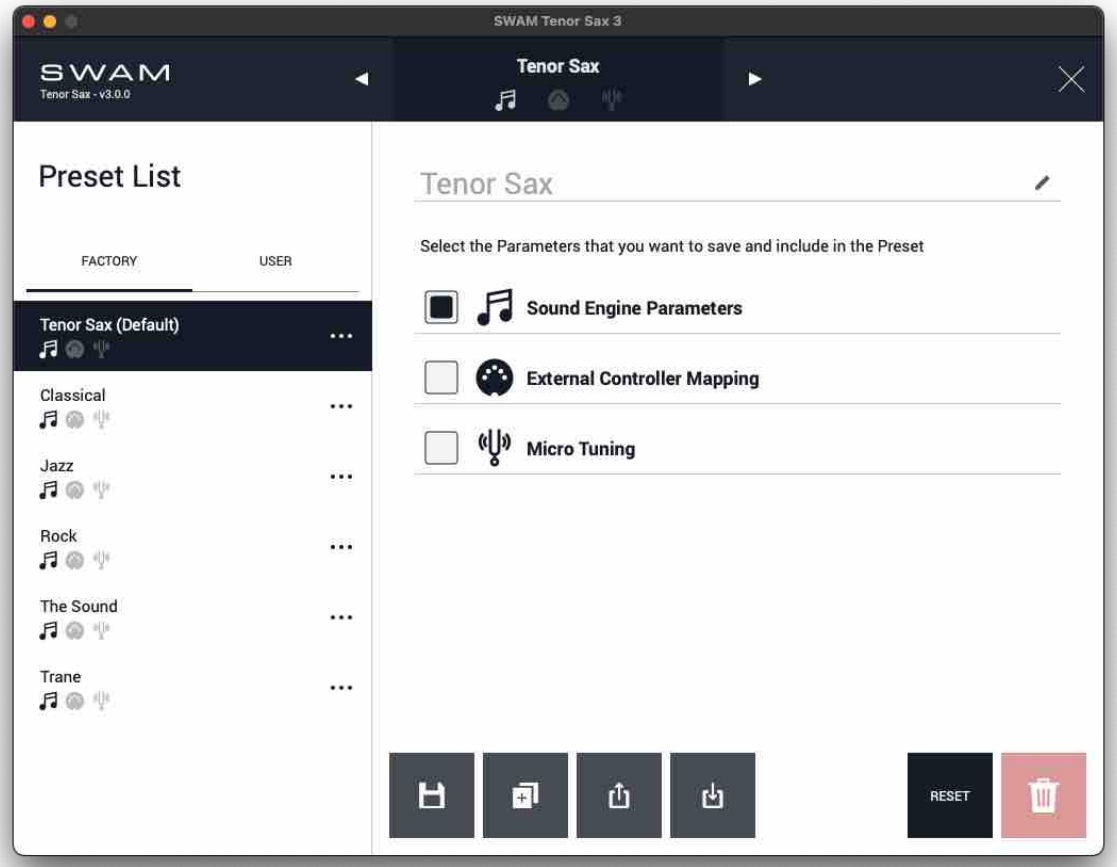


The Main Menu appears when the "three-dot" icon.  in the top right of the header is clicked.

- Save & Load: open the Preset Management window.
- Reset:
    - Initialize: reset sound engine parameters
    - Advanced:
        - Reload: reload the current selected preset, losing all changes made since the last save or load.
        - 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 view.
    - MIDI Mapping & Quick Reset: open MIDI parameters list & Quick Reset

    - Import: controller mapping from file
- Parameter Lock:
    - Sound Engine Parameters: do not allow sound parameters to change when browsing Presets
    - External Controller Mapping: keep the same MIDI Controller Mappings when changing Presets
    - Micro Tuning Settings: keep the same micro tuning settings when changingPresets
- 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 setting 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, have access to the online resources, and show the credits.

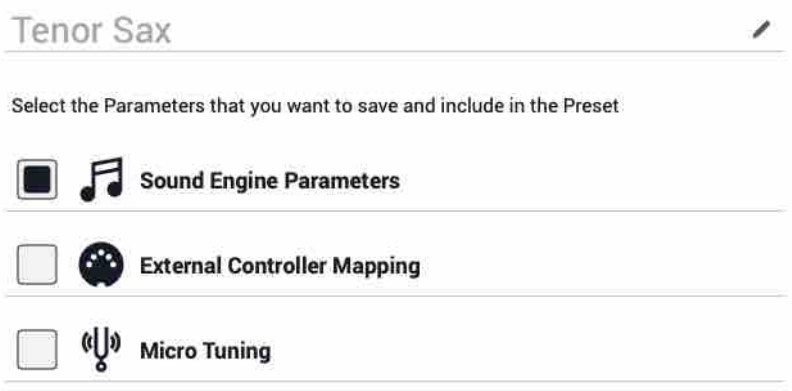
Preset Management



- Preset List: Select presets from the list on the left of the window.. 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

