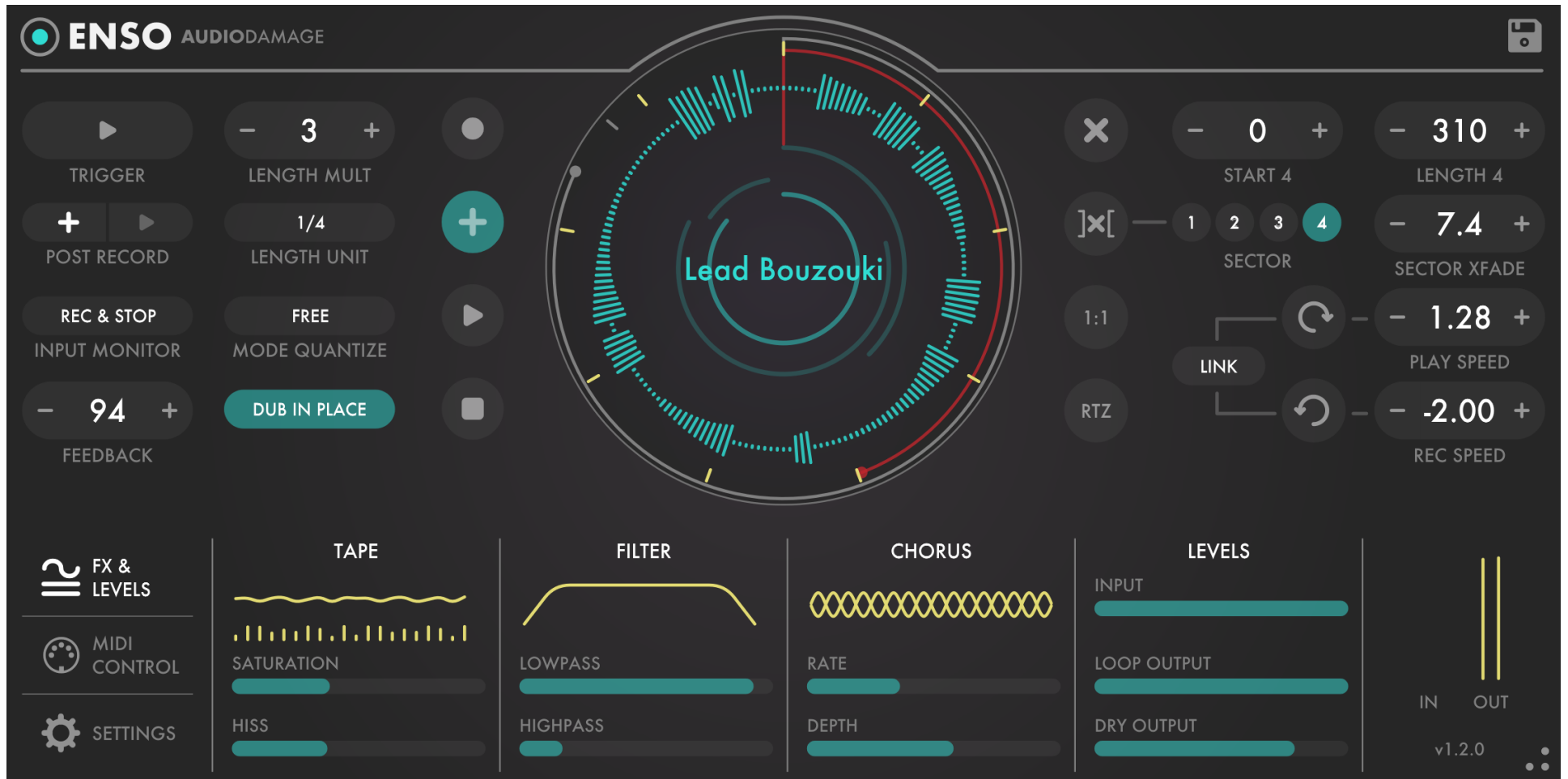


# Enso User's Guide

Audio Damage, Inc.



Release 1.2  
31 October 2023

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## Loopers: A Brief Introduction

The term looper refers to musical devices which record and play back sound in a repetitive manner. Repetition is an inherent aspect of music, but loopers are generally improvisational tools, often used in live-performance contexts. The term itself originates with tape loops—literally physical loops created by splicing the ends of a strip of magnetic recording tape together to create a medium which plays the same recording over and over again. As such, looping is as old as electronic music itself, but the compositional approach of using tape-based delays and looping to build layers of sound is primarily attributed to the mid-20<sup>th</sup>-century musicians Terry Riley and Steve Reich, followed by Brian Eno and Robert Fripp.

Looping proliferated over the last couple of decades as digital audio technology allowed creation of looping systems that were far more convenient and less cumbersome than tape decks. Digital delays, samplers, dedicated devices and software have inspired musicians of widely varied interests and styles to incorporate looping into their live performances and compositional process. With Enso, we introduce a looper which offers both the convenience and nearly perfect audio reproduction of DSP software with some of the flexibility and desirable artifacts of tape-based systems.

A comprehensive introduction to the history of looping-based music can be found here:

[http://www.livelooping.org/history\\_concepts/theory/the-birth-of-loop/](http://www.livelooping.org/history_concepts/theory/the-birth-of-loop/)

There's a more technically oriented history here:

[http://www.livelooping.org/history\\_concepts/theory/richard-zvonar-a-childs-garden-of-looping-2002/](http://www.livelooping.org/history_concepts/theory/richard-zvonar-a-childs-garden-of-looping-2002/)

and there's all sort of information about looping at the parent site of those pages:

<http://www.livelooping.org/>

## The Name Enso

The name Enso comes from the Japanese word *ensō* (円相). It means "circle" but specifically refers to a circle drawn with one stroke of a calligraphy brush, as a practice in Zen Buddhism. The symbol itself, and the practice of drawing it, are rich with tradition; there is a good description at this website:

<https://www.modernzen.org/enso/>

## What's New in Version 1.2

Release 1.2 started as a maintenance release, but we ended up adding a couple of handy new features. Here's what's new and different:

- A new preset manager.
- You can now use drag and drop to copy audio files into and out of Enso.
- Reduction in clicks and other artifacts which occur when the read and write positions collide while overdubbing.
- A scribble strip for labeling individual instances of Enso
- A new MIDI control mode which provides MIDI triggering at fixed slice points within the loop.
- A new panel for some controls which previously existed in less convenient locations.
- Several defects fixed, ranging in severity from nearly unnoticeable to quite embarrassing.
- Rebuilt with contemporary libraries and compilers for optimum compatibility with current operating systems.
- We now provide the CLAP plugin format for all operating systems, and no longer provide VST2.

