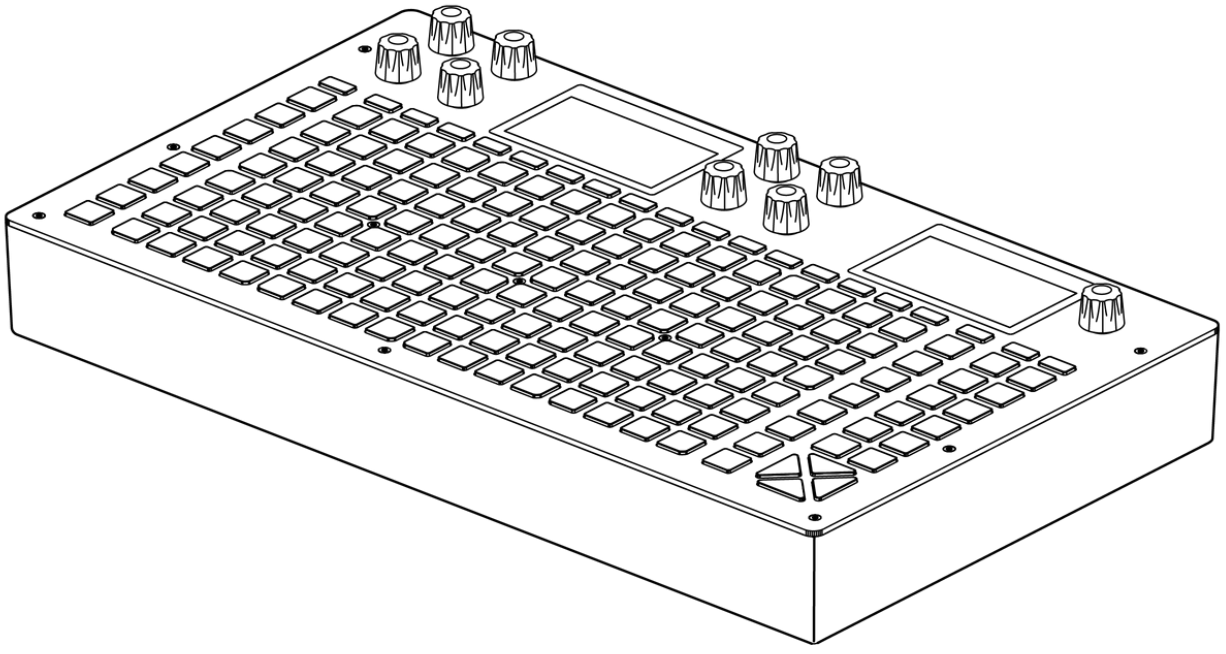
HAPAX MANUAL

Professional dual-project sequencer.

32 tracks, 8 effects per track — MPE compatible —
Advanced piano-roll and automation editing —
High recording resolution — Phasing capabilities —
Isomorphic keyboard & chord generator —
Algorithmic tools — Undo/redo with history —
Independent patterns arrangement mode with chaining —
Dual-project transparent loading & playback for song mixing —
Massive midi connectivity + Cv/gate.

engineered by Squarp instruments



Found a typo? Is something confusing, or wrong?

Please contact us at squarp.net/contact

Please consider the environment before printing this document.

This manual was updated on July 21, 2025.
Latest firmware at the time of writing: hapaxOS 2.20, released on July 21, 2025

Table Of Contents

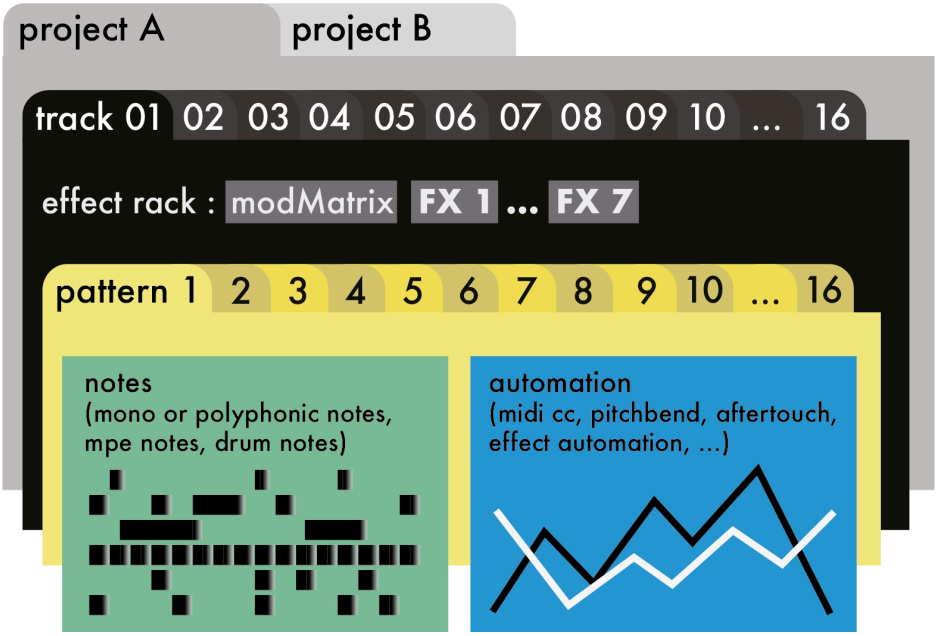
1. Basics

1.1. Power on

Plug the provided 15V power supply unit and **Press** the ON/OFF switch.

Hapax will quickly boot and be ready to use.

1.2. Sequencer workflow



Projects

Hapax can load and play two projects simultaneously: proA and proB. Each project has 16 tracks.

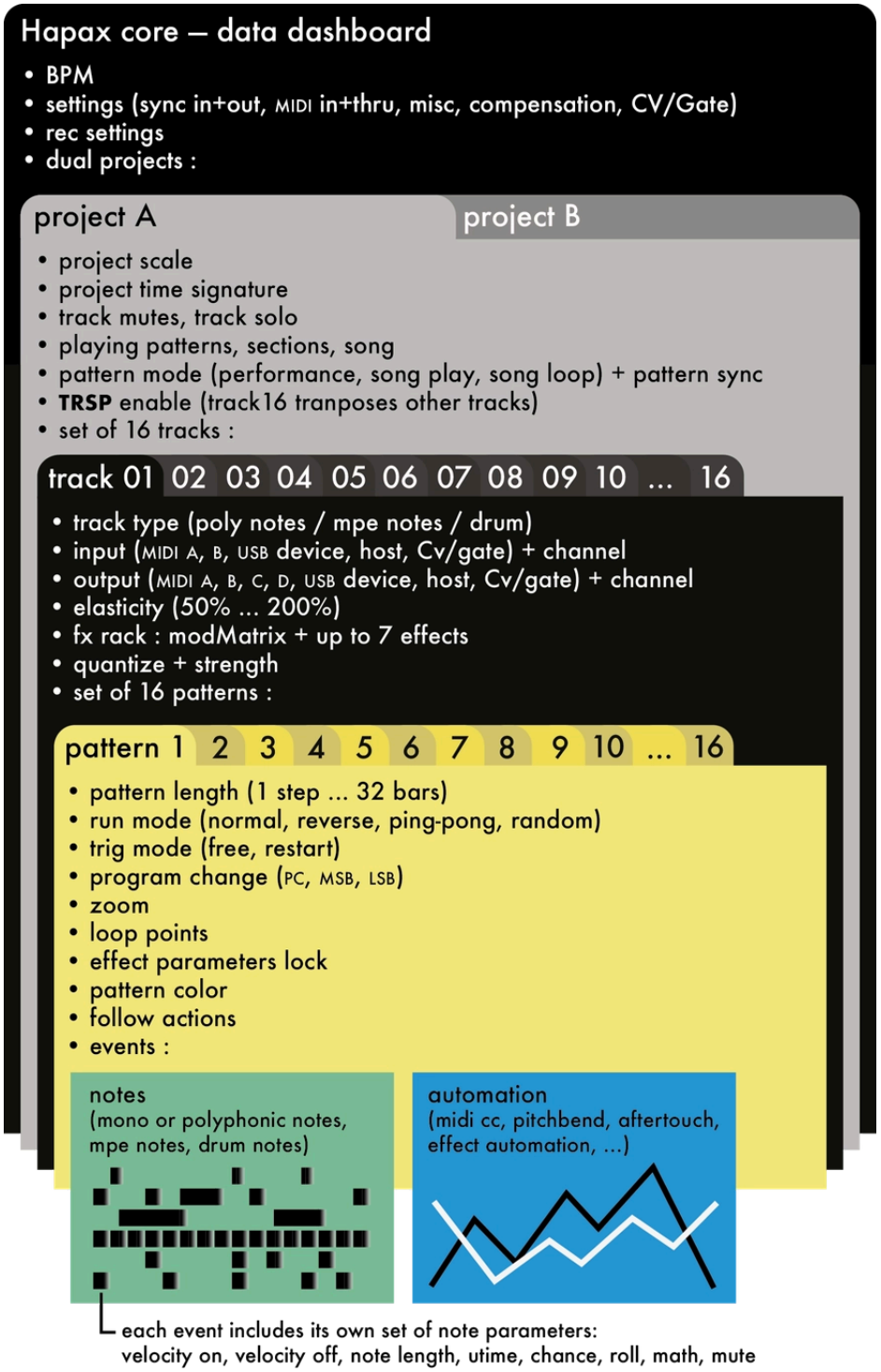
Tracks

Each track has its own inputs & outputs, its own FX rack and a set of 16 patterns.

Patterns

A pattern is a loop that contains polyphonic or monophonic notes and/or automation. Each pattern has its own events, length, runmode, effect parameter values, ...

1.3. Memo: core architecture



1.4. Connecting a synthesizer: configure track input & output

Connect a MIDI or USB cable between the input of your favorite hardware synth and one of Hapax's output.

Hold a **track** to enter Track settings menu and select the output port and the output channel:

TRACK OUTPUT

Every note of the track, whether coming from the built-in live matrix pads , the step sequencer or an external keyboard, will be sent on this output **PORT** and **CHANNEL**.

TRACK INPUT

Input **PORT**: sets up which port the track is listening to.
Input **CHANNEL**: sets up which channel the track is listening to, depending on the choosen port:

- **–** : the track isn't receiving notes from any port.
- **ALL ACTIVE**: the track listens to all input ports, only when this track is active.
- **MIDI A**, **MIDI B**, **USB DEVICE**, **USB HOST**, **CV/GATE** : the track only listens to the selected port. This setting is always active, even when the track is not selected.

Press **step**, enter some steps in the piano roll , then Press play ▷ : your synth is now playing a sequence.

Or Press **live**, then play with the 128-pad matrix .

1.5. Play/stop

From stop state, pressing ▷ will start the project playback.
If you are in a playing state, pressing ▷ will restart all tracks from the beginning.

- One press on □ stops and resets the playback, disable the recording and send a MIDI **STOP** message. It will also send the default automation MIDI values. If a song was running, it will reset the song position to the currently playing section.
- A second press will send a MIDI **ALL NOTE OFF** message to your instruments. It will also send patterns MIDI Program Changes (**PC/MSB/LSB**) if some are configured and different from the last messages sent. If a song was running, it will reset the song position to the first section of this song.
- A third press will send a midi **ALL SOUND OFF** message to your instruments, to instantly silence midi synthesizers. It will also send patterns MIDI Program Changes (**PC/MSB/LSB**) if some are configured.
- A fourth press will send MIDI values set in the **ASSIGN** mode (**2ND** + **fill**). It will also clear the internal MIDI messages cache*.

*The MIDI message cache is an internal memory within Hapax that stores the last value sent for each automation type (MIDI CC, Aftertouch, Pitch Bend). This mechanism helps avoid sending redundant MIDI messages by comparing current values with the previously sent ones. If a value hasn't changed, the message is not resent—reducing MIDI bandwidth usage and improving overall latency performance.

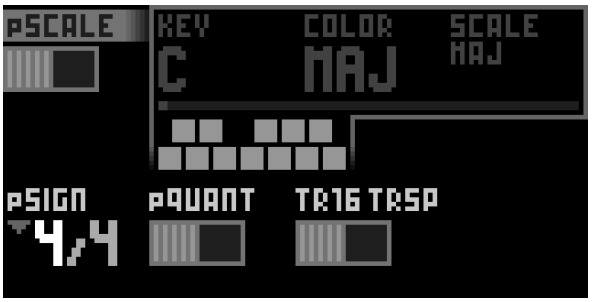
Tip From play state, when you are in **step** or **automation** mode, pressing ▷ will restart all tracks to the current page position. From stop state, pressing **2ND** + ▷ will restart all tracks to the current page position.

1.6. Working with projects, save & load

Projects proA and proB are accessible directly through their dedicated button. Each of them contains 16 tracks and can be played at the same time.

For smooth transitions you can seamlessly load a project on proB while proA is running for never ending live sets!

Press **proA** or **proB** to select a project.
Hold **proA** or **proB** to enter project settings:



On the right screen, you will also find the save/load menu:

1.7. Select a track and configure it

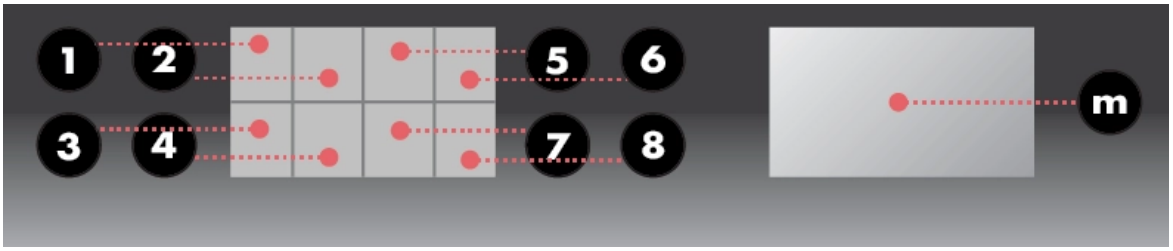
Press one of the 16 **track** buttons to select a track. The active track is indicated by a bright steady white light on the corresponding pad.

Hold **track** to enter the track settings menu: midi output, midi input, pattern length, run modes.

Hold **2ND** + Press **track** to enter the secondary settings menu: configure track name, quantize pattern, load instrument definition, import/export midi files, enable project transpose and project scale.

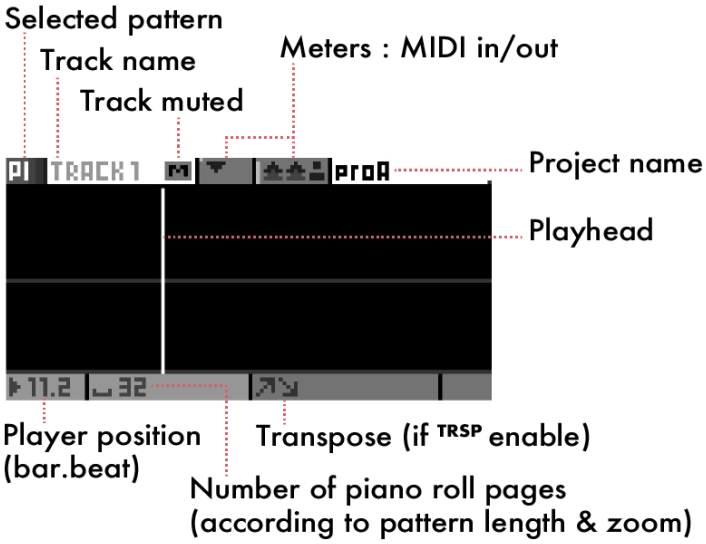
1.8. Tweak parameters

The group of 8 encoders always controls the left screen parameters, and the menu encoder controls the right screen:



Tip Hold an encoder to reset a parameter to its default value.
Tip Hold 2ND and rotate encoders to scroll faster.

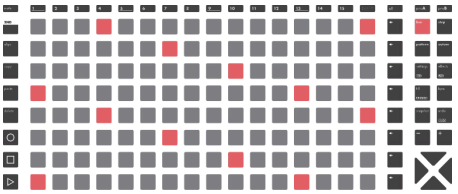
1.9. Upper & lower bars



1.10. Quick tour of the 4 modes

live MODE

Use the 128 pads as a scale keyboard or as a chord generator (to change the livemode, hold live and rotate the menu encoder).

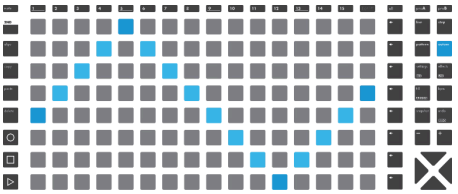


step MODE

Use the 128 pads to add or fine tune notes (or drum events) with surgical precision.

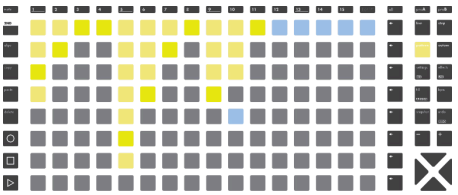
automation MODE

Use the 128 pads to create midi (or fx) automation.



pattern MODE

Perform in sync by using the 128 pads to set the playing pattern of each track. Create sections (group of patterns). Chain sections to build a song.



1.11. Live recording

Press record ○ while playing to capture your live performance, coming either from:

- the **live** mode keypad
- an external MIDI instrument or controller
- a modular system sending CV/Gate
- a computer

You can only record on the currently selected track.

Hold **2ND** + Press **settings** to enter the rec Settings:

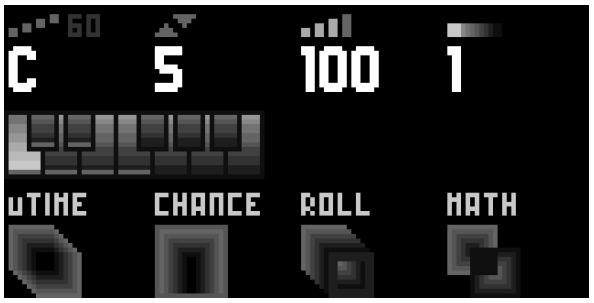
1.12. Step mode essentials

Press **step** to enter the Step mode.

Press any matrix pad to enter a note.

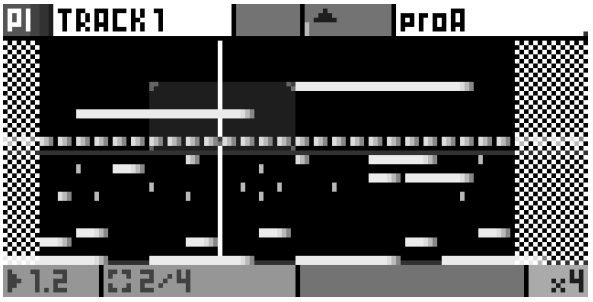
Press it again to delete the note.

Left screen parameters contains the default values for a note. Any newly added note will inherit those values:



The upper-left parameter is the note displayed on the pad matrix's bottom row. By rotating the corresponding encoder, you can scroll up and down in the piano roll

view. A viewport on the screen frames the notes displayed on the matrix pads:



Selection: Hold a Step already filled with a note to finetune any parameter. You can also select multiple notes at the same time.

1.13. Setting the length of a pattern

Hold a **track** to enter its settings:

Change the length of the active track Pattern with the corresponding encoder.

Tip When in Live or Step mode, Hold **2ND** + **+** or **-** to quickly double or halve the track length.

Tip When in Live or Step mode, Hold **2ND** + ▶| or |◀ to quickly double or halve the Track length and duplicate the events of the page.

1.14. Mute tracks

Hold **mute** and Press one or more **track** buttons.
Selected Tracks start to flash: they form a mute group.

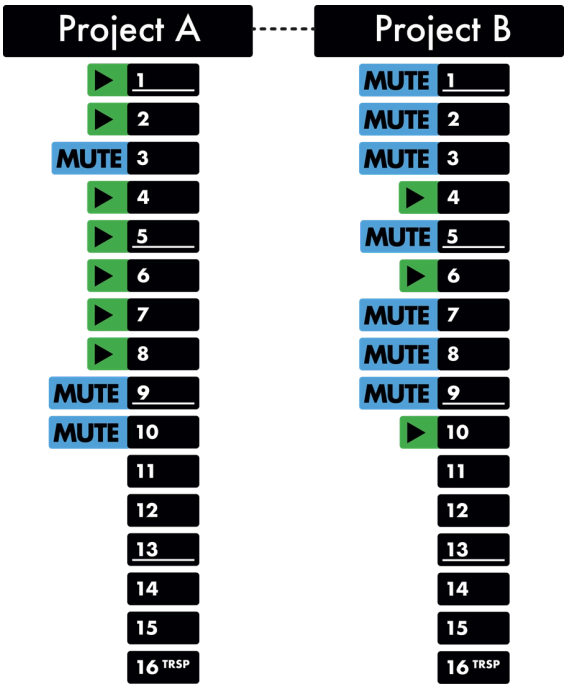
Release **mute** to apply the mute state on selected tracks.

Track status on leds:

track empty (led off)
track muted (white led is waving)
track not empty (medium led brightness)
track selected (maximum led brightness)

Tip Hold **2ND** **mute** and Press a track to instantly mute/unmute it. You can also disable the mute group feature in settings MISC.

