



User Guide

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Introduction

Additive synthesis has historically been seen as a very “technical” type of music synthesis, requiring deep knowledge and understanding if it is to be used effectively. This is because it uses many hundreds of individual sine waves to construct sounds with extremely complex spectra. Creating and editing such sounds has been a very tedious and laborious process, requiring “microscopic” attention to detail. However, by combining additive synthesis with an innovative modular approach, Loom 2 retains the power of additive synthesis while providing a user-friendly interface with broader “macroscopic” controls.

The additive synthesis engine in Loom 2 uses up to 512 different sine waves to create different spectra. This is why Loom 2 is able to generate incredibly complex, and musical, waveforms. Loom 2 features over 30 different modules, which can be freely combined into any of the 10 cells. There are over 350 patches included in Loom 2, or you can quickly create your own patches by using the intelligent randomization features.

The Morph Page not only allows for quick editing and modification of the preset parameters, it can also be used as a live performance tool to visually add motion and movement to your tracks.

Loom 2 is a modular additive virtual instrument available as a 64-bit VST™, 64-bit AU, and RTAS® plug-in for Mac® OS X® and Windows®.

System Requirements & Product Support

For complete system requirements, compatibility information, and product registration, visit the AIR website: airmusictech.com.

For additional support, visit airmusictech.com/support.

Installation

1. Double-click the **.exe** (Windows®) or **.pkg** (Mac® OS X®) installer file you downloaded.
2. Follow the on-screen instructions. If the authorization dialog box did not automatically appear when opening Loom 2 in your digital audio workstation (DAW), please see the following [Troubleshooting](#) section.

Note: Use the iLok License Manager to authorize your installation of Loom 2.

Troubleshooting

In some cases, the authorization dialog box may not automatically appear when you open Loom 2 in your digital audio workstation (DAW). This can especially happen if you cancel the authorization procedure before completing it, causing your DAW not to recognize Loom 2.

Please try the following solutions for your DAW and operating system.

To authorize Loom 2 without opening your DAW:

Mac OS X users: Go to **/Applications/AIR Music Technology/Loom 2/** on your computer, and open **Loom 2 Authorizer.app** to start the activation process.

To make your DAW rescan Loom 2 the next time you open it (which will also open the authorization dialog box), follow the instructions below for your DAW:

Ableton Live™

1. Open Live.
2. **Windows users:** Click the **Options** menu, select **Preferences**, and click the **File/Folder** tab.
Mac OS X users: Click the **Live** menu, select **Preferences**, and click the **File/Folder** tab.
3. Under **Plug-In Sources**, click **Browse** next to **VST Plugin Custom Folder**, and make sure **Loom 2.vst** or **Loom 2.dll** is in that folder.
4. Set **Use VST Plug-Ins Custom Folder** to **Off**, and then set it to **On** again. (This forces Live to rescan all plug-ins, including those disabled in a previous scan, which is different from just clicking **Rescan Plug-Ins**.)
5. Close the **Preferences** window.

Apple® Logic® Pro X

1. Close Logic Pro X.
2. Go to **~/Library/Caches/AudioUnitCache/** and delete the file named **com.apple.audiounits.cache**.
3. Open Logic Pro X.

Steinberg™ Cubase™ or Nuendo™

1. Close Cubase or Nuendo.
2. **Windows 7 or Windows 8 users:** Go to **\Users\[your user name]\AppDataRoaming\Steinberg\[Nuendo or Cubase]** and delete the file named **Vst2xBlacklist.xml**.
Mac OS X users: Go to **~/Library/Preferences/[Nuendo or Cubase]** and delete the file named **Vst2xBlacklist.xml**.
3. Open Cubase or Nuendo.

Loom 2 Overview

Loom 2 has a very straightforward user interface despite its incredibly powerful sound engine. The instrument has a small **Master** section across the top and only three pages (**Morph**, **Edit** and **Wave**). These four sections contain all of the powerful features of Loom 2.



