

VAMono

Monophonic Synthesizer



User Guide

Version 1.0.12

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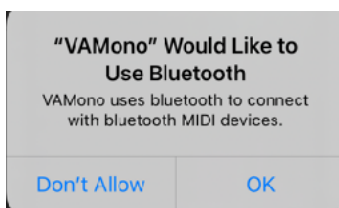
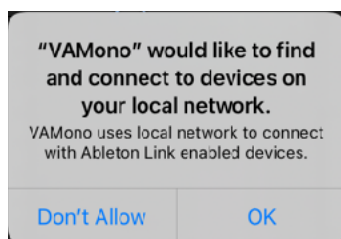
Introduction

Thank you for purchasing VAMono. To help you get the most out of this product, please read this manual carefully.

VAMono is a virtual analog monophonic synthesizer inspired by iconic monophonic analog synthesizers of 80's. The oscillators are capable of wide variety of modulation to shape the sound before the filtering stage. Pitch, shape and pulse width can be modulated by LFO, ADSR envelope. Xmod and Ring modulation offers audio rate modulation. Hard Sync offers a characteristic sync sound. Filter section and Amplifier offers classic sound of the iconic analog synthesizer of 80's. Amp section additionally offers amplitude modulation followed by distortion and delay effect. VAMono offers built-in 64 step sequencer to sequence notes and parameters. Synthesizer and Sequencer can be used as an AudioUnit Extension (AUv3) or Stand Alone. Stand Alone Mode supports Ableton Link, Bluetooth MIDI and MIDI IN/OUT.

Privacy Settings

VAMono uses local area network to connect Ableton Link enable devices and it uses bluetooth to connect with bluetooth keyboard and controllers. When dialogue appears to confirm use of the local network and the bluetooth, tap OK to give a permission to use them. These settings can be edited in Privacy section of the Setting App.



Main Features

AudioUnit Extension (AUv3)

Virtual Analog Monophonic Synthesizer features two oscillators, one LFO, one lowpass filter, three envelope generator, one amplifier, distortion and delay effect.

Oscillators are capable of producing continuously variable wave shapes and offers variety of modulation.

Features two Amp Envelopes, Gate and ADSR. ADSR envelope is analog style non-linear envelope generator.

24 dB per octave lowpass filter and amplifier produces characteristic sound of iconic analog synthesizer in 80's

LFO provides seven wave shapes and can be synced with tempo.

Distortion and delay effects are included.

Sequencer

Sample accurate 64 step sequencer capable of sequencing notes and parameter automation.

Synthesizer and sequencer work as AudioUnit Extension (AUv3) and as Stand Alone.

MIDI input and output

60 factory patches

Stand Alone (AU Host Application)

Support Ableton Link

Support Bluetooth MIDI

MIDI input and output

Features (Detail)

Synthesizer

Oscillators

Continuously variable wave shape (triangle, sawtooth, square)
Sub: Square, one octave lower (oscillator 1)
Pulse width for triangle and square (oscillator 1)
Pulse width for square (oscillator 2)
Hard Sync (oscillator 1 to oscillator 2)
Keyboard on/off (oscillator 2)
Low frequency mode (oscillator 2)
Tuning +/- 24 semitones
Fine tuning +/- 50 cents (oscillator 2)

LFO

Wave shape: sine, saw, down saw, square, triangle, random
Frequency Range: from 0.04Hz to 42.2Hz
Frequency modulation by ADSR envelope
Amplitude modulation by ADSR envelope

ADSR Envelope

Attack time: from 1ms to 6 sec
Decay time: from 1ms to 10 sec
Sustain level: from 0 to 100%
Release time: from 1ms to 10 sec

Modulation

LFO: frequency, shape, pulse width, amplitude
Env: frequency, shape, pulse width, LFO frequency and amplitude
Xmod: frequency and shape
Ring: oscillator 1 output and oscillator 2 output
Frequency modulation mode: linear / exponential

Filter

Low pass filter: 24 dB per octave
Filter envelope: adjustable decay and accent

Amplifier

Envelope: gate / ADSR
Amplitude modulation by LFO

Effects

Distortion with tone control
Delay Effect
Delay Time: From 20 ms to 1200 ms
Feedback: From 0 % to 100 %
Adjustable lowpass filter and high-pass filter.
Modulation rate: From 0.01 Hz to 10 Hz
Modulation width: From 0 ms to +/- 10 ms
Delay time can be synced to tempo

Sequencer

64 step sequencer to program notes and parameter values.
Loop: Selectable from one bar to four bar.
Host Sync: On and Off

System Requirements

iOS 14.2 or later
macOS 11.0 or later

State Recovery

When VAMono is used as a stand alone, it stores state of the app when the app is terminated. Stored data is recovered when it is launched at the next time.

Use as Stand Alone

VAMono can be used with DAW and MIDI controllers as an external synthesizer or sound module. Stand Alone mode features Ableton Link, MIDI input / output and bluetooth MIDI. Sequencer can be synced with Ableton Link enabled devices and softwares. Dials and Switches of MIDI controller can be mapped to the parameters of the synthesizer.

If you want to send out MIDI messages to the device, select the device from the list in MIDI Output Setting as a MIDI output destination. To open MIDI Output Setting, tap Gear icon to open Settings then MIDI > MIDI I/O > MIDI Output > MIDI Destination.

Use as AudioUnit Extension (AUv3)

VAMono supports AudioUnit Extensions. It works with AUv3 host applications. By enabling host sync mode, it can be synced with tempo and transport state of the host application. It can send and receive MIDI message to/from the host.

About MIDI Latency

Sending or receiving MIDI messages to Software Applications introduces a latency. If you have a problem and DAW or host application has channel delay, adjust the delay time to compensate the latency.

Factory / User Preset

Factory preset contains values of synth parameters but it doesn't contain any sequence data. When loading a factory preset, it will only change the parameters of the synth but sequence data remains the same.

On the other hand, User Preset contains values of synth parameters and sequence data. When loading user preset, parameters of synth and sequence data are both changed.

User Presets can be saved in iCloud Drive or inside of the AUv3 plug-in (iOS only)

User Preset (AUv3 Plug-In) is internally named and saved as following format, "BankName.Number.DisplayName".

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Quick Start



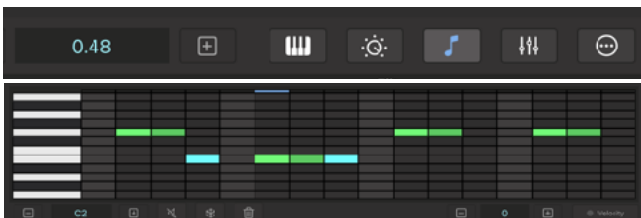
Playing the sound

1. Load a Factory Preset
2. Play keyboard
3. Adjust parameters to hear how the sound change.



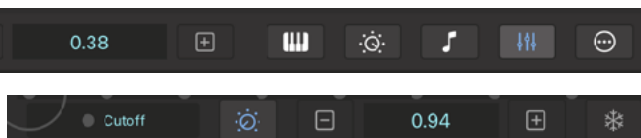
Real Time Recording

1. Select Loop Start and Loop End
2. Tap Play to start sequence
3. Tap Record to enabled Recording Mode



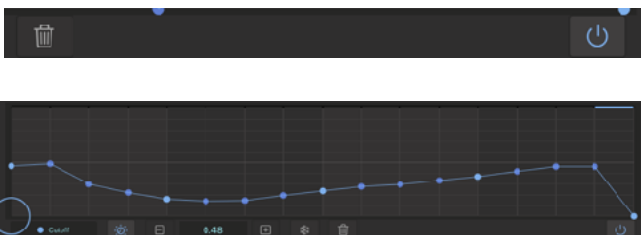
Record Notes

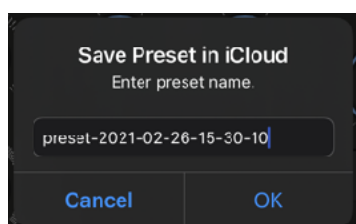
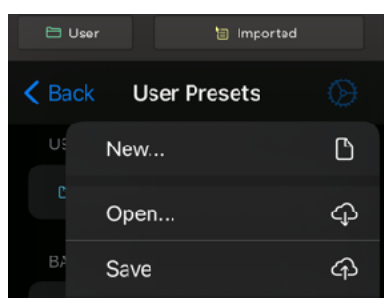
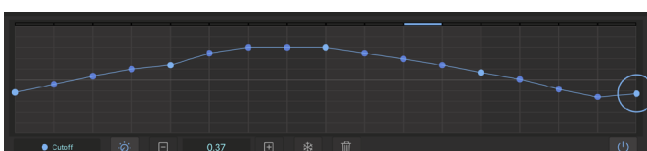
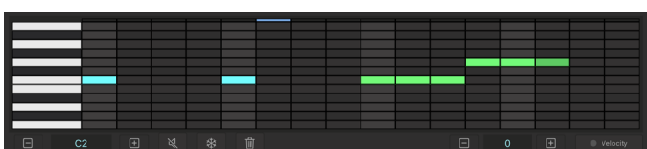
4. Play Keyboard
5. Open Sequencer and make sure the notes are recorded



Record Parameter Automation

6. Open Automation Editor
7. Turn on Parameter Link and turn a dial to select a parameter to record
8. Tap Automation Switch. Recording of parameter starts.
9. Adjust the dial
10. Tap record button to stop the recoding.





Program Sequences

1. Select Loop Start and Loop End
2. Tap Play Button to start sequence
3. Tap Edit button and select a bar to edit.

Program notes

4. Open Sequencer
5. Tap step section to program 16th notes. Drag it vertically to change note.
6. Drag your finger horizontally to program sustained note.

Program Parameter Automation

7. Open Automation Editor
8. Turn on Parameter Link button
9. Turn a dial to select a Parameter.
10. Tap Automation Switch to turn it on
11. Drag your finger to program parameter values for the selected parameter.

Save your work in iCloud

1. Tap preset type button to select User
2. Tap Preset Name to open User Preset List
3. Tap Gear icon in the navigation bar to show Editing Menu.
4. Select Save Preset.
5. Type in name in an Export Preset Window.
6. Tap OK to save the preset in iCloud.

User Interface

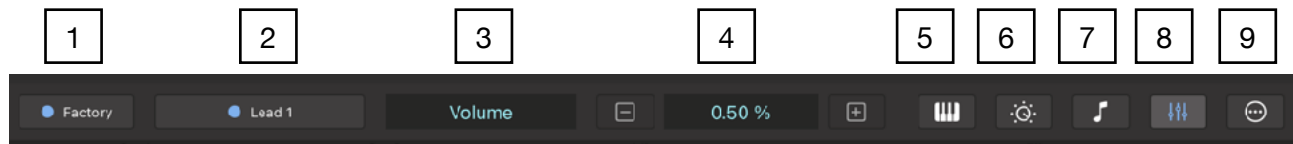
Expanded Mode



Compact Mode



Tool Bar



1. Preset Type

Tap this button to select a preset type from factory or user.

2. Preset Name

Indicates name of the selected preset. Tap this button to show Preset List.

3. Parameter Name

Indicates name of the selected parameter.

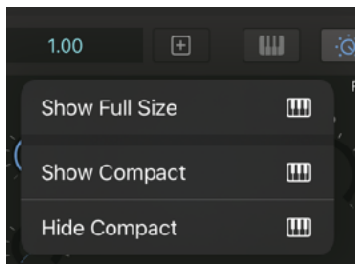
4. Parameter Value

Indicates value of the selected parameter. Use plus and minus button to adjust the value.

5. Keyboard

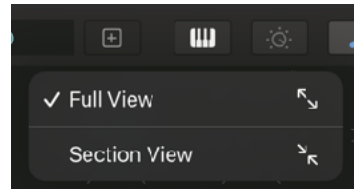
Stand Alone : Tap this button to show keyboard.

AUv3: Tap this button to show Keyboard Menu.



6. Synth

Stand Alone : Hold this button to show Synth View Menu.



AUv3 : Tap this button to select a section of the synth.

7. Sequencer

Tap this button to show sequencer.

8. Parameter Automation

Tap this button to show parameter automation editor.

9. More

Hold this button to show a menu to use additional features.

Host Sync and Preset Tempo

When host sync is on or Ableton Link is enabled, tempo is set by the host application and stored tempo in preset is ignored. If you want to load / save preset with tempo settings, please follow the instruction below.

AudioUnit Extension

Turn off sync switch before saving the preset, tempo can be saved with the preset.

Stand Alone

Disable Ableton Link and load the preset.

Synth Section

Oscillator 1

Oscillator 1 generates continuously variable wave shape, from triangle wave to saw wave and from the saw wave to square wave. Pulse width can be adjusted for triangle and square wave. Oscillator 1 also generate sub, which is square wave and its frequency is one octave below of the main pitch. Oscillator 1 can be synchronized to oscillator 2. Total amount of modulation to the oscillator can be control by dial, mod wheel or after touch. Pitch bend can be used to shift frequency of the oscillator +/- one octave.



Shape

Adjust shape of the waveform. Fully counter clockwise position is Triangle, center is Saw, and fully clockwise position is Square.

PW (Pulse Width)

Adjust pulse width of the triangle wave and the square wave.

When Square wave is selected, pulse width of 0% and 100% produce ¹ resulting no audible output.

Tune

Adjust pitch of the oscillator. (maximum +/- 24 semitones)

Mod Int (Modulation Intensity)

Adjust total amount of modulation.

Sync

Turn this switch on to sync OSC1 to OSC2. (OSC2 is a master.)

It forces OSC1 to follow frequency of the OSC2 in "hard" synchronization. Adjusting Tune of OSC1 produces unusual wave shapes resulting unusual timber. Typical use of Sync is modulate frequency of OSC1 by envelope. It will produce classic Sync Sound.

When OSC1 waveform is Square and Tune of OSC1 is lower than OSC2, it produces DC signal resulting no audible output.

¹ DC Signal is always positive or always negative and produce no sound.

Oscillator 2

Oscillator 2 generate continuously variable wave shape, from triangle wave to saw wave and from the saw wave to square wave. Pulse width can be adjusted for square wave. Oscillator 2 can be used for modulation source. When KBD switch is off, keyboard is disconnected from the oscillator 2, and the pitch of the oscillator 2 can be controlled by tune dial. When Low switch is on, the oscillator 2 can be used as LFO. Total amount of modulation to the oscillators can be control by dial, mod wheel or after touch. Pitch bend can be used to shift frequency of the oscillator +/- one octave.



Shape

Adjust shape of the waveform. Fully counter clockwise position is Triangle, center is Saw, and fully clockwise position is Square.

PW (Pulse Width)

Adjust pulse width of the square wave. Pulse width of 0% and 100% produce DC signal resulting no audible output.

Tune

Adjust pitch of the oscillator (+/- 24 semitones). When KBD switch is turned off, the pitch can be adjusted by MIDI note value. When KBD switch is off and Low switch is on, the frequency can be adjusted from 0.04Hz to 42.2Hz.

Fine (Fine Tune)

Adjust pitch of the oscillator. (+/- 50 cents)
Use Fine Tune to detuning OSC2 relative to OSC1.

Mod Int (Modulation Intensity)

Adjust total amount of modulation.

KBD (Keyboard)

Turn this switch on to control pitch of the oscillator by keyboard. When this switch is turned off, OSC2 is disconnected from keyboard and pitch of the oscillator can be adjusted by Tune dial. This is useful to modulate frequency or shape of the OSC1 by Xmod in audio range.