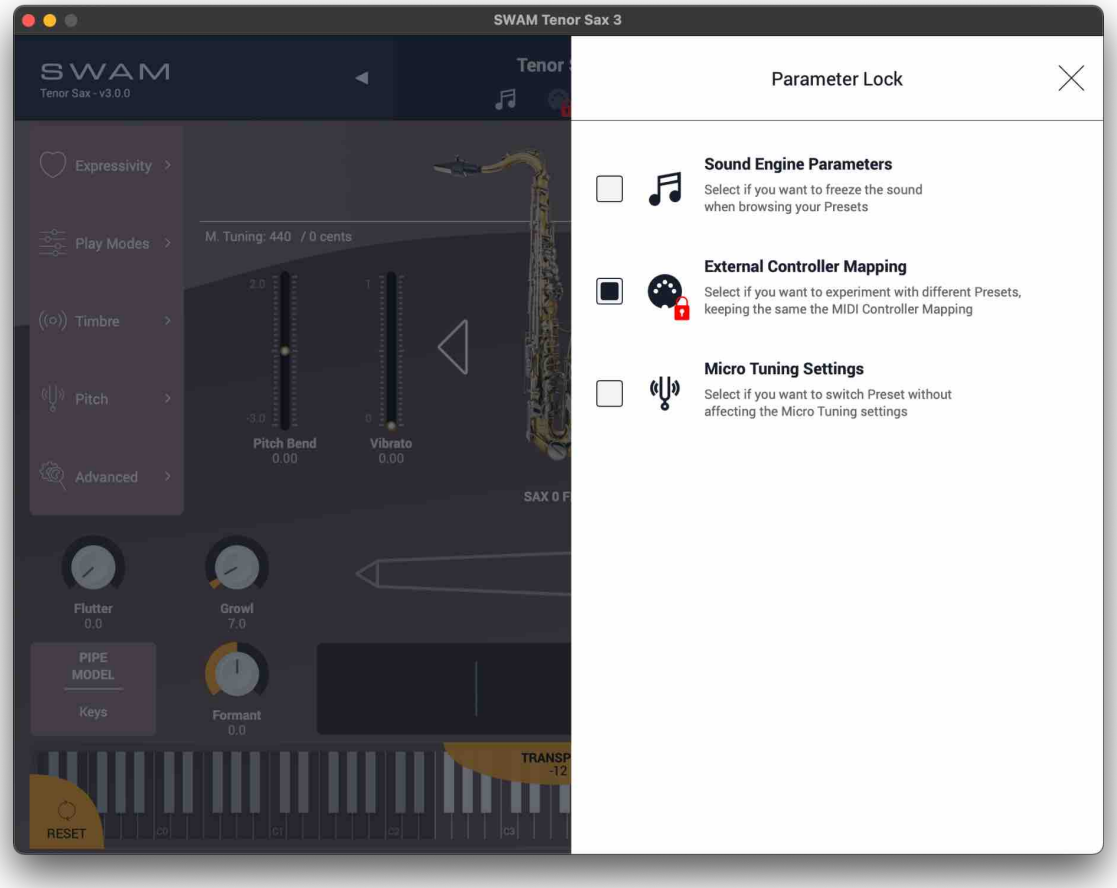
Any preset can be selected as the default, i.e. the preset loaded at startup: just click on [...] next to the preset name and choose "Set as default".



- Shows the preset components, such as Sound Engine Parameters, External Controller Mapping and Micro Tuning settings. From this area it is possible to choose the 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 parameters to the default state.
- DELETE: delete the selected User preset.