- **Master Section:** This section gives you high-level “global” features such as loading/saving sounds or switching between the Morph/Edit/Wave pages. If you just want to play the amazing sounds that ship with Loom 2, you only need to understand how this section works—exploring the Morph, Edit, or Wave pages is optional. The Master Section is described in detail in the next section of this guide.

- Morph Page:** If you're comfortable with the Master section and would now like to tweak some of the standard sounds to better fit your needs, the Morph page has a variety of "macro"-level controls to help you do this. This section lets you dial in both subtle and extreme changes to the sound without affecting the "base" sound of the instrument. The section also contains the innovative Morph X/Y Pad. Please see the [Morph Page](#) section of this guide for more information.



- Edit Page:** If you love sound design and want to create entirely new Loom 2 sounds from scratch (or make major changes to the existing sounds) the Edit Page is for you! This page contains all of the building blocks of Loom 2 sounds. At first glance, this page may seem intimidating, but not to fear—once you understand the page layout, you'll realize it's actually fun and easy to create new sounds. This section is covered in detail in the [Edit Page](#) section of this guide.



- Wave Page:** The Wave Page contains the settings of the Double Wave module. Like a vocoder, this module changes the levels of all partials with respect to the specific characteristics of 2 audio files that are loaded into the module. Please see the [Wave Page](#) section of this guide for more information.



Master Section



1. **Morph/Edit/Wave Select** – These buttons select whether the Morph, Edit, or Wave page is displayed below the Master Section.
2. **Configuration** – This button brings up a page containing several global parameters affecting the operation of Loom 2. This is described in detail in the [Settings Page](#) section of this manual.
3. **Partials** – Each time you play a note, the additive synthesis engine of Loom 2 can generate hundreds of individual sounds called “partials” that combine to create the single voice that you hear.
 - **Per Voice:** This drop-down menu lets you set the maximum number of partials each voice can contain.
 - **Current:** This indicator displays how many partials are currently being synthesized by the Loom 2 sound engine.
 - **Synced:** This parameter is **On** by default and synchronizes the start of each partial when you play a note. This results in a tight and focused sound. Switching this parameter **Off** lets the partials run freely without re-synchronizing when a note is triggered. The result is more phasing among the partials and a less focused, more “blurry” sound that may be perfect for certain applications. Switching this parameter to **Stereo** doubles the number of actually rendered sine oscillators, with an **Unsync** control to adjust the amount of unsynchronization. There is no “correct” way to set this parameter—it depends on the sound you wish to achieve.

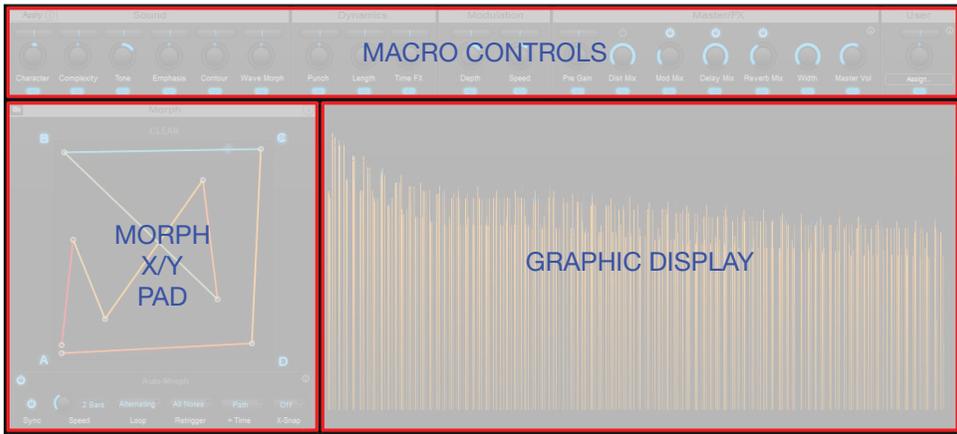
Note: The **Per Voice** parameter sets the number of partials available for each voice. Increasing this parameter places greater demands on your CPU but allows you to construct certain types of sounds that require a large number of partials in order to be heard correctly (for example, bright bass sounds with lots of high-frequency partials). If you would like to use a large number of partials while minimizing CPU load, you can try switching on **Eco Mode** (described in the [Settings Page](#) section of this guide).
 - **Unsync:** This slider adjusts the amount of unsynchronization when **Synced** is set to **Stereo**.