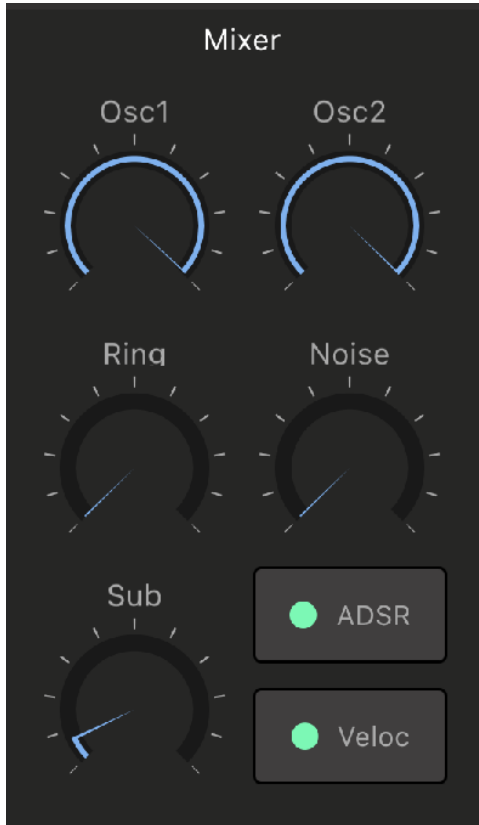
LFO

When this switch is turned on, OSC2 can be used as a LFO. (0.04Hz to 42.2Hz). This is useful to modulate frequency or shape of the OSC1 by Xmod in low frequency range.

For more complex modulation, use LFO to modulate OSC2 and then use OSC2 to modulate OSC1.

Mixer

Level of oscillator 1, oscillator 2, sub, ring and noise can be adjusted in the mixer section. Ring is output of ring modulator, which ring modulate output of the oscillator 1 and output of the oscillator 2. Noise is output of white noise generator.



Osc1 (Oscillator 1 Level)

Adjust level of the oscillator 1.

Osc2 (Oscillator 2 Level)

Adjust level of the oscillator 2.

Ring (Ring Modulation Level)

Adjust level of the ring modulator. (The output is ring modulation of Oscillator 1 and Oscillator 2)

Ring Modulator produces signal which contains sums and differences of the two oscillator frequency. Adjust frequency of the oscillators to experiment with the sounds. Ring Modulator tends to produce metallic or percussive sounds such as bell, chimes or gongs.

Sub (Sub Oscillator Level)

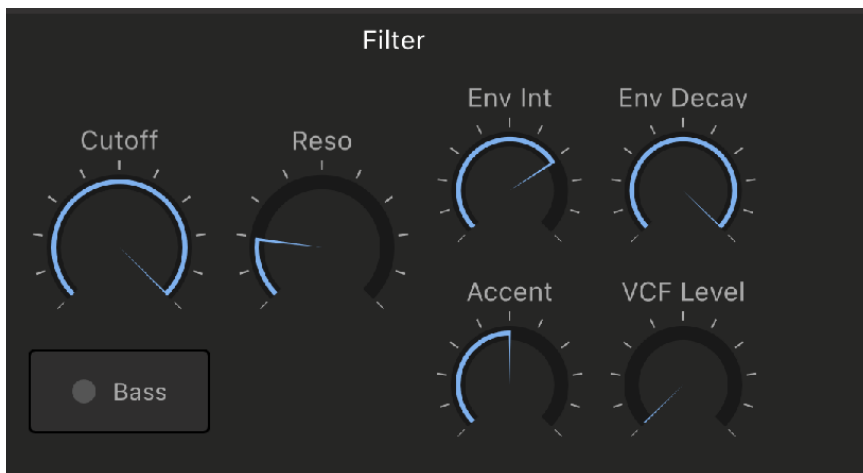
Adjust level of the sub waveform. The sub is a square wave and generated by Oscillator 1. It is one octave lower than the waveform of the Oscillator 1.

Noise (Noise Level)

Adjust level of the white noise.

Filter

This Lowpass filter is inspired by an iconic analog monophonic synthesizer of 80's and inherit the characteristic behavior. Frequency range of cutoff is limited compared to the traditional lowpass filter. Also filter envelope modulation contributes significant role for the characteristic filter sound. Cutoff and resonance of the low pass filter can be adjusted in this section. Cutoff of the filter can be modulated by filter envelope and accent. Amount of modulation and decay of the filter envelope can be adjusted. Accent is turned on when MIDI velocity is greater than 100. Amount of modulation by the accent can be adjusted by accent knob. When accent is on, decay of the filter envelope is set to zero. Accent also affect amplitude of the output signal when gate is selected for the amplitude envelope. Level of the filtered signal drops when amount of the resonance is increased. VCF level knob can be used to compensate the gain loss. Bass boost switch adjust cutoff frequency of highpass filters at the input of the amplifier. When bass boost is on, cutoff of the high pass filter is set to the lower frequency.



Cutoff

Adjusts the cutoff frequency of the lowpass filter.

Reso (Resonance)

Adjusts amount of the resonance for the lowpass filter.

Env Int (Envelope Modulation Intensity)

Adjusts how much the filter envelope modulates the cutoff frequency of the lowpass filter. (Value of the intensity equals zero doesn't mean that there is no modulation. This filter is always modulated by the envelope.)

Env Decay (Envelope Decay)

Adjusts decay time of the filter envelope.

Accent

Accent is on when velocity is greater than 100. This parameter controls how much the envelope affects the cutoff frequency of the filter and volume of the accented note. (Note: When accent is on, decay time of the filter envelope is set to zero.)

VCF Level

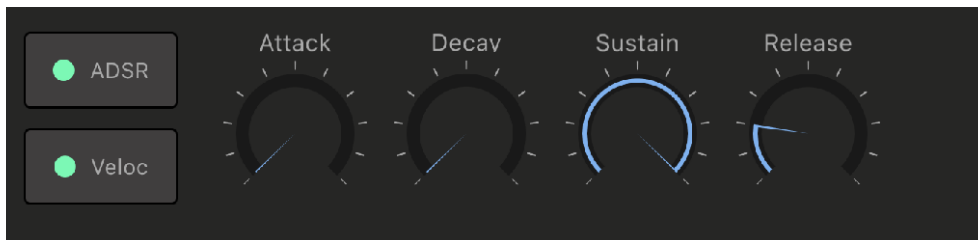
By default, signal level drops when amount of the resonance is increased. Adjust this parameter to compensate the gain loss.

Bass (Bass Boost)

This parameter adjusts cutoff frequency of highpass filters at the input of the VCA. Turn it on to lower the cutoff frequency. Turn it off to set the cutoff frequency to default value.

ADSR (Amp Envelope Generator)

ADSR is an analog style non-linear envelope generator. When velocity switch is on, amplitude of the envelope is controlled by MIDI velocity.



Attack

Adjust the attack time of the ADSR envelope (from 1 ms to 6 sec)

Decay

Adjust the decay time of the ADSR envelope (from 1 ms to 10 sec)

Sustain

Adjust sustain amount of the ADSR envelope (from 0% to 100%)

Release

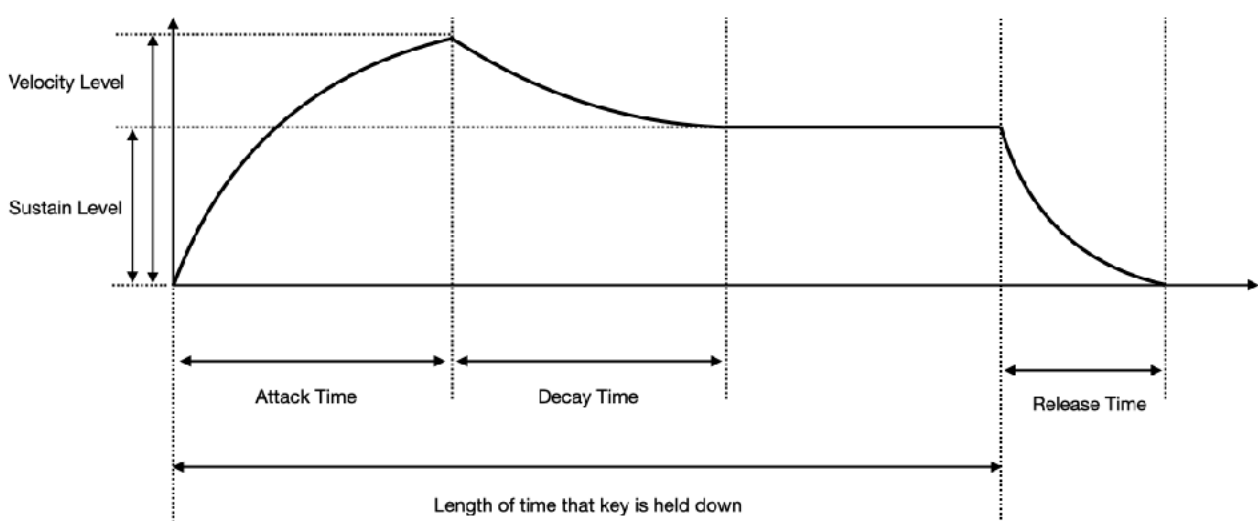
Adjust release time of the ADSR envelope (from 1 ms to 10 sec)

Amp Envelope Type

Select amplitude envelope, ADSR or gate (AR)

Veloc (Velocity)

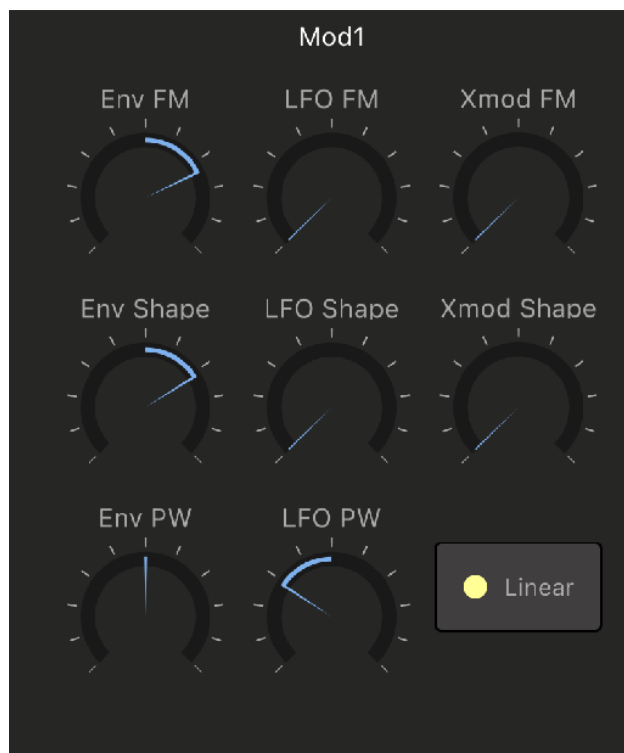
When velocity is turned on, amplitude of the envelope is controlled by MIDI velocity. When velocity is turned off, amplitude of envelope is set to maximum value. (midi velocity 127)



Oscillator Modulation

Amount of modulation to frequency, shape and pulse width of the oscillators can be adjusted in modulation section. There are three sources, envelope, LFO and Xmod. Targets of envelope are frequency, shape and pulse width of the oscillator 1. Targets of LFO are frequency and shape, and pulse width of the oscillator 1 and the oscillator 2. Targets of Xmod are frequency and shape of the oscillator 1. There are two mode for frequency modulation. The frequency is modulated by volts per octave basis (+/- 4 octaves) in exponential mode and the frequency is modulated by hertz per volt basis (+/- 2.25 octaves) in linear mode.

Mod1 (Oscillator 1 Modulation)



Env FM (Envelope to Frequency)

Adjust amount to modulate frequency by the ADSR envelope

Env Shape (Envelope to Shape)

Adjust amount to modulate shape by the ADSR envelope

Env PW (Envelop to Pulse Width)

Adjust amount to modulate pulse width by the ADSR envelope

LFO FM (LFO to Frequency)

Adjust amount to modulate frequency by the LFO

LFO Shape (LFO to Shape)

Adjust amount to modulate shape by the LFO

LFO PW (LFO to Pulse Width)

adjust amount to modulate pulse width by the LFO

X Mod FM (X Mod to Frequency)

Adjust amount to modulate frequency by the Oscillator 2

X Mod Shape (X Mod to Shape)

Adjust amount to modulate shape by the Oscillator 2

Frequency Modulation Type

Select frequency modulation type, linear or exponential. The frequency is modulated by volts per octave basis (+/- 4 octaves) in exponential mode and the frequency is modulated by hertz per volt basis (+/- 2.25 octaves) in linear mode.

Mod2 (Oscillator 2 Modulation)



LFO Fm (LFO to Frequency)

Adjust amount to modulate frequency by the LFO

LFO Shape (LFO to Shape)

Adjust amount to modulate shape by the LFO

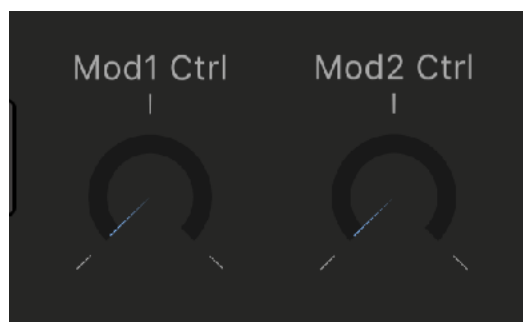
LFO PW (LFO to Pulse Width)

Adjust amount to modulate pulse width by the LFO

Frequency Modulation Type

Select frequency modulation type, linear or exponential. The frequency is modulated by volts per octave basis (+/- 4 octaves) in exponential mode and the frequency is modulated by hertz per volt basis (+/- 2.25 octaves) in linear mode.

Modulation Control Source



Mod1 Ctrl (Oscillator 1 Modulation Control Source)

Select a source to adjust total modulation amount. Options are Dial, Mod Wheel and Aftertouch.

Mod2 Ctrl (Oscillator 2 Modulation Control Source)

Select a source to adjust total modulation amount. Options are Dial, Mod Wheel and Aftertouch.

When built-in keyboard is used, amount of the Aftertouch is controlled by position of Y axis in each key pad.

LFO

LFO (Low Frequency Oscillator) can generate 6 wave shapes and the frequency of the LFO can be set by Hz or note value which is synchronized to tempo. Frequency and amplitude of the LFO can be modulated by ADSR envelope.



Shape

Select shape of the LFO waveform. Wave shapes are sine, saw, down saw, square, triangle and random.

Tune

Adjust frequency of the LFO. When sync is off range of the frequency is from 0.04Hz to 42.2Hz. When sync is on, range of the rate is from 1/64 to 8 bars.

Sync

Turn this switch on to sync the rate of the LFO with tempo.

Env FM (Envelope to Frequency)

Adjust amount of frequency modulation by the ADSR envelope.

AM (Envelope to Amplitude)

Turn this switch on to modulate amplitude of LFO by the ADSR envelope.

AMP (Amplifier)

This Amplifier is inspired by an iconic analog monophonic synthesizer of 80's and inherit the characteristic behavior. This Amplifier has additional features as followings. Amplitude envelope can be selected from gate or ADSR envelope. Amount of amplitude modulation by LFO can be adjusted. Amount of distortion and tone can be adjusted as well. When amplitude envelope is gate, by turning de-click switch on to silence click in the beginning of the note.



AM Int (Amp modulation Intensity)

Adjust amount of amplitude modulation by the LFO

Volume

Adjust volume of the output signal.

Dist Int (Distortion Intensity)

Adjust amount of distortion.

Dist Tone (Distortion Tone)

Adjust tonality of the distortion effects.

deClick (De Click)

When amplitude envelope is gate, turn this switch on to silence initial click sound of the note. The initial click is noticeable when distortion is applied to the sound.

Delay Effect



1. Delay Time

Adjust delay time.

2. Feedback

Adjust amount of the feedback.

3. Sync Switch

Tap this button to enable / disable tempo sync. When sync is on, delay time can be adjusted by note value, actual time is depend on the current tempo.

4. Filter / Modulation

Tap this button to toggle filter section view or modulation section view.

5. Mix

Adjust amount of the delayed signal mixed with the original signal.

10. High-pass filter Frequency

Adjust frequency of the high-pass filter.

11. Lowpass filter Frequency

Adjust frequency of the lowpass filter.

13. LFO Tune

Adjust frequency of the LFO.