# System Requirements

The following table summarizes the operating system requirements and provided formats for Enso. Enso is a 64-bit plugin.

Operating System	Minimum Version	Formats
macOS	10.13	AAX, AudioUnit, CLAP and VST3; Intel and Apple M1
Windows	10.0	AAX, CLAP, VST3
Ubuntu	20.0	CLAP, LV2, VST3
iOS (separate purchase via App Store)	11.0	AUv3

To use Enso, you'll need a 64-bit host application such as Ableton Live, Bitwig Studio, Apple Logic, Avid ProTools, etc<sup>1</sup>. We assume that you are familiar with using plugins with your host. If you have general questions about installing and using plugins with your host, please refer to its documentation.

## Special Note for Logic Users

As of October 31, 2023, we and our testers have found that Apple's Logic Pro for Mac version 10.7.9 has a new, more aggressive strategy for suspending the execution of plugins which do not have audio input. While this is a sound strategy (no pun intended) for most audio-processing plugins, Enso often needs to run in the absence of any input signal. Logic's CPU-saving strategy will often cause Enso to stop working altogether for no readily apparent reason. This behavior is beyond the control of any plugin and there appears to be no means for the user to alter this behavior either.

One viable workaround seems to be to put Enso in an instrument slot (as you need to do for any plugin that you wish to control with MIDI). Another method is to insert a utility plugin before Enso which generates a very low-level noise or other signal so that Logic perceives that Enso needs to keep running.

At the risk of editorializing, we will state our opinion that Logic (and its related product Mainstage) are not very flexible host DAWs and are not suited to live-performance looping as well as other hosts.

## Demonstration Version

We encourage you to download and try the demonstration version of Enso before purchasing it. The demo version of Enso is the same as the regular version, but has the following limitations:

- Presets cannot be saved, nor can parameter values or other settings. This includes the information usually stored by your host DAW. If you save a DAW session with an instance of the demo version of Enso, Enso will revert to its default state when you reload the session.
- Audio present within Enso cannot be saved.
- Enso will cease to emit audio at all 20 minutes after you add it to your DAW session. You can remove it and add it again, but it will revert to its default state.

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<sup>1</sup> Product names and plugin format names are copyrighted by their respective owners.

## Enso Overview

Before we dive into the details, we'll describe Enso's overall architecture and introduce a few terms. At the risk of oversimplification, Enso can be thought of as an audio recorder somewhat similar to a tape recorder or a voice-memo app on a smart phone: it records audio and plays it back. It plays the audio as if it's a *loop*; that is, when it reaches the end of the recording, it starts over at the beginning. The audio is recorded in what we call the *loop buffer*. Making a new recording sets the length of the loop.

There is only one loop buffer so Enso can hold only one loop at a time. However, the loop buffer has four regions called *sectors*. Sectors can span the entire loop buffer or any portion of it and can overlap each other. Once you've recorded a loop, you can play a portion of it by playing one of the sectors. You can also erase, re-record, and overdub within sectors.

Enso can play loops faster or slower than the speed at which they were recorded. Just like a tape recorder, if you play the loop faster and slower, its perceived pitch increases and decreases. Enso will follow tempo changes in your host DAW by speeding up and slowing down in sync. In a deliberate nod to its roots, Enso does *not* apply any sort of pitch or tempo correction when changing speed. Among other things, Enso is a tool for exploring the weird and sometimes wonderful things that happen when audio is played faster and slower than usual. Enso can also play the loop backwards, and even play in one direction while recording in the other.

As audio is played from the loop buffer, it passes through a series of *effects*. These effects distort, soften, and/or blur the loop to give it a new character or make it blend well with new material added on top. Depending on how Enso is configured, these effects can either affect the loop only once as it plays, or in a cumulative manner as it is fed back and re-recorded.

Like most plugins, Enso relies primarily upon your host Digital Audio Workstation (DAW) software to provide connections to your MIDI controller hardware. However, to aid its use in live performance contexts, Enso also has its own MIDI mapping system for connecting MIDI foot controllers and push buttons to many of its software buttons.

## Obloid Controls

Enso's user interface has several controls which we affectionately refer to as *obloids*. They look like this:



This kind of control handles several parameters in Enso. There are several different ways you can change parameter values with an obloid:

- Click and drag vertically with your mouse or trackpad (or with your finger if you're using an iOS device) to increase and decrease the value
- Click or tap the minus symbol on the left to decrease the value; click/tap the plus symbol on the right to increase it
- Double-click or double-tap the numeric value to type in a new value directly. Press the Enter or Return key on your keyboard to finish changing the value or press Escape to cancel your changes.

Enso's other controls should be self-evident: horizontal sliders which you drag left and right, switches which turn on and off when you click/tap them, and a few popup menus which appear when you click/tap.

Here's an image of Enso's window. We'll describe the controls in the following sections. You can resize the window by clicking and dragging the three dots at the lower-right corner.

