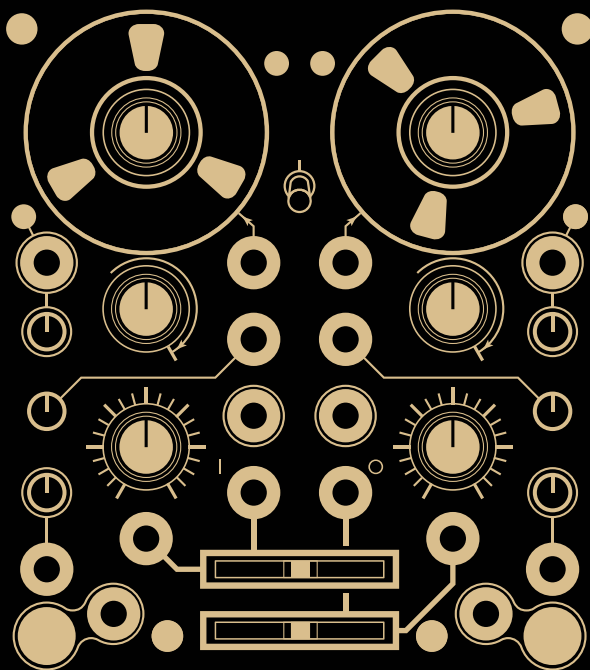




**INSTRUO** | SPECIALIST  
SYNTHESIZERS



**Lúbadh**  
**(Version 2 Firmware)**  
**Dual Looper**  
**User Manual**

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## Description

Consisting of two identical channels **Lúbadh** allows you to instantly record, playback, overdub, trim down, scan through and pitch up or down any audio signal.

Inspired by the aesthetics and mechanics of early tape techniques, each channel features an analogue input circuit which adds slight compression, filtering and saturation. On the first recording, the sound may appear slightly fuller and warmer, re-recording audio back and forth will compound this effect over time allowing you to create dense tape-like textures.

## Features

- 10 minutes of recording time per loop
- Dual recording, looping, and overdubbing capabilities
- One-shot playback and one-shot record modes
- Varispeed recording
- Multiple playheads
- 1V/Oct capabilities
- Feedback functionality
- Capacitive front panel for flange and stall effects
- Includes 2 HP passive CV expansion module, 2 HP passive USB expansion module, & 8GB USB flash drive

## Installation

1. Confirm that the Eurorack synthesizer system is powered off.
2. Locate 20 HP of space in your Eurorack synthesizer case for the module.
3. Locate an additional 2 HP of space in your Eurorack synthesizer case for the optional CV expansion module.
4. Connect the 10 pin side of the IDC power cable to the 2x5 pin header on the back of the module, confirming that the red stripe on the power cable is connected to -12V.
5. Connect the 16 pin side of the IDC power cable to the 2x8 pin header on your Eurorack power supply, confirming that the red stripe on the power cable is connected to -12V.
6. Optional: To install the CV Expander module, connect the included 12 pin IDC cable to both modules. Ensure that the red strip of the IDC cable matches the white stripe on each module.
7. Optional: To install the USB Expander module, connect the included USB cable to both modules.
8. Mount the Instruō **Lúbadh** in your Eurorack synthesizer case.
9. Power your Eurorack synthesizer system on.

### Note:

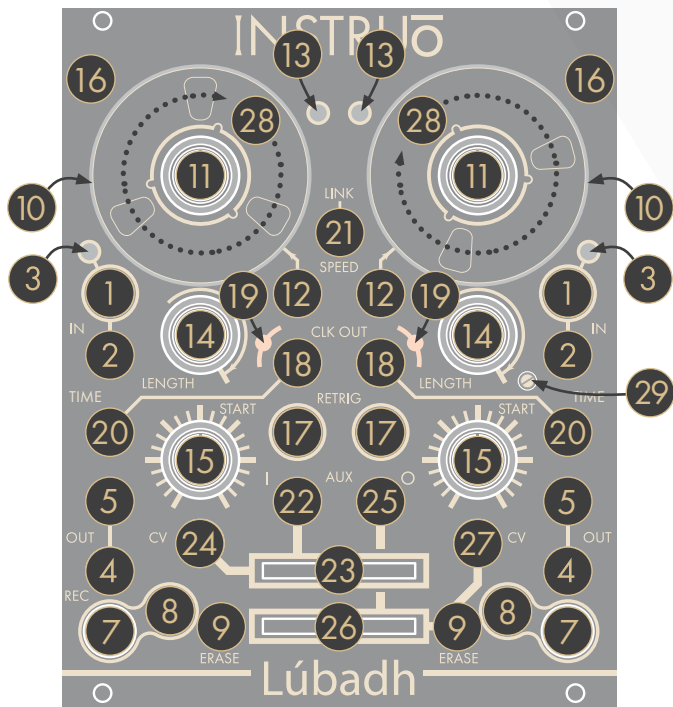
This module has reverse polarity protection.