14. LFO Int

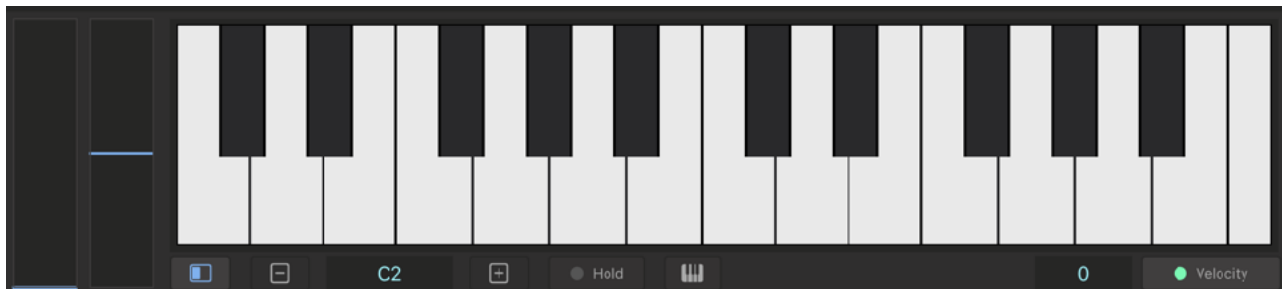
Adjust intensity of the modulation.

9. Delay Switch

Tap this button to turn on delay effect.

Keyboard Section

This synthesizer uses a last-note priority system. When two notes are played at the exactly same time, the last note has a priority (high or low) and will be played.



1. Modulation Wheel

Adjust amount of the modulation.

2. Pitch Wheel

Adjust pitch of the oscillators. Range is plus / minus one octave.

3. Wheel Button

Tap this button to show / hide Wheel.

4. Key Range

Use plus / minus buttons to adjust range of the keyboard. Indicator shows lowest note of the keyboard.²

5. Hold

Tap this button to enable /disable key holding.

6. Keyboard Setting

Tap this button to show keyboard setting menu.

7. Velocity Value

Indicates velocity value.

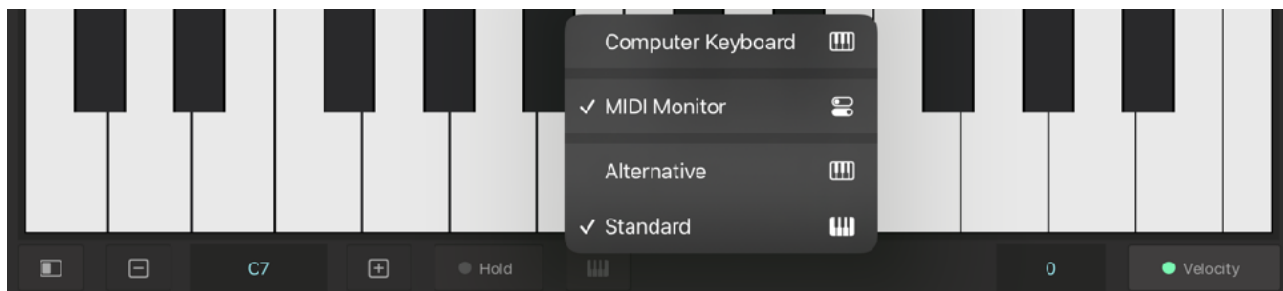
8. Velocity Switch

Tap this button to enable / disable velocity mode. When velocity mode is enabled, movement in Y axis controls velocity and aftertouch. When velocity switch of ADSR envelope is turned on and oscillator 1 is modulated by the envelope, movement of Y axis changes depth of the modulation. When aftertouch is selected in modulation source, movement in Y axis controls total amount of the modulation. When velocity mode is disabled, velocity value is fixed to 100.

² Key range uses Scientific Pitch Notation. Middle C (midi note 60) is C4. Some other applications use different standard, which indicate middle C as C3.

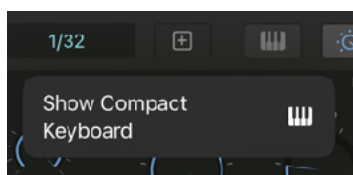
MIDI Monitor

Tap Keyboard Setting button and select MIDI Monitor to enable MIDI Keyboard Monitor mode. When MIDI Keyboard Monitor mode is enabled, the pressed note in MIDI keyboard is indicated in Keyboard UI by highlighted color.



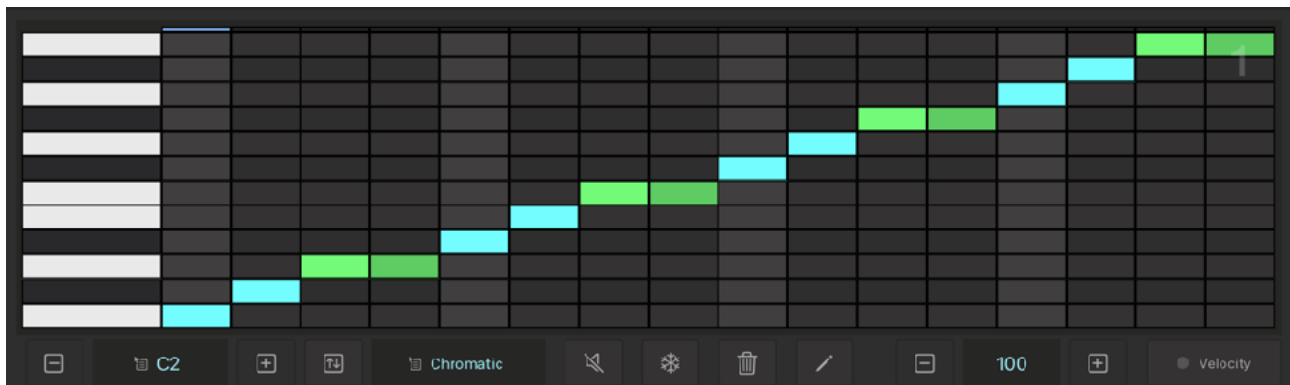
Compact Keyboard

When Synth View is compact mode, holding keyboard button shows keyboard menu. Tap on Show Compact Keyboard to show compact keyboard. Tap on Hide Compact Keyboard to hide compact keyboard.



Sequence Editor

Use Sequencer to view and program 16 steps (1 bar) of note and velocity at the time. The bar can be selected in Tool Bar from 1 bar to 4 bar (total 64 steps).



1. Keyboard

Indicates note value of the horizontal row. It can be used as keyboard.

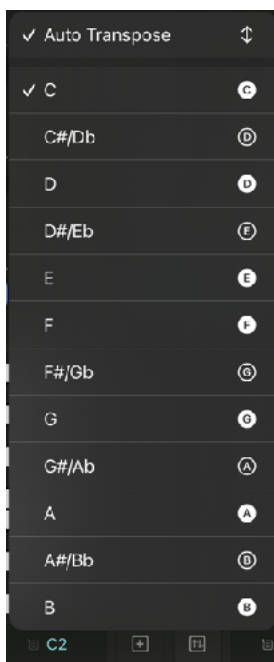
2. Step Section

Tap a step to program 16th note which is indicated by blue color. Drag it vertically to change note. Drag your finger horizontally to program sustained note which is indicated by green color. The end of the sustained note is indicated by darker green.

3. Step indicator

Indicates current step.

4. Key Range



Use plus / minus buttons to adjust range of the keypads. Indicator shows lowest note of the keypads.³

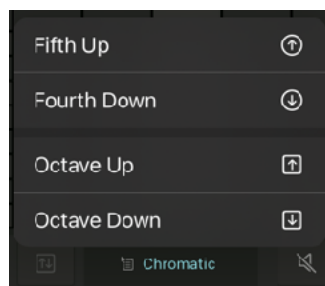
Tap on the indicator shows Key Menu. Select a key, when using Diatonic Scale, Harmonica Minor or Melodic Minor Scale to edit sequence.

When Auto Transpose is enabled, notes are transposed automatically when key is changed. This change is applied to notes in 64 steps (all bars).

³ Key range uses Scientific Pitch Notation. Middle C (midi note 60) is C4. Some other applications use different standard, which indicate middle C as C3.

5. Transpose

Tap this Button to show Transpose Menu.



Select Fifth Up to transpose key 5th up from current key.

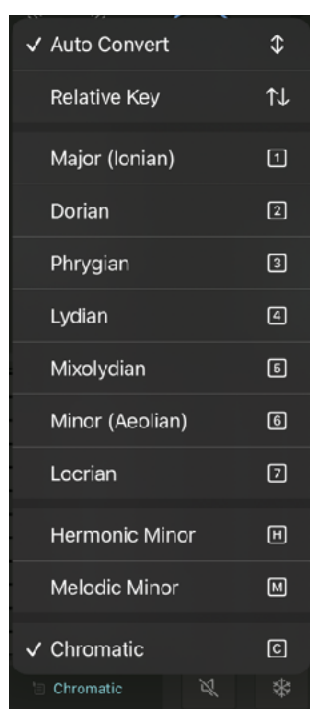
Select Fourth Down to transpose key 4th down from current key.

Select Octave Up to transpose key one octave up from current key.

Select Octave Down to transpose key one octave down from current key.

6. Scale indicator

Tap Scale indicator to show Scale Menu.



Select Chromatic to edit sequence in Chromatic Scale (12 tones).

Select one of the other scale to edit sequence in Diatonic Scale, Harmonic Minor Scale or Melodic Minor Scale⁴ (7 degrees).

When scale is changed, notes are displayed as degrees of the scale. Off-keys are indicated by pink color.

Auto Convert⁵

When sequence is edited in Diatonic Scale, Harmonic Minor or Melodic Minor Scale, by enabling Auto Convert automatically convert notes if scale is changed to the other scale.

Auto Convert Option (Diatonic Scales)

Modulating to a Relative Key

Enable Relative Key option to modulate to a relative key when changing scale from one to another. (e.g. C Major -> A Minor)

Modulating to a parallel key

Disable Relative Key option to modulate to a parallel key when changing scale from one to another. (e.g. C Major -> C Minor)



⁴ Melodic Minor is Ascending Melodic Minor (Jazz Minor Scale)

⁵ Notes programmed in Chromatic Scale can't be converted automatically. Also off-keys can't be converted automatically.

7. Mute

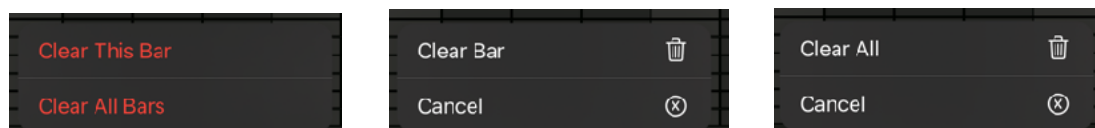
Tap this button to mute / unmute the sound when keyboard or step section is tapped.

8. Freeze

Tap this button to freeze view to the selected bar for editing.

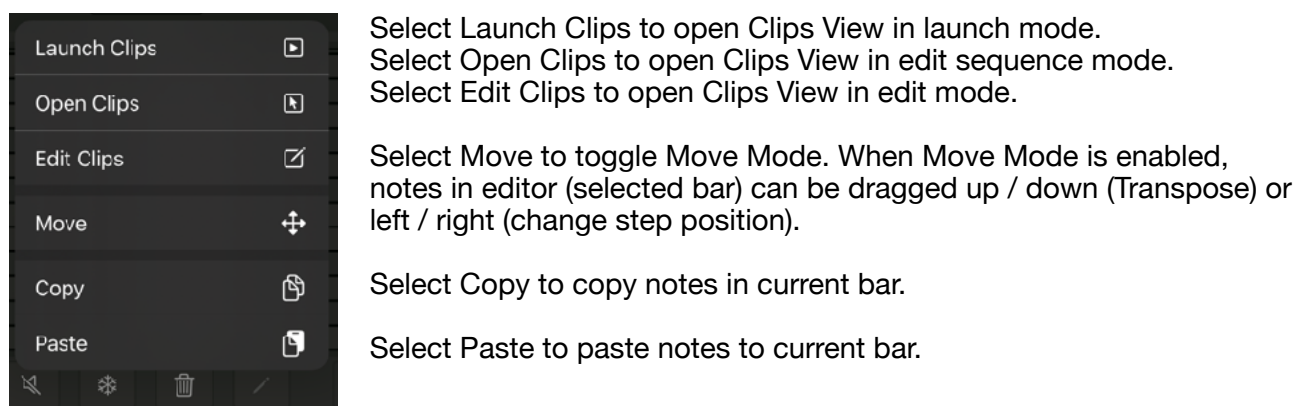
9. Clear (Trash)

Tap this button to show Clear Menu. Clear This Bar delete notes in current editing bar. Clear All Bars delete notes in all bars. Menu or Action Sheet appears to confirm the action.



10. Edit

Tap this button to show Edit Menu.

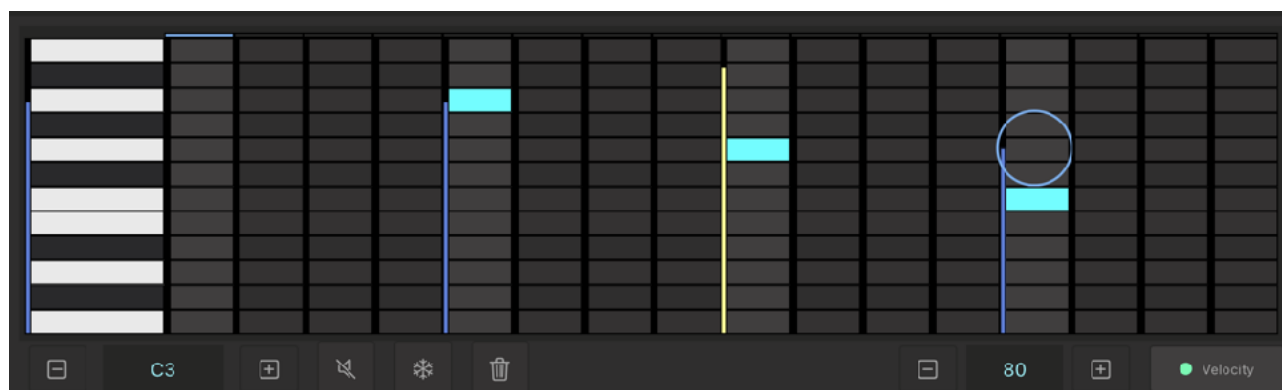


11. Velocity Value

Indicates velocity of the selected note. Use plus / minus buttons to adjust the velocity.

12. Velocity Switch

Tap this button to enable / disable Velocity Mode. When velocity mode is enabled, velocity of each step and the velocity of the keyboard can be adjusted. Velocity of accented note (velocity is greater than 100) is indicated by color of yellow.



Programming Tip

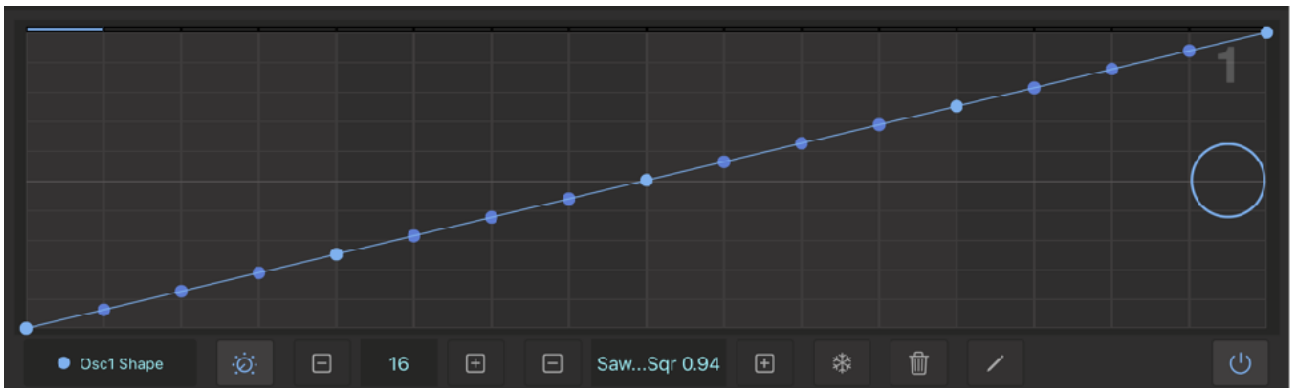
1. Extend sustained note to the next bar



Tap on the note in the last step in the bar.
Drag your finger to the right.
Color of the note changes to light green to indicate the changes.