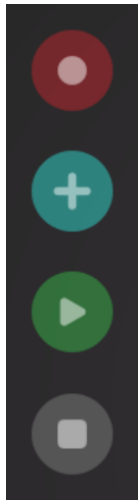


The circular loop display at the center of Enso's window provides a graphical display of the contents of the loop buffer, shows the positions of the sectors, and shows the recording and/or playback position. The beginning of the loop is positioned at the top of the circle (or at 12:00 if it were the face of a clock). If the loop is playing forwards, the playback position moves in a clockwise fashion. Positions within the buffer are expressed in degrees. There are 360 degrees in a circle, so the halfway point, for example, is at 180 degrees. A grey dot and arc indicate the play position; when recording or overdubbing, a red dot and arc shows the recording position. The sectors are shown as concentric arcs in the center. The play position is at about 240 degrees, the recording position is at about 170 degrees.

You can copy the contents of the loop buffer into a WAV file by clicking the circular display and dragging into a suitable destination, such as the desktop of your computer or a sample container in your DAW. You can also import audio files into the loop buffer by dragging them into the circular display.

## Mode Buttons

Immediately to the left of the loop display are Enso's mode buttons. You can probably guess what these buttons do by looking at the symbols on them. From top to bottom, the mode buttons are:



**RECORD** - click this button to start recording a new loop, or record new material into an existing loop, replacing the old audio. Enso doesn't do much of anything until you've recorded a loop because it uses your initial recording to define the length of the loop buffer.

**OVERDUB** - click this button to record new material on top of an existing loop, adding to the old audio. Overdubbing is affected by the **FEEDBACK** and **DUB IN PLACE** controls; we'll talk about this more later.

**PLAY** - click this button to start playing the loop you've recorded or loaded from a file.

**STOP** - click this—well, we don't actually have to explain this, right?

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**Important:** your host DAW's transport must be running to make Enso operate. Enso depends upon its host for timing information and will just sit there doing nothing if its host is stopped.

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The mode buttons are colored to show which one is active; for illustrative purposes, the diagram on the previous page shows all of them active at once, a situation that never actually arises in normal operation.

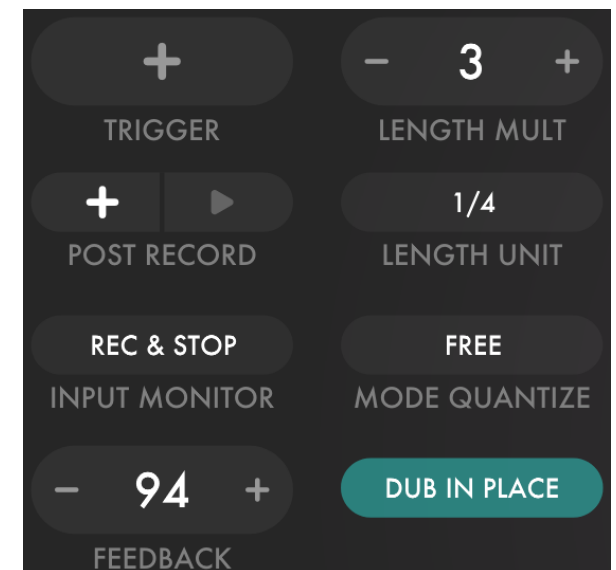
## Mode Quantization

By default, Enso responds to its mode buttons as soon as you click them. For more precise timing you can synchronize the mode changes to metrical intervals. The **MODE QUANTIZE** popup menu sets the intervals at which Enso will change between the **RECORD**, **PLAY**, and **STOP** modes. If you set **MODE QUANTIZE** to 1/4, for example, then click the **RECORD** button, Enso will wait until your host DAW reaches the next quarter-note position, and then begin recording. If you then click the **STOP** button, Enso will cease recording when the host reaches the following quarter-note position. A grey ring appears around a mode button after you click it while Enso waits to switch modes.

## Triggered Operation

The **TRIGGER** button provides one-touch control to Enso's most basic operations: recording and playing a loop. The **TRIGGER** button does different things depending on Enso's current state—that is, what you've done previously. The symbol on the button changes to show you what will happen next time you click it. Clicking the button can: record a new loop, cease recording and switch to playing the new loop, cease recording and switch to overdubbing new audio onto the loop as it plays, or start playing the loop if it's currently stopped.

The **LENGTH MULT** and **LENGTH UNIT** controls work together to make Enso record for a specific length. They are relevant only when the loop buffer is empty and you're making a new recording initiated with the





**TRIGGER** button (not the **RECORD** button). The length of the resulting loop will be equal to the setting of the **LENGTH UNIT** control multiplied by the value set with the **LENGTH MULT** control. To make a slightly contrived example: if **LENGTH UNIT** is 1/4, **LENGTH MULT** is 8, and **MODE QUANTIZE** is Measure, and you click the trigger, Enso starts recording when your host reaches the beginning of the next upcoming measure, records for exactly two measures, and then ceases recording.

What happens next depends upon the **POST RECORD** switches. These switches choose what happens when you click the Trigger button while it's recording a new loop, and/or what happens if Enso finishes recording in accordance with the settings of the **LENGTH MULT** and **LENGTH UNIT** controls. Depending on which **POST RECORD** button is illuminated, Enso will either finish recording and switch to playing the loop, or it will switch to overdubbing, playing the loop and recording new material on top.

## Input Monitor

The **INPUT MONITOR** pop-up menu chooses whether, and when, Enso passes the signal present at its input through to its output, possibly mixing it with the loop as it plays. There are four options, with the following effects:

- **ALWAYS** - the input signal is always sent to the output, regardless of what Enso is doing.
- **NEVER** - the input signal is never sent to the output. If Enso isn't playing a loop, you won't hear anything come out of it.
- **RECORD** - the input signal is passed to the output only when Enso is recording or overdubbing.
- **REC & STOP** - the input signal is passed to the output when Enso is recording, overdubbing, or is stopped.

Which input mode you'll use depends partly on how you have Enso set up in your DAW. If you're using Enso on an effects-send channel, sending audio to it from other tracks, you probably don't want the audio it receives to be included in your overall mix and the Never mode will be useful. On the other hand, if you're using Enso as an insert effect, use one of the other monitoring modes.

