Front panel

A. B. C. D. Channel gains. These knobs have an effect only when the keyframe indicator **(G)** is lit, that is to say when a keyframe has been recorded at the position pointed by the **FRAME** knob.

E. Creates a keyframe at the position pointed by the **FRAME** knob. The timeline can contain up to 64 key-frames.

> **Tip**: hold **ADD (E)** for five seconds to save the current configuration of the module. It will be restored the next time the module is powered on.
>
> **Tip**: hold **DEL (F)** for five seconds to erase all keyframes and get back to a blank state.

F. Deletes the keyframe at the position pointed by the FRAME knob.

G. Keyframe indicator - lit when there is a keyframe at the position pointed by the FRAME knob. The keyframe can be edited by the knobs A, B, C, D; or deleted with **(F)**.

H. Frame knob - scrolls through the animation.

I. Animation attenuverter. Attenuates and inverts the polarity of the signal received on the **FRAME** CV input.

J. +10V offset. When enabled, a +10V constant CV is sent to the **ALL** input - unless a patch cable is inserted there.

1. Common input. The signal patched here is sent to all unconnected input channels.

2. 3. 4. 5. Channel 1, 2, 3, 4 **inputs**.

6. Animation input. This CV modulates the position of the **FRAME** knob.

7. Mix output - sum of channel outputs 8, 9, 10, 11.

8. 9. 10. 11. Channel 1, 2, 3, 4 **outputs**. When a patch cable is connected there, the channel is removed from the global mix.

12. Frame step output. Sends a 1ms trigger pulse every time a new keyframe is reached.

Inspiration

- Patch four outputs from a complex VCO to the four inputs, and animate the mix.
- Send basic gate patterns to each input, and use the gains to create CV melodies. Morph between them.
- Dispatch the same sound source to 4 different filters, wavefolders, FX processors, speakers...
- Patch a simple ADSR envelope to the FRAME input. Get 4 synchronized multi-stage envelopes!
- Mix and match attenuation/gain channels and CV generation channels. For example, use 2 channels for mixing VCOs, and 2 channels as CV sources to alter their timbre.