Automation Editor

Use Automation Editor to view and program 16 steps (1 bar) of values of the selected parameter at the time. The bar can be selected in Tool Bar from 1 bar to 4 bar (total 64 steps).



Editing Section

Use editor to adjust a parameter value for each step.

Parameter Name

Indicates name of the selected parameter. Tap to this button to show Parameter List.

Parameter Link

Tap this button to enable / disable Parameter Link Mode. When parameter link is enabled, parameter can be selected by dials and buttons in Synth section.

Step Value

Indicate step number of the parameter value. Use plus / minus buttons to adjust the step.

Parameter Value

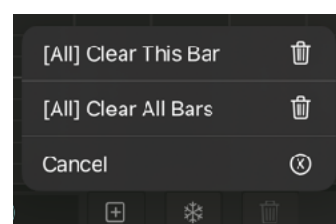
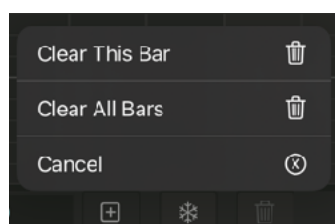
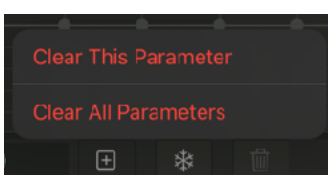
Indicate parameter value of selected step. Use plus / minus buttons to adjust the value.

Freeze

Tap this button to freeze view to the selected bar for editing.

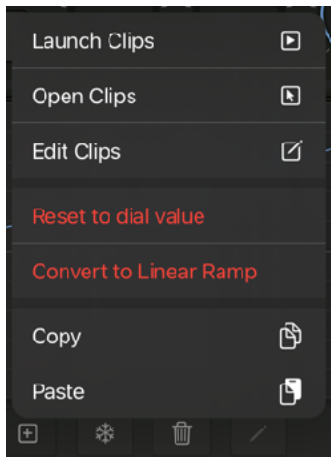
Clear (Trash)

Tap this button shows Clear Menu. Clear This Parameter delete values of the selected parameter. Clear All Parameter delete values of all parameters. Menu or Action Sheet appears to confirm the action. Select This Bar or All Bars to clear the values.



Edit

Tap edit button to show edit menu.



Select Launch Clips to open Clips View in launch mode.

Select Open Clips to open Clips View in edit sequence mode.

Select Edit Clips to open Clips View in edit mode.

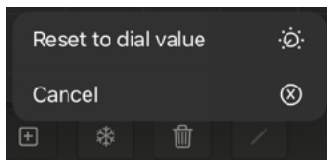
Select Reset to dial value to show reset menu.

Select Convert to Linear Ramp to show convert menu.

Select Copy to copy automation data (16 steps) currently displayed.

Select Paste to paste automation data (16 steps) to current editor.

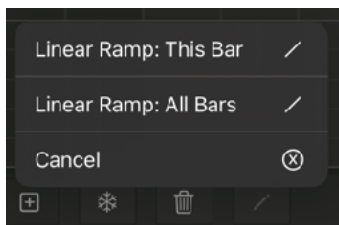
Reset to dial value



Select Reset to dial value to set all values (64 steps) to dial value.

Select Cancel to cancel the operation.

Convert to Linear Ramp



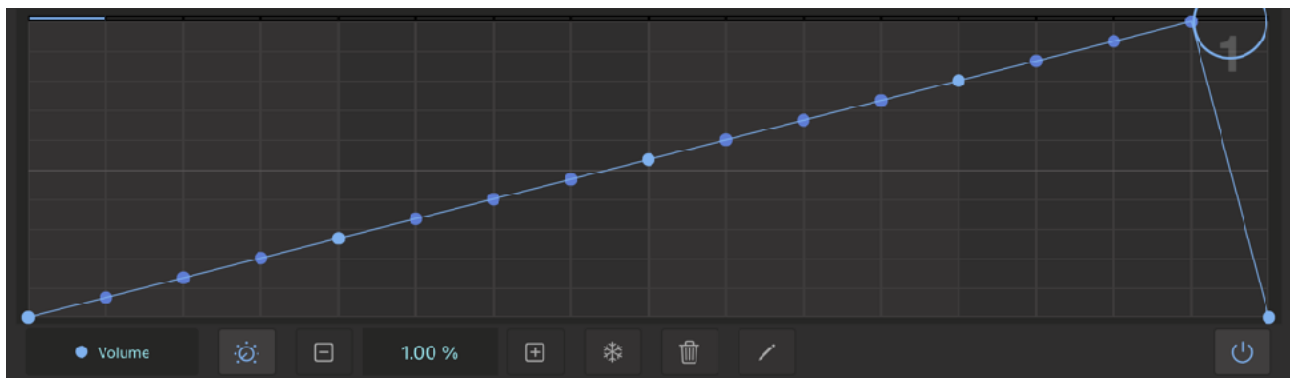
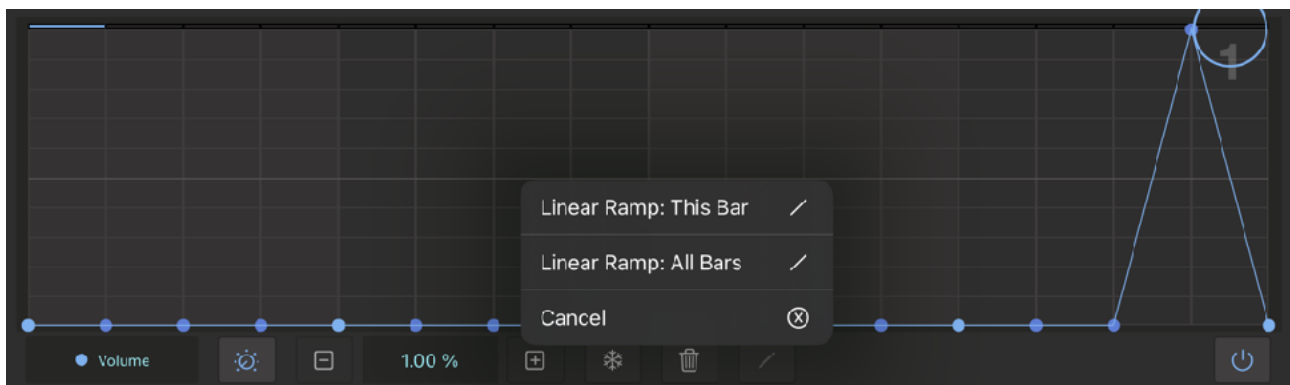
Select Linear Ramp: This Bar to create linear ramp for current bar.

Select Linear Ramp: All Bar to create linear ramp for all bars.

Select Cancel to cancel the operation.

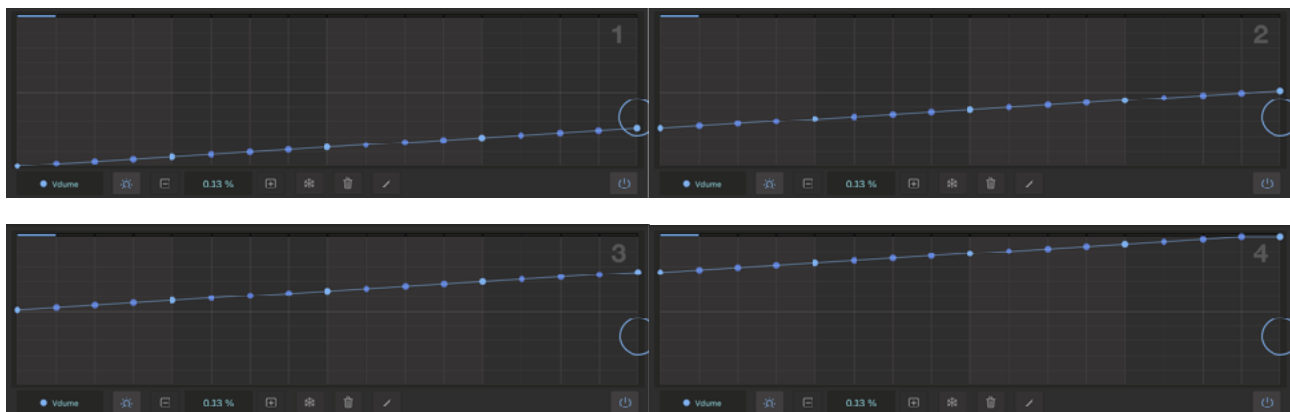
Linear Tamp: This Bar

Set value for step 1 and step 16, then tap “Linear Ramp: This Bar”.



Linear Ramp: All Bars

Set value for step 1 and step 63, then tap “Linear Ramp: All Bars”.

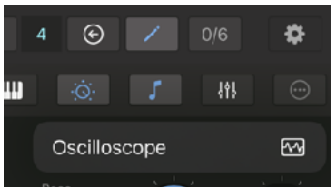


Automation Switch

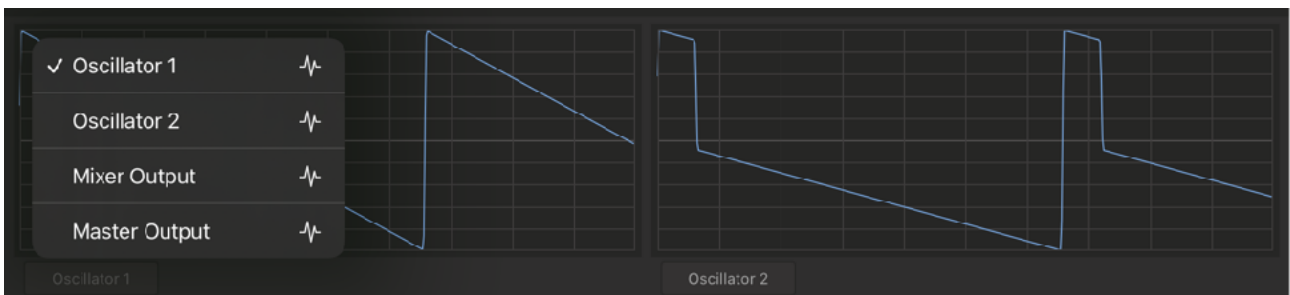
Tap this button to enable / disable automation and recording of the selected parameter. To override the automation, simply turn the dial. It will turn off the automation switch.

Oscilloscope

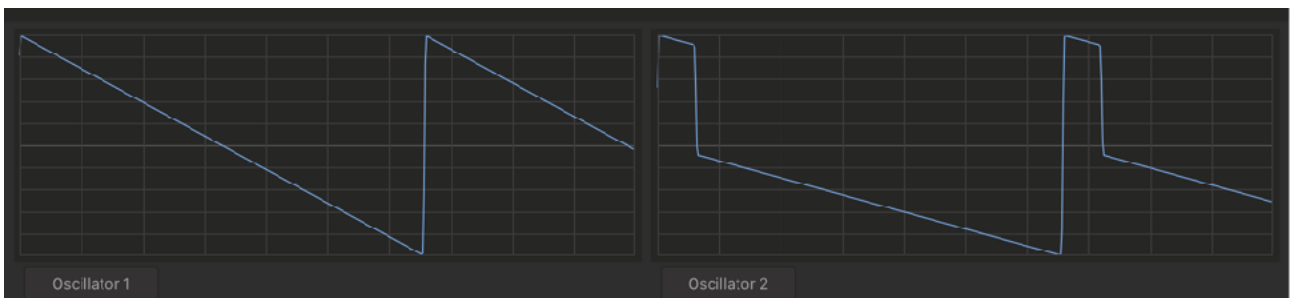
Tap More button and select Oscilloscope from the menu.



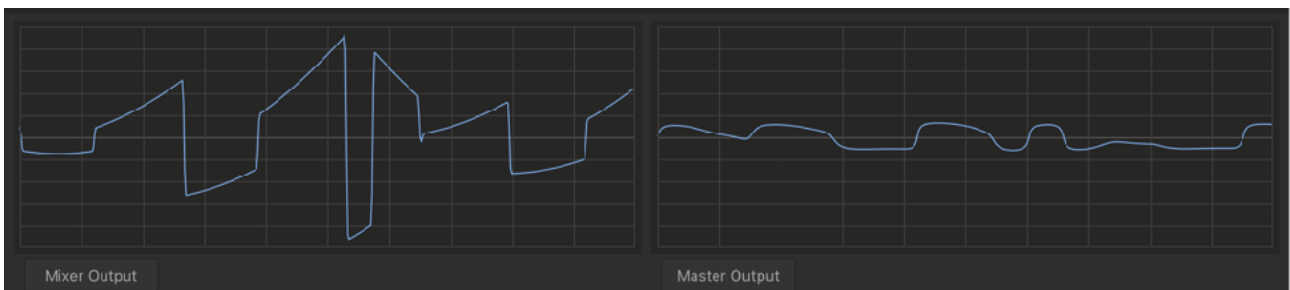
Tap Input Source button and select source from the menu.



Oscillator 1 and Oscillator 2 are output of the oscillators before applying any filter to the signal.

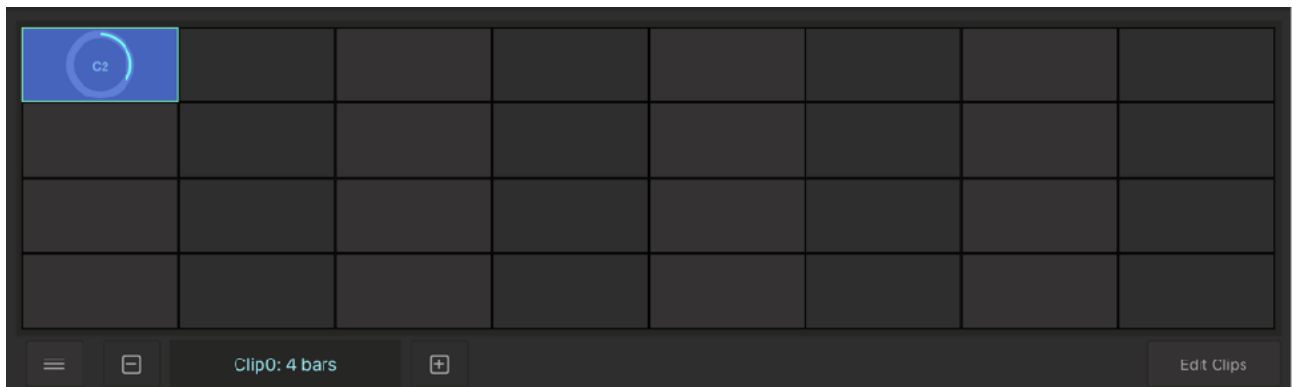


Signal for the Mixer Output is taken before applying any filter to the signal.
Signal for the Master Output is the final output to AU Host Application.



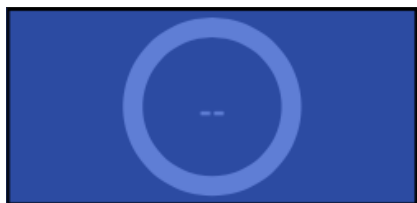
Clips

Use clip editor to arrange clips. Each clip contains 64 steps of sequence (notes and velocity) and automation data. Loop length of each clip can be adjusted from 4 bars to infinite. Maximum number of clips are 32.



Active Clip

Active clip can be played and edited. It is indicated by light background color. Progress Indicator shows playing position in the specified loop length. Clip Label show Key and Octave of the sequence.