## Overdubbing: Two Modes

The **DUB IN PLACE** button affects how new audio is added to the audio already present in the loop when overdubbing. If **DUB IN PLACE** is turned on, the new audio is added directly to the old audio already in place in the loop buffer, after the old audio's loudness is reduced by the amount set with the **FEEDBACK** control. For instance, if feedback is set to 50%, overdubbing reduces the old signal by half, adds the new signal, and stores the result back into the loop. This is the way that most contemporary looper pedals and programs work. If **DUB IN PLACE** is turned off, Enso behaves more like a long delay constructed with a tape recorder. The new audio is added to the *output* of the loop player as it is played, and the mixed signal is recorded into the buffer. Again, before the two signals are added together, the **FEEDBACK** control determines how much of the old signal is added to the new signal.

### Dub In Place and Effects Routing

An important distinction of these two modes is that when **DUB IN PLACE** is off, the feedback signal passes through Enso's effects before it is added to the incoming signal and re-recorded. When **DUB IN PLACE** is on, the effects are applied only to the output signal. In other words, if **DUB IN PLACE** is off, the effects are cumulative, or “stack”: the effects are re-applied to the signal with each cycle of the loop. If **DUB IN PLACE** is on and you briefly wiggle any of the effects controls while overdubbing, you won't hear your wiggling on subsequent passes through the loop. If **DUB IN PLACE** is off, you will hear your wiggling because that signal was re-recorded into the loop buffer.

In either mode, entering and leaving overdubbing with the **TRIGGER** or **OVERDUB** button is *not* affected by the **MODE QUANTIZE** setting.

## Sectors

Once you've recorded a loop, you can divide it into up to four regions, which we call sectors. Each sector can span all or part of the entire loop, and sectors can overlap each other. Four concentric arcs in the center of the loop display show the position and range of the sectors; the current sector's arc is brighter than the others.

The current sector is indicated by, and chosen with, the four buttons labeled **SECTOR** in the upper-right area of Enso's window. Click one of these buttons to choose the current sector. The obloid controls in the upper-right corner set the position and range of the current sector. These controls operate in degrees; a complete circle has 360 degrees. So, for example, if you set the sector's Start to 180 and its Length to 45, it will start playing halfway through the complete loop and play one-fourth of the loop, over and over again. In the following illustration, the sector start settings are 0, 45, 90, and 200; the length settings are 90, 90, 180, 300. Sector 2 is currently active, as shown by the sector buttons, the brightly illuminated arc in the inner area of the loop display, and the tick marks near the perimeter of the loop display.



Once you've set the start and length of sectors, you can switch between them by clicking the sector buttons. Changing sectors while playing causes Enso to move the playback position to the beginning of the sector. Enso switches sectors only while playing or stopped; you can't switch while recording or overdubbing. If you try, Enso will postpone your request until you switch it from recording to playing. Also, the **MODE QUANTIZE** control affects sector changing in the same way that it affects the transport controls.

## Crossfading Sectors

The **SECTOR XFADE** obloid sets a crossfade time for switching sectors. Rather than switching immediately from one sector to another when you click the buttons, Enso will fade out the current sector while fading in the next sector. If the sector crossfade time is significantly longer than the durations of the sectors themselves, you'll hear both sectors playing simultaneously for the duration of the crossfade, the first blending into the second.

## Other Buttons

The buttons immediately to the right of the loop display perform the following operations:

**X** - erases the entire loop and empties Enso's audio buffer, making everything ready to record a new loop.

**[X]** - silences the audio within the current sector. Audio outside this sector isn't changed. Even if the sector's length is 360, this button has a different effect than the Erase button. Clicking this button does not completely reset Enso; it preserves the length of the currently recorded loop. Hence if the current sector spans the entire loop, you click the Erase Sector button, and then begin recording, your recording can't be longer than the loop you previously recorded.

**1:1** - sets both the Play Speed and Record Speed to 1.00, and both directions to forward.

**RTZ** - button resets both the play position and record position to zero, i.e. the beginning of the current sector. The **RTZ** button's behavior is governed by the **MODE QUANTIZE** control in the same manner as the other transport controls.

## Speed Controls

The **PLAY SPEED** and **REC SPEED** obloids set the speeds of the loop playback and record positions or "heads" respectively. They both have a range of -4.0 to 4.0. A speed of 1.0 represents a normal play/record speed. Play speeds greater than 1.0 mean that the audio in the loop is played back faster than normal and will sound higher in pitch. A speed of 2.0 is twice as fast as normal, and pitched sounds will be transposed up by an octave. Speeds less than 1.0 mean that the audio is played back slower than normal. A speed of 0.25 is one-fourth as fast as normal, and sounds will be transposed down two octaves. Enso's audio quality is best, and its processing load is lowest, when speeds of 1.0 are used. Obviously, though, speeds other than 1.0 are where the most fun is had. Negative values represent playing in reverse, so a playback speed of -1.0 means playing at the normal speed, but backwards.

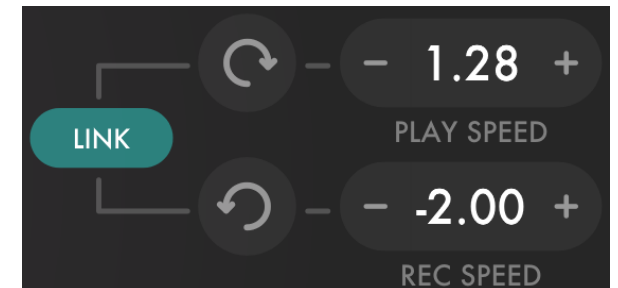
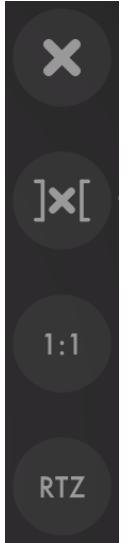
Recording speeds are also relative to 1.0. A recording speed of 2.0 means that audio will be recorded into the loop twice as fast as normal, occupying twice as much time and memory. This means that if you record audio with a speed of 2.0 and play it back with a speed of 1.0, it will play at half its original speed and sound an octave lower. In the end, it's the ratio between the recording speed and the playback speed which determines whether the audio you hear sounds faster than or slower than normal. Recording speed can be negative also, meaning that Enso can record backwards.