Parameter Lock



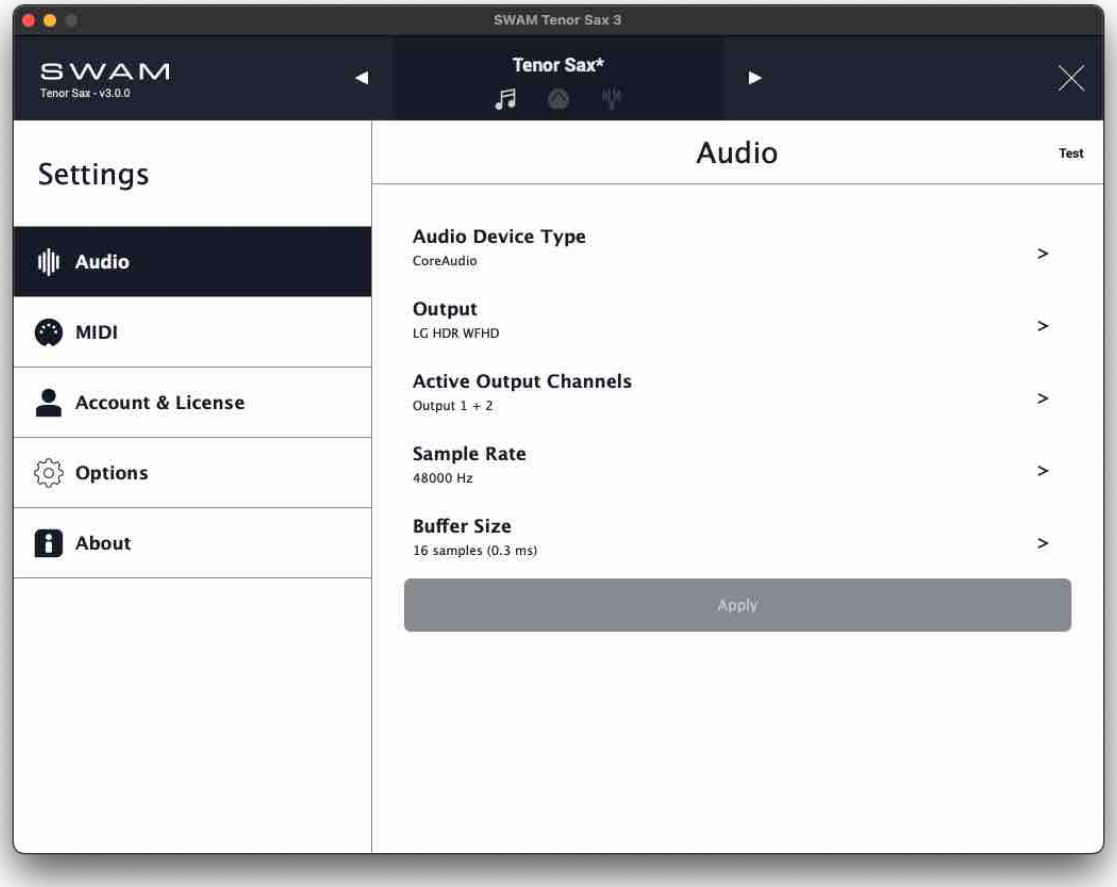
The Parameter Lock is made to appear by pressing and holding on the current preset label:

Switch presets without affecting the category of parameters that is locked.

- Select “Sound Engine Parameters” if you want to prevent changes to the sound when browsing your presets.
- Select “External Controller Mapping” if you want to experiment with different presets while keeping the same MIDI controller mapping.
- Select “Micro Tuning Settings” if you want to switch presets without affecting the micro tuning settings.