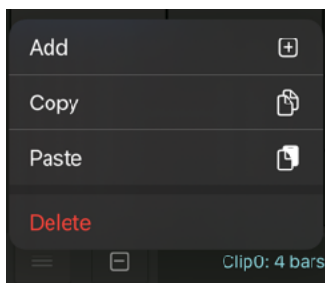
Inactive Clip

Inactive clip is indicated by darker background color. Label “—” indicate that this clip is not edited.

Open Clip Editor

Clip Editor can be opened from sequence editor, automation editor or more menu in tool bar.

Edit Menu

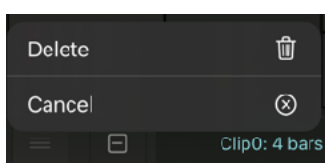


Add: Select Add to create a new clip.

Copy: Tap a Clip and select Copy from the menu.

Paste: Tap a slot and select Paste from the menu to paste the clip.

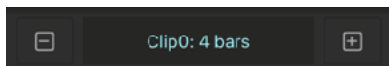
Delete: Select Delete from the menu shows confirmation menu.



Tap Delete to delete the selected clip.

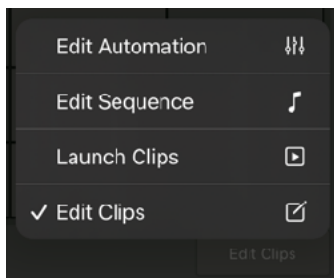
Tap Cancel to cancel the operation.

Loop Length



Tap plus and minus button to adjust loop length of the selected clip. To select Infinite, tap minus button again after selecting 4 bar.

Clip Action Menu



Select Edit Automation and tap a clip to open the clip in automation editor.

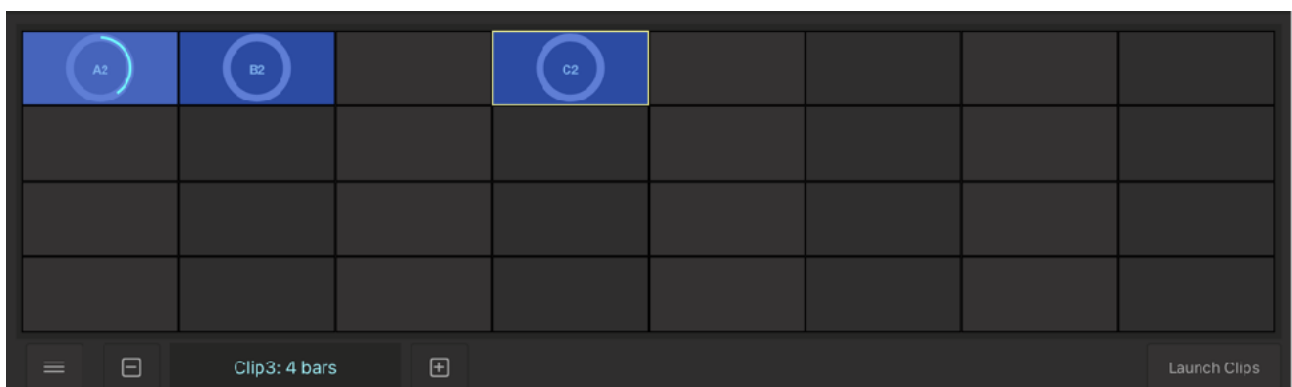
Select Edit Sequence and tap a clip to open the clip in sequence editor.

Select Launch Clips to launch clips.

Select Edit Clips to add, copy, paste and delete clips.

Playing Clips

1. Create and edit the clips. Adjust loop length of the each clips.
2. Select Launch from the Clip Action Menu.
3. Select a clip and tap play button in transport bar or play button of the host application.
4. [Automatically Select Clips] Selected clip will be played for the length specified and a clip on the right will be played next.
5. [Manually Select Clip] During clips are playing, tapped clip (yellow border line) will be played next.

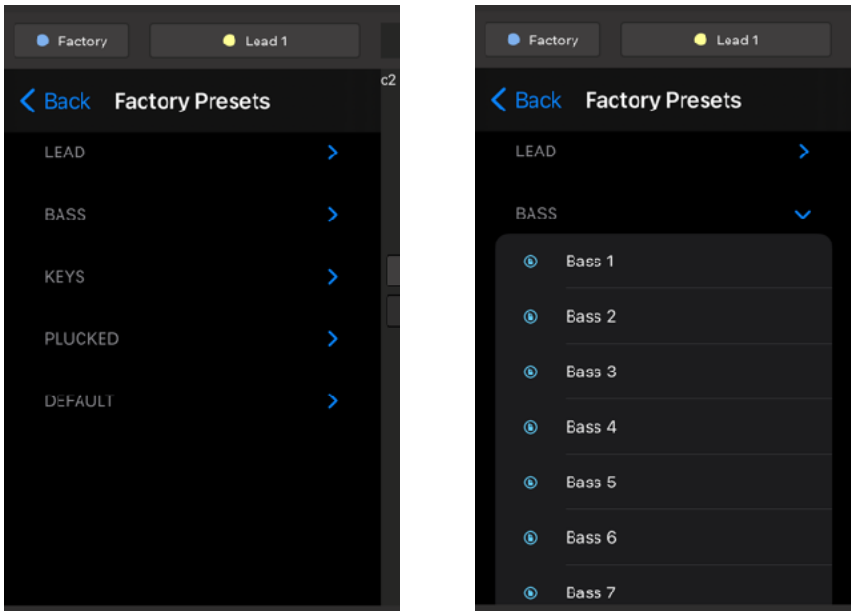


Preset / Parameter List Panel

Tap on preset name in title bar or parameter name in automation editor shows List Panel.

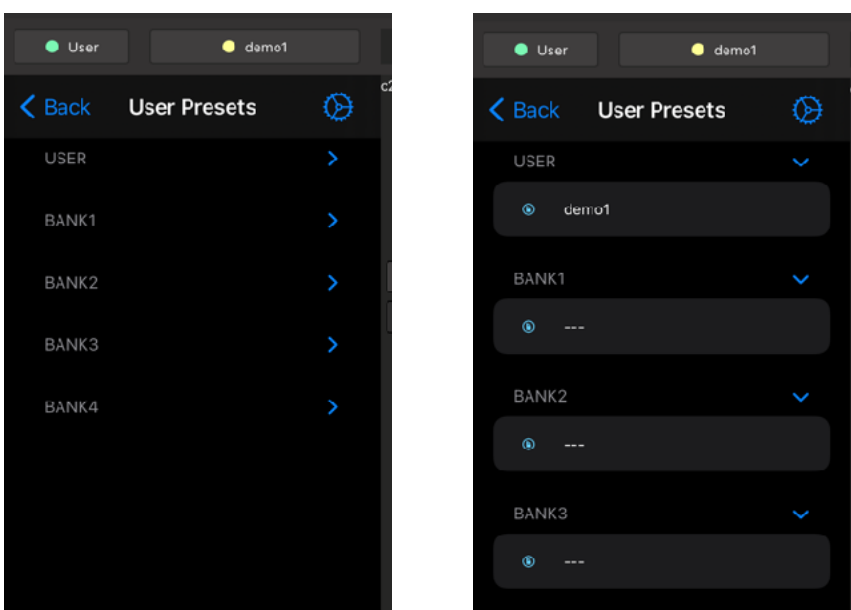
Factory Preset List

Tap arrow to expand the section. Tap preset name to load the preset.



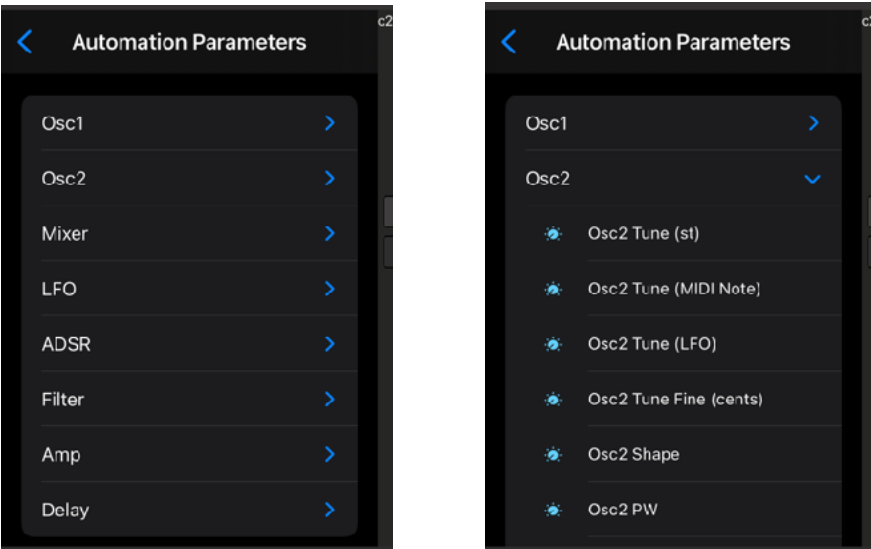
User Preset List

Tap arrow to expand the section. Tap preset name to load the preset.



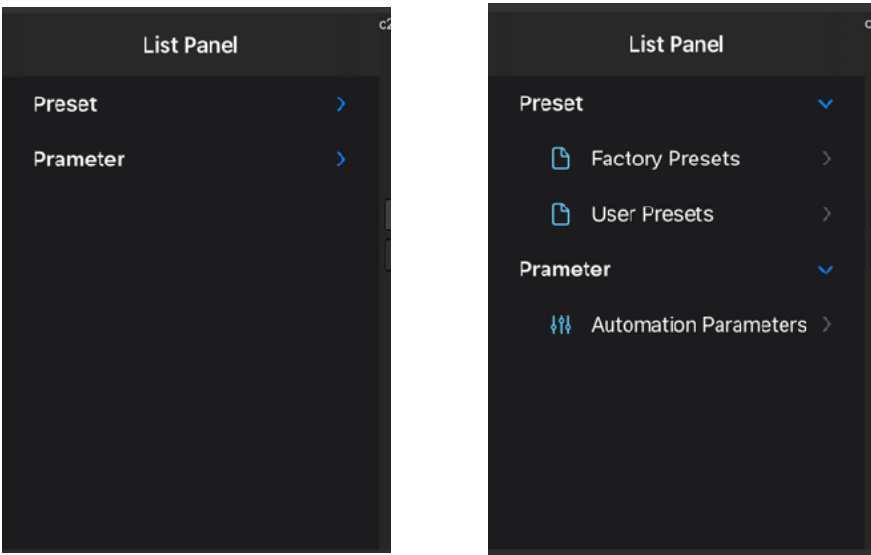
Parameter List

Tap arrow to expand the section. Tap parameter name to select the parameter for editing.



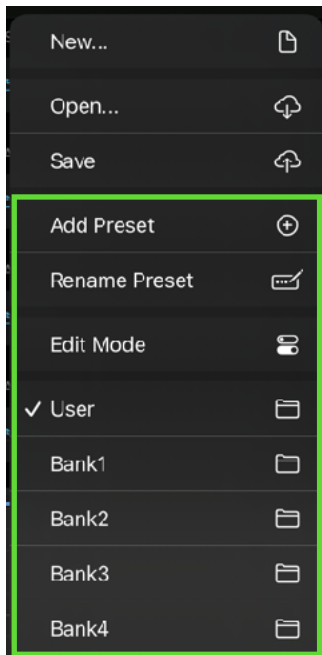
List Panel Menu

Tap left arrow in navigation bar shows a menu of the List Panel. Tap arrow to expand the section. Tap a menu item to show the selected list.



Add / Edit User Preset (in AUv3 Plug-In)

Tap gear icon in navigation bar to show editing menu.



Add Preset

Select this menu to save a user preset in AUv3 plug-in.

Rename Preset

Select this menu to rename a user preset.

Edit Mode

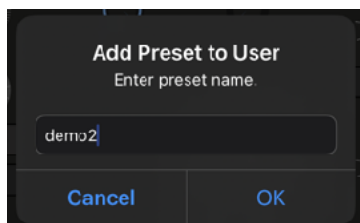
Select this menu to enable / disable editing mode. When editing mode is enabled, preset can be deleted or reordered.

User, Bank1, Bank2, Bank3 and Bank4

Select one of these menu to specify a bank to save the preset.

Add Preset

Select Add Preset menu shows a window.

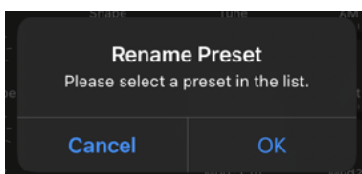


Type name then tap on OK to save the preset. The preset is saved to the selected bank.

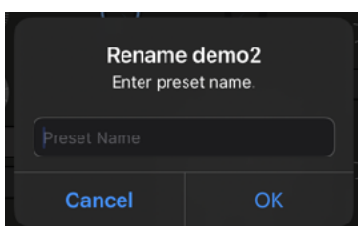
This preset is saved inside of the AudioUnit Extension and can be accessed in any host application. User Preset contains parameter values and sequence data.

Rename Preset

Select Rename Preset menu shows a window.



Tap OK then tap name of the preset to rename.



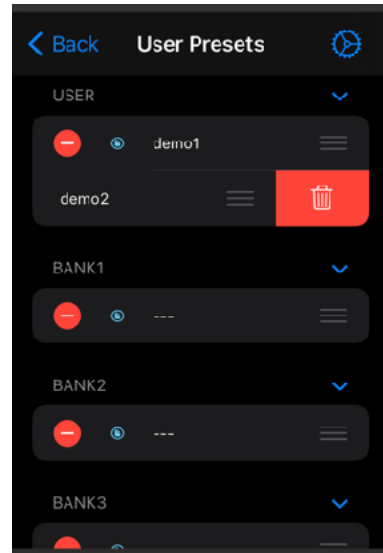
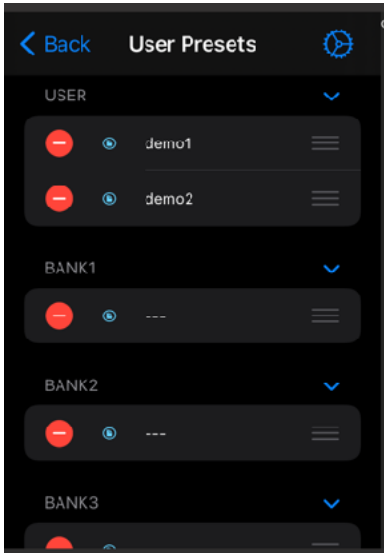
Type name then tap OK to rename the preset.

Delete Preset

Select Edit Mode menu to enable edit mode.

Tap red minus button next to name of the preset to delete.

Tap red trash can icon to confirm the action.

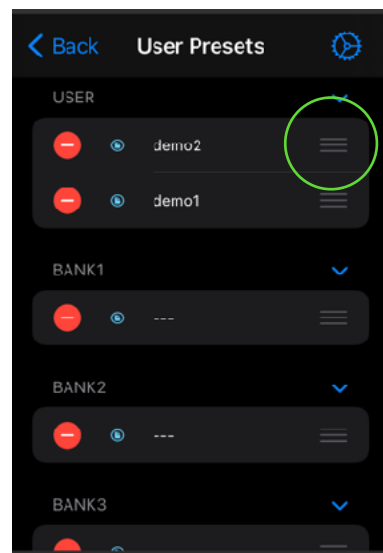
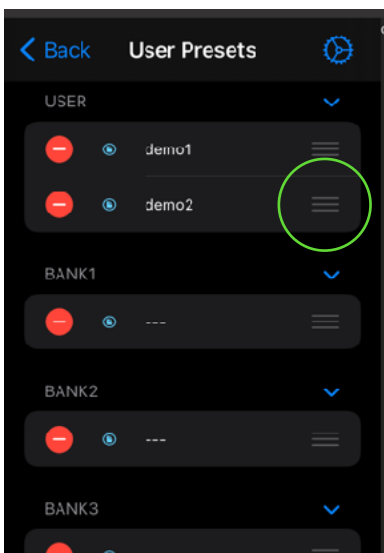


Reorder Preset

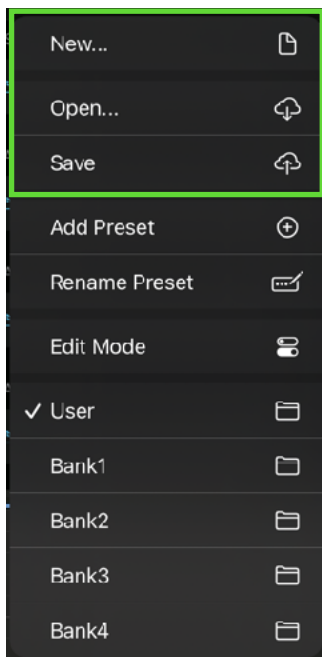
Select Edit Mode menu to enable edit mode.