You can mute tracks independently in **proA** and **proB**. For example, your projects mute states can look like:



1.15. Mute projects

Hold **mute** and Press **proA** and/or **proB** : the projects will be muted/unmuted at the same time, in sync, at the end of the bar.

A popup will appear, displaying the projects waiting to be muted.

It's the easiest way for mixing projects and perform transitions with perfect timing. Please read the manual page **PROJECTS** for more info about projects/songs mixing.

Tip Hold **2ND** **mute** and Press **proA** or **proB** to instantly mute/unmute it.

1.16. Delete tracks and patterns

- Delete a track: Hold **delete** + Press a track button
- Delete pattern notes only: Hold **delete** + Press **step**
- Delete pattern automation only: Hold **delete** + Press **automation**

1.17. Track types

By default, the 16 tracks are set to track type **POLY**. Hold **step** + Rotate the main encoder to choose the type of the active track, which can either be a Poly track, a Drum track, or an MPE track.

Poly tracks

Best suited for polyphonic or monophonic synthesizers.

live mode can either be an isomorphic keyboard (to play notes directly on the pad matrix ) or a chord generator.

step mode is a fully featured step sequencer.

Drum tracks

Drum tracks are designed for grooveboxes and samplers, featuring 8 drum lanes where each lane has its own distinct note values and MIDI channels.

live mode is a grid of eight zones, one for each lane, divided into 16 velocity levels. Use it to record and add nuances to your beats.

step mode is a drum-focused step sequencer that allows you to edit individual drum lanes.

MPE tracks

Designed for use with MPE-compatible expressive controllers and synthesizers.

In **live** mode, functionality mirrors that of **POLY** tracks, as Hapax itself does not act as an MPE controller. Notes played live are transmitted on MIDI Channel 01, which serves as the Global Channel in the MPE specification (used for standard, non-expressive note data).

Note MIDI Channels 2–16 are the expressive per-note channels: and each note gets its own channel during an MPE performance.

The **step** mode offers the same core features as **POLY** tracks, with the added ability to record and playback full MPE performances. Each note captures per-note expressive data along the XYZ dimensions:
– Press = Aftertouch = Pressure
– Glide = Pitch Bend
– Slide = Timbre (usually sent as MIDI CC74)

In addition to XYZ data, Note-On Velocity (Strike) and Note-Off Velocity (Lift) are also recorded per note.

When a note is moved left/right, transposed, copied and pasted, its associated XYZ curves are preserved (these expressive automations are stored directly within each note).

Note Editing the XYZ curves within an MPE note is not supported. These expressive parameters can only be created during live recording using an external MPE-capable controller.

Note Recording long sessions of MPE performance can consume a significant amount of internal RAM due to the high-resolution, per-note automation data.

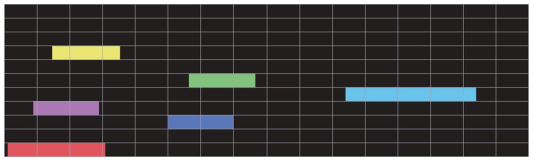
Note Some internal effects in Hapax are not MPE-compatible and may not preserve the link between a note and its associated XYZ curves.

1.18. Quantize

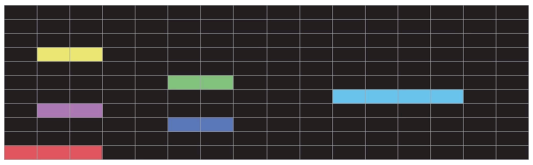
Hold **2ND** + **track** to enter the secondary settings of a track.

Configure the real-time quantization amount/strength of the track with encoders ① and ②, in order to soften the timing imperfections your recording, from – (quantize disabled) to **1/16**.

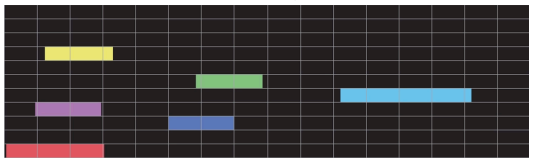
Quantize **OFF** :



Quantize **1/16** (strength **100%**) :



Quantize **1/16** (strength **50%**) :



Tip You can also configure a global Quantize for all tracks by holding **proA** or **proB** and enabling Project Quantize (**pQUANT**).

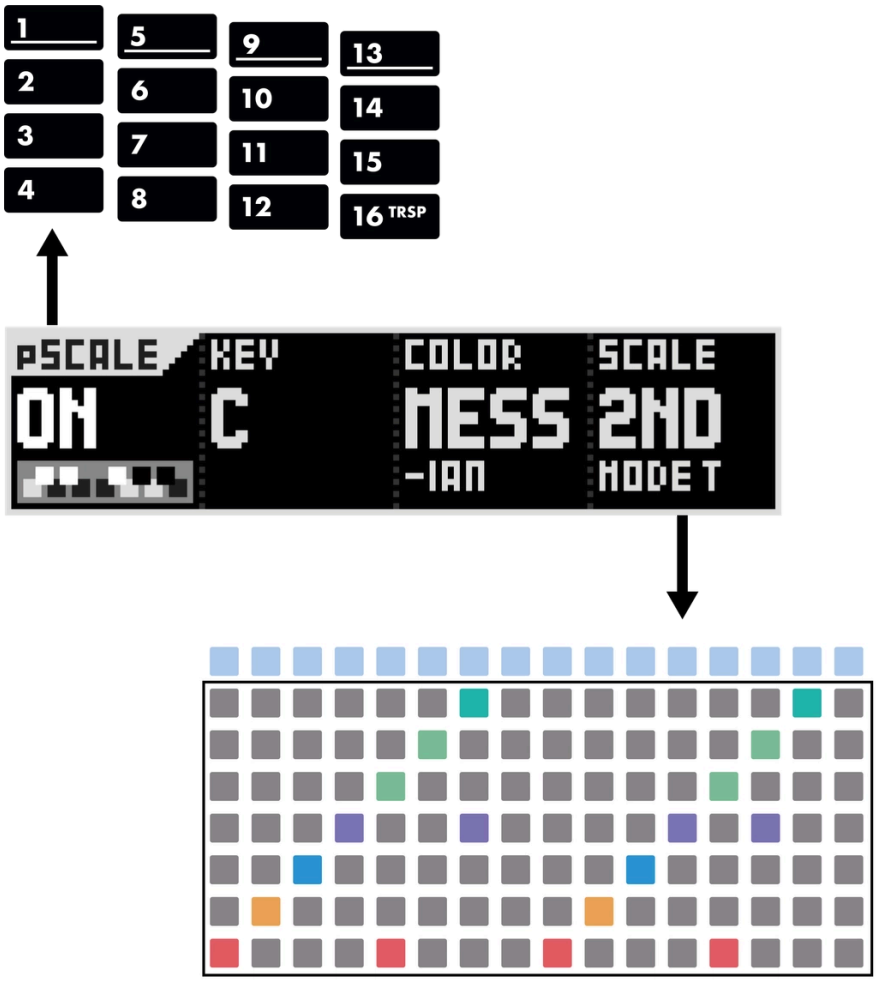
Tip It's possible to quantize only your live recordings, for a destructive approach. Hold **2ND** + Press **settings** to enable this "REC" quantization.

1.19. Project scale

One major feature of Hapax is the ability to set a global scale for each project, which will constrain all notes to the selected pScale. It provides a simpler interface without "wrong" notes.

Hold **proA** or **proB**, enable pScale with encoder ① and select your favorite scale and key with encoder ②, ⑤ and ⑥.

Project scale is quantizing harmonies of all tracks:



Usually, Only 7 notes of the selected scale are displayed on the piano roll.

Tip You can set a new scale anytime and in real-time, it's a great studio tool to color your song.

1.20. Undo/redo

To undo your last actions, such as parameter changes, new notes, or a recent recording, simply Press the **undo** button.

Hold **2ND** + Press **undo** to redo changes.

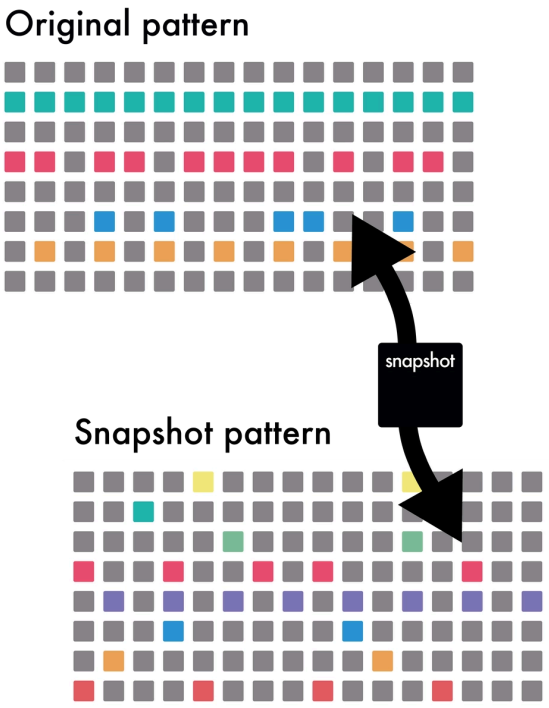
You can use undo/redo multiple times until you are back in the desired state.

Note Undo/redo is cleared when a pattern change is performed.

1.21. Snapshot

Snapshot is both a performance and a studio tool. Hold snapshot to capture the current version of your pattern: notes, automation, parameters...

Then play around with your pattern: change notes, parameters, add automation — you always have the safety net that is your captured pattern. Press snapshot to toggle between your captured version and your working version.



1.22. Assign

Hold **2ND** + Press **fill** to display assignments on the left screen.

This submode allows you to remap the 8 encoders to any MIDI message, CV output or FX parameter of your choosing: Press one of the 8 encoders and select the destination.

Each track has its own set of 8x assignments. Perfect for using Hapax as a midi controller, or doing automation knob-recording with midi messages.

Tip If you assign to a MIDI message, it will be interpreted as though it came from an external controller, meaning you can do knob-recording!

1.23. Project tempo

BPM

Press **bpm** to open the BPM popup and:

- Rotate the menu encoder to change the BPM value.
- Press the menu encoder to select the after-decimal digits, then Rotate to fine-tune the BPM.

Tap BPM

Press **2ND** + regularly tap **bpm** button to set the tempo:

Time elasticity (phasing)

While BPM changes the global playback speed of both projects, you can use the time elasticity feature to change the playback speed of each track individually.

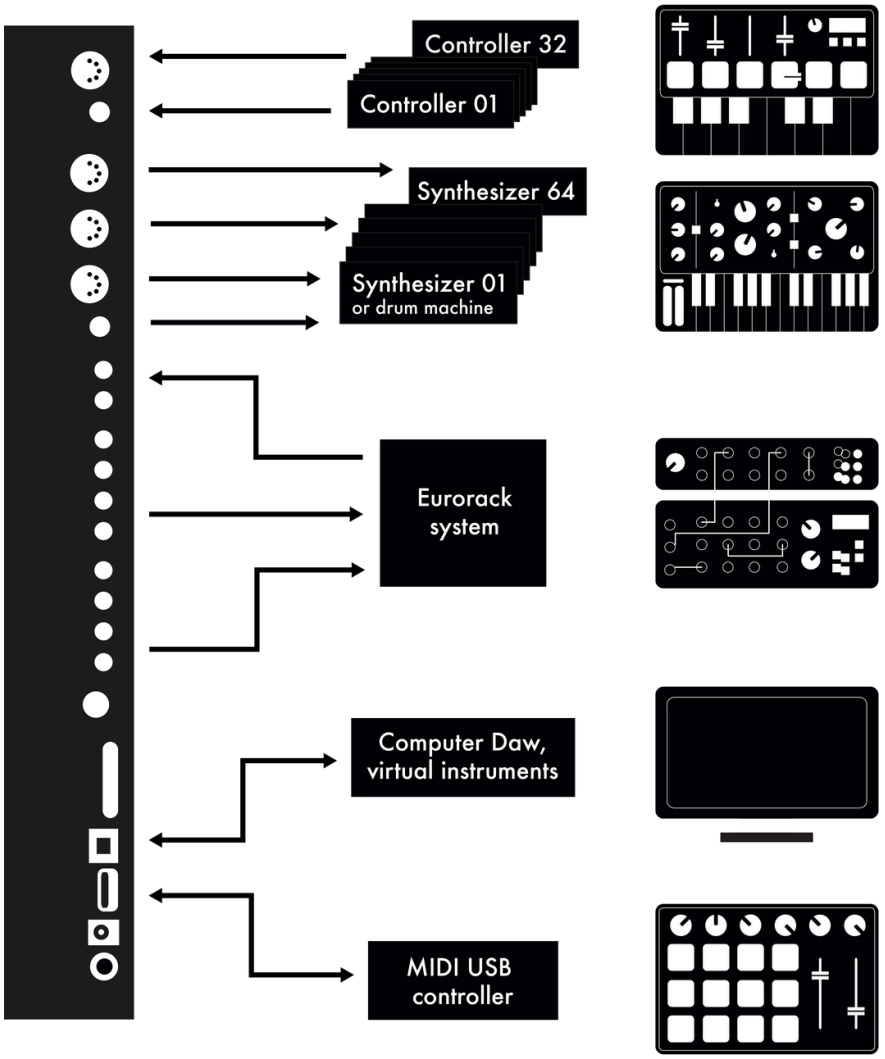
Press **bpm** to enter BPM popup. Toggle menu encoder until elasticity % is highlighted. Then Rotate menu encoder to change elasticity value (you can also fine-tune the last digits).

For example, if the global BPM is set to 120.00, and you are working on track 01:

- set elasticity to 50%: track 01 playback is two times slower = 60 BPM
- set elasticity to 200%: track 01 is two times faster = 240 BPM
- set elasticicity to 100.50%: track 01 is slightly faster and will slowly drift out of phase with the other tracks. Phasing is the main concept used in "Steve Reich - Piano Phase".

In Hapax, time elasticity is a way to achieve polyrhythms (two rhythms being played concurrently).

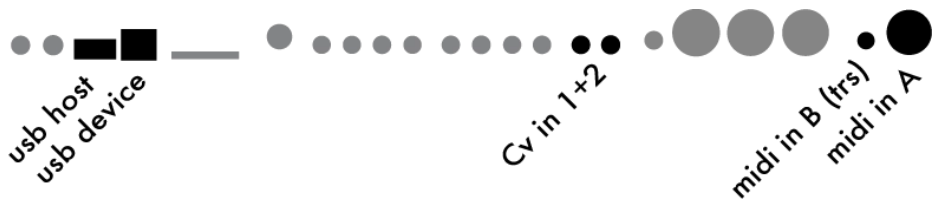
1.24. Connectivity



MIDI/CV INPUTS

Hapax can simultaneously receive MIDI from all 16 channels of each of its 4 inputs: in A, in B, usb host (usually a controller), usb device (usually a computer).

It represents a total of 64 MIDI in channels, plus the two Cv in that can be used as a CV/Gate input.

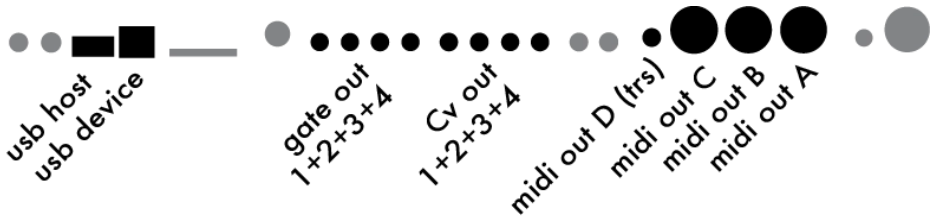


To link an external midi controller (sending midi events like notes, cc, pitch, ...) to one Hapax track, **Hold** a track and select the input/channel.

To sync Hapax with an external source (make Hapax follow the BPM and play/stop), press settings, enter sync in and set the clock source.

MIDI/CV OUTPUTS

Hapax can simultaneously send MIDI to all 16 channels of each of its 6 outputs: A, B, C, D, usb host (usually a controller), usb device (usually a computer).
This allows for a total of 96 MIDI out channels, plus the 4 pairs of CV/Gate outputs.



To link one Hapax track to a synthesizer, a drum machine, a Eurorack system, another sequencer... : Hold a track pad and select the output/channel.

To send sync messages to midi (or gates) outputs: press settings and enter sync output.

2. Live mode

2.1. Overview

live mode is the best place to start composing a track.

This mode turns Hapax into a MIDI controller that you can use to experiment and record your music using the built-in pad matrix  or an external keyboard. Depending on the current type of your track, you will have access to three different live modes.

Livemode SCALE

On **POLY** or **MPE** tracks, play some notes on the built-in isomophic keyboard, and add a scale to quantize their pitch.
Hold **live** + Rotate the main encoder to switch to livemode scale.

Livemode CHORD

On **POLY** or **MPE** tracks, effortlessly build and play some colorful chords.
Hold **live** + Rotate the main encoder to switch to livemode chord.

Livemode DRUM

On **DRUM** tracks, play your drum kit with the pads, divided into zones of 16 velocities.
A simple Press on the **live** button will lead you to the livemode drum.

You will find many useful tools in those modes, such as a quantizer, scales and chords generators, hold/relatch options, chord recognition, a live looper, and of course a lot of real-time effects (arpeggiator, harmonizer, swing...).

2.2. Record your performance

Press ○ (and ▷ if your sequencer is stopped) to record your performance. When you will start playing, you will notice that notes are starting to appear on the piano roll screen.

It is possible to record events on several tracks at the same time. To learn about this feature, please check the **Multitrack recording** chapter on *this page*.

Recording settings can be accessed through the **REC** menu.
Press **2ND** + **settings** to enter this menu.

LEARN OFF ON
Toggle this parameter off to completely disable the note learn in **step** mode.

NOTES HARD REC OVERDUB
When hard recording is selected, the previously recorded notes will be erased upon a new recording. Overdub allows to merge incoming notes with the existing ones.

COUNTDOWN OFF ON (1 BAR) ON (2 BARS) ON (3 BAR) ON (4 BAR)
When enabled, Hapax will play a countdown before the recording starts. The track must be armed beforehand with a Press on rec ○. The countdown time can be set from 1 bar to 4 bars.

METRONOME OFF ON
Enabling Metronome will output a quarter note when the sequencer is playing. The output routing and other parameters of the metronome can be set in the **settings** MISC.

PUNCH IN OFF ON

Press ○ to arm your track. If punch-in is enabled, Hapax will wait for the first incoming note to automatically start recording.

LOOPER OFF 1 BAR 1/16

This option provides a way to capture your performances as if you were using a looper pedal. The length of your track is not predefined, and will be determined by the final length of your recording. The looper is only available on an empty track (no notes and automation).
First, Press rec ○ to start recording a loop.
Press rec ○ a second time to stop recording. The track length will now be set, and the track will start to loop.

New! **1 BAR** will set the pattern length to the closest bar while **1/16** will set the pattern length to the closest sixteenth note.

Tip When recording a track with the **LOOP** feature, press its corresponding track button (e.g. **TR01**) to end the looper mode and set the track length while keeping **REC** enabled.

REC OFF OFF END PATTERN

If enabled, this parameter will allow the recording to stop automatically when the sequencer reaches the end of the pattern.

QUANTIZE OFF 1/64 1/32 1/24 1/16

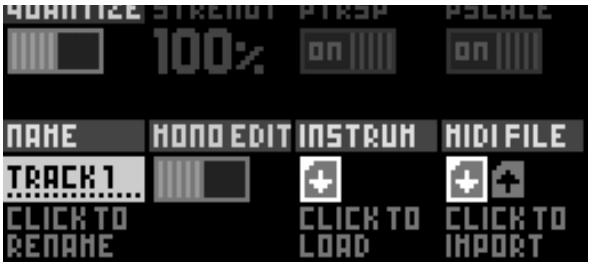
New! When enabled, the notes will be destructively quantized to the selected rate. Destructive quantization means that no micro-timings will be added to recorded events. To use non-destructive quantization, use the ***track quantizer*** .

Hold and Rotate to set the note end quantization behavior. By default, notes are moved altogether on the grid, including their start and end points. When activated, this setting allows for quantizing the start point alone, leaving the end of the note at its original position, unquantized.

2.3. Quantize your performance

The real-time quantizer is very useful for correcting the timing of a live played recording, or for applying rhythmical variations on a pattern.

Each track quantize parameters can be set independently. Hold **2ND** + Press **track** to enter the track secondary setting window:



Rotate encoder ① to enable and set the rate of the quantizer. 1/16 is the coarsest setting, 1/64 is the most precise.

Rotate encoder ② to set the strength value of quantization.
While 100% strength value will apply maximum quantization to the notes, lower values will allow the notes to be slightly off-grid.
Tweak this parameter to taste to find the balance between straight and swung feel in your tracks.

The track quantizer is non-destructive, meaning that the original micro-timings of the sequence are preserved and can be restored at any time. If you prefer a destructive quantization, use the ***quantize option in rec settings***.

2.4. Across live and step mode

Any note recorded in **live** mode can be seen and edited in **step** mode.