Since the playback and record heads can have different speed settings, Enso can simultaneously play at one speed while recording or overdubbing at a different speed and/or direction. Yes, this means that the heads can move past each other, a capability which isn't often found in loopers. The results can be strange and unexpected, particularly if the **DUB IN PLACE** is off, which is exactly why we gave Enso this capability.

## Direction and Link Controls

The buttons with curved arrows to the left of the speed controls change the sign of the **PLAY SPEED** and **REC SPEED** obloids and hence the direction of motion of the playback and record heads. With normal, default settings, both positions move forward in a clockwise manner in the loop display. Click the direction button to reverse the motion of the play position, and you'll hear your loop play backwards. If you reverse the record position, you can record or overdub new material in reverse while the original material plays forwards. There is one exception: when you first record the loop, recording always happens in a forward, clockwise direction, regardless of the recording-direction control. (Like the speeds, the directions are relative to each other, so you can get the same net result of recording backwards by recording forwards and then playing backwards.)

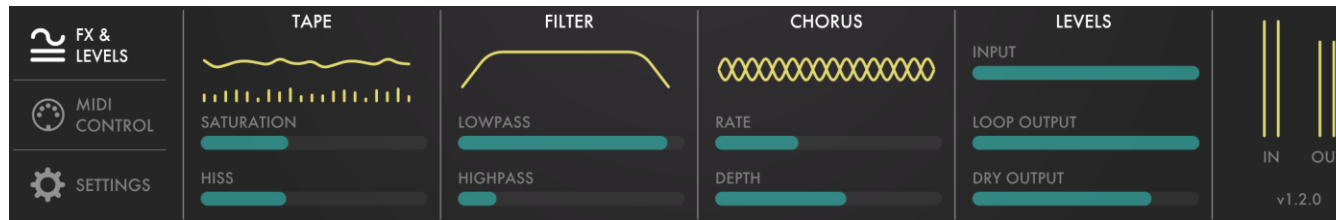
If the **LINK** button to the left of the speed controls is illuminated, the recording position is linked to the playback position and the **REC SPEED** control have no effect; the record position is the same as, and moves in the same speed and direction as, the playback position. Turn the **LINK** button off and on by clicking it.



Note that the **DUB IN PLACE** switch also affects overdubbing in that if **DUB IN PLACE** is on, the signal at the recording position is re-recorded, and if **DUB IN PLACE** is off, the signal at the playback position is re-recorded. If **LINK** is on, these positions are the same, but if **LINK** is off, these positions can be entirely different—and can change at different speeds and/or with different directions. Note that the record speed won't visibly change when **LINK** is on and you adjust the play speed; this allows you to leave the record speed at a different value which takes effect when you turn **LINK** off.

## Effects (FX) & Levels

Enso has several built-in effects which can be engaged to alter the looped recording as it plays. There are three effects: a Tape simulator adds hiss and soft saturation reminiscent of the analog tape recorders originally employed to create loops and long delays; a Filter reduces the high and/or low frequencies of the signal, making it darker or thinner; a modulated-delay-based Chorus thickens the sound, adds animation, and smears out transients. Each effect is described below. If the controls for the effects are not currently visible, click the **FX & LEVELS** button near Enso's bottom-left corner.



### Tape

Prior to the proliferation of digital audio processing, looping systems used magnetic audio tape. When tape was the only recording medium available, we chafed at its limitations—its finite dynamic range, its inherent noise floor, etc. Digital audio provides nearly perfect recording and reproduction. However, in retrospect, it turns out that some of the limitations of tape contributed to looping and long-delay systems. The inherent reduction in quality created by repeated recording passes slowly erodes the sound, fading it into the background, making auditory room for new sounds recorded on top. Enso's Tape processor, while not a slavishly accurate emulation of analog tape recording, recreates some of this useful audio damage.

The **SATURATION** slider adjusts a softly curved distortion processor which approximates the signal overload (or saturation) inherent when excessively loud signals are recorded to tape. Moving the slider to the right increases the amount of distortion. The result of this distortion depends heavily upon the original signal; generally speaking, more distortion makes the signal sound louder but also less defined. Enso's saturation process employs some amount of gain compensation so that you can distort the signal without radically increasing its overall amplitude, although you may still have to tweak the feedback setting to control undesired runaway feedback while overdubbing.

The **HISS** slider adds noise reminiscent of the hiss present in analog tape decks. Enso's hiss has reduced high frequencies to give it an analog-like warmth and reduced low frequencies to prevent rumbling from building up in the loop. Move the slider to the right to increase the amount of hiss; leaving the slider at the far left turns the hiss off.

### Filter

Enso's Filter section contains two filters in series: a high-pass filter for removing low frequencies, and a low-pass filter for removing high frequencies. Each has a single slider for controlling its operating frequency. As you move the **LOWPASS** slider to the left, the low-pass filter's frequency is reduced, and the high frequencies of the audio are removed. Conversely, as you move the **HIGHPASS** slider to the right, the high-pass filter's frequency is increased, and the low frequencies of the audio are removed. The low-pass filter has a range of 1KHz to 20KHz while the high-pass filter has a range of 10Hz to 1KHz. This means that if you leave the sliders at their default positions, the filters have no audible effect.

## Chorus

The Chorus processor uses a pair of modulated delays to add animated doubling effects to the loop. There are two controls, Depth and Rate. The Rate slider controls the frequency of the modulation oscillator which varies the delay times of the chorus processor. Moving the slider to the right increases the frequency of the oscillator and hence the perceived speed of the effect. Leaving the slider all the way at its left position effectively disables the modulation, and the Chorus will create a sort of comb-filtering effect which may or may not be useful. The Depth slider adjusts the apparent intensity of the Chorus; moving it to the right increases the intensity. If the Depth slider is at its extreme left position the Chorus processor is inaudible. You may find that it's helpful to move the Rate and Depth sliders in complementary directions while fine-tuning the Chorus effect, i.e. a high Rate setting may sound better with a low Depth setting and vice-versa.