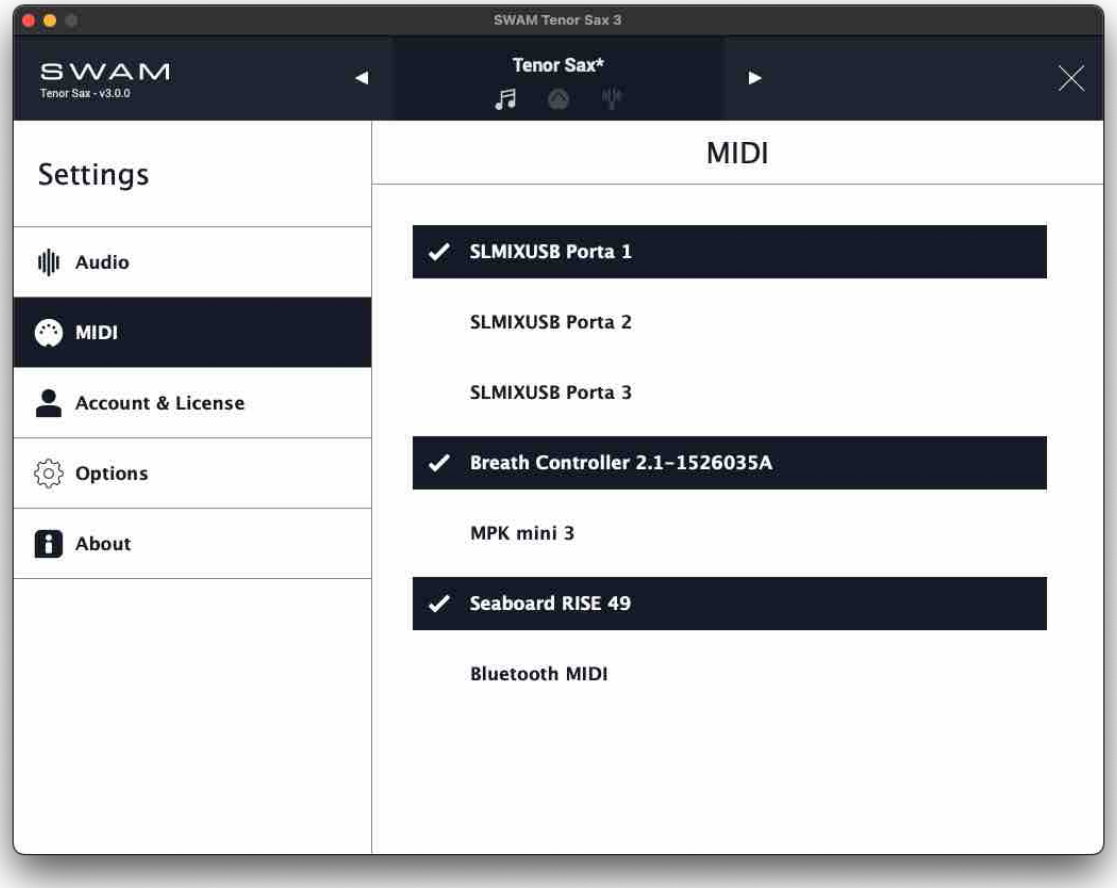
Settings

Audio Settings



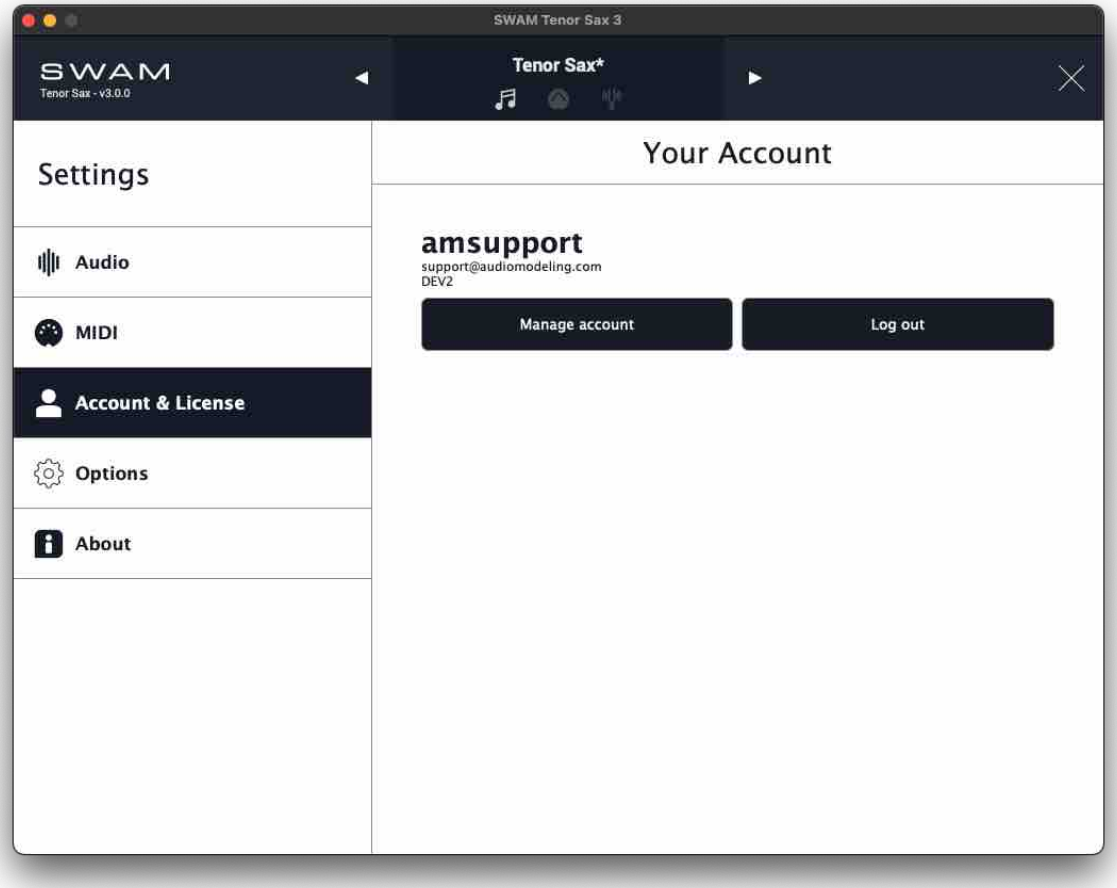
The Audio Settings page is available for Standalone version only, and allows selecting the proper Audio Device, Output port, Active Output Channels, Sample Rate and Buffer Size.
For real-time playing, the combination of Buffer Size and Sample Rate should result in a maximum latency of about 10 ms.

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".