Inverted installation of the power cable will not damage the module.

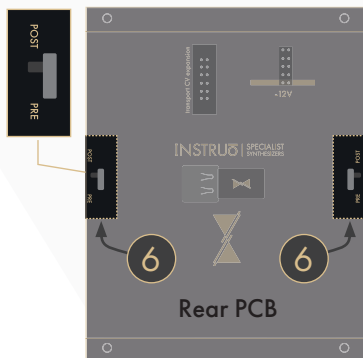
## Specifications

- Width: 20 HP Module + 2 HP CV Expansion Module + 1 HP USB Expansion module
- Depth: 42mm
- +12V: 250mA
- -12V: 100mA
- Sample Rate: 48kHz
- Bit Depth: 32 Bit

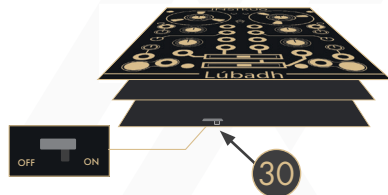
**Lúbadh** *l'lux̪ax̪* | verb (willow weaving) loop, link, coil, twist, bend; meander of a river, to be fond of, wrapped up in



Pre/Post Output Level Switch



Capacitive Tape Reel Switch



## Key

- |                                 |  |   |
|---------------------------------|--|---|
| 1. Input                        | 13. Speed Indicator                    | 25. Auxiliary Output                    |
| 2. Input Level                  | 14. Length                             | 26. Auxiliary Output Crossfade          |
| 3. Input Indicator              | 15. Start                              | 27. Auxiliary Output Crossfade CV Input |
| 4. Output                       | 16. Retrigger/Shift Button             | 28. Capacitive Tape Reel                |
| 5. Output Level                 | 17. Retrigger Input                    | 29. Capacitive Tape Reel Trimmer        |
| 6. Pre/Post Output Level Switch | 18. Clock Output                       | 30. Capacitive Tape Reel Switch         |
| 7. Record Button                | 19. Time Indicator                     |   |
| 8. Record Gate Input            | 20. Time                               |   |
| 9. Erase Button                 | 21. Link Toggle                        |   |
| 10. Position/Record Indicator   | 22. Auxiliary Input                    |   |
| 11. Speed                       | 23. Auxiliary Input Crossfade          |   |
| 12. Speed CV Input              | 24. Auxiliary Input Crossfade CV Input |   |

# CV Expansion Module



## Key

1. Length CV Input (Left Deck)
2. Start CV Input (Left Deck)
3. Time CV Input (Left Deck)
4. Erase Trigger Input (Left Deck)
5. Length CV Input (Right Deck)
6. Start CV Input (Right Deck)
7. Time CV Input (Right Deck)
8. Erase Trigger Input (Right Deck)

## Deck Specific Parameters

These parameters are specific to each deck, but function identically regardless of deck.

**Input:** AC coupled audio input.

**Input Level:** The **Input Level** knob sets the level of the signal present at the **Input**.

- If the **Input Level** knob is at its centre position, the signal present at the **Input** will be set to unity gain. Any setting beyond the centre position will add gain to the signal present at the **Input**. High signal levels will experience analogue limiting and saturation keeping the codec from digitally clipping.

**Input Indicator:** The **Input Indicator** will illuminate amber when a signal is present at the **Input**.

**Output:** AC coupled audio output.

- The **Output** of deck 1 is normalised to the **Input** of deck 2, and the **Output** of deck 2 is normalised to the **Input** of deck 1, creating a feedback path. This allows for the transfer of loops from one deck to the other, as well as creating feedback loops.

**Output Level:** The **Output Level** knob sets the level of the signal present at the **Output**.

**Pre/Post Output Level Switch:** Two **Pre/Post Output Level Switches** are located on the back of the module. There is one for each deck. These switches determine whether the **Auxiliary Output Crossfade** is set to be pre output level or post output level.

**Record Button:** The **Record Button** allows for recording, overdubbing, and playback based on the currently selected mode.

- The **Record Button** is also used to enter alternate modes (See the

**Input Monitoring Modes, Looping & One-Shot Record Modes, Save & Load, and Time Modes** sections for more information).

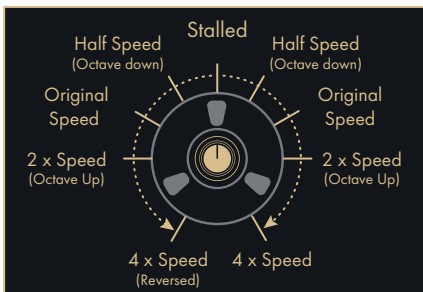
**Record Gate Input:** Recording, overdubbing, or playback (based on the currently selected mode) will be activated when a trigger or gate signal is present at the **Record Gate Input**.