Mutable Instruments
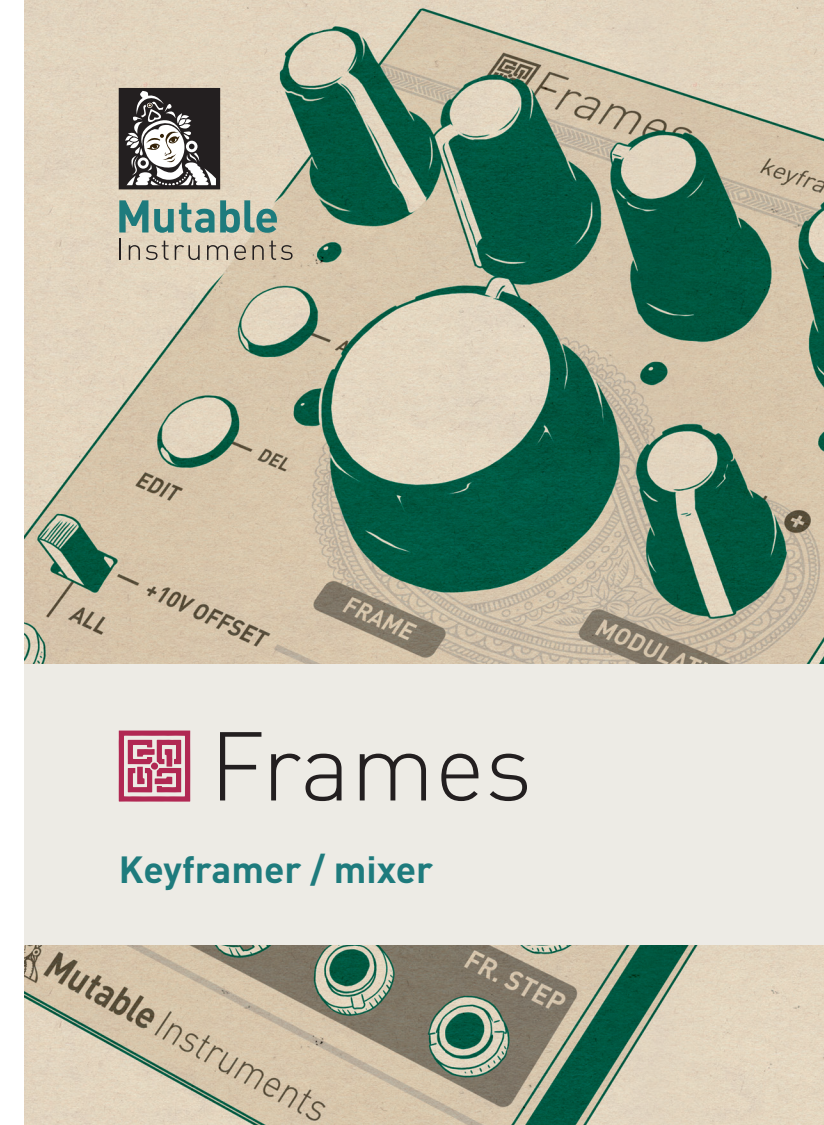
Frames

Keyframer / mixer

About Frames

Frames brings to Eurorack modular systems the concept of keyframing, widely used in computer animation.

It allows up to 64 configurations of gains (or control voltages) to be stored and morphed into one another. Mix, pan, morph, dispatch or control four channels of sounds or CV!

Installation

Frames requires a **-12V / +12V** power supply (2x5 pins connector). The red stripe of the ribbon cable (-12V side) must be oriented on the same side as the "Red stripe" marking on the board.

The power consumption is as follows: **-12V: 30mA; +12V: 90mA.**

The jumper at the back of the module selects the constant voltage sent to unconnected inputs (+5V or +10V).

Online manual and help

The manual can be found online at mutable-instruments.net/modules/frames/manual

For help and discussions, head to mutable-instruments.net/forum

Walkthrough

Power on the module. Connect two different audio sources to channel inputs 1 and 2. Listen to the MIX output. In this configuration, Frames works like a mixer.

Turn the **FRAME knob** fully counter-clockwise. Press the **ADD button**. Using the first two knobs on the top row (labeled 1 and 2), mute channel 1 and set channel 2 to maximum level.

Turn the FRAME knob fully clockwise. Press the **ADD button**. Mute channel 2, set channel 1 to maximum level.

What happened? You have created two keyframes, each of them storing a different configuration of the channel gains. By moving the **FRAME knob**, you can interpolate back and forth between them. The **FRAME knob** is like the play-head moving through an automation curve.
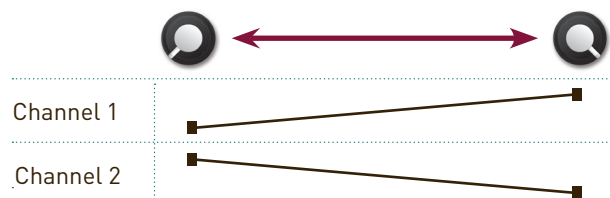
Channel 1
Channel 2

Move the **FRAME knob** to the middle position. Press the **ADD button**. Set the two channels to their maximum level. You have created the animation shown here:

Channel 1
Channel 2
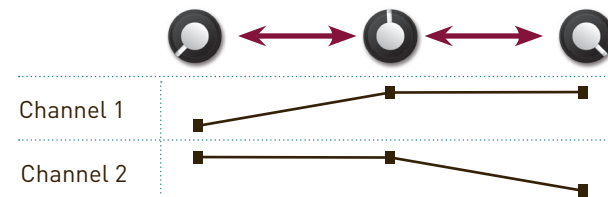
Send a LFO to the FRAME CV input and adjusts its amount with the MODULATION attenuverter to move through the animation.

Signal flow

Frames is not just a mixer. It is actually comprised of four digitally-controlled analog VCAs with DC coupling.

- Each VCA has an **individual input and output.**

- When no patch cable is inserted in a channel input, the signal from the **ALL** input is processed instead.

- When no patch cable is inserted in the **ALL** input, and if the +10V offset switch is on, the **ALL** input receives a **constant 10V CV.** Sending this constant voltage into a VCA turns it into a CV source! This voltage can also be set to +5V with the jumper at the back of the module.
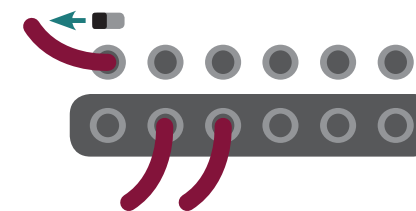
When no patch cable is connected to a channel output, the signal is sent and summed to the **MIX output**.

Patch examples

Mixing
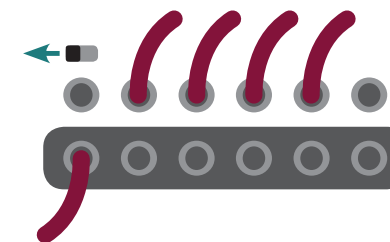
Dispatching/panning

CV generation