## Signal Routing

We mentioned this previously, but it's an important point so we'll reiterate: Signals are routed through the effects in two different ways, depending on the setting of the **DUB IN PLACE** switch. More specifically, the feedback path used while overdubbing is different depending on the switch's setting. If **DUB IN PLACE** is on, the signal played from the loop is fed back while overdubbing *before* the effects. If **DUB IN PLACE** is off, the feedback signal is taken *after* the effects.

As a result, Enso's effects are non-destructive if **DUB IN PLACE** is on. In other words, the effects do not alter the audio present in the loop buffer—they only alter the signal as it's played from the buffer. If **DUB IN PLACE** is off, the signal re-recorded in the buffer is potentially altered by the effects, possibly many times if you allow the loop to cycle many times while overdubbing. Again, this difference is relevant only during overdubbing. If you're just playing the loop, the effects process only the output signal.

## Levels and Meters

The three level sliders adjust the amplitude or loudness levels of signals as they enter and leave the plug-in. Click and drag them to the left to attenuate the signals. Each slider has a range of about -40dB to 0dB (unity gain), but if you slide them all the way to the left, they silence the corresponding signal altogether.

The **INPUT** level slider controls the level of the signal immediately after it enters the plugin. It affects the signal before it is recorded or overdubbed, and when it passes through the plugin if the Input Monitor mode is appropriately set.

The **LOOP OUTPUT** slider controls the loudness of the signal played back from the loop buffer. The **DRY OUTPUT** slider controls the loudness of the signal passed from the plugin's input to its output if the Input Monitor mode and current mode of operation permit the signal to pass through.

There are two stereo level meters in Enso's lower-right corner. They display the relative loudness of the signals entering and leaving Enso. The **IN** meters reflect the signal after the **INPUT LEVEL** slider's influence. The **OUT** meters correspond to the final output signal; that is, the loop's output and the dry signal added together after they are adjusted by the **LOOP OUTPUT** and **DRY OUTPUT** sliders. (again assuming that the Input Monitor mode is set such that the dry signal passes through). The top of the meter range represents 0dBFS.

## MIDI Control

Enso's MIDI assignment options let you assign up to eight MIDI buttons or footswitches to various operations. These assignments can be made in addition to, or instead of, MIDI controller assignments in your host DAW software. Obviously you will have to route MIDI messages to Enso; how this is done varies from one host to another. Consult your DAW's documentation for information about routing MIDI to effects plugins if you're not already familiar with the procedure. You'll probably have to set up a separate track in your DAW for routing MIDI from your controller to the track containing Enso, selecting Enso as the destination for the MIDI connection. Enso will present 16 destinations, one for each MIDI channel, but they are merged internally so it's easiest to simply select the first on the list. Click the MIDI CONTROL button near the lower-left corner of Enso's windows to find the MIDI assignment controls.



To assign a controller, click one of the empty ovals underneath the MIDI CC headings. The oval will display "WAITING" indicating that it is waiting to receive a MIDI Continuous Controller (CC) message. Press the appropriate button on your controller. The oval changes to display the CC number it receives, such as "CC 64" for the standard sustain pedal MIDI message.

Then, click on either or both ovals to the right under the ON PRESS and ON RELEASE headings to invoke a pop-up menu to choose an action. You can assign a separate action to pressing the MIDI controller button, releasing the button, or both. The actions correspond to buttons in Enso's window and should be self-explanatory.

Enso considers a button to be pressed when it receives a MIDI CC message with the value 127 and released when it receives a message with the value of zero. This means that you can also assign knobs and sliders to Enso, and Enso will respond when you move the control from one extreme position to the other.

To remove a MIDI controller assignment altogether, click the small button labeled X to the right of the oval.

The MIDI assignments are stored in Enso's presets. You can save separate template presets for different controllers or situations, and each instance of Enso can have its own MIDI assignments.

## MIDI Slices Mode

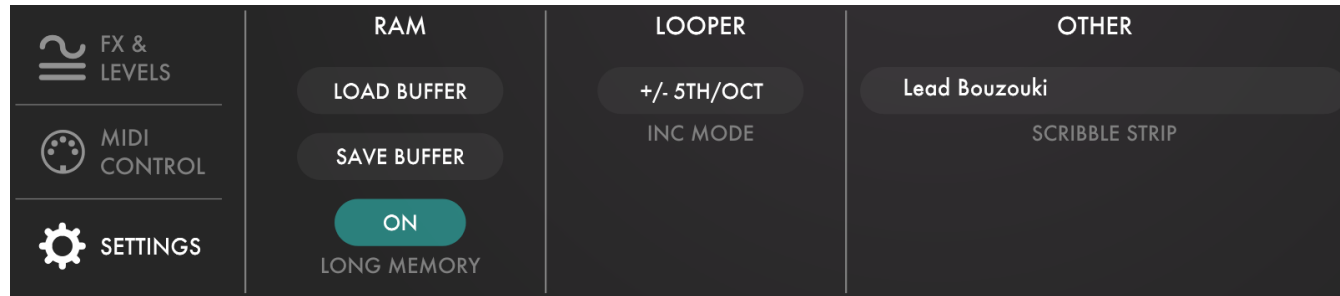
When turned on with the **ACTIVATE** button, the MIDI Slices mode jumps Enso's playback position in response to MIDI note-on messages. The **# SLICES** control sets the number of slices or jump points within Enso's loop buffer. The slices are equally spaced, starting at the beginning of the loop, and are indicated by yellow marks around the perimeter of the loop display. After jumping to the beginning of a slice, Enso continues playing indefinitely.

The **ROOT** control shows the MIDI note number which will trigger the first slice. Click it then hit a key, pad or button on your controller to set the note number.