4. **Voicing** – This section lets you adjust the settings for the voices.
- **Poly:** Loom 2 is a polyphonic instrument and can play up to eight notes at the same time. This parameter lets you limit the number of notes the instrument will play.
Tip: If you wish to play Loom 2 as a monophonic instrument, set this parameter to **Mono**.
 - **Octave:** This parameter lets you shift the synthesizer up or down by four octaves.
 - **Glide Time:** This slider determines the amount of time (in seconds) it takes for a monophonic sound's pitch to portamento (or slide) from one note to another. For example, if this parameter is set to **0** the pitch will instantly jump from one note to another as you hold one note and press another note; if you set this parameter to **3** it will take three seconds to transition from the first note to the second.
Note: **Glide Time** only applies to monophonic sounds (i.e., if the **Poly** parameter is set to **Mono**). If the **Poly** parameter is set to a value of **2** or greater, Loom 2 becomes a polyphonic instrument and the **Glide Time** parameter is ignored.
 - **Tuning:** This setting lets you set Loom 2 to follow either a normal **Tempered** tuning scale or one of 12 **Natural** scales.
5. **Save/Load Section** – This section lets you load and save sounds.
- **Loading Sounds:** To load a sound, click the screen to bring up a categorized list of Loom 2 sound patches. You can also use the arrow buttons to the right of the patch name to quickly shift between sounds.
 - **Saving Sounds:** To save a sound, click the **Save** button. If you wish to quickly overwrite the file you are currently working on without changing the file name or bringing up the file browser, you can do so by shift-clicking the **Save** button.
6. **Random** – This button creates a unique new Loom 2 sound by randomizing all of the modules and parameter settings. Holding the shift key while clicking this button randomizes all parameters but keeps the modules that have been selected on the **Edit** page.

Morph Page

The **Morph** page gives you “macro”-level control of the sound. This makes it easy to take any existing “base” sound and quickly modify it to suit your needs. This page also contains the innovative **Morph X/Y Pad**, which lets you transform any static sound into a complex, evolving sound in seconds.

The page is broken down into three separate sections: **Macro Controls**, **Morph X/Y Pad**, and a **Graphic Display**.



Macro Controls



All of the knobs in the **Macro Control** section automatically connect themselves to the appropriate controls that are available on the Edit page. This means that turning one Macro knob will cause several of the controls on the Edit page to change simultaneously. For example, if you turn the **Tone** knob, a variety of settings on the Edit page will change in order to modify the tonality of your sound. This saves you from having to go to the Edit page and manually locate and modify individual parameters relating to tonality.

Note that the mapping of Macro Control knobs to the controls on the Edit page is not arbitrary—each Macro knob is carefully (and automatically) mapped to any control that relates to the parameter you wish to change. For example, turning the **Length** knob will only affect parameters on the Edit page relating to the length of the sound. Other elements (such as tone or modulation) will not be affected.

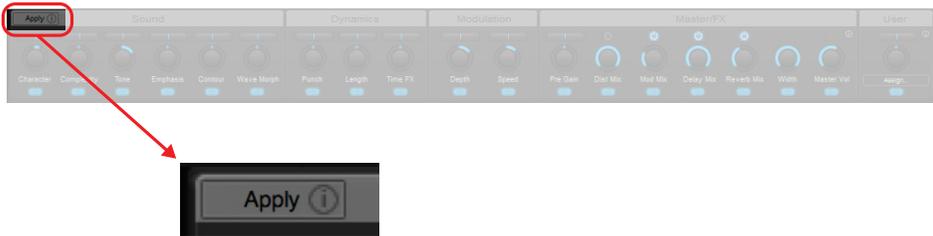
The on/off buttons above the **Dist Mix**, **Mod Mix**, **Delay Mix**, and **Reverb Mix** controls switch the corresponding effects (also located on the Edit page) on and off.