Drag reorder icon on the right to move the item.

When it is done, select Edit Mode menu to disable edit mode.



New / Open / Save (User Preset in iCloud Drive)



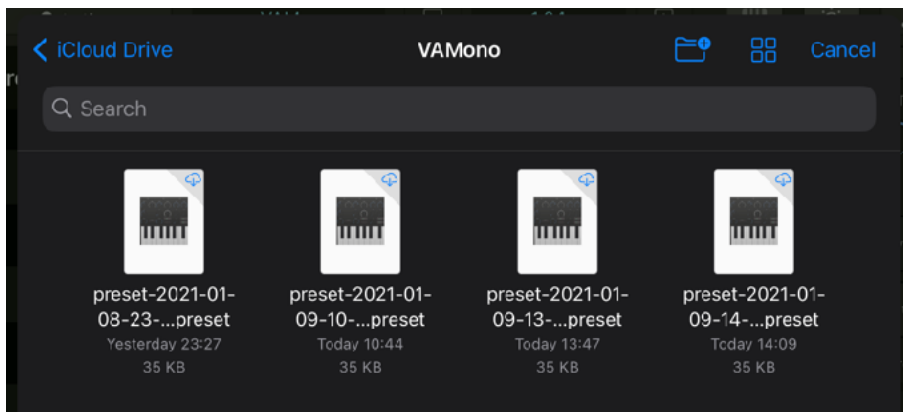
Select New... to reset parameters, sequencer and automation.

Select Open... to load preset from iCloud Drive.

Select Save to save preset to iCloud Drive.

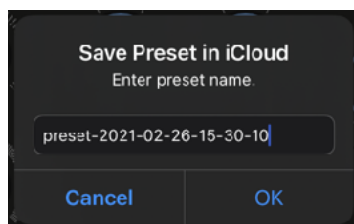
Open Preset

Select Open... from the menu. Tap a file in file browser to load the preset.



Save Preset

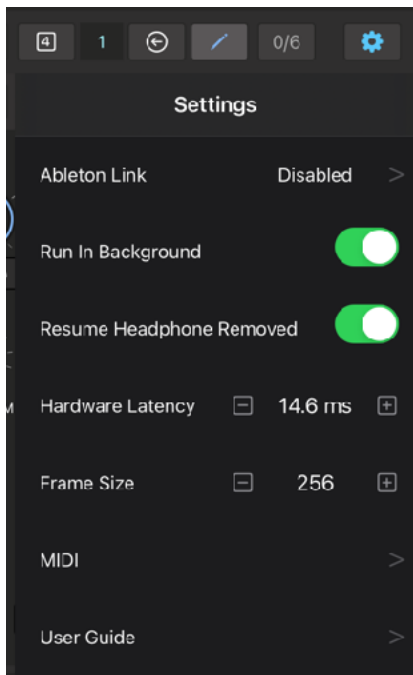
Select Save from the menu. Type file name and tap OK to save a new preset to iCloud.



New...

Select New to reset all parameters and clear sequencer data and automation data.

Setting Panel (Stand Alone)

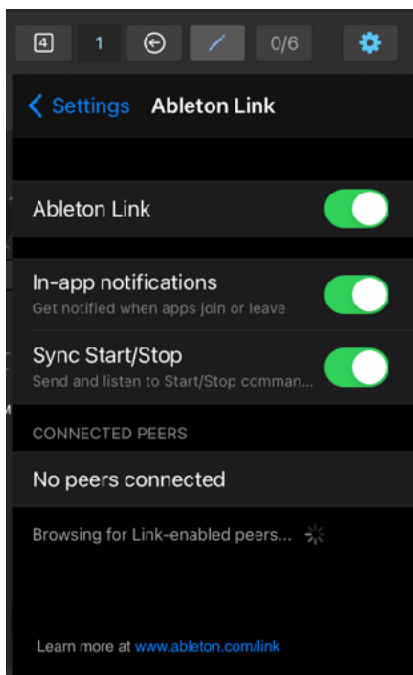


Tap setting button to show Setting Panel to edit settings for Stand Alone.

Ableton Link

Ableton Link is a new technology that synchronizes beat, phase and tempo of Ableton Live and Link-enabled iOS apps over a wireless network. It lets you play devices together with the freedom of a live band. Anyone can start and stop their part while others keep playing, and anyone can adjust the tempo and the rest will follow.

You can use Link to play with several instances of Ableton Live, with Live and iOS apps, or even without Live in your setup: using Link-enabled apps on multiple devices, or multiple apps on the same device.



Ableton Link

Switch on to enable Ableton Link.

In-app notification

Switch on to displays a message when an Ableton Link enabled app is connected.

Sync Start/Stop

Switch on to synchronize start and stop with connected apps.

Connected Apps

Indicate number of currently connected apps.

Ableton Link requires Wireless Local Network Connections. Your device and other Link-enable devices must be connected to the same local network.

Run in Background

Turn this switch on to allow app to play continuously when the app enters in the background.

Resume Headphone Removed

Turn this switch on to allow app to play continuously when headphone is disconnected.

Hardware Latency

When Ableton Link is enabled, playback is synchronized to the Link-enabled devices. If there is a latency, output signal may not be aligned with the beginning of the each step.

In order to adjust the latency, set time in milliseconds in Hardware Latency. This value is used to compensate the latency of the output signal.

The latency varies on audio Interface and sample rate. Default value is 8.6 millisecond (sample rate is 44.1KHz)

Frame Size

Frame Size (Buffer Size) is a number of samples contained in an audio buffer. Higher frame size increases system performance also increase latency. Lower frame size decrease latency also decrease system performance. If you experience a problem with system performance, set higher frame size to improve the performance. Default setting is 256.

MIDI

Tap this menu to open MIDI Settings.

User Guide

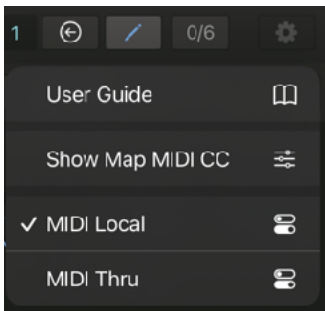
Tap this menu to show this user guide. Tap on expand icon in navigation bar to view this user guide in full screen.

Default Settings

Ableton Link	Disabled
Run in Background	On
Resume Headphone Removed	On
Hardware Latency	8.6 ms
Frame Size	256
MIDI Input Channel	OMNI
MIDI Output Channel	OFF
MIDI Local	ON
MIDI Thru	OFF

Setting Menu (AudioUnit Extension)

Tap setting button to show Setting Menu in AudioUnit Extension.



User Guide

Open this user guide.

Show/Hide Map MIDI CC

Open or Close Map MIDI CC view.

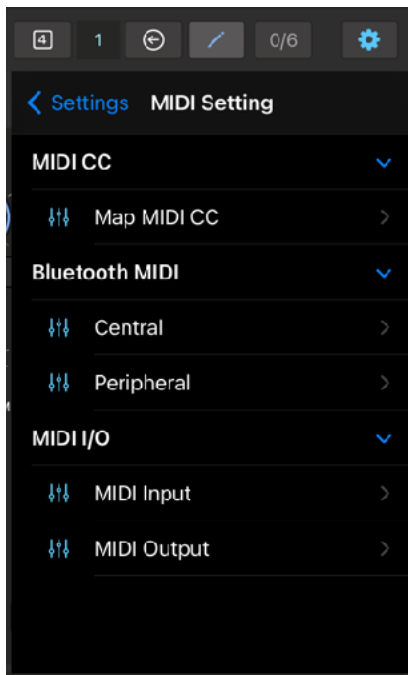
MIDI Local

When sending and receiving MIDI, connected device may send back MIDI it is received. This causes each notes to play twice. If this problem occurs, turn MIDI Local Switch OFF to disconnect User Interface from Audio Engine.

MIDI Thru

When MIDI thru is turned on, MIDI messages received in MIDI input will be send out form MIDI output. This setting is required when connected device's local switch is turned off.

MIDI Setting

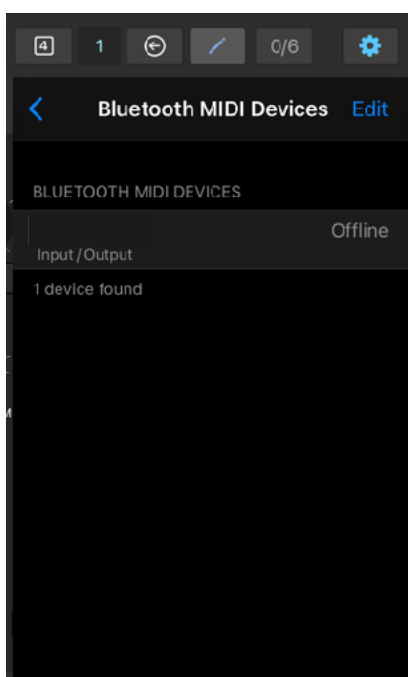


Map MIDI CC

Open Map MIDI CC view.

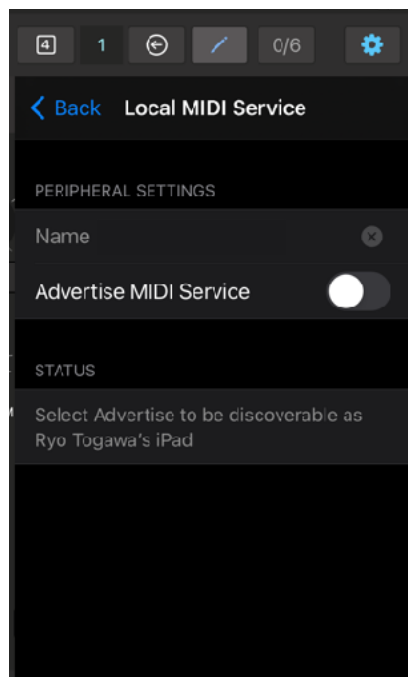
Bluetooth MIDI Central

Open Bluetooth MIDI Devices Page, which list available bluetooth devices. Select a name to connect to the device.



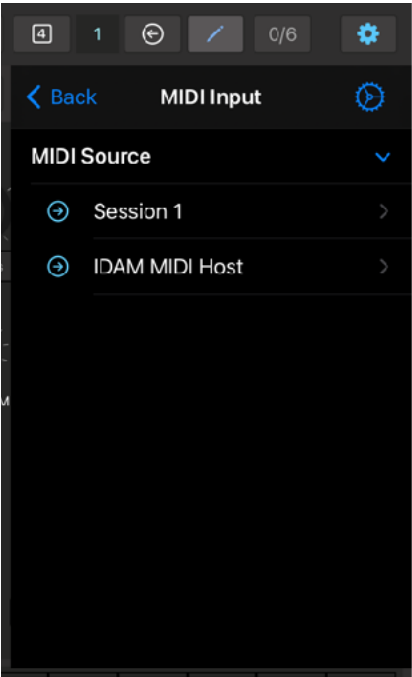
Bluetooth MIDI Peripheral

Open Local MIDI Service Page. If Advertise MIDI Service switch is turned on, it makes the device to be discoverable from the other Bluetooth MIDI devices.



MIDI Input

Open MIDI Input Page. This page shows a list of MIDI input services and devices. Tap on gear button to show MIDI Input Menu.



Update List

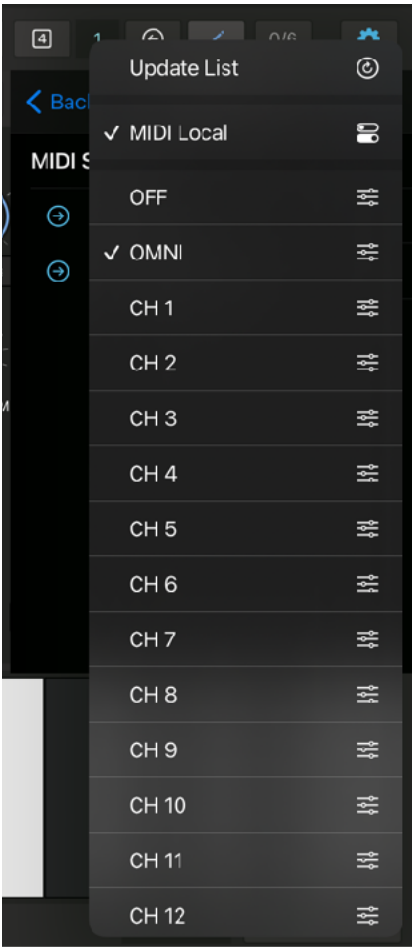
Select this menu to update MIDI input list.

MIDI Local

When sending and receiving MIDI, connected device may send back MIDI it is received. This causes each notes to play twice. If this problem occurs, turn MIDI Local Switch OFF to disconnect User Interface from Audio Engine.

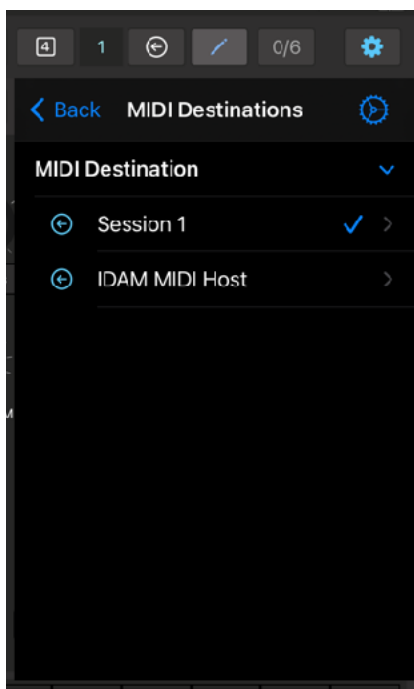
MIDI Channel

Select MIDI Channel.
Select OFF to disable MIDI input.
Select OMNI to connect all channel.



MIDI Output

Open MIDI Output Page. This page shows a list of MIDI output services and devices. Tap on name to connect to the device. Tap on gear button to show MIDI Input Menu.



Select MIDI Output Destination

Tap name of the device to connect MIDI output to the device.

Selected device shows check mark on the right.

Update List

Select this menu to update MIDI output list.

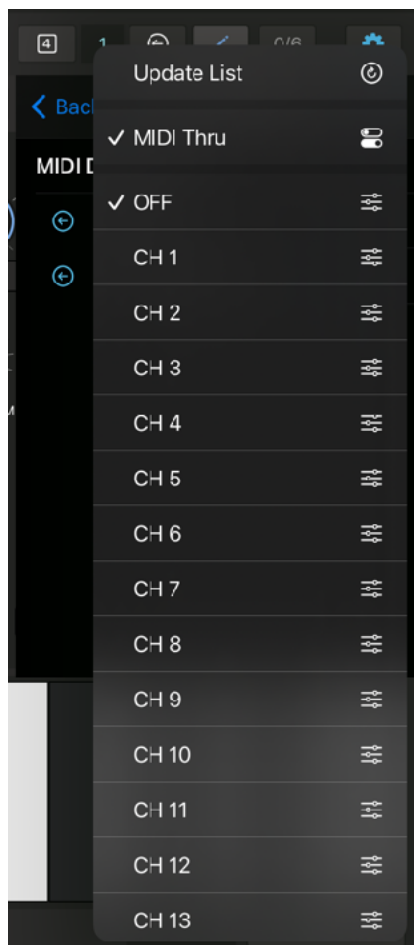
MIDI Thru

When MIDI thru is turned on, MIDI messages received in MIDI input will be send out form MIDI output. This setting is required when connected device's local switch is turned off.