**Erase Button:** Any loop in the buffer will be erased when the **Erase Button** is pressed.

- The **Erase Button** is also used to enter alternate modes (See the **Looping & One-Shot Playback Modes** and **Save & Load** sections for more information).

**Position/Record Indicator:** The position of the playhead within the loop is shown by the **Position/Record Indicator**. It will also indicate when the deck is recording to the buffer.

**Speed:** The **Speed** knob sets the playback rate of the loop.



When the knob is fully clockwise, the rate of playback will be set to 4x the original speed. When the knob is fully anticlockwise, the rate of playback will be set to 4x the original speed, but playback will be reversed. When the knob is set to its centre position, playback

will be stalled. Because this is a vari-speed control, setting the rate of playback to half the original speed will also lower the pitch by one octave.

- Pressing the **Retrigger/Shift Button** and turning the **Speed** knob will mute the knob turn to allow for immediate speed value selection upon release of the **Retrigger/Shift Button**.

**Speed CV Input:** The **Speed CV Input** is a bipolar control voltage input for **Speed**.

- Control voltage is summed with the knob position.
- Input range:  $-/+5V$ .

**Speed Indicator:** The **Speed Indicator** will illuminate white when the **Speed** parameter is set to a value that corresponds with one of the selected speed notches. By default these speed notches are at 0x speed and at 0.5x, 1x, 2x, 4x speed in both forward and reverse playback directions.

**Length:** The **Length** knob controls how much of the loop is played before resetting to the loop's start position set by the **Start** knob.

- **Lúbadh** can record up to 10 minutes of audio per deck.



- When the knob is fully clockwise, the entire loop will play. When the knob is fully anticlockwise, the loop will be as small as possible, creating a wavetable-esque sound source (scrub through the sample via the **Start** knob for different wavetable-esque effects).

**Start:** The **Start** knob sets the start position of the loop.



- Moving the knob from anticlockwise to clockwise increments the start position from the beginning of the loop to the end of the loop.

**Retrigger/Shift Button:** The playhead will reset to the **Start** position set by the **Start** parameter when the **Retrigger/Shift Button** is pressed.

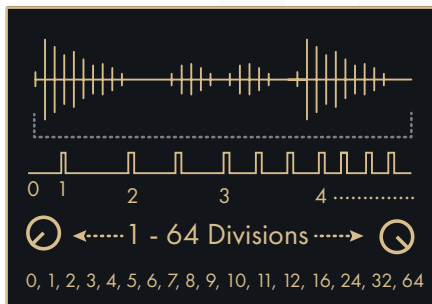
The **Retrigger/Shift Button** is also used for entering alternate modes (See the **Input Monitoring Modes, Looping & One-Shot Record Modes, Looping & One-Shot Playback Modes, Save & Load,** and **Time Modes** sections for more information).

**Retrigger Input:** The playhead will reset to the start position set by the **Start** parameter when a trigger or gate signal is present at the **Retrigger Input**

**Clock Output:** The **Clock Output** generates a trigger signal based on the size of the loop and the value set by the **Time** knob.

**Time Indicator:** The **Time** knob sets the multiplication factor of trigger signals generated at the **Clock Output**, the **Dub Level**, or the **user-defined** parameters set up for the corresponding deck (See the **Time Modes** section for more information).

**Time:** The **Time** knob sets the multiplication factor of trigger signals generated at the **Clock Output**.

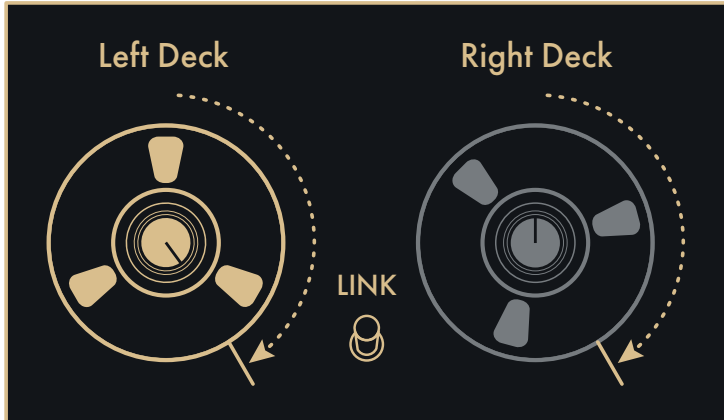


- When the knob is fully anticlockwise, the **Clock Output** will generate one trigger at the end of each loop. When the knob is fully clockwise, the **Clock Output** will generate 64 triggers per loop. Visual indication is shown via the **Position Indicator** upon selection of the multiplication factor.
- The available multiplication factors are 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 16, 24, 32, and 64.
- The **Time** knob is also used to set the **Dub Level**, as well as user definable parameters (see the **Time Modes** section for more information).