Moreover, all notes and chords played on an external controller or using the live mode keypads are captured in step mode and displayed on the left screen under **LEARN**.
Those learned notes can be added with a single press of a pad in **step** mode.

More info about **LEARN** : ***click here***.

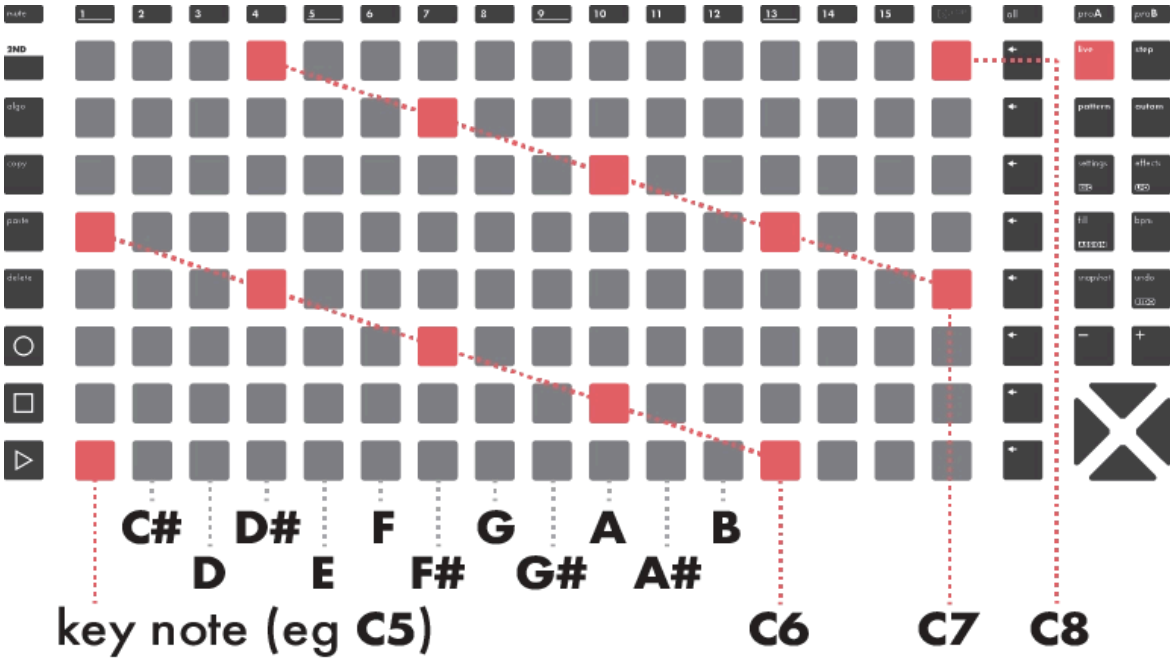
3. Livemode Scale

3.1. Overview

In this mode, the pad matrix  is used as an isomorphic keyboard. This leverages the property of *transpositional invariance*, very useful for playing chords in various keys:

> Any given sequence and/or combination of musical intervals has the same shape when transposed to another key.
> - Wikipedia

By default, this isomorphic keyboard is chromatic, with a row-jump of 3 semitones : for any given pad, the pad to its right plays 1 semitone up, and the pad above it plays 3 semitones up.



When applying a scale, the keyboard will no longer add 1 or 3 semitones, but will move up by 1 or 3 *degrees* of the scale. For example, in chromatic mode, a pad up would translate into a minor 3rd jump, whereas in a major key, it would give us a fourth jump.

3.2. Basic operations

Press ▼ or ▲ to set the octave of the lowest note of the pad matrix.

Rotate encoder ① in order to set the lowest note of the pad matrix.

Rotate encoder ② to enable hold or relatch.

Rotate encoder ③ to set the velocity of the played notes.

Rotate encoder ④ to set how many notes separates a given row from the row above it.

Rotate encoder ⑤ to change the scale color.

Rotate encoder ⑥ to change the scale type.

Rotate encoder ⑧ to set the way that notes are displayed on the pad matrix:

KEY
Displays a simple layout indicating the different positions of the root note and of the played notes.

NOTES IN PATTERN
Only displays the notes that are stored in the **step** mode of the current pattern.

CHROMATIC+SCALE
Always displays the chromatic scale (all the 12 notes), but highlights the notes of the currently selected scale.

3.3. Scales

COLORS

Hapax comes with 72 factory scales, sorted by families called colors.

Scales of the same color are sharing the same third and/or seventh degree, so that you can replace a scale by another of the same color without radically changing the feel of you track.

The different colors are listed below, along with their respective scales :

MAJOR

Major, Harmonic, Augmented, Pentatonic, Pentatonic (V), Pentatonic (Ionian), Arabic

MINOR

Dorian, Aeolian, Phrygian, Japanese, Spanish, Pentatonic, Pentatonic Dorian, Pentatonic Pelog, Blues, Romanian, Gypsy b7, Hawaiian, Melodic, Harmonic, Diminished, Gypsy

DOMINANT

Myxolidian, Arabic, Blues, Pentatonic, Pentatonic (IV), Pentatonic (D II), Lydian, Melodic Major, Phrygian, Diminished, Tritone, Altered, Rock n Roll, Whole Tone, Inverted (Aug)

SUSPENDED

Mixolidian, Pentatonic, Ritusen, Dorian (b2)

HALF-DIMINISHED

Half-Diminished, Locrian, Pentatonic Minor b5

DIMINISHED

Diminished, Half Tone, Romanian, Ultralocrian, Blues Heptatonic

MESSIAN

2nd mode T, 3rd mode, 4th mode, 4th I mode, 5th mode, 5th I mode, 6th mode, 6th I mode

INTERVALS

Minor Thirds, Major Thirds, Fourths, Fifth Octave, Octave

3.4. Hold and relatch

Hold and Relatch options are accessible through the **PLAY** parameter on the left screen. All held or relatched notes will remain highlighted on the pad matrix.

Rotate encoder ② to enable Hold or Relatch.

HOLD
The classical toggle mode. When notes are played, they will be held until the same notes are played again.

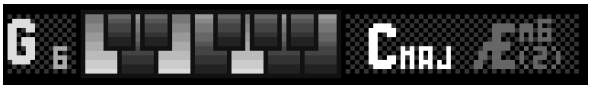
RELATCH
The held notes will be replaced by any new input of notes.

Tip Hold is very useful when designing drones/synth pads or experimenting with effects, such as an arpeggiator.

3.5. Chord recognition

The name of the currently played chord is displayed under the keyboard representation on the left screen. The number between brackets is the inversion index of this chord.

For example, if **C-E-G** is played, Hapax will indicate **Cmaj**, as well as the second chord name **Em6** in second inversion:



4. Livemode Chord

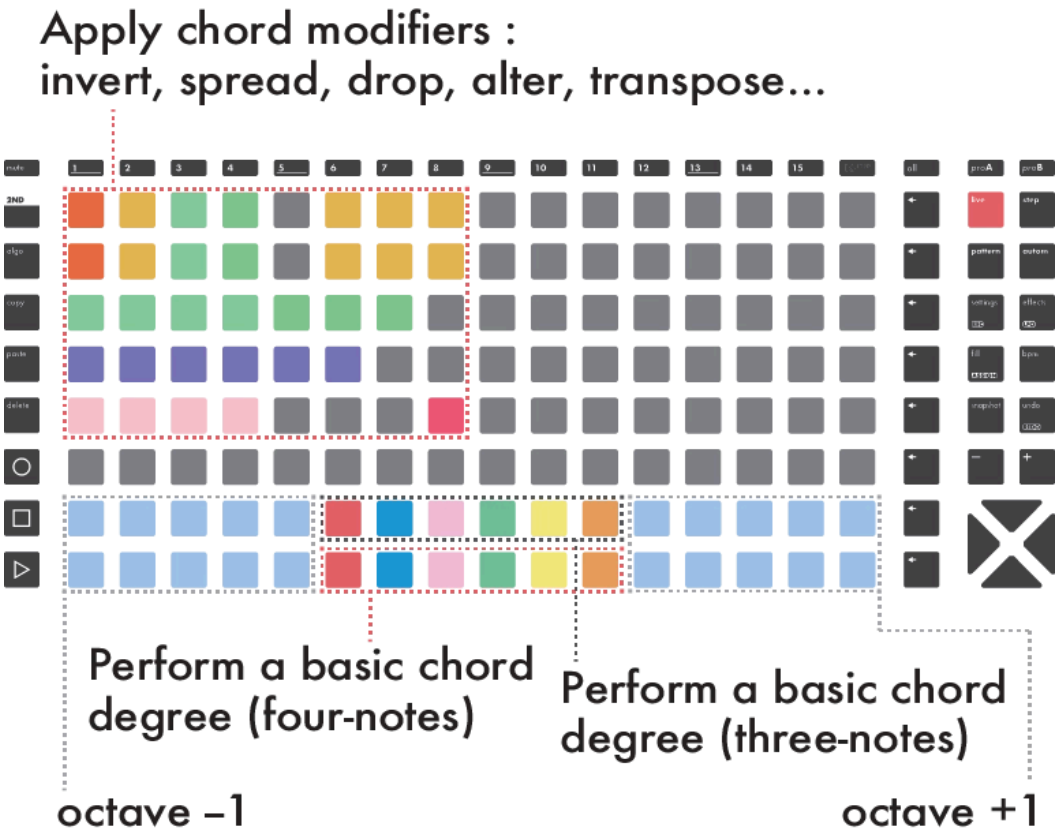
4.1. Overview

This mode gives access to a large variety of chords, harmonized to the currently selected scale, that can be used to generate complex harmonies.

No particular knowledge is required for using this mode, although based on solid musical theory.

The interface is designed to be played with both hands. The left side is focused on inversions, spreads, drops, alterations and other enrichments. The right side is used to play the different degrees of the chords.

Here is a description of those two main areas :



RIGHT HAND

Press the bottom pads to input an initial chord.

LEFT HAND

Press a pad of the left part of the pad matrix. A modifier will temporarily be added to the chord. Up to 8 modifiers can be stacked per track to enrich chords.
New! Pressing a pad will retrigger the modifier.

4.2. Right hand - Chord generator

Press a chord pad on the pad matrix to play a chord.

Rotate encoder ⑤ and ⑥ to select a selected scale. If a project scale in enabled, it will be used instead.

Each chord pad represents a scale degree : if the pentatonic scale is set, five chords will be available on the pads, as this particular scale contains five degrees.
Harmonizing a scale is done by stacking thirds of a scale.

As an example, a **C Major** scale harmonisation leads to the following chord degrees :

Maj7 - min7 - min7 - Maj7 - Dom7 - min7 - Half-dim

Scales, when used as basis for chords, entails vast possibilities, which are yours to discover!

4.3. Left hand - Voicings

Chords that are played by the bottom pads are in common root position. Add some modifiers to spice things up!

Up to 8 modifiers can be stacked per track. The stacking order is important, as each modifier is processed sequentially.

Press a modifier pad to momentarily add it to the list. Its name appears on the right screen.

Tip Hold **2ND** and **Press** a modifier pad to add or remove it from the list. The modifier no longer requires to press a pad to be applied.

The different modifiers are described below :

OCTAVE

OCTAVE +1/-1
Each chord note is raised/lowered by one octave.
OCTAVE +2/-2
Each chord note is raised/lowered by two octaves.

SPREAD

SPREAD UP
Takes one out of two chord notes and raises them one octave up.
SPREAD UP ++
Takes one out of two chord notes and raises them two octaves up.
SPREAD DOWN
Takes one out of two chord notes and lowers them one octave down.
SPREAD DOWN ++
Takes one out of two chord notes and lowers them two octaves down.

ROTATE +1 +2 +3 +4

Chord inversions are displayed under the keyboard representation on the left screen. Inversions are great for making chords match with each other.

VOICINGS

SPREAD UP+DOWN

Applies **SPREAD UP** and **SPREAD DOWN** at once.

WIDER INTERVAL DOWN

Rotates the chord until the wider interval is in the lowest part of the chord.

QUARTAL VOICING

Replaces thirds by fourths.

EXTENDED CHORDS

POWER CHORDS

Only keeps root & 5th.

SUS2

Replaces the 3rd by a 2nd.

SUS4

Replaces the 3rd by a 4th.

ADD 6TH

Replaces the 7th by a 6th.

ADD 6/9

Replaces the 7th by a 6th, and adds a 9th.

KENNY BARRON

Adds a 9th and an 11th. Best used on minor chords.

BASS (DROP)

BASS ROOT
Drops the root note by an octave.
BASS THIRD
Drops the 3rd by an octave.
BASS FIFTH
Drops the fifth by an octave.
BASS SEVENTH
Drops the 7th by an octave.

TRANSPOSE **+1** **+2** **+3** **+4** **+5** **+7**

Transposes the entire chord in semitones. **+5** is equivalent to a perfect 4th up, **+7** to a perfect 5th up.

4.4. Auto inversion

This special modifier unlocks for you a well known pianist skill, which is moving as few fingers as possible from one chord to another.

Press the red modifier pad to activate.

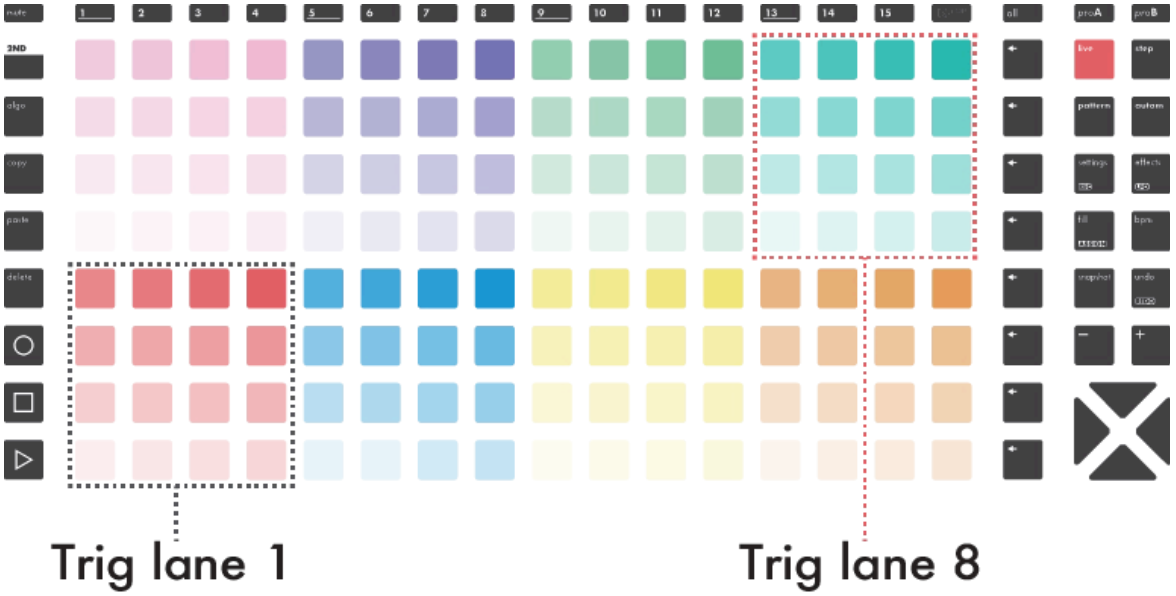
5. Livemode Drum

5.1. Overview

LIVEMODE DRUM is designed specifically for drum machines, grooveboxes and samplers. This mode gives you the ability to play your kits with different velocities.

Hold **step** and Rotate the main encoder to switch the track type to **DRUM**.

Then, Press **live** to enter the **LIVEMODE DRUM**.



The pad matrix is divided in 8 zones, corresponding to the 8 drum lanes of the track. Pressing a pad will trigger the sound mapped to the corresponding lane. The velocity values are indicated by the brightness of each pad.

Rotate one of the eight encoders to change the lane note number.

Hold & Rotate an encoder to change the lane output channel or gate number.

Tip For more information about **DRUM TRACKS**, please visit ***this section***.

6. Step mode

6.1. Overview

The **step** mode is a different way to create rhythms and melodies. Unlike the **live** mode — where you perform in real–time using the matrix keypads — this mode allows you to program sequenced events directly into the current track. It is a great way to get the best out of your synthesizers and drum machines.

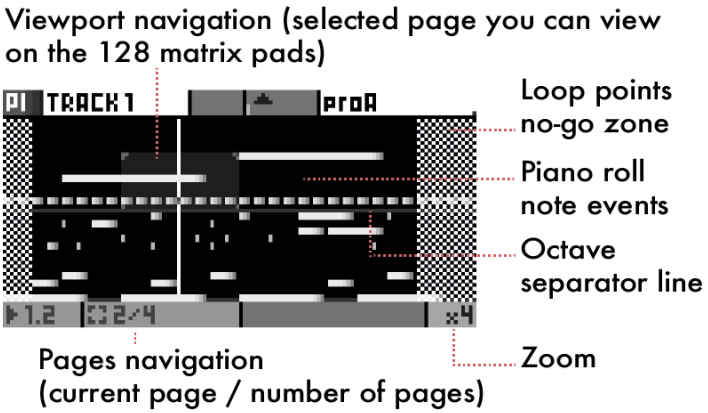
Hapax a 128–pad matrix to program step–by–step rhythms and melodies effortlessly and efficiently. The length of a track can be extended up to 32 bars. In conjunction with extreme zooms, conditional trigs, chance, loop points, selection, scale folding, run modes, possibilities are endless!

The **step** mode can also be used to edit a previously recorded live performance, using the piano roll view.

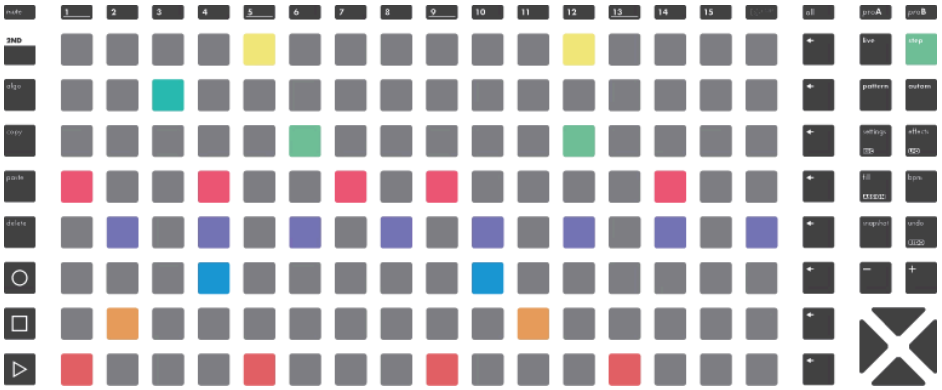
The **step** mode, like the **live** mode, always displays the events contained the current pattern of the active track. Each pattern of each track has its own events.

6.2. Piano roll overview

The piano roll is always displaying the full current pattern on the right screen. The grey rectangle inside is called the viewport. It indicates which portion of the page that is shown on the pad matrix.



The 128–pad matrix always displays the current page, depending on the current zoom and track length settings:



The lower–left pad holds the note set in the upper–left corner of the right screen.

Tip In case you are lost in the piano roll, a simple **step** Press will automatically focus the pad matrix onto the closest note.

By default, the displayed page follows the playhead. To temporarily lock the view to the current page, simply Press ▶ or ◀. A single **step** Press will revert back to the default behavior. This option can be permanently disabled in ***this section*** of the settings.

6.3. Basic operations

Press a pad of the matrix to add a note.

Tip Hold a pad (empty pad, or pad already containing a note) and Press another pad to set the end of the note. To set a length of 1 step, Hold the pad and tap a pad placed on the same column.

Adding a note while the sequencer is stopped will send a short pre–listen of this note to the output. This behavior can be disabled in ***this section*** of the settings.

Rotate encoder ① to set the lower–left note of the pad matrix. The main encoder can also be used. A third way to perform this action is to Hold **2ND** and Press ▼ or ▲.

Rotate encoder ② to set the octave. You can also Press ▼ or ▲.

Rotate the other encoders to change their corresponding parameters.

Press + to zoom in, Press - to zoom out.

Press ▶ or ◀ to navigate between pages.

Tip Hold 2ND + + or - to double or halve the length of the pattern.

Tip Hold 2ND + ▶ or ◀ to duplicate/divide the pattern along with its events.

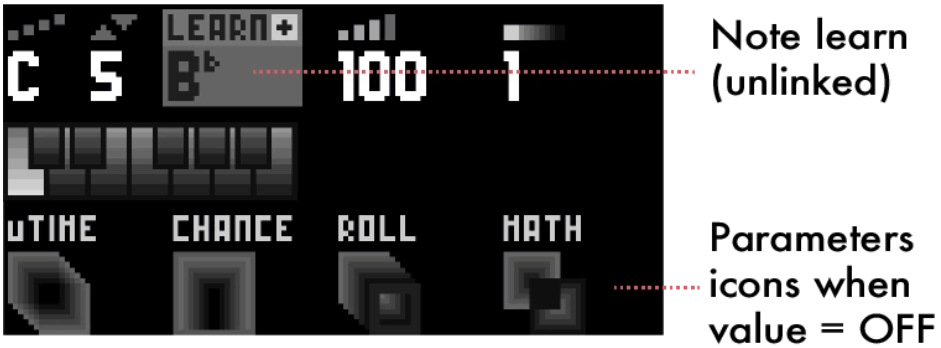
Tip Hold a pad of the matrix to override the global parameters with the ones contained in this pad (quick copy function).