Here's an example to show how this all fits together: suppose the number of slices is eight and the root note is 60. Hitting a key on your controller which transmits a Note On message with note number 60 will cause Enso to jump to the beginning of the loop and play from there (assuming that Enso is already playing). Sending a Note On message with note number 64 will jump to the middle of the loop. A Note On message with note number 66 will jump to 3/4 of the way through the loop, and so on.

# Settings

The controls in the Settings pane affect how the speed obloids behave, and the maximum recording time available in the loop buffer.



## Looper Inc Mode

The **INC MODE** popup menu selects one of several modes of behavior for the increment/decrement buttons on the Play Speed and Rec Speed obloids, and for the corresponding MIDI assignment targets. The choices are:

- **+/- 0.01** – changes the speed by adding or subtracting 0.01 to/from its current value. (Yes, that’s a relatively small change.)
- **+/- 0.1** – changes the speed by adding or subtracting 0.1 to/from its current value.
- **x2, 1/2** – clicking the increment button doubles the current speed, while clicking the decrement button halves it. This produces relative pitch changes of octaves for tonal material.
- **+/- SEMITONE** – increases/decreases the speed to produce a perceived pitch change of one semitone
- **+/- OCTAVE** – increases/decreases the speed to produce a perceived pitch change of one octave
- **+/- 5TH/OCT** – increases/decreases the speed to produce perceived pitch changes of fifths and octaves.

The last three modes adjust (or quantize) the speed to the nearest interval. For example, suppose you’re using a setting of +/- Semitone. if you’re playing a loop with a normal speed of 1.0 and the pitch of the audio is C, clicking increment will raise the pitch to C#, which will be displayed (with rounding) as a speed of 1.06. If you then manually adjust the speed to 1.05, you’ll hear a slightly flat C#. If you then click decrement, the speed will go back to 1.0 and you’ll hear C again, not a slightly flat C. Putting it another way, the x2, 1/2 setting differs from the +/- OCTAVE setting in that the latter simply multiplies and divides the current speed by a factor of two, while the former snaps the current speed to 2.0, 4.0, 0.5, 0.25, etc.

## Saving and Loading the Loop Buffer

You can load audio from files directly into Enso’s loop buffer, and you can save the audio therein to a WAV file. Clicking the **LOAD BUFFER** button invokes a standard file-loading dialog box, allowing you to choose any audio file in the common formats such as WAV, AIFF, and MP3. Enso will convert the sampling rate of the file to match that of your current DAW session and set the loop buffer length to the length of the file. If the file exceeds Enso’s maximum buffer length, it will be truncated to fit.

Clicking the **SAVE BUFFER** button invokes a standard file-saving dialog box, where you can choose the destination folder for the audio file. Enso provides a default name for the file based on the current date and your host’s tempo setting, but you can edit this name to your liking before you save the file. Files are stored as uncompressed stereo WAV files with the current sampling rate of your DAW. The audio in the file corresponds to a play speed setting of 1.0, regardless of the current setting of that control.

You can copy the contents of the loop buffer into a WAV file by clicking the circular display and dragging into a suitable destination, such as the desktop of your computer or a sample container in your DAW. You can also import audio files into the loop buffer by dragging them into the circular display.

## Long Memory

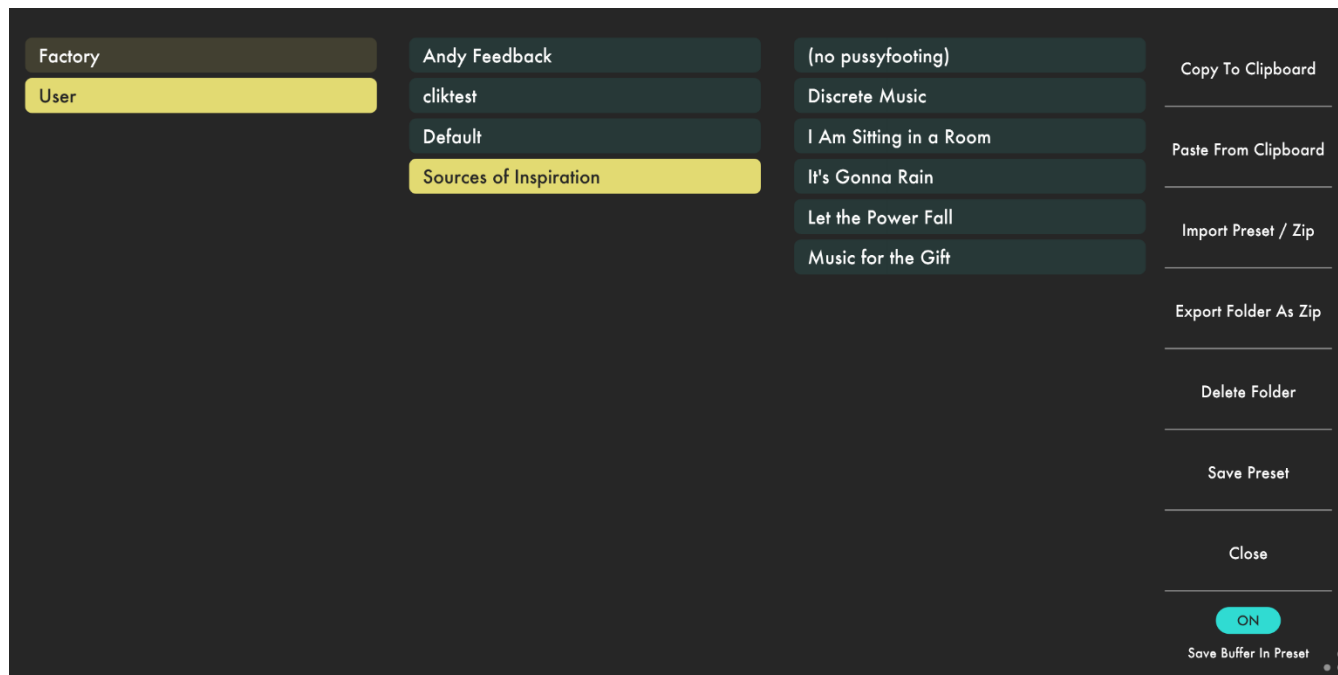
The **LONG MEMORY** switch determines how much memory (RAM) Enso reserves for recording. By default, the switch is off, and every instance of Enso consumes about 22MB, enough memory for one minute of stereo audio recorded with a 48KHz sampling rate. If you turn on LONG, each instance of Enso sets aside 10 times as much, so that your loop can be up to 10 minutes long (if recorded at 48KHz).