## Shared Parameters



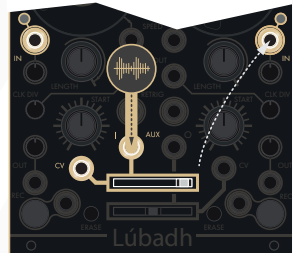
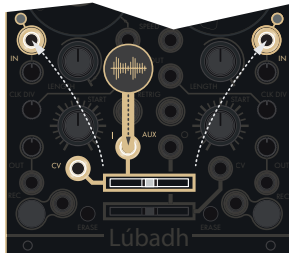
**Link Toggle:** The **Link Toggle** forces the right deck to mirror the left deck's controls.



**Auxiliary Input:** The **Auxiliary Input** is an AC coupled audio input that normals to the **Input** of both decks.

**Auxiliary Input Crossfade:** The **Auxiliary Input Crossfade** determines how much of the signal present at the **Auxiliary Input** gets routed to the **Input** of each deck.

- As the fader moves from fully left to fully right, audio crossfades between the **Inputs** of both decks.



**Auxiliary Input Crossfade CV Input:** The **Auxiliary Input Crossfade CV Input** is a bipolar control voltage input for the **Auxiliary Input Crossfade**.

- Control voltage is summed with the fader position.
- Input range:  $-/+5V$ .

**Auxiliary Output:** The **Auxiliary Output** is an AC coupled audio output that is normalled from the **Output** of both decks.

**Auxiliary Output Crossfade:** The **Auxiliary Output Crossfade** determines the audio signal balance of both **Outputs** routed to the **Auxiliary Output**.

- As the fader moves from fully left to fully right, audio from both decks crossfades at the **Auxiliary Output**.



**Auxiliary Output Crossfade CV Input:** The **Auxiliary Output Crossfade CV Input** is a bipolar control voltage input for the **Auxiliary Output Crossfade**.

- Control voltage is summed with the fader position.
- Input range:  $-/+5V$ .

## Start & Length Quantisation

Lúbadh can quantise its **Start** and **Length** parameters so that they will update in divisions of the loop size. For tempo-based loops, quantised **Start** and **Length** parameter changes will result in musically relevant divisions of the loop.

To quantise the **Start** and **Length** parameters:



Press and hold the **Retrigger/Shift Button** and turn the **Time** knob to select a quantisation value for the start time and length of the corresponding deck. Quantisation values are displayed on the **Position/Record Indicator** (similar to the display for **Clock Division** settings). The number of illuminated sections refers to the divisions of the loop.

- No illuminated sections will disable the quantisation.
- 2 illuminated sections will set the quantisation of the **Start** and **Length** parameters to  $1/2$ .
- 4 illuminated sections will set the quantisation of the **Start** and **Length** parameters to  $1/4$ .
- 8 illuminated sections will set the quantisation of the **Start** and **Length** parameters to  $1/8$ .
- Etc.
- When quantisation is enabled, but unquantised adjustments are desired, press and hold the **Retrigger/Shift Button** and turn the **Start** and **Length** parameters.

# Capacitive Tape Reel

**Capacitive Tape Reel:** The playhead graphic on the front panel is a capacitive touch plate that can be used for warble effects and stalling the loop.

**Capacitive Tape Reel Trimmer:** The **Capacitive Tape Reel Trimmer** is accessed via the front panel and is used to calibrate the sensitivity of the **Capacitive Tape Reel**.

**Capacitive Tape Reel Switch:** The **Capacitive Tape Reel Switch** is located on the bottom of the second circuit board and is used for turning the **Capacitive Tape Reel** on and off. By default, the **Capacitive Tape Reel Switch** will be in the on position.



## CV Expansion Parameters

**Length CV Input:** The **Length CV Input** is a bipolar control voltage input for the **Length** parameter.

- Control voltage is summed with the knob position.
- Input range:  $-/+5V$ .

**Start CV Input:** The **Start CV Input** is a bipolar control voltage input for the **Start** parameter.

- Control voltage is summed with the knob position.
- Input range:  $-/+5V$ .

**Time CV Input:** The **Time CV Input** is a bipolar control voltage input for the **Time** parameter.

- Control voltage is summed with the knob position.
- Input range:  $-/+5V$ .

**Erase Trigger Input:** A trigger or gate signal present at the **Erase Trigger Input** will erase the buffer of the corresponding deck.

## Normalisation Path

A feedback path is created between the inputs and outputs on **Lúbadh**. The **Output** of deck 1 is normalled to the **Input** of deck 2, which then passes to the **Output** of deck 2. The **Output** of deck 2 is normalled back to the **Input** of deck 1. This feedback path becomes very useful when bouncing audio from deck to deck.