Tip Hold mute and Press a pad in the matrix to mute it instantly. The note will be dimmed. To unmute it, repeat the same action or simply Press the matrix pad.

Hold track to enter the track settings.

6.4. Note parameters

Each note event includes its own set of 8 parameters : Note & Octave, Velocity, Length, µTime, Chance, Roll, Math.
Step parameters are visible on the left screen. Each one of them is connected to its own encoder :



To adjust the global note parameters, simply set the values with the encoders. The notes that will be added will be created with those attributes.

To modify the parameters of existing notes, Hold a pad or a selection of multiple pads.

Modifying the pitch, octave or velocity of existing notes while the sequencer is stopped

will send a short pre–listen of those notes to the output. This behavior can be disabled in ***this section*** of the settings.

PITCH + OCTAVE C0 (0) ... G10 (127)
Sets the midi note pitch & octave.

VELOCITY 0 ... 127
Sets the midi note velocity.

NOTE LENGTH 1/16 ... INFINITY
Sets the length of the note in steps. A step corresponds to a 16th note when using the default zoom. Infinite notes won't stop or be retriggered until the ◻ button is pressed.

New! Hold a pad containing a step, Press the encoder to highlight the **tick** value, then Rotate to finetune the note length:

uTIME –50% ... +50%
Time offset : slightly moves the note around its central step position. On the right (+) the note will be delayed, on the left (–) the note will play sooner.

CHANCE 0% ... 100%
Sets the probability for the note to be played.

ROLL 1/8 ... 1/256
Note will repeat throughout its length (ratcheting)

MATH /SYNC SYNC, /PREV PREV /1ST 1ST ...
Conditional trigs allow you to set a condition to a note to be played. Here are some examples :

- 1:2 — note plays the 1st time, every 2 loops
- 2:3 — note plays the 2nd time, every 3 loops
- !2:4 — note not plays the 2nd time, every 4 loops
- FILL — note plays if the fill button is pressed
- !FILL — note plays if the fill button is released
- PRE — note plays if last condition of track was valid

- SYNC — note plays if added on 1st step of a beat
- NT=0 — plays only if no other notes are played
- PB<5 — plays if last beat played less than 5 notes
- NO FX – note is not sent to the FX chain

Note All conditions are listed in the 'Math (conditional trigs)' section at the end of this chapter.

Tip When scrolling through the Math parameter, RGB leds are dimmed to highlight events with the same Math parameter. This visual feature also works for Roll and Chance parameters.

Tip **Hold** an encoder ①...⑧ to reset a parameter to its default value. For example, **Hold** **all** to select all notes, and **Hold** the uTime encoder ⑤ to quantize all notes to their closest time position.

6.5. Note selection

You can select one, or a group of notes to edit all their parameters at the same time.

Single-event selection

Hold a note on the piano roll. The pad color will change and the selected note parameters will be displayed on the left screen.

Keep holding the pad and **Rotate** one of the ①...⑧ encoders to change the corresponding parameter.

Tip Keep holding this pad and quickly tap another pad to set the end of the note (two-finger step length feature).

Tip **Hold** a note pad momentarily to override the global parameters values with the values contained in this note.

Multiple–events selection

Hold a pad on the piano roll, then Hold another pad to select multiple notes.

To perform a selection, you can also:
- Hold **all** to select all events.
- Hold a **row** to select a single row of events.
- Hold more than one **row** to select a range.

While selecting steps:
- Rotate an encoder to change the corresponding parameter.
- Press ▶ or ◀ to move your selection left/right.
- Press ▼ or ▲ to move your selection up or down.
- Press **mute** to mute/unmute your selection.
- Press **delete** to erase your selection.
- Press **copy** to save a copy (see **PASTING** below).
- Press **+** or **-** to warp or rotate (see **WARPING** below).

Tip By default, a multiple–events selection will select all notes on the vertical axis inside your selection. Hold **2ND** while making your selection to constrain your selection to the selected notes.

Tip Press **2ND** during an **all** or **row** selection to toggle between single–page and all–pages selection.

Pasting

To paste your copied selection:
Hold **paste** and Press a piano roll pad. When pasting, only the horizontal position is important (pasted notes pitch/octave will stay the same).

To paste a selection at a precise XY position (transposing the copied motif), Hold **2ND** + **paste** and Press a piano roll pad.

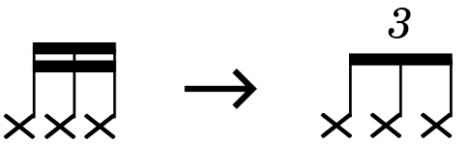
Warping

When a multiple-events selection is active, you can warp your events in time by using + and -. In other words, you can compress or expand rhythms.
Note The **MISC** setting "**SELECT +/–**" need to be set to **WARP**. Otherwise the selection will rotate when using + and -.

EXAMPLE 1

1. In zoom x1, place three events on consecutive pads, to create three 16th notes.
2. Now select these events, making sure the selection spans exactly three columns, i.e. three 16th notes.
3. Press +.

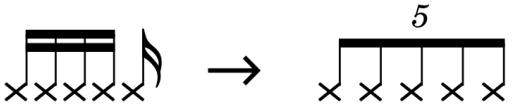
The three events now span four 16th notes, and are still regularly spaced, which results in triplets.



EXAMPLE 2

1. In zoom x1, place five events on consecutive pads, to create five 16th notes.
2. Now select these events, making sure the selection spans exactly five columns, i.e. five 16th notes.
3. Press -.

The five events now span four 16th notes, and are still regularly spaced, which results in quintuplets.



Of course, you can press + and - multiples times, and program complex rhythms, polyrhythms and swings easily.

6.6. Track length, zoom and navigation

Length

Each of the 16 patterns of each track can have a different lengths. The track length can be set between 1 and 32 bars.

To set it, Hold a **track** and use encoder ⑥. You can Hold + Rotate encoder ⑥ to increment the length in steps.

Tip Quick length modifiers :

Hold **2ND** + **+** to double pattern length
Hold **2ND** + **-** to halve pattern length
Hold **2ND** + ◀| to double pattern length and copy events
Hold **2ND** + |▶ to halve pattern length and delete events

Zoom

Press **+** or **-** to zoom in or out.
Press **+** and **-** at the same time to Toggle between regular and triplet zooms.

Navigation

A page is what you can see on the matrix pads, represented by the smaller grey rectangle on the piano roll screen, called viewport.
When increasing the track length or zoom values, the viewport will exceed one page.
The piano roll screen will always display the entire pattern with all its pages.

Press |▶ or ◀| to navigate to previous or next page.

6.7. Loop points

Loop points allow you to set up in real–time where your pattern begins and ends. Only the pattern inside your loop points will be played. You can set different loop points for every pattern within every track.

When composing, it is a great way to loop a small part you want to focus on. When performing, you can play with track positions and create interesting effects like beat repeats or polymeters.

Hold ▶ and Press one of the 1...16 **track** buttons to set your loop point start.

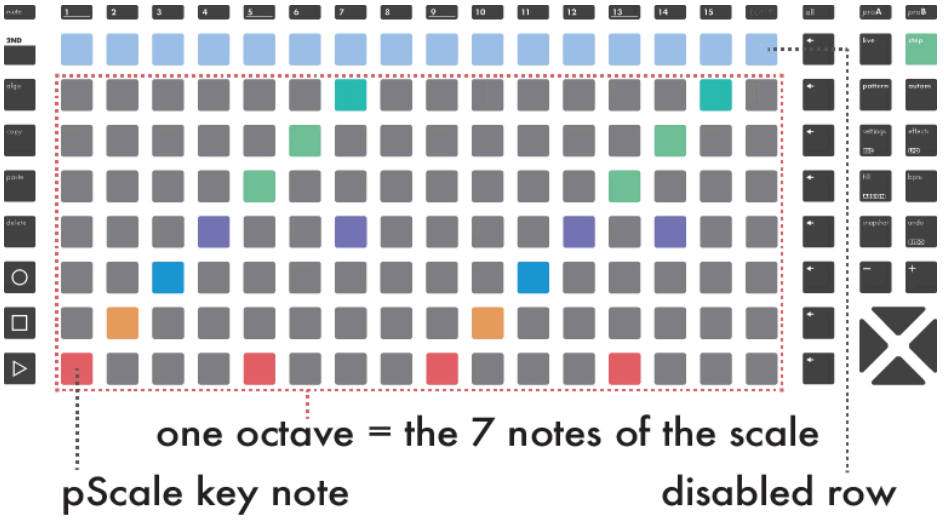
Hold ◀ and Press one of the 1...16 **track** buttons to set your loop point end.

Press both ▶ + ◀ to remove the loop points.

6.8. Project scale (pScale)

Hold **proA** or **proB** to enter the project settings.
Set the **pScale** param to **ON** to enable the project scale.

When a global **pScale** is enabled, the matrix pads only show the notes of the selected scale:



There are never more than 8 notes in a scale, so the 8 rows will always show the same note. For example, if the key note of the scale is **F**, the bottom row will always display

the **F** note of the selected octave.

Once **pScale** is enabled, only in–scale notes can be added with the matrix pads. The vertical navigation in the piano roll is now octave by octave. This simpler interface garantees that no out of scale note can be added anymore.

Tip Even with **pScale** set to **ON**, you can disable it for individual tracks in their secondary setting window.Press **2ND** + Track and set **pScale** to **OFF**.

6.9. Mono edit

New! Use the shortcut **2ND** + **step** to enable the **MONO EDIT** mode.

It allows you to edit the track in a monophonic way. Whenever you add a new step to the track, all the other steps sharing the same vertical position will be automatically removed.

When enabled, a message appears on the left screen:

On the matrix pads, if a note is placed in a step but is 'out-of-scope' (either above or below the visible range), a blue gradient will appear to indicate that the step is occupied.

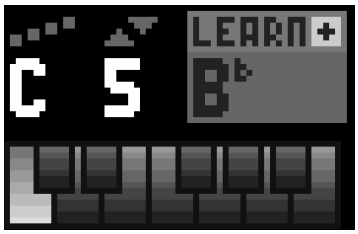
Tip You can also enable the **MONO EDIT** mode in the *secondary track settings*.

6.10. Note learn

NOTE LEARN can learn both single notes and chords (multiple notes) from either the **live** mode keypads or an external controller.

Before playing any notes, the left screen will show:

Before enabling **NOTE LEARN**, it is necessary to first play a note on the **live** pads, or on an external keyboard:



At this point, Hapax is not learning notes at this stage, but it has recognised the note input. Press encoder ② to enable **NOTE LEARN**. The display will change to:

The pads are now reflecting notes played in **live** mode, or on an external keyboard. Playing a single note will move the view, so that the bottom row follows the note pressed.

To add this note, Press a pad on the bottom row.

However, if a chord is learnt (e.g. **C +2**), Press any pad in the column to add this chord to the pattern. If notes were previously added on this column, they will be first deleted.

To turn **NOTE LEARN** off (and so stop the view moving when note are performed from an external controller), simply Press (or rotate) encoder ① or ②.

Tip Press **2ND** + **settings** to enter **REC SETTINGS** and Rotate encoder ① to completely disable **NOTE LEARN**.

6.11. Math (Conditional Trigs)

Also known as "Conditional Trigs" in the sequencing vocabulary, the math operations are conditions that you can add to individual events to modify their behavior.

A **"!"** before a condition means **NOT**. For example **!FILL** has the opposite behavior of **FILL**.

FILL

FILL Note plays only when **fill** is held.
!FILL Note plays only when **fill** is not held.

CONDITIONAL

1ST Note plays on first pattern playback.
!1ST Note does not play on first pattern playback.
PRE Note plays if last condition was valid (track level).
!PRE Note plays if last condition was not valid.

SYNC

SYNC Note plays if added on 1st step of a beat.
!SYNC Note plays if not added on 1st step of a beat.

NOTES

NT=0 Note plays only if no other notes are played.
NT<2 Note plays if less than 2 notes are played.
NT<3 Note plays if less than 3 notes are played.
NT<4 Note plays if less than 4 notes are played.
NT<5 Note plays if less than 5 notes are played.

Those conditions are applied at project level.

LAST STEP / LAST BEAT

PS=0 Note plays if last step played zero notes.
PS<2 Note plays if last step played less than 2 notes.
PS<3 Note plays if last step played less than 3 notes.
PS<4 Note plays if last step played less than 4 notes.
PS<5 Note plays if last step played less than 5 notes.

PB=0 Note plays if last beat played zero notes.
PB<2 Note plays if last beat played less than 2 notes.
PB<3 Note plays if last beat played less than 3 notes.
PB<4 Note plays if last beat played less than 4 notes.
PB<5 Note plays if last beat played less than 5 notes.

Those conditions are applied at project level.

ONE IN...

1:2 ... X:Y Plays the note X time each Y loops.
!1:2 ... !X:Y Does not play the note X time each Y loops.

NO FX

FX IF FILL Note sent into the FX chain if fill is held.
NO FX IF FILL Note not sent into the FX chain if fill is held.
NO FX Note never sent into the FX chain.
Note The FX chain also includes the **pSCALE** and **pTRSP** effects. The parameter **NO FX** notes will also bypass these effects. *Click here for more info*.

Tip When fill is held, adding notes (or recording them) will force them with **MATH** = FILL.

6.12. Step–rec mode

New! Step Recording, inspired by the SH-101, TB-303 and CS70 synthesizers, provides an alternative way to program notes into the sequencer, without having to play them in real-time.

To enter Step–rec mode, press **live** and **step** together.

In this mode, you can input notes using either an internal or external keyboard. As you enter each note, it gets added to a sequence displayed on the screen. Once you've finished inputting the notes, press **APPLY** to fill the pattern with the sequence you created in the order, length and rhythm defined.

To input a chord, play multiple notes simultaneously and release them: the chord will be recorded as a single step.
— If you prefer monophonic sequencing, enable **MONO** mode. In this mode, each played note will occupy its own step, disabling polyphony.
— You can also enable the **MONO + LEGATO** mode. When you play a new note while holding another, the two notes will slightly overlap, creating a legato/glide effect (if your monophonic synthesizer supports this feature).

These controls are available by clicking the encoders:
- **APPLY** : add the Step–rec sequence in the current pattern
- **REST** : insert a silence between notes
- **TIE** : extend the previously added note
- **BACK** : reset the previous step
- **CLEAR** : reset the Step–rec

By default, when applying the recorded sequence, notes are added at a **1/16** rate. You can adjust this timing using the **RATE** encoder.

In the example above:

- step 1 contains a single note.
- step 2 contains a single note.
- step 3 is tied to step 2.
- step 4 is a rest.
- step 5 contains a single note.
- step 6 contains a 4-note chord.
- step 7 contains an 8-note chord.
- step 8 contains a single note.
- step 9 is empty, awaiting input.

Note The maximum steps of the Step–rec sequence is 32. The maximum note polyphony per step is 16.

Tip You can assign **REST** and **TIE** to the footswitch in the settings.

Tip To delete all notes applied in the current pattern, Hold **delete** + Press **step**

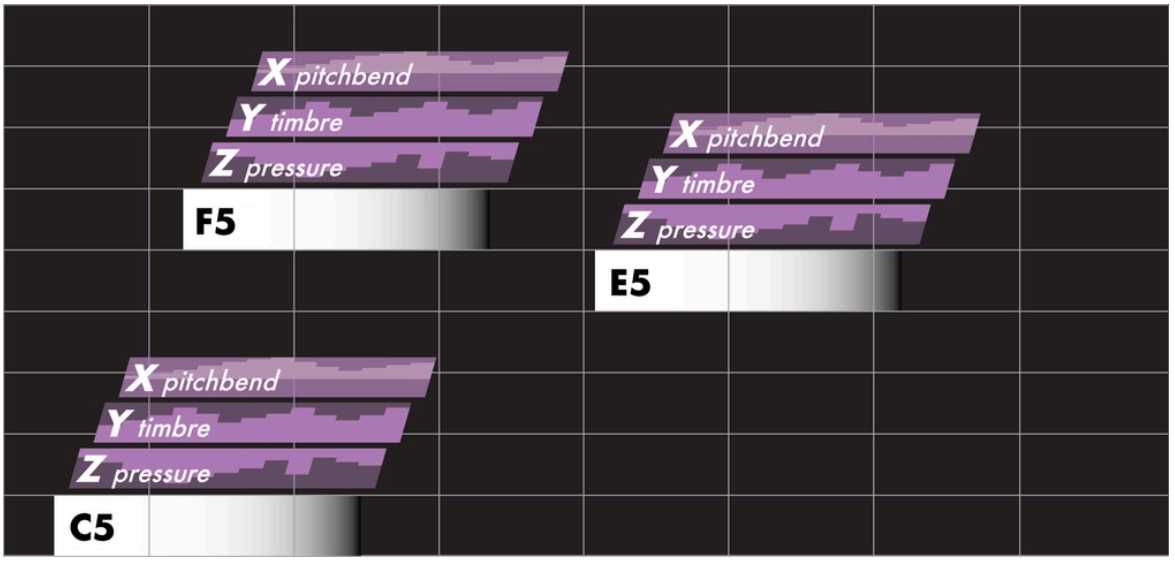
7. MPE Tracks

7.1. Overview

MPE, or Midi Polyphonic Expression, is a recent specification of musical instruments data exchanges, based on MIDI.
It allows to play a synthesizer in an expressive, articulated way, that approaches the sound and feel of acoustic instruments. Hapax can record MPE controllers, with which you can simultaneously modulate several parameters on distinct notes, like timbre, tonality, pressure or volume.

MPE and **POLY** track types are very similar, but in **MPE** type, Hapax can record and playback the 3–dimension XYZ expressions of individual notes, even when playing polyphonically.

These per–note messages are usually named Pitchbend (for X–axis movement), Timbre = CC74 (for Y–axis movement) and Finger Pressure (Z–axis movement).

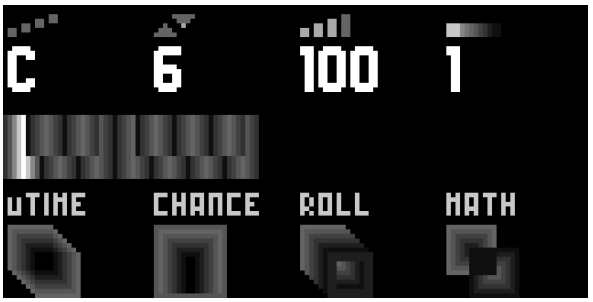


It's like having 3 automation inside each recorded note.

7.2. Recording and editing

Recording a track using an **MPE** controller is the same process as described in ***this section*** about recording in **live** mode.

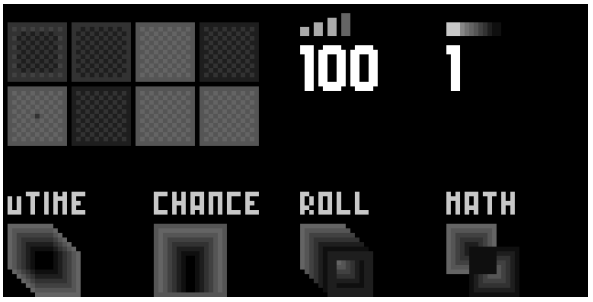
To edit an **MPE** track, you can use the same basic operations, parameter editing and note selection techniques that are described on this page. The **MPE** per–note expression controls can't yet be visualized and edited, but they are contained in the note pads of Hapax. This means you can move notes around, use copy, paste and every other tool at your disposal for editing your **MPE** recordings.



8. Drum Tracks

8.1. Overview

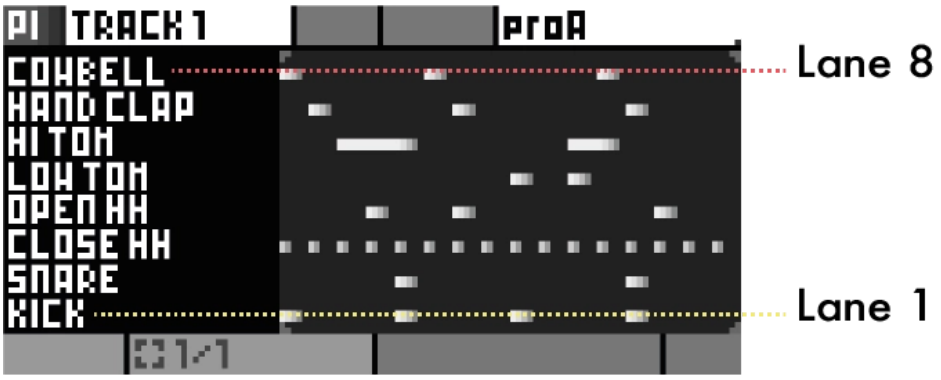
The **DRUM** track type is particularly suited for drum machines, grooveboxes and samplers.