## Scribble Strip

Any text you enter in the **SCRIBBLE STRIP** field is superimposed in the center of Enso's window. This feature lets you differentiate between two or more instances of Enso, ameliorating confusion which may occur when you have many loops running at once.

## Presets

Enso includes a few built-in presets to serve as a demonstration of its capabilities and inspirations for your own creations. To access the presets, click the floppy-disc icon at the top-right corner of the window to open the preset browser.



The browser displays presets within two lists of folders. The leftmost list shows the folders within Enso's preset collection, grouped in two categories: Factory and User. Clicking any of these folders reveals its contents in the next list. These folders can contain sub-folders of their own; clicking any of these displays their contents—the presets—in the rightmost list. Clicking on a preset name loads the settings into Enso. Double-clicking a preset name loads the preset and dismisses the preset browser.

After clicking on any of the lists, you can move up and down in the list with the corresponding arrow keys on your keyboard. You can also go through all the presets in all the folders by clicking the left and right pointers on either side of the preset name at the top center of Enso's window.



Loading a preset irretrievably erases Enso's current settings, so if you have created a sound that you want to use again, save it as a new preset before loading another preset. To save your own presets, click the **SAVE PRESET** button at the right edge of the window. Enso will prompt you to enter a name for the preset with a standard system file dialog box.

The folders and presets in the browser correspond to folders and files within Enso's own folder on your storage device (i.e. your computer's hard drive or SSD). This folder is located at `C:\ProgramData\Audio Damage\Enso\` on Windows, and `~/Music/Audio Damage/Enso/` on macOS. Theoretically you can save your presets anywhere you like, but for them to show up in Enso's User list they must be placed in the User folder within Enso's folder. Also, to avoid possible collisions during future updates, do not store your presets within the Factory folder.

Any folders you create within the User folder will show up as folders in the User list. You can create sub-folders within the User folder, but not folders within those sub-folders.

You can delete presets and folders from the lists by clicking their name and then clicking the **DELETE PRESET** or **DELETE FOLDER** button. Enso will give you a chance to confirm this action or cancel it. If you confirm, the preset/folder will be removed from your storage system and is gone for good.

## Default Preset

If you save a preset with the special name "Default" in the User folder, new instances of Enso will load it automatically when you add it to your DAW session. You can use a default preset file to give you the same starting point with Enso.

## Importing and Exporting Presets

Preset files are plain-text XML files so that you can exchange them online in forums, copy them between a Windows computer and a Macintosh, email them to your friends, etc.

The **COPY TO CLIPBOARD** and **PASTE FROM CLIPBOARD** buttons copy Enso's current settings to the system clipboard and paste settings from the clipboard. You can use the copy and paste commands to transfer settings between two instances of Enso or paste the settings into an email message or text editor. When copied to the clipboard, presets are presented in the same XML text as used in preset files. Copying and pasting a preset does *not* transfer the contents of the loop buffer.

The **IMPORT PRESET / ZIP** button provides a way to add presets to Enso without manually moving them into the appropriate folders in your file system. Clicking this button produces a file-browser window wherein you can select either a single preset file or a .zip file containing one or more presets. After you select the file, Enso copies the preset(s) into whichever folder you have selected in Enso's preset list, unzipping the file first if necessary.

Depending on whether you've selected a preset or Folder, the **EXPORT SINGLE PRESET** or **EXPORT FOLDER AS ZIP** button performs the complementary functions of the **IMPORT** button. First select either a preset or a folder in Enso's list, then click the export button. A file-save window appears; choose a location in your file system, give the file a name, and click Save. If you have chosen a folder in Enso's preset list, the plugin places it and all of the presets it contains in a .zip file.

## Save Options

Clicking the Save Preset button invokes a dialog box with a couple of helpful features. As the text therein describes, you can create a folder within the destination folder (whose name is given at the top of the dialog box) by adding the folder's name to the beginning of the preset's name, separated by a slash mark. Bear in mind that the User folder accommodates only one level of sub-folders: you can create folders inside the User folder, but not folders within those folders.

Clicking the **RANDOM NAME** button replaces the preset's name with a pair of words chosen at random from two lists. While the resulting names won't have any connection with what the plugin is doing, you may find this button useful for coming up with alternatives to routine names like "Kalimba Loop 22".

## Saving the Loop Buffer

By default, Enso does *not* save the audio in the loop buffer when you save a preset. If you wish to retain the audio in the buffer with the preset, turn on the **SAVE BUFFER IN PRESET** switch in the right of the preset window. If you save a preset with this switch engaged, the preset file contains a copy of the loop buffer which will be restored when you next load the preset, replacing whatever might be in the buffer. Note that this can make preset files rather large since they contain uncompressed, text-encoded copies of the audio. You will see a corresponding increase in the time it takes to load and save DAW sessions.

## Automation

Most of Enso's controls can be automated using your host's automation features. Consult your host's documentation for information on how to use its automation features.

## And Finally...

Thanks again for purchasing Enso. We make every effort to ensure your satisfaction with our products and want you to be happy with your purchase. Please write to [support@audiodamage.com](mailto:support@audiodamage.com) if you have any questions or comments.

## Document Revisions

- 1 March 2019: Initial release
- 4 April 2019: replaced link to article on history of looping (thanks, Michael Peters)
- 14 August 2020: minor updates for software release 1.0.15
- 6 June 2023: updates for software release 1.2, miscellaneous reformatting
- 16 June 2023: corrections to System Requirements
- 31 October 2023: added note about Logic's misbehavior, clarified effect of Mode Quantize setting