The on/off buttons below the Macro Control knobs can be used to disconnect the Morph X/Y Pad from affecting the parameter.

The slider controls above the Macro Control knobs can be used to add an offset to the parameter. The line around the outside of the knob indicates the new "center" point.



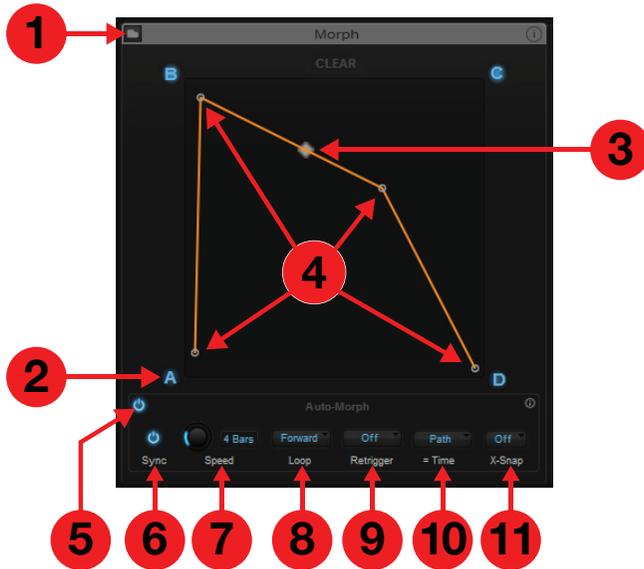
Apply Button



When working with the Macro controls, you are always imparting modifications to the parameters of the “base” sound without actually overwriting those parameters. As you work with the Macro controls, you may come across a heavily morphed sound that you wish to use as a starting point for even more morphing. To do this, simply click the **Apply** button.

When you click the **Apply** button, all of the temporary modifications being imparted from the Macro controls become permanently imprinted into the base sound. The Macro controls are then reset to their baseline settings. You can then save the new base sound or continue using the Macro controls for even more modification.

Morph X/Y Pad



1. **Load/Save** – This section lets you load and save morph points and paths.
2. **Variations (A, B, C, D)** – The Morph X/Y Pad can hold up to four variations of a base sound in the corners labeled **A**, **B**, **C**, and **D**. To store a variation:
 - 1) Use the Macro Controls to create a sound that you prefer.
 - 2) Right-click either **A**, **B**, **C**, or **D** and select **Store State**.
 - 3) Repeat the steps above for the other corners (morphing requires at least two stored variations).

3. **Now Sound Point** – Clicking and dragging the diamond allows you to freely morph the sound between the different variations that you have created. For example, if you have stored variations into all four slots, dragging the diamond closer to **A** will make the sound more like variation **A** and less like variations **B**, **C**, or **D**.

Tip: You can move the Now Sound point with your MIDI Controller by using “MIDI Learn” functionality. To do this, right-click anywhere in the Morph X/Y Pad and select either **Morph X > Learn MIDI CC** or **Morph Y > Learn MIDI CC**, then move a knob or slider on your MIDI controller. Your chosen knob or slider will now move the Now Sound point along the X- or Y-axis, respectively. You can also do this by selecting the associated MIDI CC parameters in your DAW’s automation lane and drawing them in using a mouse.