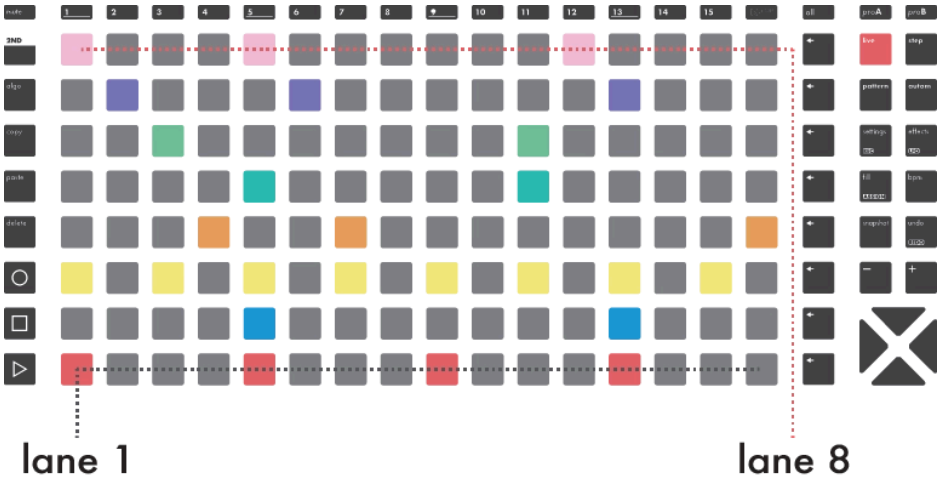


Once in step mode, Hold **step** and Rotate the menu encoder to set the track type to **DRUM**.

In this mode, each percussive element, along with its events, corresponds to a drum lane.

There are 8 lanes in total :





This step mode shares basic operations, selection & editing, copy/paste, mute and loop points with the **POLY** and **MPE** step modes.

A drum note has the same parameters as any other note: Velocity, Length, µTime, Chance, Roll, Math and Mute. Hold a pad to access its parameters.

New! Hold a pad and Press ▼ or ▲ for faster velocity adjustement (**HARD**, **PUNCH**, **MEDIUM**, **SOFT** and **GHOST** accents).

Tip To mute an entire lane at once, instead of muting each drum event individually using **mute** + Press on pads, you can Hold a **row** button to select all events and Press **mute**. Repeat the same action to unmute the lane.

New! The principal difference is that instead of pitch & octave parameters, a drum note has a **TRSP** (transpose) parameter. Changing this parameter will transpose the base midi note of the drum lane to allow for pitched drumming. Note that this only works if the corresponding lane outputs midi instead of CV or gate signals.

In the example above, the selected drum event has a **TRSP** of **+12**. The resulting midi note is also displayed (**60** = **C** note).

8.2. Select/Rename a lane

In **DRUM** tracks, events are organised in lanes. The lanes are, by default, named as follows:

1. Kick
2. Snare
3. Closed HH
4. Open HH
5. Low Tom
6. Hi Tom
7. Hand Clap
8. Cowbell

To select a drum lane, you can either Rotate the main encoder, or Press the **ROW** button corresponding to the lane.

To rename this selected lane, Press the menu encoder.

To move this selected lane position up or down, Hold **2ND** and Press ▼ or ▲.

8.3. Drum lane MIDI routing

A lane is characterized by its corresponding note. This means that events in a drum lane will always trig the same note. This is ideal for working with drum machines, which usually expect a given note for a given drum element.

Each lane can have its own particular pair of note/channel. It is also possible to have a lane triggering a gate output : you can mix and match multiple machines to create your drums ensemble.

To access the settings of a lane, Hold a **ROW** button:

INPUT 0 ... LINK ... 127

Rotate this encoder to set the note triggering this lane. **LINK** means that the **INPUT** and the **OUTPUT** parameters are linked: the same note will both trigger the lane and be outputed by it. Hold the encoder to reset it to this default value.

OUTPUT NOTE 0 ... 127

Rotate this encoder to set the note outputed by this lane. The **TRSP** parameter of drum events selection will transpose from this reference note.

OUTPUT CHANNEL CH TRACK CH 01 ... CH 16 GATE 1 ... GATE 4 CV 1 ... CV 4 CV/GATE 1 ... CV/GATE 4

Press the **OUTPUT** encoder to access this secondary parameter. Then Rotate this encoder to set the channel of the lane output.

- By default, it's set to **TRACK CH**, which means that the lane output channel will be the same as the track channel. Hold the encoder to reset it to this default value.
- A lane can also trig its drum events on a selected **GATE** output or a **CV** output (a **CV** output will act like a gate, with **0V–5V** trig levels).
- You can use the **CV/GATE** output to perform with drum accents (the gate will trig the event, the **CV** will output the drum velocity).

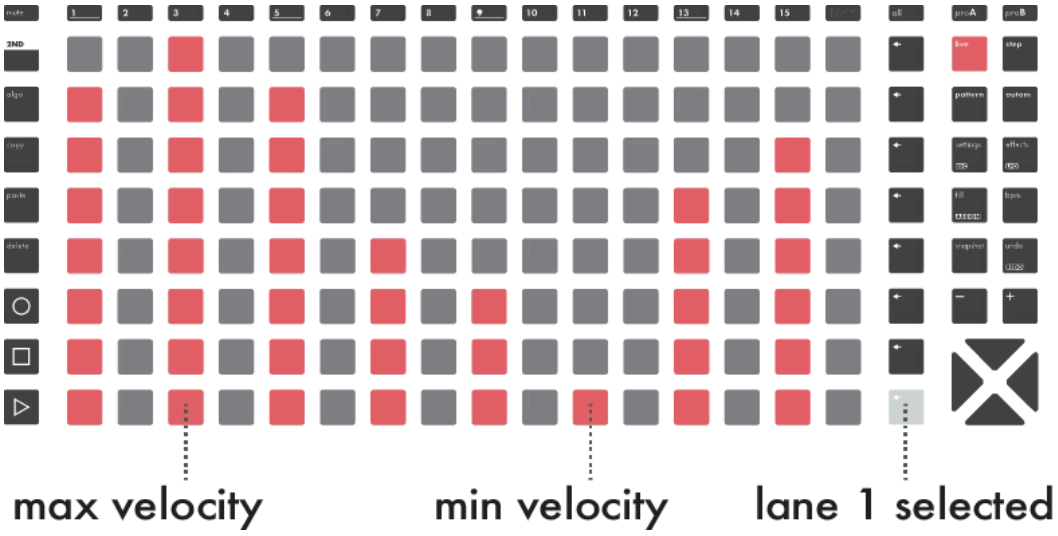
Note On **DRUM** tracks, the midi output channel defined in the track settings affect the lanes outputs only if **OUTPUT** = **TRACK CH**, and it will be used for MIDI automation lanes output.

Tip You can Hold multiple rows (or **all** rows) and adjust the **OUTPUT** notes of all selected lanes at once. This makes it easier to quickly route your track to an external drum kit.

8.4. Velocity view

To enter the **VELOCITY VIEW**, Hold **2ND** and Press a **row** to select the lane you want to edit.

In this submode of **DRUM**, the matrix pads show the note velocities of the selected drum lane. Press a pad to change the velocity of an existing note.

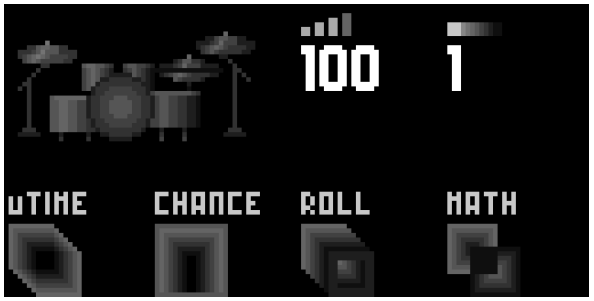


To exit velocity view, simply press **step**.

Tip Hold **2ND** and press a pad to add events from **VELOCITY VIEW**. Events will be created at a velocity corresponding to the pressed pad. Please note however that pressing the lowest row will delete existing events.

8.5. Drum Pads / Drum Kit animation

By default, the left screen displays animated drum pads that respond visually to the played MIDI events. To switch to a drum kit animation, rotate Encoder ①.



This is a purely visual feature with no impact on functionality. Choose the one that best suits your visual preference.

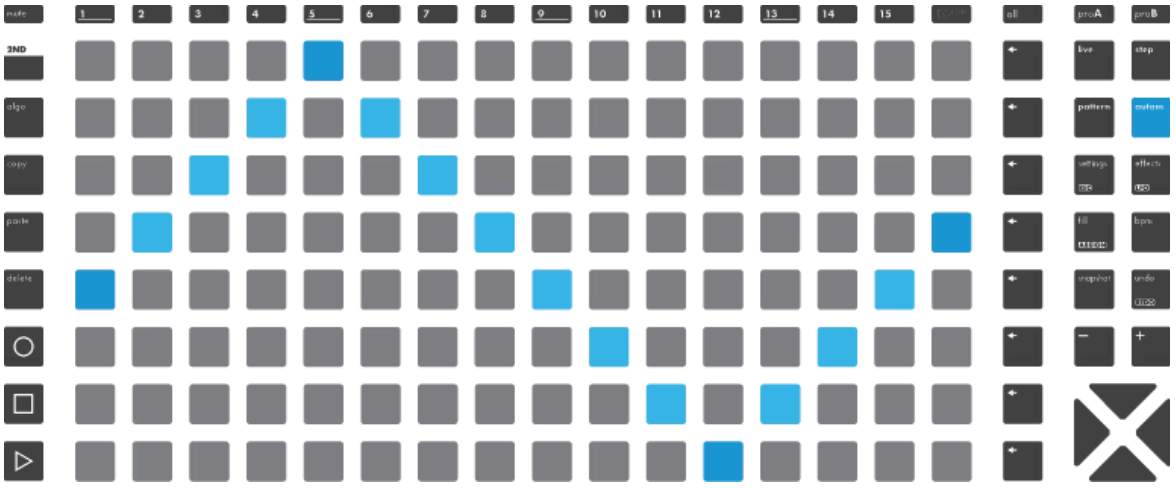
9. Automation mode

9.1. Overview

The **automation** mode enables you to record and draw automation curves into lanes.

Automation lanes can emit CC messages, control the effect parameters of their track, and even output control voltages.

Each track can hold up to 64 automation lanes, and each pattern of a track can have different automation events.



9.2. Creating an automation lane

The automation screen is divided in lanes. Scroll to the bottom of the list, and click on **+ ADD**. You will be prompted to choose a destination, which represents what you wish to automate.

DESTINATIONS

CC MESSAGES

PITCHBEND

AFTERTOUCH

PROGRAM CHANGE

VELOCITY – Overrides the velocity of the current pattern

NRPN MESSAGES – Non-Registered Parameter Number

PAIRS OF CC MESSAGES – For 14-bit CC MSB/LSB

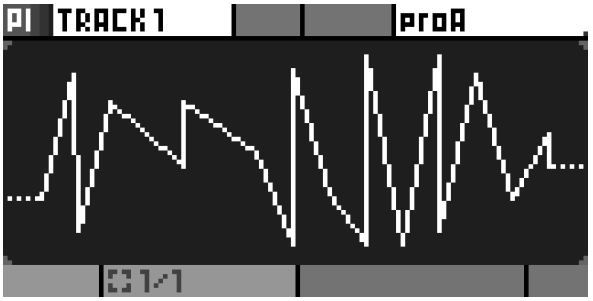
CV IN – For recording purposes

CV OUT

EFFECT PARAMETER

Once the automation lane is created, simply Press some pads on the matrix to add or remove automation points, called events.

Tip Hold **2ND** and Press a pad to put an event at the very end of the step for sharp transient:



The screen below shows the symbols used to represent the content of automation lanes:

Six automation lanes are created on the current track:

- **cc8** has events
- **cc14** has events and is locked
- **aftertouch** has events and is muted
- **CV out 2** has no events, but has a default value
- **pitchbend** has events (no interpolation)
- **cc4 + cc14** (NRPN) has no events

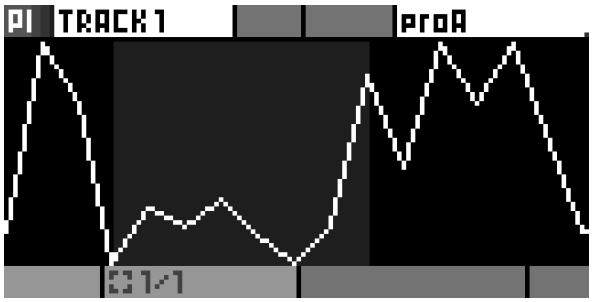
Tip It is possible to create a curve before selecting a destination. Simply Press some pads when **+ADD** is selected. This will create a **VOID** lane, with no destination. Click on a **VOID** lane to assign its destination afterwards. This helps sketching out ideas quickly, by storing curve shapes for later use.

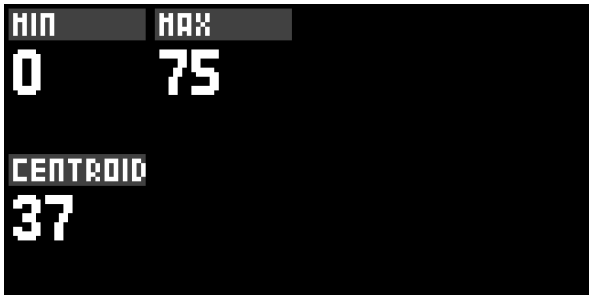
9.3. Editing an automation lane

To modify the parameters of an existing automation point, **Hold** a pad filled with an event. Its value will be displayed on left screen and the pad color will change. Scroll the associated encoder to fine-tune displayed value (e.g. 0 to 127 for a midi CC message).

New! While holding a single automation point, you can also **Hold** the encoder to reset the value to the default value.

To perform a multiple selection, **Hold** a pad on the matrix, then **Hold** another pad to select multiple events. You can now edit the parameters of all the events contained in this portion of curve, like its minimum and maximum values, as well as a parameter called centroid, which moves the central value of the curve:





9.4. Muting an automation lane

Simply scroll to the desired automation in the list, and press **2ND** + **mute** to mute this automation lane. You can also click on an automation lane and select the **MUTE LANE** option.

Note Mute states are per-pattern based.

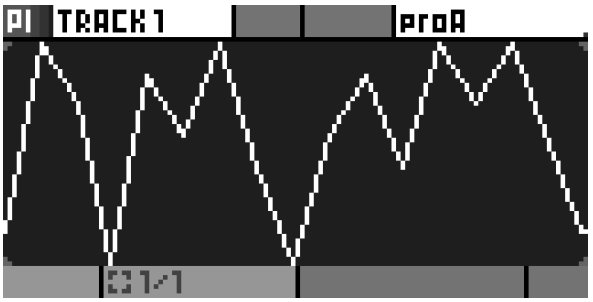
A muted lane is represented by the **M** status icon.

9.5. Interpolation

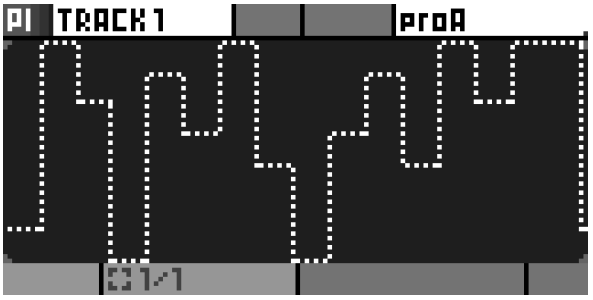
Rotate encoder ⑥ to enable this option and draw lines and curves using very few automation events. This saves memory and time, and can be easier for drawing certain shapes.

Disabling this parameter allow for drawing stepped automation, meaning that values will be held until the next change.

Interpolation ON

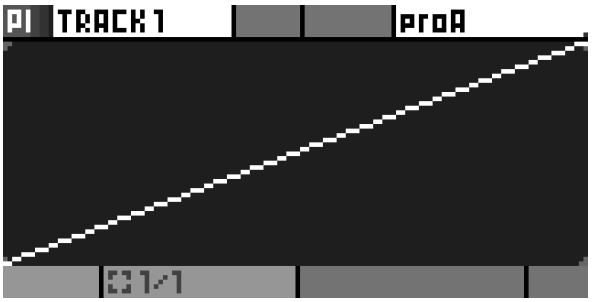


Interpolation OFF



The default status is always **ON** for automation lanes created manually. However, recorded automation are *not* interpolated by default, to keep the recording faithful to the original.

Tip Thanks to interpolation, a ramp can be drawn using only two points :

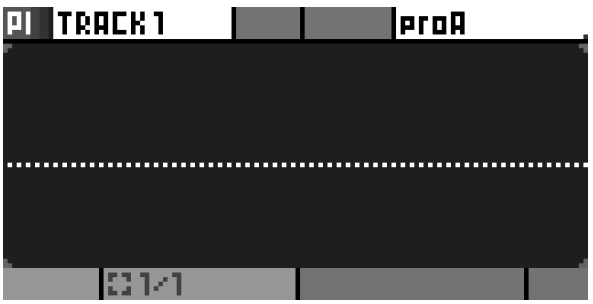


9.6. Default value

Encoder ⑧ allows you to define a default value that will be used if the automation lane is empty. Automation events are stored per pattern.

Default values are useful to send fixed values, without the need of creating any automation event. It also allows to reset a parameter after a pattern change.

For example, setting a default value of 0% on a pitchbend automation can be smart, to make sure that the pitchbend is reset upon switching to a pattern that does not automate pitchbend.



Tip If the default value is active on the current pattern, the lane will show the following status icon: "·..."

9.7. Automation lane context menu

Click on an automation lane to access additional features and actions :

MUTE LANE
Mute the selected lane.

CLEAR EVENTS
Deletes all events on the lane, for the current pattern.

DELETE LANES
Deletes the lane from the entire track. All events in all patterns will be deleted as well.

CHANGE DESTINATION
Changes the destination of a lane, without altering the events.

Note Data definition might change, depending on source and destination types : 16bits CV data will be downscaled to 7bits CC data.

COPY
Copies the automation lane events of the current pattern and destination.

PASTE
Used in conjunction with **COPY**, allows to paste an entire automation lane.

MAXIMUM RATE (192ppqn ... 1ppqn)
To avoid saturating a device with too many messages, automation lanes can be configured to output at a given maximum rate. For example, at 24ppqn, an automation lane can send a message at most 24 times per quarter note.

Tip While this is primarily intended as a safety feature, to not overload a MIDI device's bandwidth, it can have musical applications, as well. Limiting the max rate to 4ppqn, for instance, will send a message once every sixteenth note at most, which can create very rhythmical parameter changes. This is akin to a sample-and-hold function.

LOCK

With this parameter **ON**, the lane's automation events cannot be modified. Pressing pads has no effect. Recording will not overwrite the lane events, nor record new ones for this lane.

Tip This can prove useful to save a **CV IN** recording, as an unlocked **CV IN** lane will always be overwritten.

Tip When a lane is locked, the lane will show the following status icon: 🔒

9.8. Copy/paste lanes

Hold an encoder while **+ ADD** is highlighted to open a different context menu.

INSERT
Adds a lane. Same action as clicking **+ ADD**.

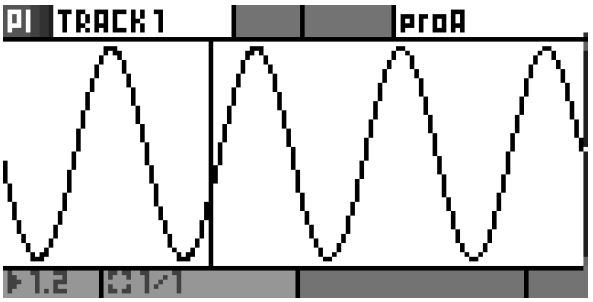
PASTE
In conjunction with **COPY**, pastes an entire automation.

PASTE TO...
Same as **PASTE**, with the possibilty of choosing the destination of the pasted events.

9.9. Recording an automation lane

When **REC** ○ is active, you can record incoming data as an automation for the active track.

For MIDI messages recording, such as CC, pitchbend or aftertouch, the lanes are created automatically, as soon as a event is received (with interpolation set to **OFF**) :



For CV in recording, lanes must be created prior to recording.

Tip To prevent overwriting a lane with incoming data, you may use the **LOCK** option described in the above section of this manual.

Note Recording of program changes and NRPN messages is not supported.

Note Regardless of the destination, you can store 1 data point per clock tick. Hapax has a resolution of 192ppqn (192 ticks per quarter note), which means that at 120BPM clock ticks are 2.6ms apart, resulting in a sampling frequency of 384Hz, which according the Nyquist Sampling Theorem means a maximum frequency of 192Hz can be captured.