## Record, Overdub & Erase —

The **Lúbadh** currently records 10 minutes of audio per deck.

To record to a deck, connect an audio signal to the **Input** of deck 1 and monitor from the **Output** of deck 1. Set the **Input Level** to its centre position and set the **Output Level** to its fully clockwise. Press the **Record Button** to start recording. The **Position/Record Indicator** will start to pulse, indicating that **Lúbadh** is recording. Press the **Record Button** again to stop recording. Playback of the recorded audio will immediately start and will be indicated by a cycling **Position/Record Indicator**.

Repeat this process to overdub new audio on the existing recording. By default, the existing recording being overdubbed upon is always rerecorded with an amplitude setting of 0.9 to allow older overdubs to decay over time.

Press the **Erase Button** to erase the recording from the deck.

## Punch-In Recording —

Punch-In Recording destructively records, completely replacing any audio for the duration of recording.

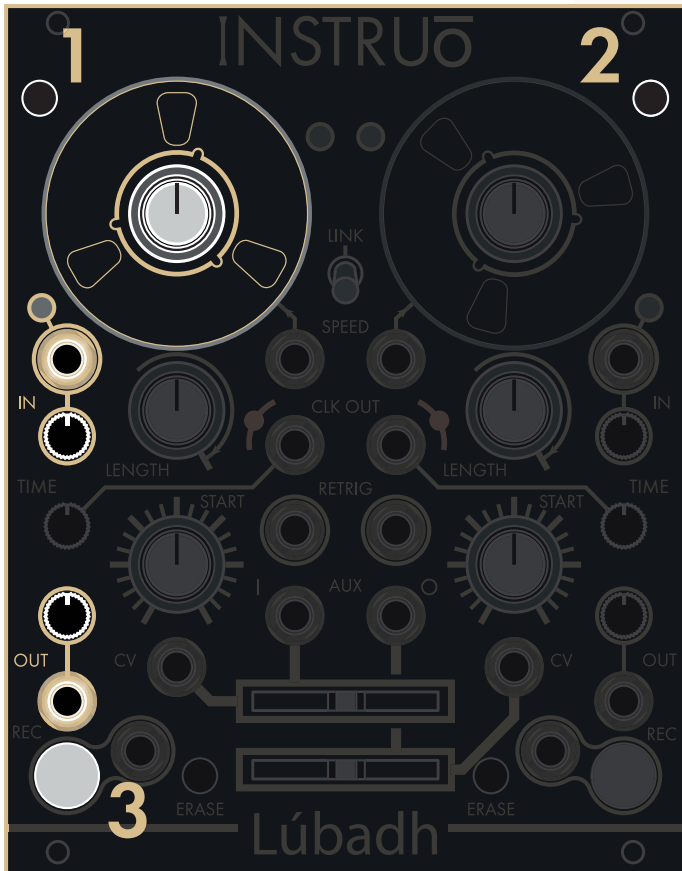
To **Punch-In Record** on a desired deck, press and hold the **Erase Button** and then press the **Record Button** on the corresponding deck.

This feature can also be used for adding gaps of silence to an existing recording.

## Input Monitoring Modes —

There are three **Input Monitoring Modes**. To toggle through the three **Input Monitoring Modes**, press and hold the **Retrigger/Shift Buttons (1 & 2)** for deck 1 and deck 2, then press the corresponding deck's **Record Button (3)**.

For example, deck 1's **Record Button** is included in the button combination to toggle through **Input Monitoring Modes** for deck 1. Deck 2's **Record Button** is included in the button combination to toggle through **Input Monitoring Modes** for deck 2.



## Input Monitoring Enabled Mode



This mode is indicated by a white illuminated **Record Button (1)**.

When this mode is active, input monitoring is always enabled. Audio signals present at the corresponding input will always pass to the output, summing with any recorded loops.

This is the default mode.

## Armed Input Monitoring Mode



This mode is indicated by a pulsing white **Record Button (1)**.

When this mode is active, input monitoring is only enabled when the deck is armed or when audio is being recorded. Pressing the **Record Button** once arms the deck and the **Record Button** pulses amber, enabling input monitoring. Pressing the **Record Button** a second time starts recording and keeps input monitoring enabled. Pressing the **Record Button** a third time stops recording, disables input monitoring, and starts playing the recorded loop. When armed, the **Erase Button** will disarm the deck without erasing the loop.

## Input Monitoring Disabled Mode



This mode is indicated by an unilluminated **Record Button (1)**.

When this mode is active, input monitoring is disabled and only recorded audio passes to the **Output**.