4. **Morph Path Points** – One of the most powerful features of Loom 2 is the ability to create a Morph Path that the Now Sound point follows automatically. This lets you create complex and evolving sounds quickly. To create a Morph Path:
 - 1) Double-click anywhere within the Morph X/Y Pad. If the pad does not include any points, one will be created. If the X/Y pad already includes one or more points, your new point will be connected to the previously created point.
 - 2) To delete a morph path point, double-click on an existing point.
 - 3) You can add a point to a sound path by double-clicking on the line.
 - 4) Points can be moved by clicking and dragging.

Tip: You can use your MIDI controller’s modulation wheel to move the Now Sound point along the Morph Path. To do this, right-click anywhere in the Morph X/Y Pad and select **Assign Path to Mod-Wheel**. This lets you “play” the morphing of the sound using the modulation wheel.

5. **AutoMorph On/Off** – This switches the AutoMorph feature on and off.

Note: The **Sync On/Off**, **Speed**, **Mode**, and **Retrigger** parameters are only active when AutoMorph is switched **on**.

Important: It is not possible to change any of the Macro Controls when AutoMorph is switched on because the Morph X/Y pad is continuously feeding morphing data to the Macro Controls. To make any changes to the Macro controls, switch AutoMorph **off** first.

6. **Sync On/Off** – This parameter synchronizes the movement of the Now Sound point along the Morph Path to your DAW's (digital audio workstation's) master tempo. When this parameter is set to **Off**, the Now Sound point still moves, but it is not synchronized with your DAW's master tempo.
7. **Speed** – This knob determines the speed at which a note moves along the Morph Path.
Note: If the **Sync** parameter is **On**, **Speed** is displayed as bars and beats. If the **Sync** parameter is **Off**, the **Speed** display shows information from **0-99** (slowest to fastest). Also, you can speed up or slow down an individual section of the Morph Path by holding down your keyboard's **Control** key while dragging a Morph Path line segment up or down.
8. **Loop** – This parameter sets the direction of movement along the Morph Path.
9. **Retrigger** – When set to **All Notes**, the morph will start from the beginning of the Morph Path each time a note is played. When set to **Off**, the Now Sound point moves along the Morph Path regardless of what is played. It is also possible to assign any of the C-notes on your keyboard (from C-2 to C7) to retrigger the Morph Path.
10. **= Time** – When set to **Path**, the length of the line and the Speed offset determines the amount of time it takes to travel through a section of the Morph path. When set to **X-Axis**, the Morph path functions similarly to a classic envelope, moving left to right with a constant speed.
11. **X-Snap** – When Time is set to X-Axis, use this setting to activate a grid within the Morph X/Y Pad, allowing you to snap points to even time positions. This is useful for creating rhythmic morph patterns. Select **Off**, **32**, **24**, **16**, **8**, or **6**.

Edit Page



The **Edit** page is where all of the amazing “base” sounds of Loom 2 are created. The page contains two separate sections: a bank of sound generation and effect processing “modules” on the top and smaller bar of “modifiers” along the bottom. The modules generate and process the sounds that you hear while the modifiers (envelopes, LFOs, pitch controls) can be used to modulate the various parameters of the modules.

Sound Modules Overview



The **Edit** page contains 12 separate “modules.” Each module is capable of adding an element to the overall sound. The first and last modules are special and cannot be changed. The middle 10 modules are user-selectable and can be swapped out to create a very wide variety of sounds. These user-selectable modules described in the next section of this guide.

- First Module:** The first module of Loom 2 lets you distort and modulate the distribution of frequencies among all of the partials, as well as add spectral noise and sub harmonics. The user-selectable modules that follow this module impart their effects on the output of this first module. This is a unique feature—no other synthesizer offers this type spectral control.
- Last Module:** The last module contains four effects that can be individually switched on/off and dialed in to achieve your desired sound. This section also contains a master output level knob and a “width” control knob that allows you to reduce the stereo sound field, if necessary. Finally, there is an LED next to the **Level** knob that indicates if Loom 2’s output limiter is active. This limiter is always on, but it only affects signals when they exceed the maximum output level. This is included as a safety mechanism since additive synthesis can unexpectedly become very loud.