Note For a given tempo, the maximum frequency that can be captured is: *f = 192 * (BPM / 120)*

10. Pattern mode

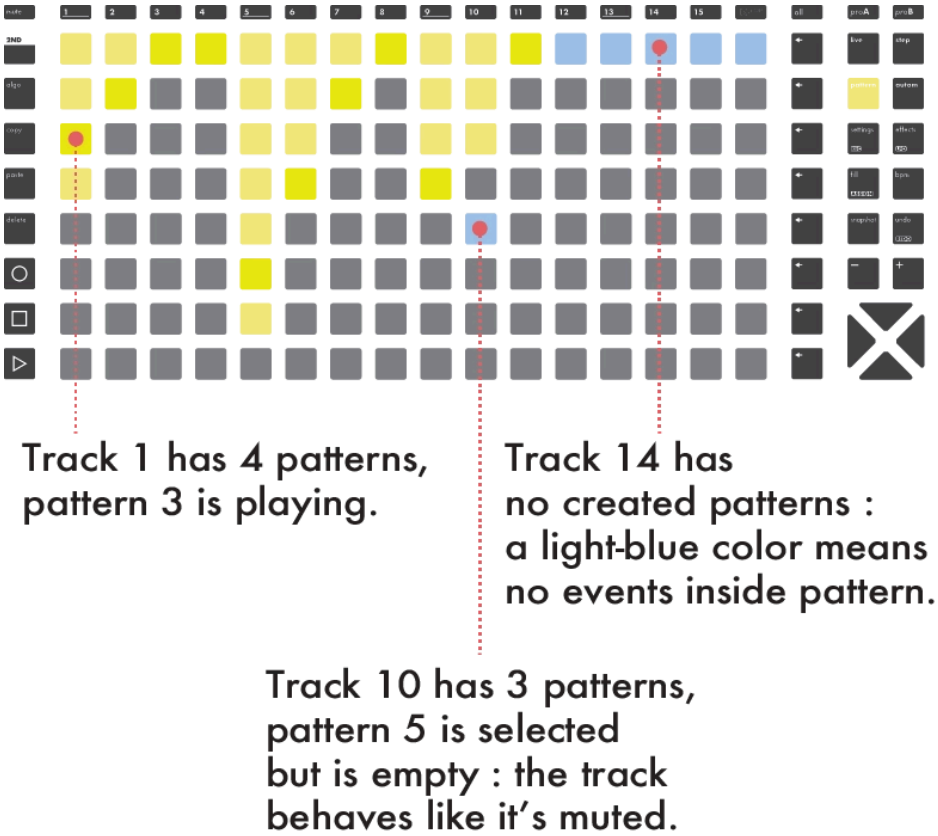
10.1. Patterns overview

Once your tracks are created, the **pattern** mode enables you to play with 256 patterns (16 patterns per track) and to arrange them into a song.

Each Pattern is a loop that contains polyphonic or monophonics notes and automation. Patterns hold their own events, lengths, runmodes, effect parameter values, ...

Unlike most sequencers, Hapax can assign a different pattern to each individual track: you can have track 01 play pattern 3 and, at the same time, have track 02 play pattern 4.

On the matrix pads, each column holds the 16 patterns for each of the 16 tracks:



8 patterns are displayed at a time. To view the other patterns, Press ▶ or ◀ to scroll the pattern list by single increments. You can also jump between the two pages of 8 patterns with a Press of ▲ or ▼. The left screen indicates the patterns that are currently shown on the pads.

Tip From any mode : **Hold** **pattern** + any matrix pad to quickly select (and instantly launch) the pattern you want to edit.

Pattern mode has different playback types to choose from, using encoder ① :

PERFORM

To manually perform with patterns (default).

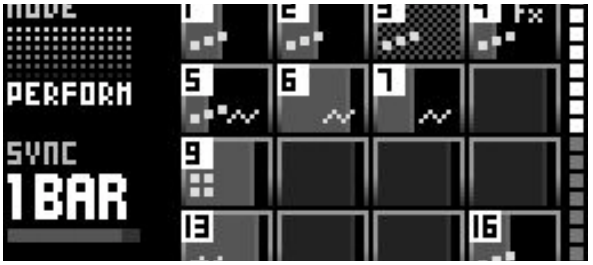
PLAY SONG

LOOP SONG

Please refer to the *Song* chapter ***below***.

10.2. Patterns progress bars

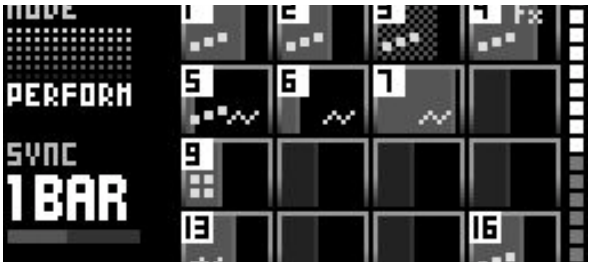
On the left screen, you can see a progress bar for the current pattern of each track, playing in concurrency. As each pattern have its own length, the progression % may be different, leading to polymetric effects.



This screen also displays the content of your tracks. In the upper example:

- Track 1, 2, 3, 4, 16 contain notes
- Track 5 contains notes and automations
- Track 6, 7 only contains automations
- Track 9 only contains drum events
- Track 13 only contains MPE notes
- Other tracks are empty (no events in any patterns)

The 16 squares on the right of the screen are indicating the 8 patterns that are currently displayed by the pad matrix. In the below, the matrix pad are showing patterns 2 to 9:



10.3. Launching patterns

There are 2 ways to launch patterns:

- Press a matrix pad to select the playing patterns of a track.
- Press one of the 8 **row** buttons to simultaneously launch the 16 patterns of the row.
  This is the classic sequencer workflow, where one sequence = a set of 16 parameters

10.4. Synchronized pattern changes

In order to ensure proper musical timing in regard to pattern changes, pattern mode has a **SYNC** option. This allows you to schedule a change, for it to occur perfectly on the next beat, the next bar, or whichever time division you choose.

Rotate encoder ③ to set the sync division. When the sequencer is playing, a scheduled pattern led will blink, indicating that it is waiting for the next sync division to be launched.

Tip When using **SYNC = PTRN**, the new pattern will be launched when reaching the current one's end.

On the left screen, a bar is showing the progression % of the selected sync:

10.5. Muting a pattern

To mute a single pattern, Hold **mute** and Press a pad containing a pattern. To unmute a pattern, repeat this action, or simply press the pattern pad.

A muted pattern will never output any midi event, either coming from an external controller, the live mode, the step mode or midi effects.

Note You can create a section with a muted pattern: the section will retain the mute state.

Tip Selecting an empty pattern is an other easy way to cut a certain track. Please note that this method does not mute incoming messages, or messages generated by effects.

10.6. Editing pattern parameters

Like **step** and **automation** modes, **pattern** mode responds to single and multiple selections. You can only edit multiple patterns at once if they belong to the same track.

Hold a pad to edit a specific pattern's parameters, namely:

PC (LSB, MSB)
Program change midi messages to be sent when transitioning to this pattern. Optional extended PC logic with MSB/LSB.
Tip To access extra options, Press encoder ① to enter the *Pattern PC popup*.
Note For further detail on PC, please refer to the *Pattern Program Change* section *below*.

TRIG FREE RESTART

"RESTART" will reset the new pattern position to its beginning after a pattern change. Default value "FREE" will keep the previous pattern position : the playhead will not jump.

COLOR RGB1 ... RGB8

Sets the color of the selected pattern, or group of patterns. The 8 available colors can be edited in the palette, under the MISC settings.

LENGTH 1 STEP ... 32 BARS

Sets the duration of the pattern, in 16th notes (steps).Hold and Rotate encoder ③ to access finer increments and odd pattern lengths.

RUN – REVERSE PING-PONG RANDOM BAR RANDOM BEAT RANDOM 1/16

Sets the pattern playback mode. It can be played forward, in reverse, in ping-pong, or randomly (every bar, every beat, every 16th note).

Note The first 4 parameters, **PC**, **TRIG**, **LENGTH** and **RUN** can also be accessed to by a **track** Hold.

Note The other parameters, **FOLLOW LENGTH**, **FOLLOW 1** and **FOLLOW 2** are detailed in the next section, 'Pattern follow actions'.

Tip Press **2ND** while making a selection to extend it to the whole column.

10.7. Pattern Program Change

Patterns can be assigned a specific MIDI "Program Change" message, to be sent when the pattern is launched. Tying a program change to a pattern ensures you'll always get the right sound with the right pattern.

MIDI Program Change: PC messages are used to change presets on MIDI instruments. The value of the PC message (0-127) corresponds to a specific preset, enabling quick changes in sound during performance without manual adjustments. This feature is essential for selecting various instruments, tones, or patches stored in your device, facilitating seamless transitions between preset sounds in a MIDI sequence or live setup.

MSB / LSB (a.k.a. MIDI Bank Select): For instruments with a large number of presets organized into banks, MIDI Bank Select messages are used alongside Program Change messages to access all available sounds. Bank Select consists of two parts: the Most Significant Byte (MSB) and Least Significant Byte (LSB). These are Control Change (CC) messages, where MSB defines the general bank and LSB provides finer control within that bank. Once the correct bank is selected using MSB and LSB, a Program Change message is sent to choose the specific preset from that bank. This combination enables access to thousands of presets across multiple banks on advanced instruments.

Pattern PC can be set with fine-grained control within the *Pattern PC popup*.

>APPLY
This will apply your desired changes, but no message will be sent, until the pattern is launched again.

>APPLY&SEND
This will apply your desired changes, and immediately send the set PC/LSB/MSB messages.

PC – 1 ... 128
Value of the MIDI Program Change message.

MSB – 0 ... 127
Value of the MIDI Bank Select MSB message.

LSB – 0 ... 127
Value of the MIDI Bank Select LSB message.

INSTR DEF ...
This will contain the list of PCs defined within the Instrument Definition file, provided one was loaded onto the track. This list provides quick access to predefined combos of PC/MSB/LSB messages (e.g. your favourite presets).

PRE-SEND – ON
Certain instruments take a certain amount of time to load a preset after receiving a Program Change message. Therefore, it can be benefitial to send the PC messages in advance, to ensure that the correct sound is loaded when we eventually launch the next pattern. Please note this setting is applied to the entire track, not per-pattern.

WHEN CHANGED ALWAYS
This sets the 'user preference' for when to send the PC message tied to that pattern.
CHANGED sends the Program Change message only if it differs from the previously sent message. This is the default behaviour.
ALWAYS sends the Program Change message every time the pattern is launched.
The CHANGED setting is useful when switching between several patterns with the same PC, while actively changing/modulating the instrument parameters. Let's say for example you're manually opening the filter on your synth during a live performance, suddenly reloading the preset would cause the cutoff to suddenly jump back to its original position, which could be a jarring contrast in the sound. On the other hand, using ALWAYS could ensure you always go back to a known state when launching the pattern, even if you just went wild on the controls on the previous pattern which technically shared the same preset.

>CLEAR
This will reset PC, LSB and MSB values to "none".

Tip The *Pattern PC popup* can be opened either:

In **pattern** mode
Hold one or multiple patterns of a track to access their parameters, then Press encoder ① to enter the Pattern PC popup - the chosen PC/MSB/LSB will apply to all selected patterns.
In any mode

Hold a **track** button then Press encoder ① to enter the Pattern PC popup - the chosen PC/MSB/LSB will apply to the active pattern of the selected track.

Note Events that cause Pattern PC messages to be sent

Event	Send
Pattern Launch	🟢
Section Launch (section tab)	🟢
Song Section Launch (song tab)	🟢
Double Stop	🟢
Triple Stop	🔴
Load	🟢
Snapshot: GREEN ↔ RED	🟢
Pattern: PERFORM ↔ SONG	🟢
Pasting a pattern on the active pattern	🟢
Track Hold Menu - PC encoder rotation	🟢
Pattern Hold Menu - PC encoder rotation	🟢 *
Pattern PC Popup - "APPLY&SEND"	🔴 *
Project unmute	🔵
Track unmute	🔵

🟢 sent according to the "WHEN" setting

🔴 always sent

🔵 sent if changed

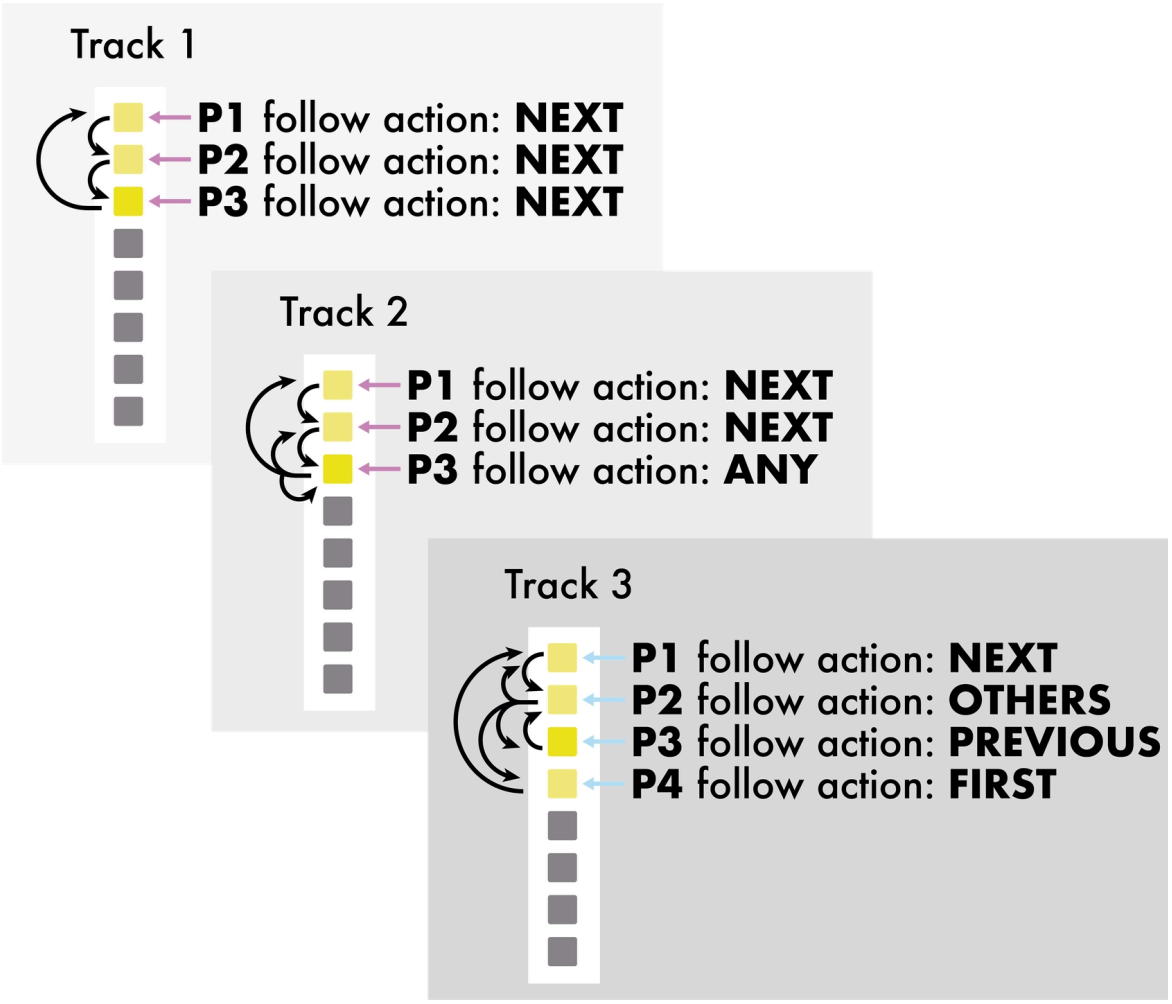
* only if the active pattern is concerned

Note If any of these events occur while a track is "silent", the PC messages will be "quarantined" and sent only when the track is no longer silent. A track is considered "silent" if it is muted or temporarily muted, if another track is solo-ed, or if the project it belongs to is muted.

Note While Pattern PC are usually only sent when a pattern changes, unmuting a project or a track might also resend a PC message. This addresses the potential issue of conflicting PCs accross tracks or projects. Let's say proA TR1 and proB TR1 are targetting the same output and the same channel, but when one is playing, the other is muted. During a performance, they are muted/unmuted in turn. If the pattern PCs are not the same, switching back and forth between these two tracks would ideally also switch back and forth between the two preset sounds.

10.8. Pattern follow actions

By using follow actions you can automate pattern triggering and add some randomness to your patterns launches. When a follow action is set within a pattern, this pattern will apply the chosen action at the end of the pattern playback.



Each action applies within a contiguous group of patterns. For example, if the first 3 patterns have the follow action set to **NEXT**, they will cycle within this group.

In **pattern** mode, Hold one or multiple patterns of a track to access their parameters.

FOLLOW 1

Rotate encoder ⑦ to choose a condition :

–

No follow action.

STOP

Stops (mutes) the currently playing pattern. No subsequent patterns will be triggered. Useful for creating "one-shot" pattern playback.

NEXT

Triggers the next pattern in the group. Circles back to the first pattern if called by the last pattern of the group.

PREVIOUS

Same as **NEXT**, but triggering the previous pattern in the group.

ANY

Triggers any pattern within the group.

OTHER

Same as **ANY**, but never retrigs the same pattern twice.

FIRST

Jumps to the first pattern of the group.

LAST

Jumps to the last pattern of the group.

Tip Press encoder ⑦ momentarily to highlight the % value, then Rotate this encoder to set the probability of this **FOLLOW ACTION** to happen. This action will automatically balance with **FOLLOW 2** chance percentage.

FOLLOW 2 **–** **NEXT** **...** **LAST**

Rotate encoder ⑧ to choose a condition. The actions are the same as in **FOLLOW 1**. Set the two **FOLLOW ACTIONS** and adjust their probabilities to create probabilistic jumps.

FOLLOW LEN 1 STEP ... 32 BARS
By default, **FOLLOW ACTIONS** will be triggered at the end of a pattern (pattern length).
Rotate encoder ⑥ to set a new duration for the **FOLLOW ACTION** jumps.
Hold + Rotate encoder ⑥ to define finer increments.

Tip The trig mode (**FREE/RESTART**) can be used in conjunction with follow actions. For example, the default **FREE** mode allows for conditional jumps from one pattern to another without restarting them.

10.9. Copy, paste, delete & move patterns

To copy a pattern, Hold **copy** + Press a pad.
To paste a pattern, Hold **paste** + Press a pad.
To delete a pattern, Hold **delete** + Press a pad.
To move a pattern, Hold a pattern + Press ⧗ or ⧖.

Note It is possible to copy a pattern and paste it to a different track.

Tip To copy an entire row of patterns across all tracks, Hold **copy**, and Press a **row** button. Then, you can Hold **paste** and Press the destination **row** to paste those patterns.

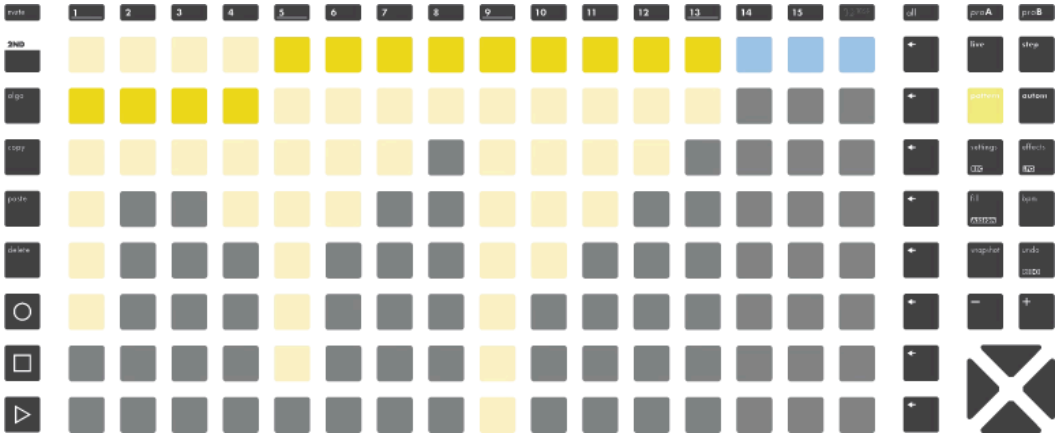
10.10. Sections overview

While the matrix pads are very convenient to perform patterns by hand, more control might be desired using written **SECTIONS**.

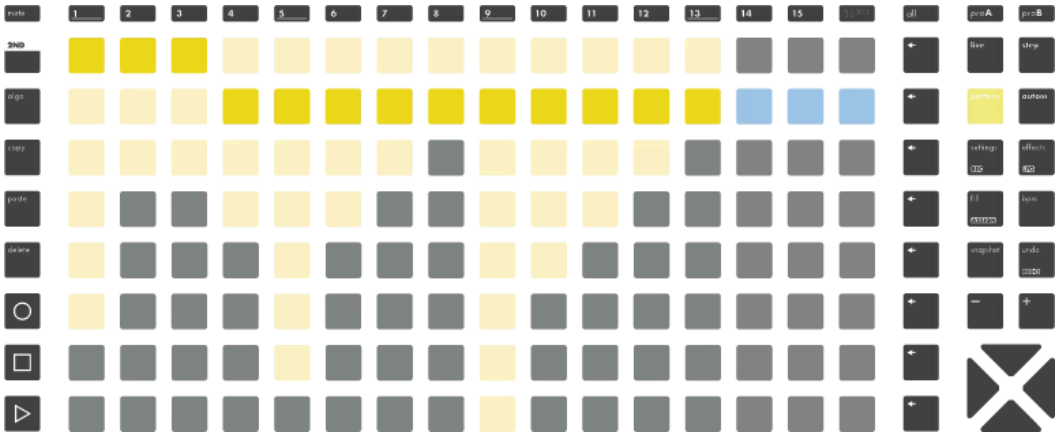
A section is a precise arrangement of patterns.