## Looping & One-shot Record Modes —

To toggle between **Looping Record Mode** and **One-Shot Record Mode**, Press and hold the **Retrigger/Shift Button** of the desired deck, then press the **Record Button** of the opposite deck.

For example, to toggle between **Looping Record Mode** and **One-Shot Record Mode** on deck 1, press and hold the **Retrigger/Shift Button (1)** of deck 1, then press the **Record Button (2)** of deck 2. To toggle between **Looping Record Mode** and **One-Shot Record Mode** on deck 2, press and hold the **Retrigger/Shift Button** of deck 2, then press the **Record Button** of deck 1.



- **Looping Record Mode** is the default mode.
- In **One-Shot Record Mode**, a loop must be recorded to determine the size of the loop. Any further recording will start from the current playback position and will record for the duration of time set by the first loop along with the **Start** and **Length** parameters. Once the determined duration of time is met, recording will automatically stop. **One-Shot Record Mode** is indicated by an illuminated mixed amber and white **Record Button** when **Input Monitoring Enabled Mode** is active, a pulsing mixed amber and white **Record Button** when **Armed Input Monitoring Mode** is active, and an unilluminated **Record Button** when **Input Monitoring Disabled Mode** is active.

## Looping & One-shot Playback Modes —

To toggle between **Looping Playback Mode** and **One-Shot Playback Mode**, Press and hold the **Retrigger/Shift Button** of the desired deck, then press the **Erase Button** of the opposite deck.

For example, to toggle between **Looping Playback Mode** and **One-Shot Playback Mode** on deck 1, press and hold the **Retrigger/Shift Button (1)** of deck 1, then press the **Erase Button (2)** of deck 2. To toggle between **Looping Playback Mode** and **One-Shot Playback Mode** on deck 2, press and hold the **Retrigger/Shift Button** of deck 2, then press the **Erase Button** of deck 1.



- **Looping Playback Mode** is the default mode.
- In **One-Shot Playback Mode**, a loop must be recorded to determine the size of the loop. Pressing the **Retrigger/Shift Button** or sending a gate or trigger signal to the **Retrigger Input** will start playback of a full loop determined by the **Start** and **Length** parameters. Playback will automatically stop after each loop.

## Time Modes



There are three separate functions for the **Time** knob called **Time Modes**. To toggle through the three **Time Modes** for a desired deck, press and hold the **Retrigger/Shift Button (1)**, then press the corresponding deck's **Record Button (2)**.

For example, to toggle through the **Time Modes** for deck 1, press and hold the **Retrigger/Shift Button** and then press the **Record Button** of deck 1.

To toggle through the **Time Modes** for deck 2, press and hold the **Retrigger/Shift Button** and then press the **Record Button** of deck 2.

## Clock Divisions



The **Time** knob sets the number of clock divisions per loop. Clock trigger signals can be set between 1 trigger per loop to 64 triggers per loop. This number of triggers per loop is indicated on the **Speed Indicator**.



Clock trigger signals are indicated by white illumination of the **Time Indicator**.

## Dub Level

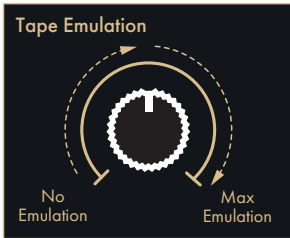


The **Time** knob sets the volume at which old material is summed with incoming audio when overdubbing. This can be used to create delay effects, where dub level becomes the delay feedback amount.



This mode is indicated by a solid lit amber **Time Indicator**.

## User - Definable Parameters



The **Time** knob controls the amount of user definable controls such as Crossfade Duration, Tape Emulation Amount, and Speed Slew.



This mode is indicated by an pulsing amber **Time Indicator**.

## Presets

The Lubadh now features user-configurable presets. Each deck of Lúbadh can independently toggle between two active presets. A preset folder on the USB drive contains a file called `PresetLoader.txt` which can be used to select the active presets. The preset folder is also populated with a selection of factory preset files to get you started. Within the `PresetLoader.txt` file, insert the name of the desired presets within the quotation marks next to "PresetA:" and "PresetB:"

Presets are curated, edited, and accessed via the USB drive. Edits made to any of the preset files will be saved between power cycles. To revert a preset back to the factory settings, delete it and a fresh copy will be recreated upon power up. Keep in mind that they're just text (.txt) files – Edit them, rename them, play with them, and share your favourite settings with the community.



To toggle between presets on deck 1, press and hold the **Retrigger/Shift Buttons** of deck 1 and deck 2, then press the **Erase Button** of deck 1. This action is mirrored for toggling between presets on deck 2.

## Factory Presets

**Tape Looper:** This is one of the default presets for the V2 firmware. It stays fairly true to the original **Lúbadh** functionality, but incorporates vari-speed recording as well as top-level control over the amount of **Tape Emulation**.