User-Selectable Modules in Detail

While Loom 2 has over 30 different modules, the layout of knobs, sliders, and drop-down menus is exactly the same on all of them. This makes learning and using modules very easy.

1. **Module Selector** – The name of the module is displayed at the top. You can change the module by clicking this area and picking another module from the menu that appears.

2. **On/Off Switch** – This control switches the module on or off.

3. **Information Icon** – Clicking this icon brings up a prompt describing the module and all of its controls.

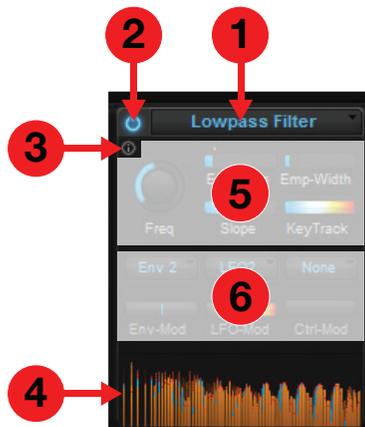
Tip: This on-screen prompt is an extremely useful tool for learning about each module and all of its controls.

4. **Graphic Display** – This area displays the spectrum of the sound as it leaves the module.

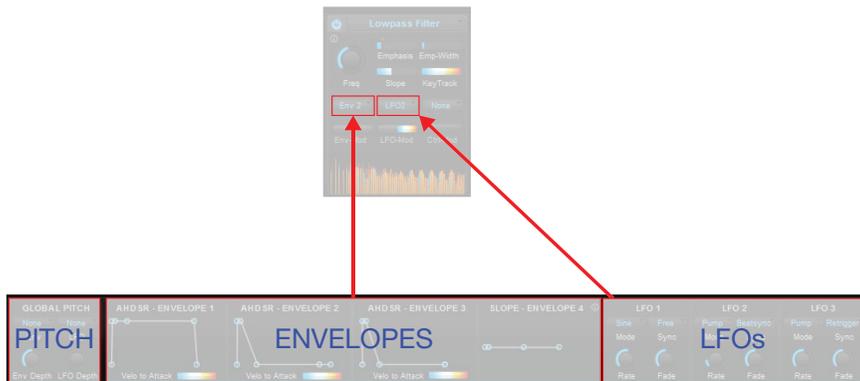
5. **Module Controls** – The controls of each module are shown here. The layout of the controls is the same across all modules, however, the text and function of the controls will vary depending on what is selected. Note that each module has a “main” knob in the top-left corner. This knob controls the primary function of that module and can be automated with envelopes and LFOs. Additionally, many modules require sub-functions, which are controlled by up to four sliders to the right of the main knob. These sub-functions cannot be automated by envelopes or LFOs.

Tip: Clicking the **Information Icon** will bring up a very useful description of each parameter and its purpose.

6. **Modulation Controls** – These controls allow you to use Modifiers (such as envelopes or LFOs; explained in the next section of this guide) to control the “main” knob of a module. The drop-down menu lets you select the source of the modulation, and the slider directly below the drop-down menu lets you set the intensity of the modulation.



Modifiers



Users that are familiar with synthesizers will recognize the envelope, LFO, and global pitch controls at the bottom of the **Edit** page. If these concepts are new to you, there are many great resources on the Internet to help you understand the purpose of these controls (it is beyond the scope this guide to describe the functions in detail).

- **Envelopes:** Loom 2 has four envelopes and any envelope can be applied to a module by selecting the left drop-down menu. The **Env-Mod** slider directly below the drop-down menu determines the amount of modulation that is applied.
- **LFOs:** Loom 2 has three LFOs. Any of these LFOs can be connected to a module using the center drop-down menu. The **LFO-Mod** slider below sets the amount of modulation.
- **Pitch:** The Pitch section lets you connect an envelope or LFO to the global pitch of your instrument. The **Env** and **LFO** drop-down menus select which envelope or LFO (respectively) you would like to apply to the global pitch. The **Env Depth** and **LFO Depth** knobs directly below the drop-down menus determine the amount of modulation that is applied.