Let's see some examples:

We need a section called "Intro", with track 1 to track 4 playing pattern 2, and other tracks playing pattern 1.
On the grid, it would look like :



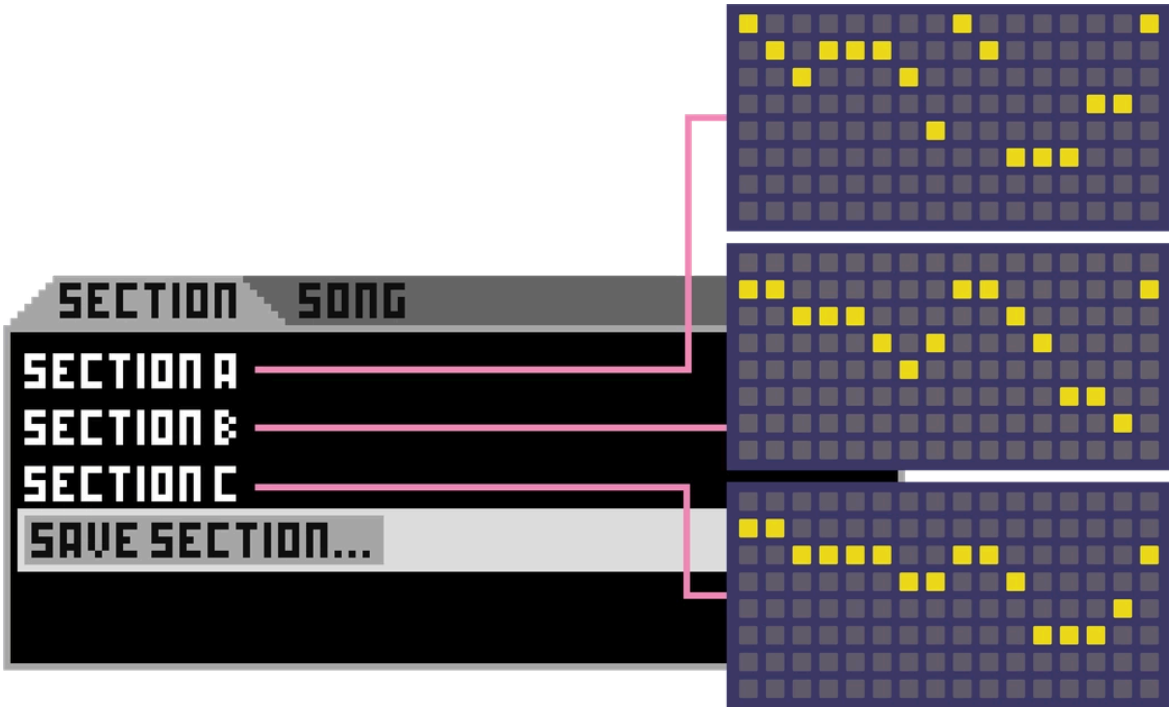
Now we need a section called "Verse", with track 1 to track 3 playing pattern 1, and the other tracks playing pattern 2.
On the grid, it would look like :



10.11. Creating & launching sections

Sections and song configuration options are displayed on the right screen of the **pattern** mode. The section tab is the pool of saved sections:

A section = a state of patterns:



Creating a section

To create a new section, first use the grid to choose the desired arrangement of patterns for the section.

Then, Rotate the main encoder and scroll to **SAVE SECTION**. You will be prompted to choose a name for the section. Once saved, the section is added in your pool of available sections.

Note By default, sections are named "section A", "section B", and so on.

Launching a section

To launch a section, (recall all pattern states for the 16 tracks), Rotate the main encoder to select the section, then Press the main encoder.

Note Similarly to manual pattern changes, sections are launched in sync, according to the **SYNC** parameter.

10.12. Editing a section

Scroll to an existing section and Hold **2ND** + Press the main encoder to open the section context menu, which offers the following options:

LAUNCH >
Resets the song cursor to this section.

OVERRIDE
Replaces the previous pattern arrangement with the current one.

RENAME...
Allows to change the name of the section.

MOVE
Allows to rearrange this section's position within the song.

DELETE
Removes this section from the song.

10.13. Song overview

A Song is an arrangement of previously created sections. This makes it very easy to create complex songs using sections as building blocks, for example --intro x1 --verse x2 --chorus x1 --verse x4 ...

When the pattern mode is in song mode, the song will automatically play sections in order, and schedule the next sections in advance. Any manual change performed on the grid will still occur, but will eventually be overriden by the song's next scheduled section.

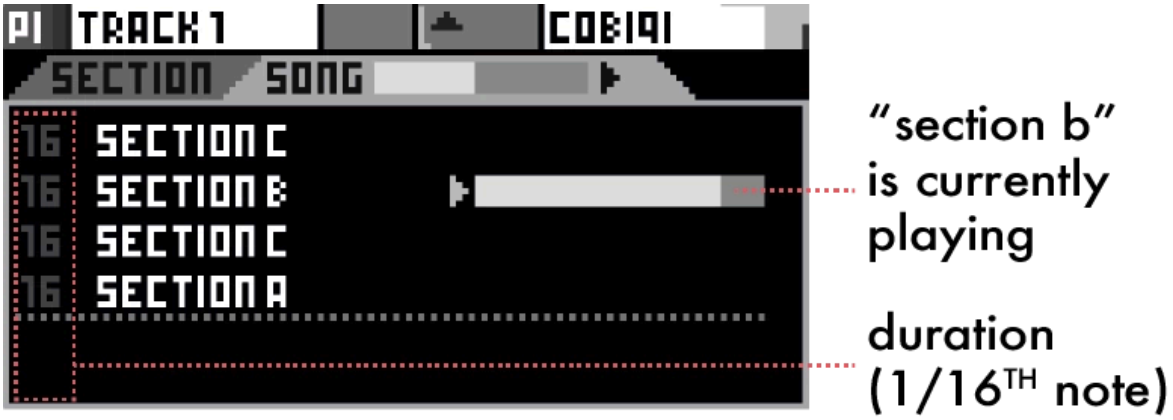
To toggle between section tab and song tab, simply Press **pattern**.

10.14. Creating a song

First, Press **pattern** once to enter the song tab.

Note You need to create at least one section to start creating a song.

Then, to add a section, scroll to the desired position and Press the main encoder. You will be prompted to choose the section to add, and its desired duration at this point in the song.



Tip When selecting the duration, you can Hold and Rotate the main encoder for more resolution, enabling very short sections and polymeters.

Tip You can use the same section multiple times.

10.15. Playing a song

On the left screen, use encoder ① to select one of the song modes :

PLAY SONG
The song will stop playback when reaching its end.

LOOP SONG
The song will play in an infinite loop.

Press the ▷ button to start the song playback.

Tip When a song is playing, it is possible to set the mode to **PERFORM** : the song playback will be paused, allowing you to do live improvisation, manual pattern changes, ... Then you can go back to **PLAY SONG** or **LOOP SONG** to continue the song playback.

10.16. Editing a song

Scroll to an existing section in the song and Press the main encoder to open the context menu :

LAUNCH
Schedules this section in the song list.

SET TIME
Sets the duration of the section in the song.

MOVE
Allows to rearrange this section position within the song.

DELETE
Deletes this section from the song.

11. Tracks

11.1. Overview

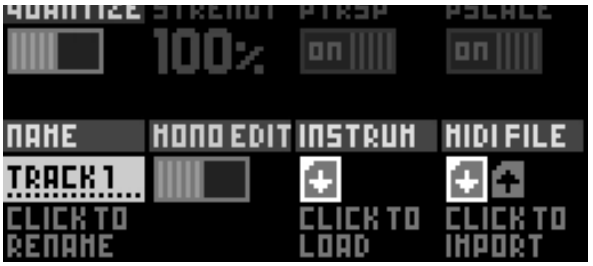
The 16 tracks of a project hold 16 patterns each. They also have a type (**POLY**, by default) and several parameters which define their input and output channels, runmodes, ...

Each project contains 16 tracks.

Press one of the 1..16 **track** buttons to select a track.

Hold a **track** button to enter the primary track settings menu:

Hold **2ND** + Press a **track** button to enter the secondary settings menu:



The active track is indicated by a bright steady white light on the corresponding pad.

11.2. Track settings

OUTPUT PORT MIDI A/B/C/D USB DEVICE/HOST CV/GATE 1/2/3/4 CV 1/2/3/4 GATE 1/2/3/4

Sets the track output.

Tip When possible, we recommend to use a separate MIDI output port for tracks generating a lot of events, e.g. if you send a lot of automation CC messages to a synthesizer. Moreover, as USB outputs have a higher bandwidth, you can use them to output a lot of event on different channels without compromising on timing.

OUTPUT CHANNEL 1 ... 16

Sets the MIDI channel for the track output.

Note **DRUM** tracks will only use this channel for automations, as channels are tied to specific drum lanes.

INPUT PORT

Sets the MIDI port for the track input :

–

No input

ALL ACTIVE

Listens to all incoming events, on any port and channel, but only when the track is currently selected.

MIDI A/B USB DEVICE USB HOST CV/GATE

Listens to the specified port.

INPUT CHANNEL

Sets the MIDI channel for the track input :

1 ... 16

Listens to the specified channel

All 1 ... 16

Listens to any channel on the specified input port. Prefered for **MPE** or **DRUM** tracks.

LENGTH 1 STEP ... 32 BARS

Sets the length of the pattern in steps (1 step = 16th notes).

Tip Hold and Rotate encoder ⑥ for finer resolution.

RUN – REVERSE PING-PONG RANDOM BAR RANDOM BEAT RANDOM 1/16
Sets the pattern playback mode. A pattern can be played normally, in reverse, in ping-pong (forward/backward) or jump to a random step every bar, every beat or every 16th note.

TRIG
Sets the behavior of the player upon a pattern change :
RESTART Resets the position to the beginning of the pattern after a change.
FREE Keeps the previous position of the player upon a pattern change. The playhead will not jump in this case.

PC (LSB, MSB) 0 ... 127
Sets the program change (PC) MIDI message to be sent when transitioning to this pattern. You can also use optional extended PC logic with MSB/LSB (used by some synthesizer with more than 127 presets).

Tip Rotate encoder ① to instantly set the PC, or Press encoder ① to enter the *Pattern PC popup.*

Note For further detail on program changes, please refer to the ***Pattern Program Change*** section of the **pattern** mode chapter.

11.3. Secondary track settings

Hold **2ND** + Press a track button to enter advanced settings.

QUANTIZE – 1/64 1/32 1/24 1/16
Sets the quantization time division. Please note that this parameter will be overriden by the project quantization if set.

STRENGTH 0% ... 100%
Sets the track quantize strength. At 100%, note positions will be shifted to land precisely on the quantization time divisions. At 0%, note positions won't be affected. At 50%, notes will only be shifted half of the duration they should have been shifted in order to be fully quantized.

pTRSP OFF ON
If "pTrsp" is enabled in the project settings, this parameter will allow the current track

to be transposed by track 16. This setting is disabled if pTrsp is not project enabled.

pSCALE OFF ON
When set to "OFF", the track will not follow the project scale. This setting is disabled if pScale is not enabled at the project level.

TRACK NAME
Allows renaming your track.

MONO EDIT
New! When set to **ON**, it allows you to edit the track in a monophonic way in a **POLY** track. Whenever you add a new step to the track, all the other steps sharing the same vertical position will be automatically removed.
Tip Use the shortcut Hold **2ND** + Press **step** to toggle this feature quickly.

INSTRUMENT DEFINITION
Shows wich Instrument definition file is loaded.
Clicking on either of the two lower right encoders will open a list of the available files on the SD card, to load a new one.
Holding on either of the two lower right encoders will show the text included in the comment section of the file.

MIDI FILES IMPORT/EXPORT
Import SD card MIDI files thanks to the explorer, or export the active pattern to a .mid file.

11.4. Copy, paste, delete & swap tracks

To copy a track, Hold **copy** + Press a **track** button.
To paste a track, Hold **paste** + Press a **track** button.
To delete a track, Hold **delete** + Press a **track** button.

To swap positions of existing tracks Hold a **track** button, then Press either ▶ or ◀.

Note While the **TRANSPOSE** track is originally numbered 16, changing its position will not change its role, meaning the **TRANSPOSE** track can be at any position.

11.5. Instrument Definitions

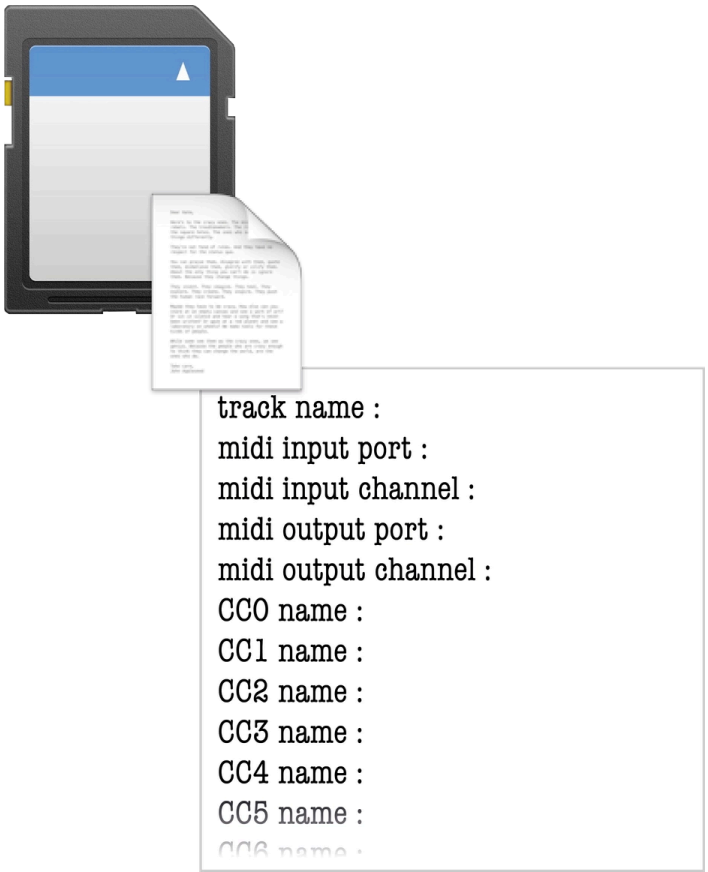
Intro

Instrument Definitions are a fast and easy way to setup a track to work with a given instrument. Here is a non-exhaustive list of their features:

- Give CCs names
- Set the input and output MIDI port and channel
- Set up the drum lanes of a drum track
- Give PCs names (to save your favourite presets)
- Create empty automation lanes

Instrument Definitions are UTF-8 encoded text files, with the ".txt" file extension.

They should be stored in the HAPAX folder of the SD card, alongside the projects.



instrument.txt

Browse community files

Our community forum has a dedicated category for Hapax Instrument Definition files. At the time of writing, there are more than 100 files created by the community, available for download.

https://squarp.community/c/hapax/instrument-definitions/21

How they work

The file is broken up into several sections, e.g. one for naming CCs, one for setting up drum lanes, etc. Each section contains keywords, known as *commands*, followed by values to set a given property.

Almost all commands are optional, and most values can be set to *not overwrite* the current state of the track with the keyword **NULL**.

Note This can be particularly useful to reuse an instrument definition where the channel or port might regularly change from project to project.

All text to the right of a '#' character are comments, and have no effect.

The syntax is quite simple, and self-documented in the examples below.

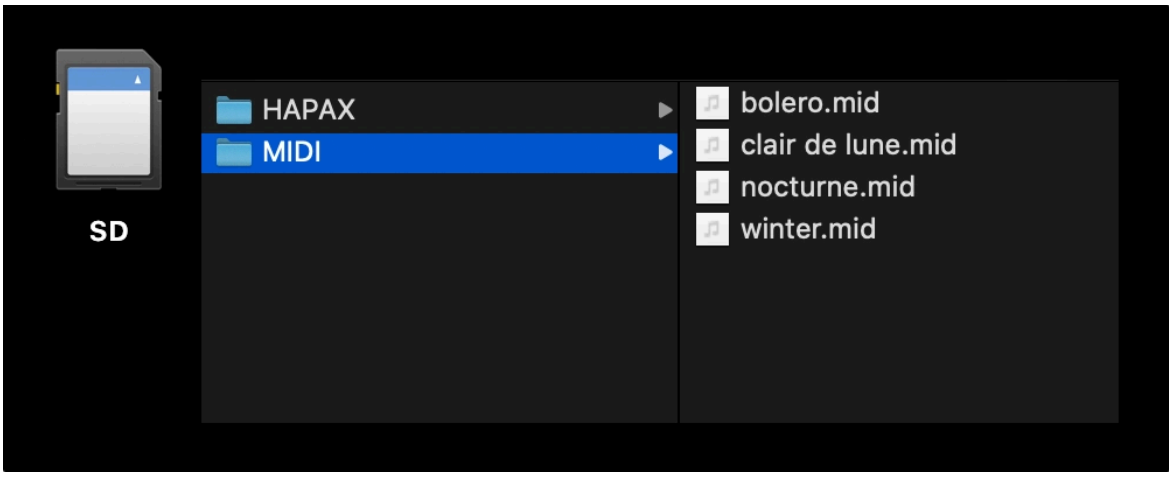
Download examples

Instrument definition examples are available online on our website:
https://squarp.net/hapax/manual/modetrack#XX7CT5W++

11.6. MIDI Import Export

Overview

Hapax is able to import or export standard MIDI files. They are all stored in the **MIDI** folder, located in the root of the SD card, next to the **HAPAX** folder:

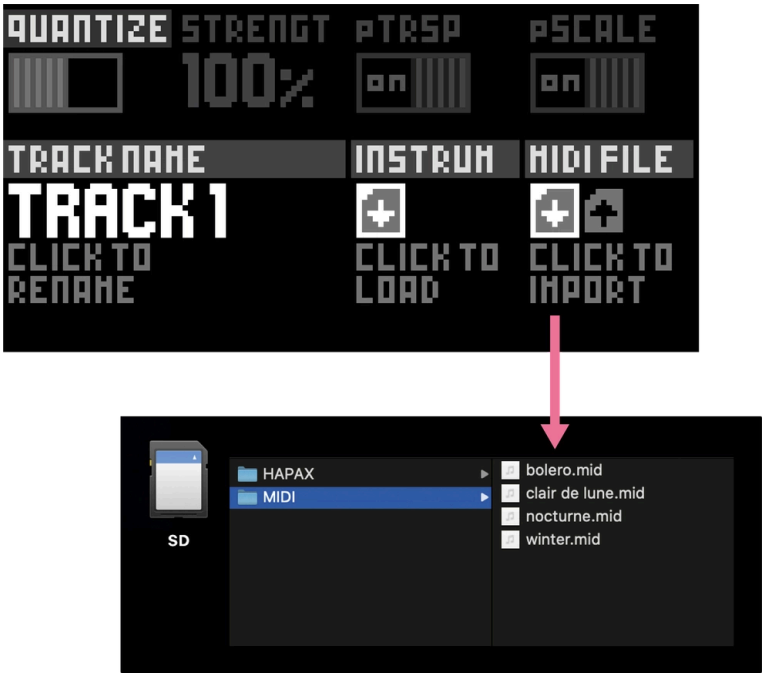


Importing MIDI files

You can download MIDI files from the internet or export them from your favorite DAW. These files may contain notes and CC (Control Change) data.

The supported types are type 0 (1 file = 1 track) and type 1 (1 file = multiple tracks). Hapax does not support type 2.

To import, navigate to **2ND** + **track**. Use Encoder ⑧ to select Import or Export.



Select Import and press the encoder to enter the MIDI File Explorer.

After selecting a .mid file, you will be asked to select the track you want to import. Indeed, some .mid files (type 1) includes multiple tracks. Generally, each track corresponds to an instrument or an automation lane.

After confirming the import, the selected track of the selected .mid file will be imported into your current pattern.

Note This action will overwrite any previous notes or events present in the pattern.

Note When importing a .mid track longer than the maximum pattern length of Hapax (32 bars), this .mid track will be shortened to 32 bars.

Exporting MIDI files

Press **2ND** + **track** and select Export to save the current pattern in a .mid file. Thanks to the menu encoder and the right screen, you can edit the name of this file.

The exported file is of type 1. This file will inlude multiple tracks: a single MIDI track for notes, and tracks for each automation lane.

This file name is derived from the current project name, the track number, and the pattern number.