**Clean:** This is one of the default presets for the V2 firmware. It stays fairly true to the original **Lúbadh** functionality, but incorporates vari-speed recording as well as top-level control over **Crossfade Duration**. Most tape emulation features are turned off in this preset.

**Classic:** In this preset, settings were chosen to closely mimic the functionality of the V1 firmware. It is important to note that this preset has vari-speed recording disabled.

**Clockable:** This preset is optimised for using an external clock signal to synchronise loops. This is a great starting point for chopping up loops or beat repeat-esque patches.

**Multi-Tape:** This preset utilises multi-taps allowing for multi-tap delay lines (See the **Multi-Tap** section for more information).

**SequencingMono:** This preset allows for 1V/Oct pitch changes and a retrigger delay to ensure any pitch change is set in time for a new note being triggered.

**SequencingPoly:** The **SequencingPoly** preset is a multi-tap version of the **SequencingMono** preset, where playback speed is set to 'hold.' This allows multiple taps to be active simultaneously, each playing at a different speed or pitch. This allows you to sequence polyphonic playback of a loop.

**Melontron:** This preset is curated to change **Lubadh** into a knock-off Mellotron. 4-note polyphony is possible using multi-taps and a sequenced 1V/Oct signal to re-pitch looped samples.

**Octave-Delay:** This preset is curated to change **Lúbadh** into a pitch-shifting octave delay line.

**Broken Tape:** This preset is a maxed out tape emulation for extreme pitch warbled distortion.

## Multi-Tap

Lúbadh supports polyphonic playback capabilities. This brings multi-tap delay functionality similar to that of classic analogue tape loopers that utilise multiple cascaded playheads reading a single tape loop. This feature is curated within the **Multi-Tape**, **SequencingPoly**, **Melontron**, **Octave-Delay**, and factory presets.

Pressing the **Retrigger/Shift Button** will create a new playhead tap that will start from the active start position in a buffer. If four playhead taps are currently active, the oldest tap will be removed and replaced when a new tap is created.

In a multi-tap capable mode, pressing and holding the **Erase Button** and then pressing the **Retrigger/Shift Button** will remove a playhead tap. Additionally, the CV Expander's **Erase Trigger Input** can be used to remotely remove a playback tap.

## Save & Load

The USB drive is automatically populated with a “samples” folder that houses 12 subfolders. Each subfolder can hold up to 12 loops. Loop and folder numbers are displayed on the **Position/Record Indicators** (similar to the display for **Clock Division** settings). The number of illuminated sections refers to the folder number. Loops and folders are automatically sorted alpha-numerically, based on their first character/digit, using the following sorting hierarchy:

Numbers - 01, 02, 03 ... 1, 11, 12, 13,

Uppercase letters - A, B, C, D,

Lowercase letters - a, b, c, d,

**Save:** To save a loop to the USB drive, press and hold the **Retrigger/Shift Button** and the **Erase Button** and then press the **Record Button** of the corresponding deck

For example, to save a loop from deck 1, press and hold the **Retrigger/Shift Button** (1) and the **Erase Button** (2) of deck 1, then press the **Record Button** (3) of deck 1. To save a loop from deck 2, press and hold the **Retrigger/Shift Button** and the **Erase Button** of deck 2, then press the **Record Button** of deck 2.



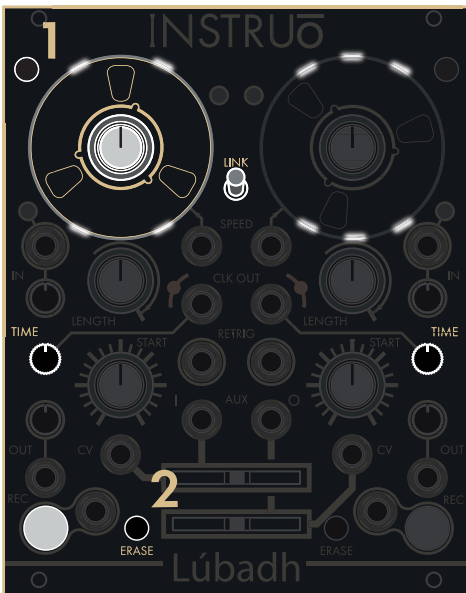
Saving a loop when the **Link Toggle** is engaged will save a stereo file. All saved loops are saved into the “saved” subfolder found within the “samples” folder on the USB. The “saved” folder will always appear in the folder menu as folder 0 (indicated by no lights on the Position/ Record Indicators). Saved files will appear in folder 0 in reverse chronological order meaning that the first file in the folder is always the most recent take. If there are no samples in the saved folder, folder 0 won't appear as an option.

**Load:** To load a saved loop from one of the USB drive's 12 subfolders, press and hold the **Retrigger/Shift Button** and then press the **Erase Button** of the corresponding deck to enter the load menu.