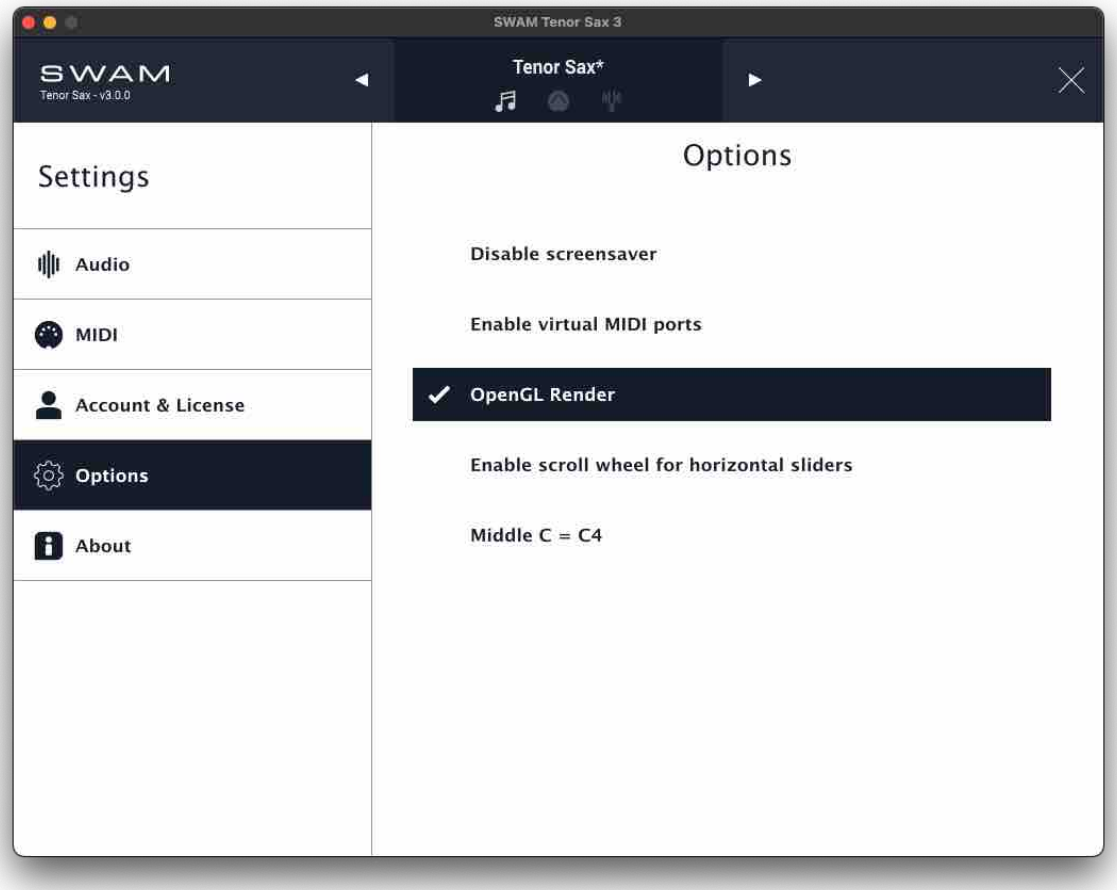
Account & License



The Account & License view shows the user currently logged in.

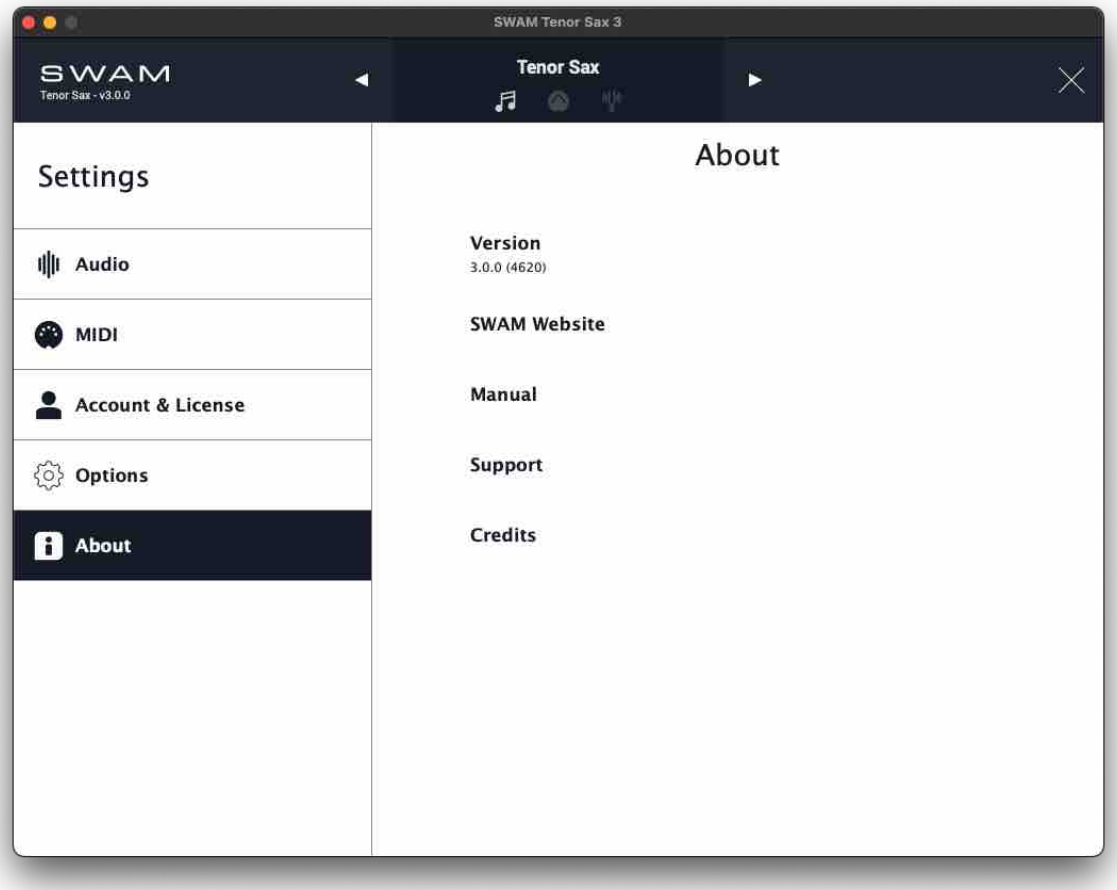
- Manage account: opens the Audio Modeling Customer Portal in a web browser.
- Log out: logs the user out of the application