Note: Only the main knob of each module can be affected by Modifiers.

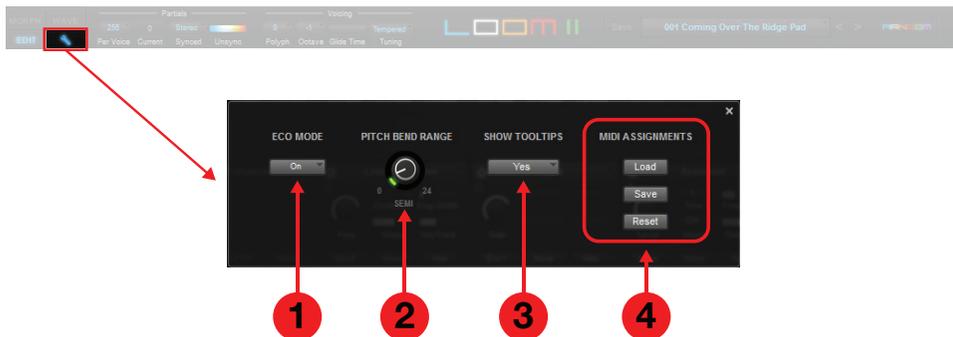
Wave Page



The Wave Page contains the settings for the Double Wave Module from the **Edit Page**. Like a vocoder, this module changes the levels of all partials with respect to the specific characteristics of 2 audio files that are loaded into the module.

- **Wave Modules:** This section is used to load and edit audio files. Click on the folder icon below the waveform display to select and load a file. Use the controls above the waveform display to adjust how each file is used.
- **Settings:** These controls allow you to adjust the amount of effect and different processing modes.
- **Modulation:** These controls allow you to use Modifiers (such as envelopes or LFOs) to control the Wave Modules. The slider lets you set the amount of modulation, and the drop-down menus directly below the slider let you select the source and destination of the modulation. A graphic display is also included in this section, which displays the spectrum of the sound as it leaves the module.

Settings Page



The **Settings** page contains several global parameters that affect all areas of Loom 2. This page is accessed by clicking the wrench icon at the left of the **Master** section.

1. **Eco Mode** – By default, this parameter is set to **On** to engage Economy Mode, which can reduce CPU load by up to 35% and allow Loom 2 to run smoothly on older or less powerful computers or in heavy sessions. This is achieved through a slight (usually unnoticeable) reduction in the sampling rate of the Loom 2 sound engine. For maximum audio quality, Eco Mode can be set to **Off**, such as when you are rendering a session. The Eco Mode setting is saved in the session and restored the next time the session is open. However, loading a new instance of Loom 2 in the same session or creating a new session will return Eco Mode to default **On**.
2. **Pitch Bend Range** – This parameter sets how many semitones up or down your note will be shifted when you use your MIDI controller's pitch wheel. If this parameter is set to **0** Loom 2 will ignore pitch bend MIDI messages.

3. **Show Tooltips** – Tooltips are helpful hints that appear when you hold the mouse over an on-screen control for one second. If you're already familiar with the instrument, you can hide the tooltips by setting this parameter to **No**.
4. **MIDI Assignments** – Nearly all of Loom 2's controls can be re-mapped ("MIDI-learned") to the buttons, knobs, or sliders of your MIDI controller. This is done by right-clicking the on-screen control and selecting **Learn MIDI CC** and then using that control on your MIDI device.

If you have several different MIDI controllers that you wish to use with Loom 2 (for example: a small, lightweight keyboard for live performance and a large "master" keyboard for studio use), use the **Save** and **Load** buttons to quickly save or load "learned" MIDI mappings for each controller. The **Reset** button removes all custom mapping and returns Loom 2 to its default state.

Appendix

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Manual Version 1.0