For example, to enter the load menu of deck 1, press and hold the **Retrigger/Shift Button** (1) and then press the **Erase Button** (2) of deck 1. To enter the load menu of deck 2, press and hold the **Retrigger/Shift Button** and then press the **Erase Button** of deck 2.

Once the load menu is opened:

- The **Time knob** of the corresponding deck selects the loop.
- The **Time knob** of the opposite deck selects the folder.
- The **Record Button** of the corresponding deck loads the selected loop.
- Holding the **Retrigger/Shift Button** will preview the first 5 seconds of the selected loop.
- The **Erase Button** exits the load menu.



Loading a loop when the **Link Toggle** is engaged will load a stereo file. If a stereo file is loaded to a single deck, a mono sum of both stereo channels will be loaded.

**Note:** Any audio content settings auto saved from previous sessions will be automatically loaded when powered on.

## Tails & Tags

After recording a loop, **Lúbadh** will continue to record a 250ms **tail**. This additional 250ms **tail** allows for crossfading from the end to the start of the loop while maintaining the timing set by the duration of the first recording. The **tail** can be dealt with in various ways when it comes to loading loops by adding one of the following tags to the file name of the loop.

{s} - Silent tail (default)

- This tag preserves the timing of the loaded loop, but will have a dip in volume during the crossfade, as it adds silence to the end of the loop.
- This tag is recommended for rhythmic loops where shorter/no crossfades are desired.
- This is equivalent to not adding tags to the file name.

{n} - No added tail

- This tag has the smoothest crossfade, but will loosen the timing.
- This will consume 250ms of the end of the sample for use in crossfades, affecting the timing of the loop.
- This tag is recommended for ambient or tonal material with longer musical events where either the timing is less critical than having a smoother transition or where the loop is pre-prepared with an additional 250ms of audio for use in crossfades.

{c} - Copy tail

- This preserves the timing of the loaded loop, but will have no dip in volume during the crossfade. This may result in transient clicks depending on the loop edit points and zero-crossings of the waveform.
- This tag will automatically copy the first 250ms to the end for use in crossfades.
- This is recommended for rhythmic loops, but longer musical events may have an audible transition.

## Mode Reset —

A factory reset will set all modes to their default setting:

- Input Monitoring Enabled
- Looping Record
- Looping Playback
- Clock Division

To perform a factory reset, press and hold both **Retrigger Buttons** and then press both **Record Buttons**. Both **Speed Indicators** will flash to show that the factory reset has been successfully completed. This does not delete the recorded audio in the buffer.

# Calibration

Press and hold both **Retrigger/Shift Buttons** and both **Erase Buttons** during power up to enter the **Calibration Mode**.

Once, in **Calibration Mode**, turn both **Speed** knobs to their minimum position and ensure that 0V is present at the **Speed CV Inputs**. Press the **Record Button** of deck 1 to store a 0V reference. Repeat this process for deck 2. Repeat this process with 1V at the **Speed CV Inputs** to store a 1V reference. Repeat this process with 3V at the **Speed CV Inputs** to store a 3V reference. Remove control voltage from the **Speed CV Inputs** and set the **Speed** knobs to their maximum position and press the **Record Button** of deck 1 to store a 5V reference. Repeat this process for deck 2.

**Note:** If voltage is present at any stage is deemed out of range the amber **Time Indicator** will blink to and Lúbadh will use default values instead.

# Cheat Sheet

Functions	Button Combinations	Display
Monitoring Modes	Both Shifts & Record	On - REC LED Solid White Armed - REC LED Pulse White Off - REC LED Off
Time Pot Function	Shift & Record	CLK Divisions - CLK LED Off Dub Level - CLK LED Solid Lit User Definable Parameter - CLK LED Pulsing
Looping Record One-Shot Record	Shift & Opposite Record	Looping - Unchanged One-Shot - REC LED Mixed
Looping Playback One-shot Playback	Shift & Opposite Erase	Looping - REC LED Blinks White One-Shot - REC LED Blinks Mixed
Punch In Record /Tap Tempo	Erase & Record	REC LED Lights Amber /Mixed
Toggle Preset	Both Shifts & Erase	Preset A - REC LED Blinks White Preset B - REC LED Blinks Mixed
Flip Playback Direction (in 1V/Oct Mode)	Opposite Erase + Erase	Speed Indicator LED's Blink
Delete Taps	Erase & Shift	N/A
Save	Shift, Erase & Record	Deck LED Animation
Load	Shift & Erase	Deck LED Animation
Reset	Both Shifts & Both Records	Speed Indicator LED's Pulse

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**CE** This device meets the requirements of the following standards: EN55032,  
EN55103-2, EN61000-3-2, EN61000-3-3, EN62311.