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
- OpenGL Render: uses OpenGL for rendering the GUI, using the GPU instead of the CPU (enabled by default on Windows, not available on iPad)
- Enable scroll wheel for horizontal sliders: allow the use of the scroll wheel for changing slider values
- Middle C = 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 a desktop machine, 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, touch the PLAYicon 

to access a dedicated Touch Control Surface:

The control surface has the following purposes:

- provide an onboard screen keyboard to perform at a 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.

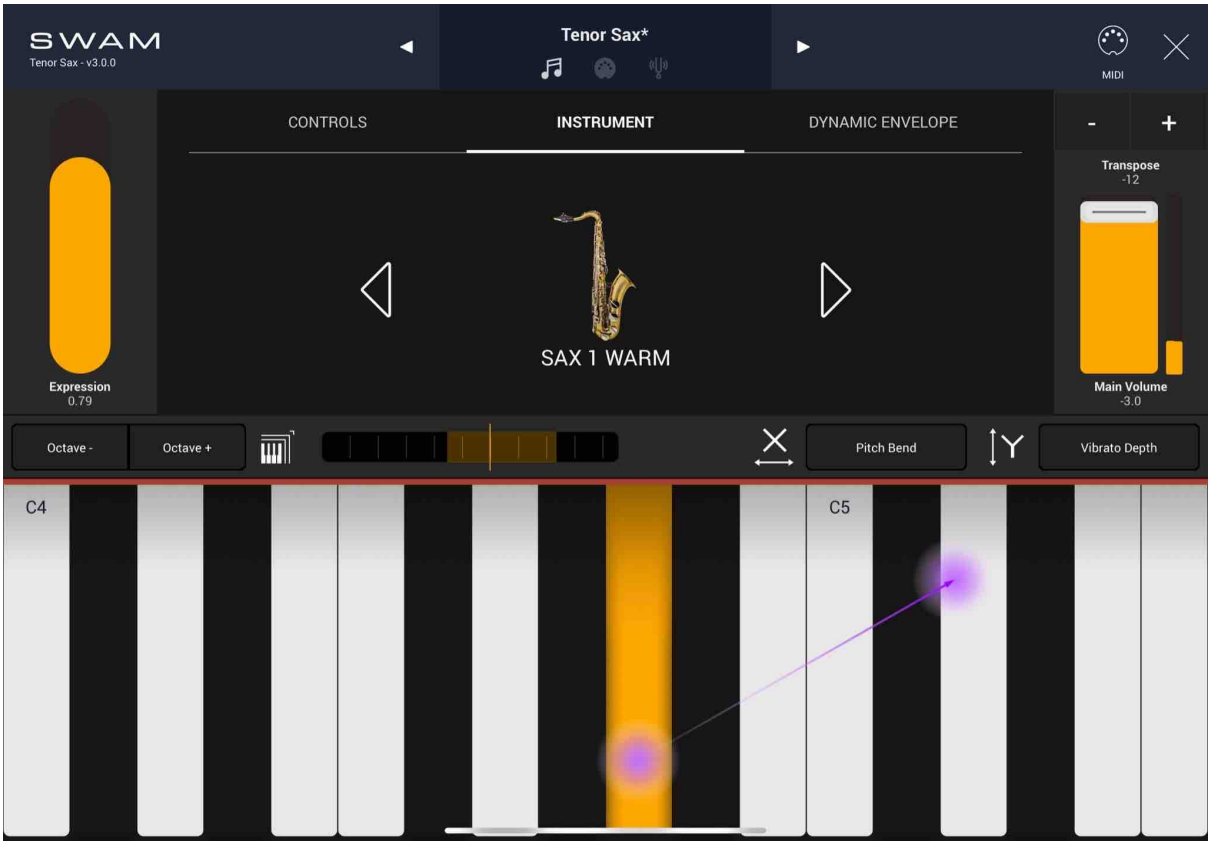
NOTE: To record and playback on a DAW what is played on the Control Surface, the "Control Surface Default" MIDI preset must be selected (see the MIDI Mapping Presets section).