MIDI Channel

Select MIDI Channel.

Select OFF to disable MIDI output.



MIDI CC Map

To make a MIDI CC (Continuous Controller) assignment, Tap a button then turn a knob on MIDI controller. The first MIDI CC number detected will be assigned to the parameter. When CC is assigned, the button shows the CC number. Alternatively, double tap on a button shows a widow, so that you can type in CC number.

To cancel the assignment, tap the button again. To remove the mapping, tap the button showing CC number. Tap X button on the top left to close the MIDI CC Map window.



Override Automation

When a parameter is controlled by MIDI controller, it is not possible to automatically override automation. To override, turn off automation switch of the parameter or turn the dial of the parameter on screen that will stop the automation and the parameter can be controlled freely by MIDI controller.

Program Change

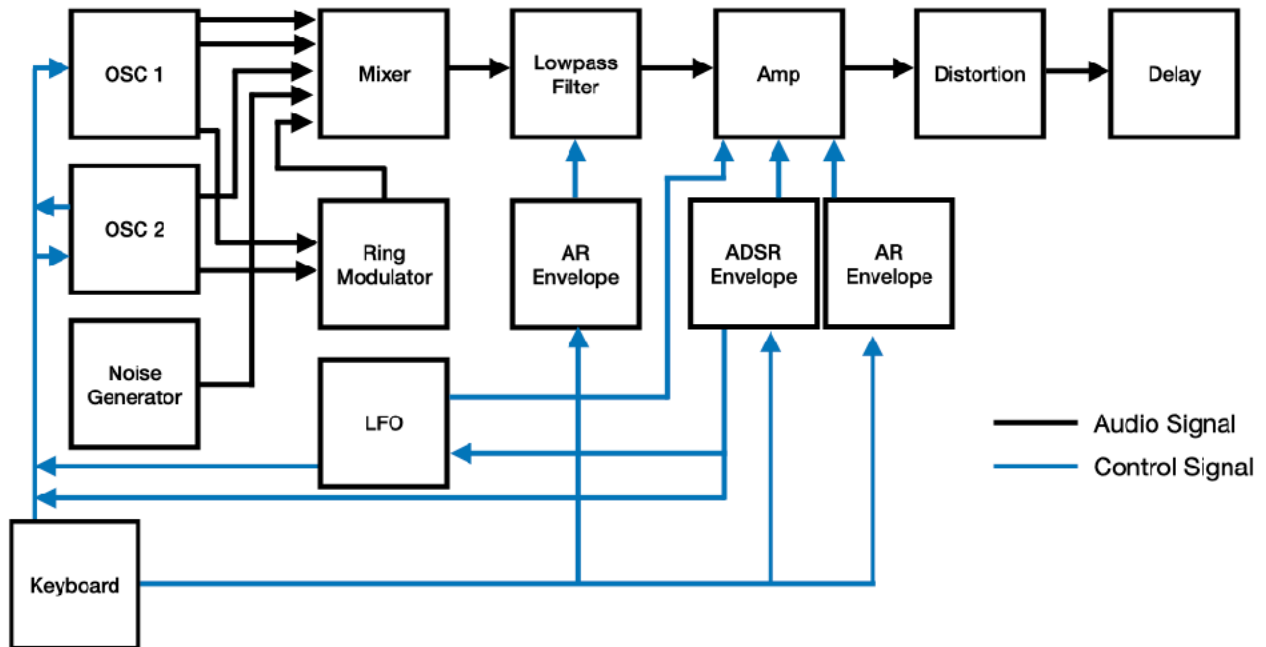
Program Change is received as following.

Factory: Bank (CC#0) = 0, Sub (CC#32) = 0, Program = Preset Number

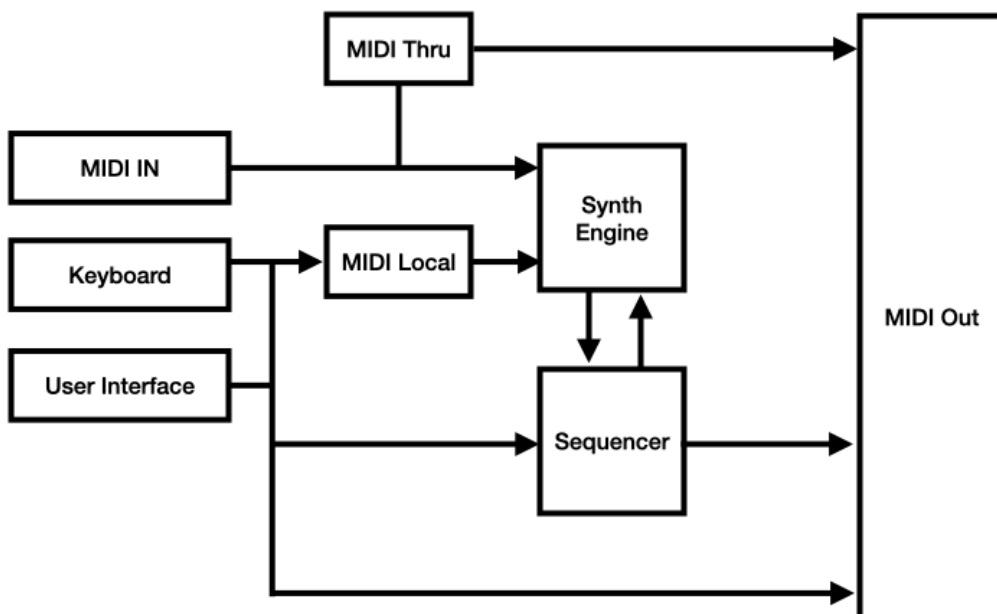
User: Bank (CC#0) = 0, Sub (CC#32) = 1, Program = Preset Number

Synthesizer Overview

Block diagram

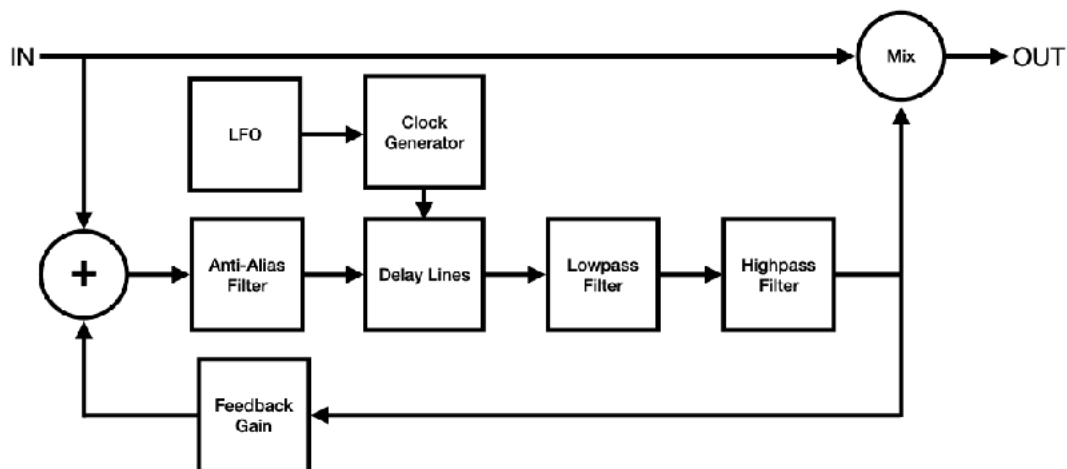


Control Signal & MIDI Flow



Delay Effect Overview

Block diagram



Description

Delay Time

Adjust delay time from 20 ms to 1200 ms. When sync switch is turned on, delay time can be set as note value which is synchronized to the tempo provided by the host application. If tempo is not provided by the host application, value of the tempo can be manually adjusted. Valid range of the note value is automatically adjusted base on the current tempo.

Regeneration

Adjust feedback from 0 % to 100 %. You can change sound of the feedback by adjusting frequency of the high-pass filter and the low-pass filter.

Modulation

When modulation switch is turned on, modulation can be applied to the delayed signal. LFO (Low Frequency Oscillator) generates sine wave for the modulation.

Adjust LFO frequency from 0.01 Hz to 10 Hz.

Adjust LFO Intensity from 0 to 1.0, which adjust modulation width from 0 ms to +/- 10 ms.

Mix

Adjust balance of the direct sound and delayed sound from 0 % (Dry) to 100 % (Wet).

System Interruptions

It is important to aware that system may interrupt playback in the following situations. Please make sure to test and make a plan to handle the situations.

1. Incoming calls or activating Siri

When receiving an incoming call or when activating Siri, it interrupts playback and send App to background. In order to avoid it occurs, turn off the followings in the Setting App.

- Do Not Disturb > Do Not Disturb > turn on.
- Siri & Search > Listen for “Hey Siri” > turn off.
- Siri & Search > Press Home for “Siri” > turn off.

2. Connecting or disconnecting a headphone

Headphone output has own DAC⁶ and own sample rate. The sample rate may be different form the sample rate of the audio engine. What will happens when connecting or disconnecting a headphone depends on the sample rates.

If the sample rates are same, playback continues when headphone is connected. When headphone is unplugged, playback will stop. You can change this behavior by turn Resume when headphone is unplugged on in Settings.

If sample rates are different, when connecting headphone or when disconnecting headphone stops playback and system will re-configure audio engine for the new sample rate.

The sample rate of the audio engine is set by an application or an audio interface. For example, when connecting an iOS device to Mac using a cable that came with your device, Inter Device Audio and MIDI on macOS uses 44.1KHz but Quicktime player app on macOS uses 48KHz.

If you are planning to connecting or disconnecting headphone for monitoring during playback, please make sure to test and learn what will occurs.

3. Changing sample rate setting

As described above, if sample rate of the audio engine is changed for any reasons, playback stops.

4. Media Reset

Under rare circumstances, the system terminates and restarts its media services daemon. When it occurs playback stops.

5. Pressing the Home button or sending App to background

When app is sent to background by pressing home button, showing notification center or any other reasons, playback stops. You can change this behavior by turn Run in Background on in Settings.

Additional Settings

Followings are other settings in the Settings App which you may want to adjusted.

⁶ Digital to Analog Converter

- Display & Brightness > Auto-Lock > set to Never
- Sounds > turn off all system sound
- Notifications > Show Previews > set to Never
- Home Screen & Dock > Multitasking > Gestures > turn off

If you have installed apps that may send you a notifications or may interrupt playback, make sure to adjust settings of the apps to disable the functions.

If you are using Ableton Link, make sure that Local Network in Privacy is turned on.

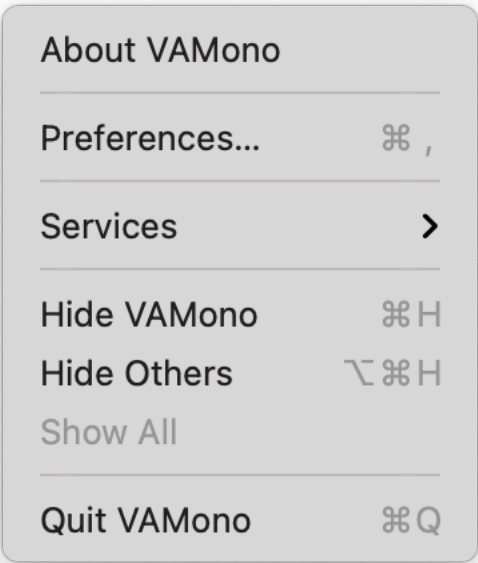
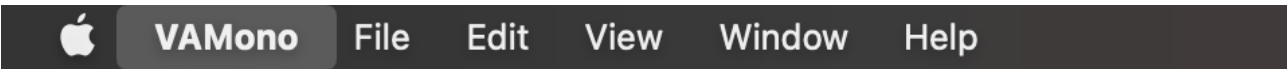
If you are using Bluetooth MIDI, make sure that Bluetooth in Privacy is turned on.

macOS

VAMono on macOS (stand alone) supports menu bar, keyboard shortcuts, context menu and touch bar. AUv3 plug-in on macOS supports keyboard shortcuts and context menu.



Menu Bar



Open a window to display version information.

Open Preference window.

Quit this application.

New...	⌘ N
Open...	⌘ O
Save	⌘ S

Reset all parameters and sequence data.

Display File Browser to load preset from iCloud drive.

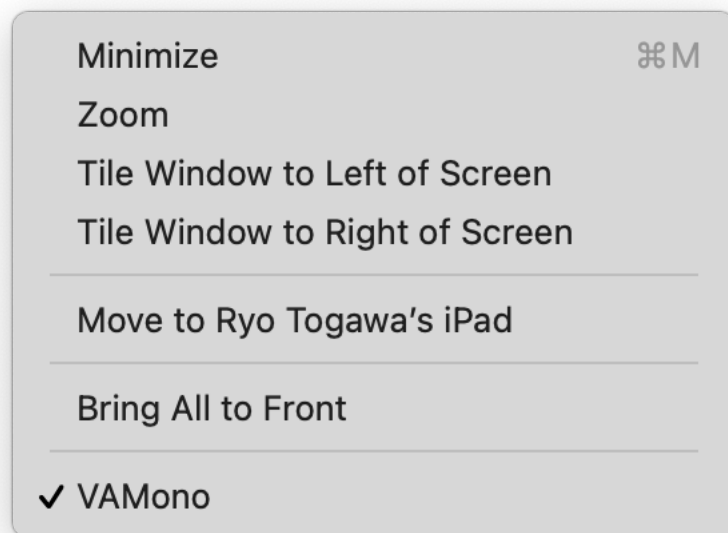
Display a widow to type file name and save the preset to iCloud drive.

Undo	⌘ Z
Redo	⇧ ⌘ Z
<hr/>	
Cut	⌘ X
Copy	⌘ C
Paste	⌘ V
Paste and Match Style	⇧ ⌘ V
Delete	
Select All	⌘ A
<hr/>	
Start Dictation...	⌘ H
Emoji & Symbols	⌘ Space

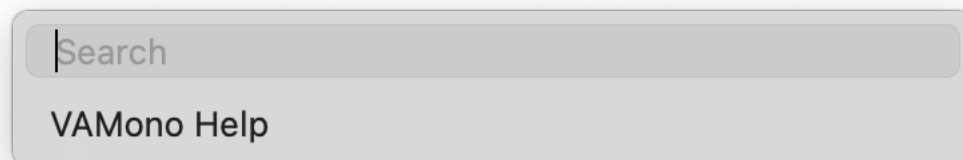
Edit Commands are enabled when typing text to specify file name.

Show Keyboard	⇧ ⌘ K
Show Piano Roll	⇧ ⌘ P
Show Automation	⇧ ⌘ A
Show Wheels	⇧ ⌘ W
Show Synth Section B	⇧ ⌘ S
Show Map MIDI CC	⇧ ⌘ M
Show Oscilloscope	⇧ ⌘ O
Show Clips	⇧ ⌘ C
<hr/>	
Enter Full Screen	⌘ F

Show/Hide Commands are enabled/disabled based on the current view mode.