The dynamic areas can be selected just by tapping on the tabs:

Controls

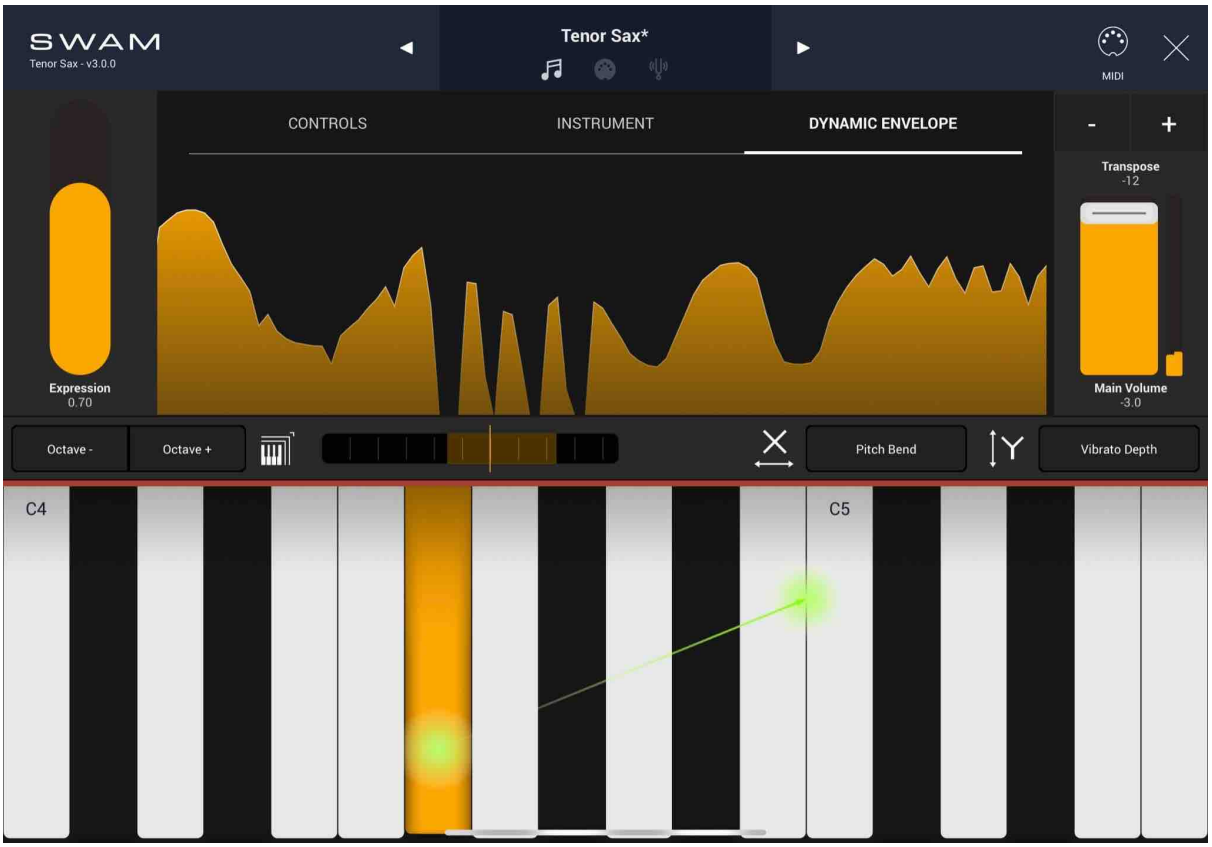
This view provides faders and buttons that are very handy in live performance for tweaking the sound in real time, or adding subtle expressive details, when needed. Play and tweak in real time using the onboard keyboard, or use them as an extra control surface when playing with an external controller.

Instrument



This view shows the instrument selector. Use the arrows to select different instrument timbres.

Dynamic Envelope



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

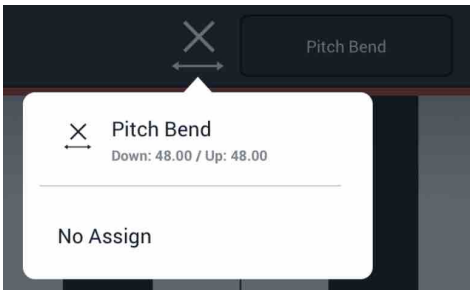
Control Surface Keyboard setup

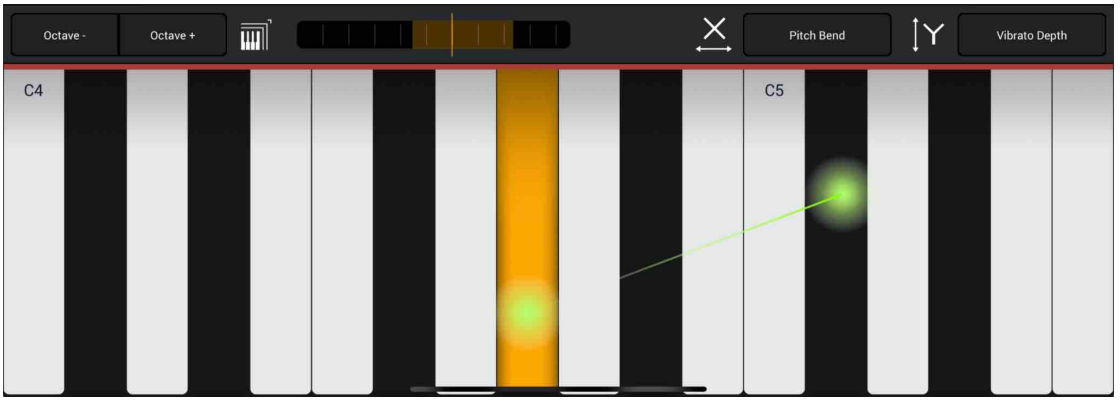
The keyboard has a toolbar with dedicated controls to:

- Shift the pitch by octaves (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 in horizontal and vertical directions

X: Pitch Bend control by x-axis

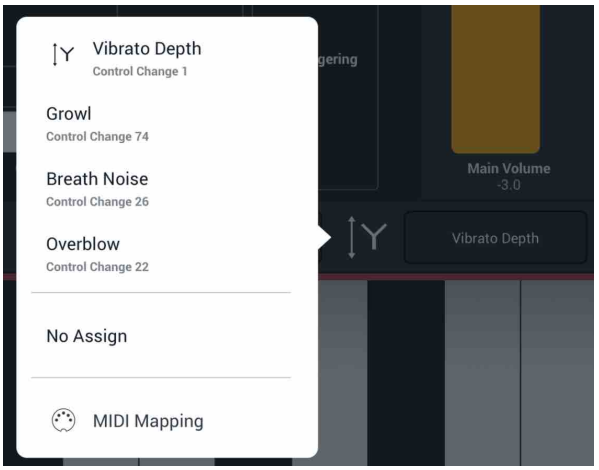
Tap on the X to show pitch bend range or to unassign pitch bend control

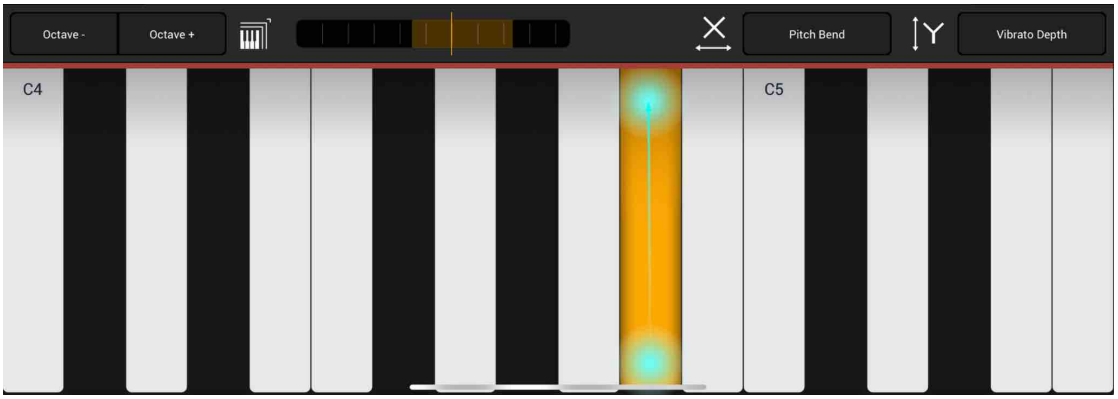




Y: parameter control by y-axis

Tap on the Y to change the 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 view is provided to easily change MIDI mapping for the controlled parameter. This is useful when using the control surface to record MIDI into a DAW, or control an external instrument.





Keyswitches

Depending on the "KS Octave" parameter, keyswitches can be positioned beginning at any octave from C-1 to C2, or they can be disabled.
By default, the keyswitches are positioned starting from C1 (MIDI note 24), where C3 = Middle C (MIDI note 60). You can change the MIDI channel from which keyswitches receive note events through the "KS Channel" setting. This can be useful when controlling keyswitches from a separate keyboard.
The keyswitch state depends on the note on velocity. The velocity curve can be adjusted using the "KS Velocity Remap" parameter.

The keyswitches provided are:

- C triggers a short fall.
- C# switches between two legato modes: Gliss and Expr;
- D triggers a "squeak" (a short overblow on attack) or a continuous overblow, depending on the timing and velocity:
    - A low KS velocity triggers a squeak (if the KS is pressed before note on).
    - A higher KS velocity plays a continuous overblow (if the KS is pressed before note on).
- D# behaves like D in latch mode.
- E triggers the Alternate Fingering (momentary)

Flutes only:

- F behaves like E in latch mode.

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.