Window Menu

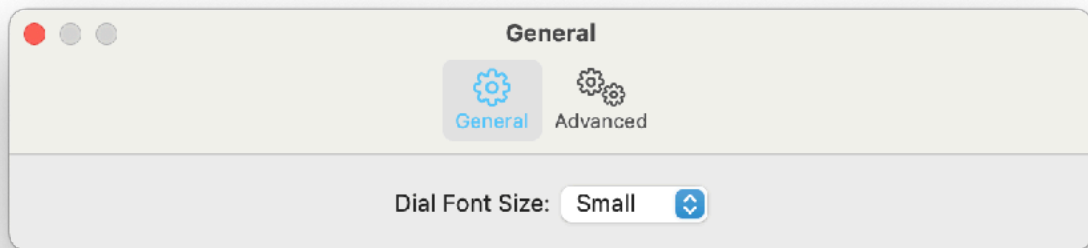


Help Menu

Preference

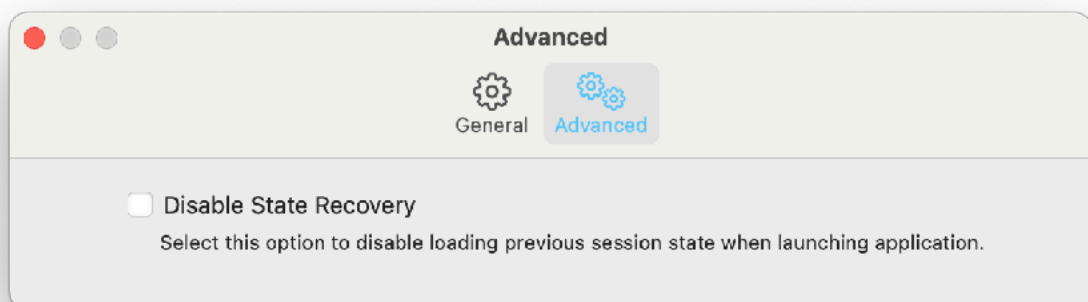
Dial Font Size

Adjust font size of title label of the dials in Synthesizer View. Please note that VAMono adjust font size based on the size of window. If VAMono is displayed in small window, setting the Font Size to Large may not change the font size of the dial title.



Disable State Recovery

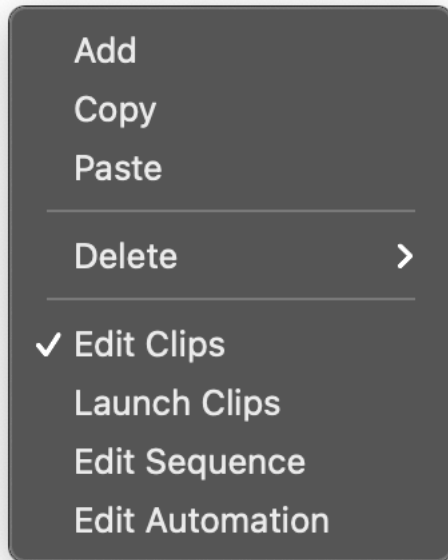
When application is launched state of the previous session is automatically loaded by default. Check this option to disable state recovery, so the application always start in default state.



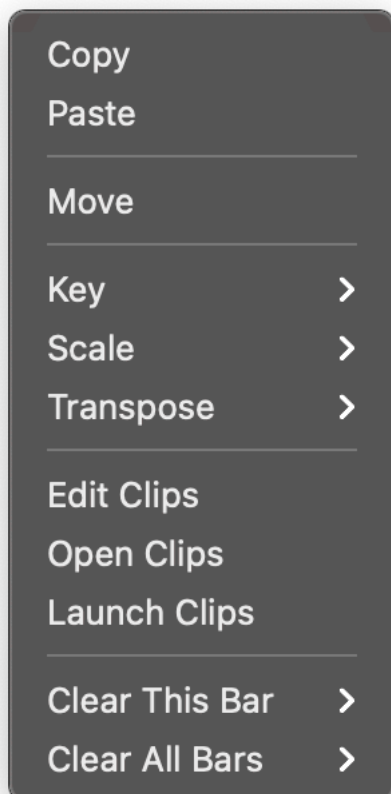
Context Menu

Right Mouse Click or Command-Click to show context menus. Context menu contains all commands for the view. Functionality of the commands are same.

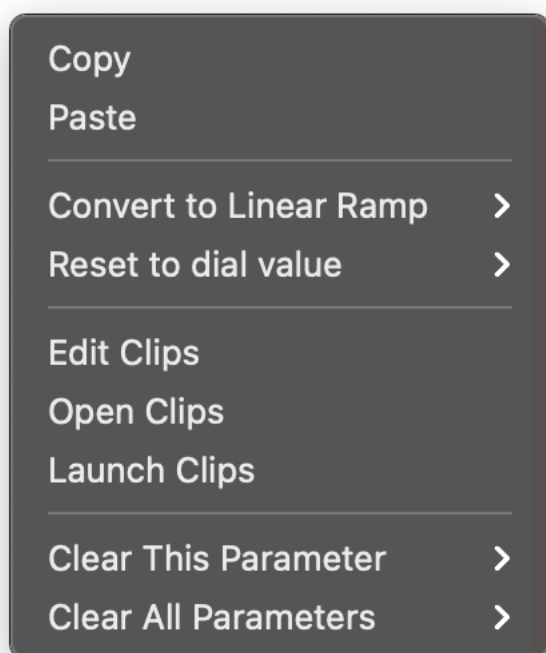
Clip View Context Menu



Piano-Roll View Context Menu



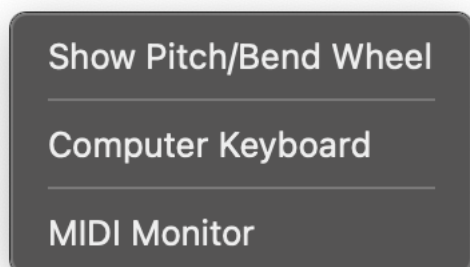
Automation View Context Menu



Oscilloscope View Context Menu



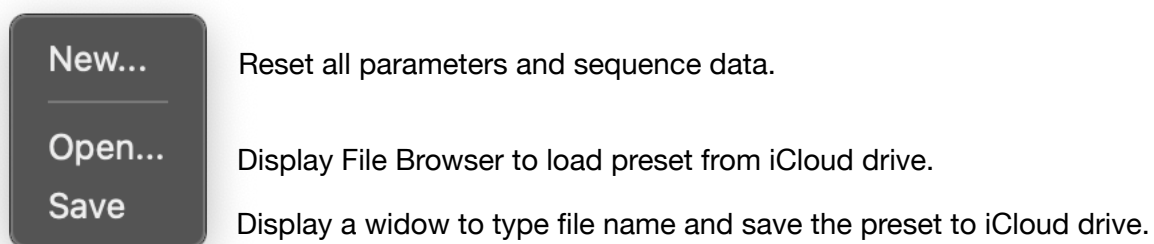
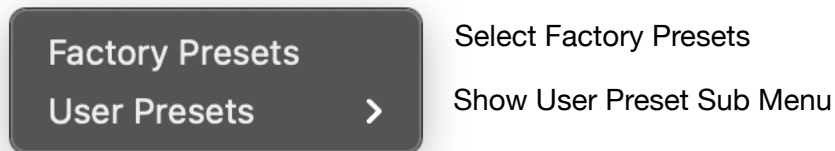
Keyboard View Context Menu



User Preset

User Presets can be stored in iCloud Drive so that the presets can be shared with VAMono on iPhone or on iPad. macOS version of VAMono can't save or load user presets inside of the AUv3 plug-in.

Tap Preset Type Button (Factory / User) to show Preset Menu.



Touch Bar (MacBook Pro)



Play / Stop Sequencer



Enable / Disable Arm Recording.



Select Loop Start (Turn off to select edit mode)



Select Loop End (Turn off to select edit mode)

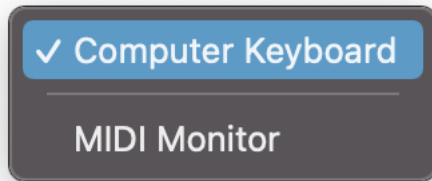


Select Bar

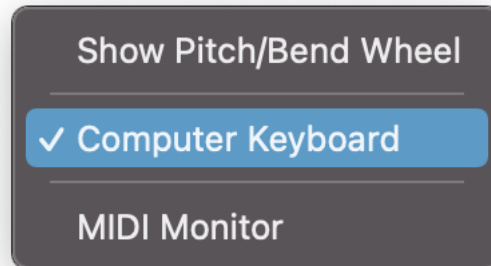
Use Computer Keyboard as MIDI Keyboard

Enable Computer Keyboard option from Keyboard setting menu or keyboard contest menu.

Keyboard setting menu



keyboard contest menu



Keys are mapped as shown in the figure below.



Change Octave

Press Z key to select one octave below.
Press X key to select one octave above.

Change Velocity

Press C key to decrease velocity.
Press V key to increase velocity.

Keyboard Shortcut

Command	Key	AUv3	Note
New	Command-N	N/A	
Open	Command-O	N/A	
Save	Command-S	N/A	
Undo	Command-Z	✓	Available for Text Input
Redo	Shift-Command-Z	✓	Available for Text Input
Cut	Command-X	✓	Available for Text Input
Copy	Command-C	✓	Available for Text Input
Paste	Command-V	✓	Available for Text Input
Delete	Delete	✓	Available for Text Input
Show/Hide Keyboard	Option-Shift-Command-K	✓	
Show/Hide Pianoroll	Option-Shift-Command-P	✓	
Show/Hide Automation	Option-Shift-Command-A	✓	
Show/Hide Wheels	Option-Shift-Command-W	✓	
Show/Hide Synth	Option-Shift-Command-S	✓	
Show/Hide Clips	Option-Shift-Command-C	✓	
Show/Hide Oscilloscope	Option-Shift-Command-O	✓	
Show/Hide MIDI CC Map	Option-Shift-Command-M	✓	
Enter/Exit Full Screen	Control-Command-F	N/A	
Play/Stop	Space	✓	(AUv3) Available when host sync is disabled.
Record	Option-Shift-Command-R	✓	
Loop Start (Bar)	Option-Shift-Command-[1, 2, 3, 4]	✓	
Loop End (Bar)	Option-Command-[1, 2, 3, 4]	✓	
Edit (Bar)	Command-[1, 2, 3, 4]	✓	
List Focus	Arrow-Left	✓	
List Up	Arrow-Up	✓	
List Down	Arrow-Down	✓	
List Select	Enter	✓	

AUv3 on Apple Garage Band

Activate Plug-In

After loading VAMono or opening a project file, if oscilloscopes don't show waveform of the signals, DSP engine of VAMono is not running.

In order to start DSP engine of the VAMono, please do one of the followings to start the engine.

- Press Play button on GarageBand
- Play MIDI notes from GarageBand

When the DSP engine is started, oscilloscopes show waveform of the signals.

Offline Renering

Start Offline Rendering on Apple Garage Band
Share > Export Song to Disk

The followings are a few tips for offline rendering on Apple Garage Band.

- Make sure to save your project before performing offline rendering.
- Audition before initiate offline rendering. In order to perform offline rendering, DSP engine of VAMono needs to be running. Please press play on GarageBand and make sure that DSP engine of the VAMono is running.
- If you are using clips, add an empty clip at the end and set the length to INF. Garage Band will stop rendering when audio level is dropped to inaudible level. This also helps to record tail of the delay effect.
- Oscilloscopes won't updated waveform during the offline rendering. If oscilloscope is updating the waveform, the recording is not performed properly. This happens if offline rendering is initiated when DSP engine of VAMono is not running.

Known Issues

Version 1.0.7

- DSP Engine doesn't start until a user presses play button or play MIDI notes on GarageBand.
- Touch Bar shows blanc screen when showing button menu or context menu.
- Key Inputs can't be recognized after resizing the window until a user click on any position of the UI.

Specification

Synthesizer

Oscillators

Continuously variable wave shape (triangle, sawtooth, square)

Sub: Square, one octave lower (oscillator 1)

Pulse width for triangle and square (oscillator 1)

Pulse width for square (oscillator 2)

Hard Sync (oscillator 1 to oscillator 2)

Keyboard on/off (oscillator 2)

Low frequency mode (oscillator 2)

Tuning +/- 24 semitones

Fine tuning +/- 50 cents (oscillator 2)

LFO

Wave shape: sine, saw, down saw, square, triangle, random

Frequency Range: From 0.04Hz to 42.2Hz

Frequency modulation by ADSR envelope

Amplitude modulation by ADSR envelope

ADSR Envelope

Attack time: From 1ms to 6 sec

Decay time: From 1ms to 10 sec

Sustain level: From 0 to 100%

Release time: From 1ms to 10 sec

Modulation

LFO: frequency, shape, pulse width, amplitude

Env: frequency, shape, pulse width, LFO frequency and amplitude

Xmod: frequency and shape

Ring: oscillator 1 output and oscillator 2 output

Frequency modulation mode: linear / exponential

Filter

Low pass filter: 24 dB per octave

Filter envelope: adjustable decay and accent

Amplifier

Envelope: gate / ADSR

Amplitude modulation by LFO

Controllers

Modulation Wheel

Pitch Bend Wheel

Sequencer

64 Step Sequencer

Loop Length: from 1 bar to 4 bars

Tempo: 20 BPM to 999 BPM

Host Sync: On and Off

Effects

Distortion with tone control

Delay Effect

Delay Time	Range from 20ms to 1200ms
Feedback	Range from 0% to 100%
Mix	Range from 0% to 100%
Highpass Filter	Range from 20Hz to 500Hz
Lowpass Filter	Range from 1000Hz to 20000Hz
LFO Frequency	Range from 0.01Hz to 10Hz
LFO Intensity	Range from 0.0 to 1.0 (from 0ms to +/- 10ms)
Effect Switch	ON or OFF
Sync Switch	ON or OFF
Frequency Range	From 0Hz to 22.05KHz

*Appearance and specification of products are subject to change without notice.

Release Notes

What's new in version 1.0

- Initial release

What's new in version 1.0.1

Version 1.0.1 contains improvements and bug fixes.

- Addressing an issue of reported crashes during the launch.

What's new in version 1.0.2

Version 1.0.2 contains improvements and bug fixes.

- [Standalone] Improved timing of the MIDI input events.
- Fixed a problem of the view configuration.
- The holding note is now indicated in the keyboard UI.
- Added MIDI Monitor mode to indicate MIDI note input in the keyboard UI.

What's new in version 1.0.3

Version 1.0.3 contains improvements and bug fixes.

- Fixed a bug that muting sequencer also mute keyboard input.
- Fixed a bug that MIDI Keyboard input can't be recorded correctly.
- Fixed a bug that during the recording, programming sequencer causes unexpected result.
- Fixed a problem causes reported crash when resizing window.

What's new in version 1.0.4

Version 1.0.4 contains improvements and bug fixes.

- Added a feature to load/save preset to iCloud Drive.
- Fixed a bug that showing AUv3 transport in Standalone on iPhone.

What's new in version 1.0.5

Version 1.0.5 contains improvements and bug fixes.

- App folder is now shown in iCloud Drive if the folder contains any files.
- Saved presets can be opened from Files App and others.
- Fixed a bug that MIDI Map can't be updated correctly when preset is loaded.
- Added a feature to reset all parameters and clear sequence / automation data.

What's new in version 1.0.6

Version 1.0.6 contains improvements and bug fixes.

- Added copy and paste features to edit menu of the automation editor.
- Added reset to dial value feature to edit menu of the automation editor.
- Added edit menu to the sequencer. Editing features include copy, paste and move.
- Added scale mode to the sequencer. Supported scales are Major, Minor, Dorian, Phrygian, Lydian, Mixolydian, Locrian, Harmonic Minor and Melodic Minor.
- Added Clip Editor. Each clip contains 64 steps of sequence (notes and velocity) and automation data. Clips can be played automatically or manually.

What's new in version 1.0.7

Version 1.0.7 contains improvements and bug fixes.

- Support Mac (Intel and Apple Silicone)
- Update Ableton Link Framework (V3.1.5).

What's new in version 1.0.8

Version 1.0.8 contains improvements and bug fixes.

- Fixed a problem that app crash when adjusting values by plus and minus button.
- Fixed a problem that a part of UI is not visible when loaded to AUM on iPhone.

What's new in version 1.0.9

Version 1.0.9 contains improvements and bug fixes.

- Support iOS 15 / iPadOS 15.

What's new in version 1.0.10

- Fix problems which make AUv3 to fail the test of AudioUnit Validation Tool on macOS.
- Update Ableton Link Framework to the latest version.

What's new in version 1.0.11

- Support iOS 16 / iPadOS 16.

What's new in version 1.0.12

- Support iOS 17 / iPadOS 17.
- Support macOS Sonoma 14.