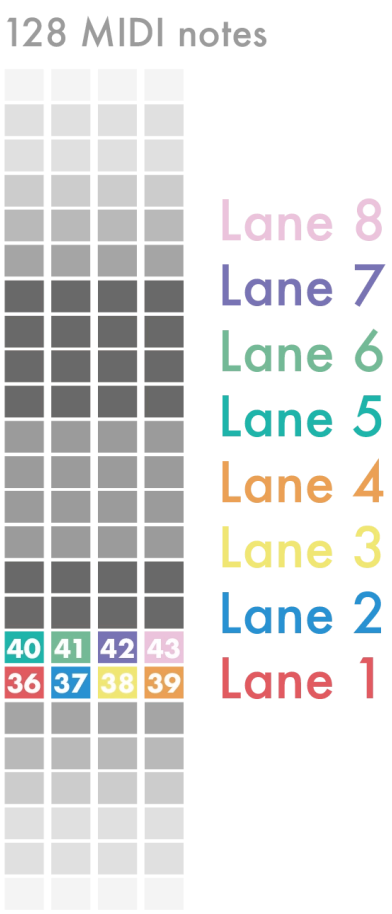
Note Importing and exporting an **MPE** track is not supported.

11.7. MIDI Import Export (drums)

New! **DRUM** track patterns can be easily exported and imported, making it simple to recall rhythm patterns from various genres that you've previously exported or copied to the SD card.

Just like with **POLY** tracks, these files are saved in the MIDI folder as Type 1 .mid files, allowing automation curves to be stored on separate tracks.

Each .mid file supports up to 128 MIDI note values (0 to 127). When exporting **DRUM** tracks:
– The first drum lane (e.g. Kick) is assigned to MIDI note **36** = **C3** (Hapax note naming convention) = **C1** (Ableton note naming convention).
– The last lane (e.g. Cowbell) is assigned to MIDI note **43**.



When importing a .mid track in a **DRUM** track:

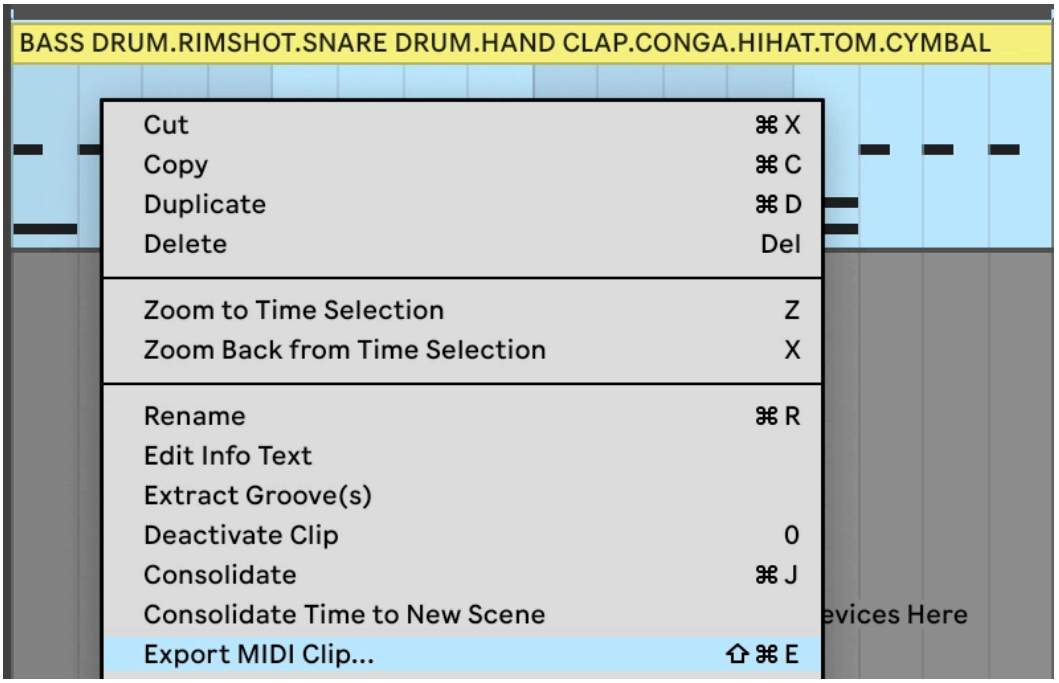
– Hapax will automatically detect the lowest MIDI note in this file to assign it as Lane 1 (e.g. MIDI note 0 = C0 = Lane 1 = Kick). You can adjust this mapping using the **MAP TO** parameter: if you set **36**, then MIDI note 36 (C3) will be mapped to Lane 1, note 37 (C#3) to Lane 2, note 38 (D3) to Lane 3, and so on.

– You can choose to import the drum pattern as a single lane or multiple lanes by selecting the corresponding checkboxes. Lane 1 is the first box, Lane 8 is the last. By default, all lanes are selected for import.

Tip You can also use this feature to export a **DRUM** pattern and import it into a **POLY** track, or vice versa.

Tip When exporting a **DRUM** pattern from Hapax, the resulting .mid track will be named based on the 8 lane names (by default: **KICK.SNARE.CLOSED HH.OPEN HH.LOW TOM.HI TOM.HAND CLAP.COWBELL**). When selecting a file to import, hovering this .mid track will display a popup showing the drums content:

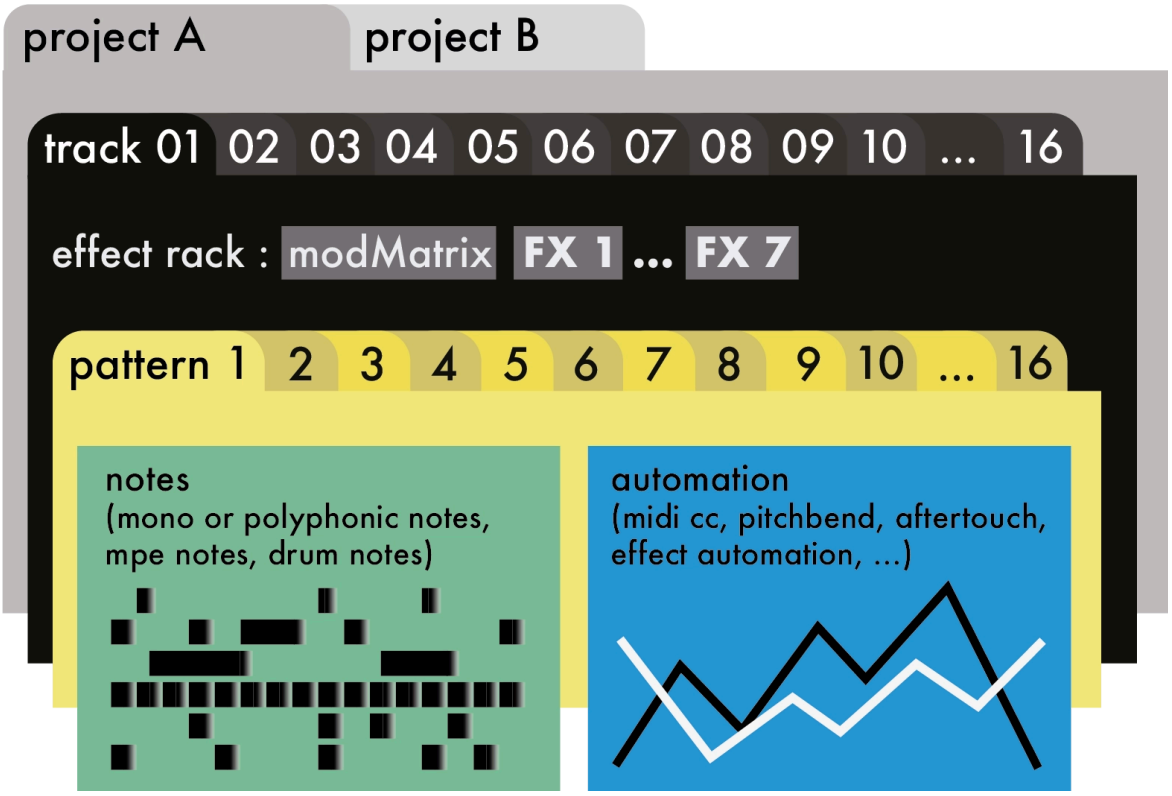
Dots in the track name will be displayed as line breaks in the popup. This popup is useful for remindering how your lanes correspond to your drum kit presets or samples. If you are using another tool to export a .mid file (e.g. Ableton), you can replicate this behavior by naming the MIDI track (not the .mid file) using lane names separated by dots:



12. Projects

12.1. Overview

Hapax can handle two projects simultaneously. Each project contains 16 tracks. Here is an overview of the general structure of Hapax :



proA and **proB** are directly accessible through their dedicated buttons. Each of them contains 16 tracks and can be played at the same time.

You can seemlessly load a project on **proA** while **proB** is running, for never ending live sets!

12.2. Saving, loading or creating a project

Hold **proA** or **proB** to access the **SAVE/LOAD** menu, displayed on the right screen :

Note The SD card must be inserted to save or load projects.

– **SAVE**: Saves the current project under its existing name.
– **SAVE AS**: Saves the project under a new name.
– **NEW**: Creates a new, blank project.
– **LOAD**: Opens a previously saved project.

In the **LOAD** list, displaying your saved projects, Hold **delete** and click the encoder to delete the selected project.

Tip To create a project template, name your project "**DEFAULT**. This is useful for setting up your regular studio configuration, such as routing, track names, instrument definitions, drum layouts, and more. Then, whenever you start a **NEW** project, a popup will appear giving you the choice to either load the DEFAULT template, or start from a blank project.

Tip When editing a project name, Hold **DEL** with the main encoder to erase everything at once.

Tip When editing a project name, if the name is empty, select **RAND** to generate a 6-letter random project name.

12.3. Project transitions

Hapax is a polychronic sequencer, meaning that it can process two different projects simultaneously and independently.

Saving, loading and mixing projects won't get you out of sync: perfect for live performances.

After loading a new project while another one is already running, the loaded project will be muted :

proA is playing, proB is empty

proA is playing, proB is loaded + muted

From there, arrange your muted tracks and your patterns of both projects to prepare the transition.

When you are ready to launch project B, Hold **mute** and Press **proB** : the project B will be unmuted in sync, at the end of the bar. Both projects are now playing!

proA is playing, proB is playing

When you finally need to silence all tracks of your project A : Hold **mute** and press **proA** :

proA is muted, proB is playing

You can also save proA while the other is playing, load a new project to proA to prepare a new song transition, create a new project, ...

Note When loading a project, if this project BPM differs from the playing project BPM, you will be asked to update the tempo (the two projects must share the same BPM for proper transitions).

Tip While holding mute, you can mute/unmute tracks of a project, and while keeping mute held, select the other project and mute/unmute its tracks. Thanks to the mute

group feature, the mute release will toggle the mute state of your both project, at the same time. It's a great way to mix project's tracks and enhance your song transitions.

12.4. Setting a project scale (pScale)

One major feature of Hapax is the ability to set a global scale for each project, which will constrain all notes to the selected pScale. It provides a simpler interface without "wrong" notes. You can set a new scale anytime and in real-time, it's a great studio tool to color your song.

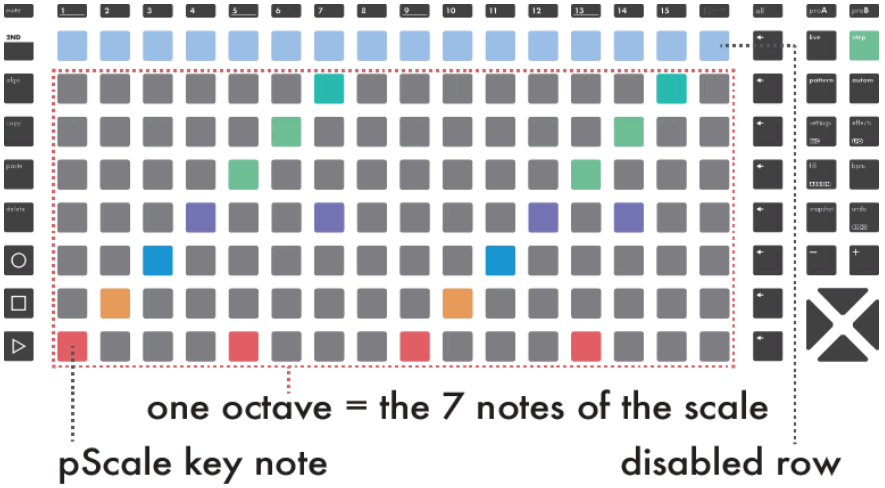
Hold **proA** or **proB** to display the selected project settings on the left screen :

On the left screen, the keyboard displays the quantized notes of the selected scale, as well as the number of currently playing notes in the selected project.

When **pScale = ON**, the chosen scale will be applied to all the tracks that have their respective **pScale** parameters enabled (located in **2ND** **track**, enabled by default).

When this global **pScale** is enabled, the matrix pads only show the notes of the selected scale. There are never more than 8 notes in a scale, so the 8 rows will always show the same note.

For example, if the key note of the scale is F, the bottom row will always be the F note in the selected octave.



With **pScale** enabled, only in-scale notes can be added with the matrix pads. The piano roll navigation is based on octave increments.

When an incoming note is out of scale, the **STICK** option determines how an out of scale incoming note will be corrected:

Down (quantize note to nearest lowest note)

Up (quantize note to nearest higher note)

Filter (out of scale notes are ignored = not played)

12.5. Time signatures

Each project can hold its own time signature. By default, the TS is 4/4 common time, but you can easily and drastically change your songs grooves by using other signatures.

Hold **proA** or **proB** to enter project settings :

- Rotate encoder ③ (pSignature) to set the upper numeral (number of beats in one bar)
- Hold + Rotate the encoder ③ to set the lower numeral (note value that represents one beat)

Upper numeral

When a project to 7/4, each bar is made of 7 subdivisions (7), each being a quarter note (4).

Representation on the pianoroll leds will adapt accordingly:

- One bar of 4/4 is displayed on 16 steps.
- One bar of 7/4 is displayed on 28 steps.

As 28 steps won't fit on the 16 pads of the matrix, the first part will be displayed on page 1 and will end on page 2. Page 2 will contain only 12 steps.

Now Hold **2ND** + Press ◀ to duplicate the pattern. You will end up with 2 bars of 7/4, which is 56 steps long at default zoom level (2 x 28).

By default, each beginning of a bar is displayed on a new page. This allows for easier navigation when using uncommon time signatures.

Note To disable this option, set **SPLIT BARS** in *this section* of the settings.

Lower numeral

- A common 4/4 TS means 4 beats per bar, each beat representing a quarter note.
- A 4/8 TS means 4 beats per bar, each beat representing an eight note (quaver). Your bar will end up being twice as fast as when a common 4/4 TS is used.
- 4/2 means 4 beats per bar, each beat representing a half note. Your bar will end up being twice as slow as when a common 4/4 TS is used.

Tip Common Time Signatures: quadruples (4/4, 12/8), triples (3/4, 9/8), duple (2/4 - 6/8), irregulars (5/4, 7/8)

12.6. Transpose track (TRSP)

The transpose track is a unique track which leads the transposition of other tracks. This role is devoted to track 16.

Hold **proA** or **proB** to enter the project settings. Rotate encoder ⑧ to enable track 16 as the transpose leader (track 16 will start to blink).

Notes played in track 16 will be used as reference for transposing all other tracks (1 to 15). Drum tracks are never transposed.

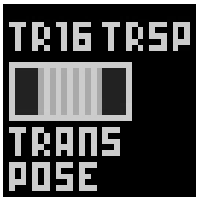
Tip You can disable the transposition on some particular tracks. This option is accessible under track's advanced settings. Hold **2ND** + Press a **track** button to enter advanced settings.

Track 16 can be used in the same way as any other track. You can play notes in live mode or with an external controller, write notes in step mode or use MIDI effects.

Tip If you need your transpose leader track to remain silent, you can route it to any unused output.

There are 2 different modes of pTRSP :

TRSP - Transpose

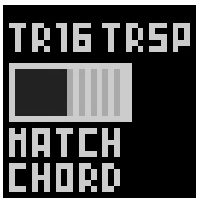


The simplest transpose: once you play a new note in the leader track (track 16), the other track's notes will be transposed in real-time, accordingly to the track 16 note.

Note By default, the change is instantly applied. To enable synchronized changes, set the **pTRSP SYNC** option in ***this section*** of the settings.

Tip To change the default transpose center note (the note defining a "+0" transpose), set the **TRANSPOSE ROOT** option in ***this section*** of the settings. By default, the C5 note is the note "resetting" the transpose amount.

CHRD - Match Chord



New! Match Chord is a fun and musical feature, opening the way to live scale changes and new harmonization possibilities.

Once Match Chord is set on Track 16, it will listen for a note or a chord. Every other tracks (1 to 15) will have their own notes quantized accordingly. This allows you to transpose everything to a new scale, a new chord or even a single note and thus change your entire project harmony in real-time.

On the bottom of the right screen, you will be able to view the chromatic scale used thanks to the small piano roll (played keys are white):

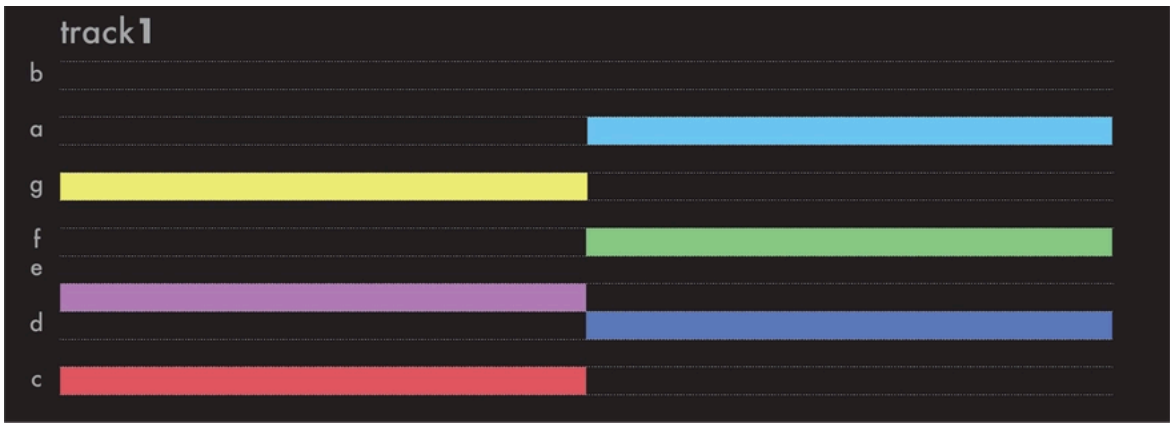
Tip Use **HOLD** or **RELATCH** on track 16 to lock played notes when **pTRSP SYNC** is enabled for live transpositions.

Note When using Match Chord, note octaves have no effect. Only the chromatic scale (the set of twelve pitches, from C to B) will be used to quantize the other tracks.

Note By default, the change is instantly applied. To enable synchronized changes, set the **pTRSP SYNC** option in ***this section*** of the settings.
The chord needs to be held until the synchronized change has been processed. If the new played chord (or note) is released before the sync, Match Chord will be reset to the default chromatic scale. On the bottom of the right screen, a progress bar helps you to visualize the sync:

12.7. TRSP Transpose in practice

On track 1, let's add a simple chord progression :
Cmin - Dmin

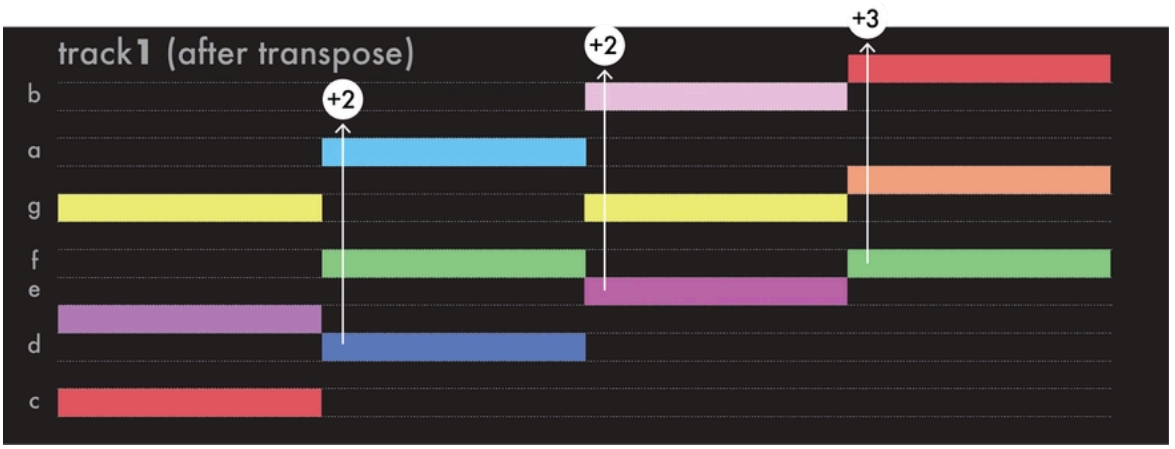


On track 16, with **pTRSP = TRANSPOSE**, let's play some notes either with the live mode keypads, with an external keyboard, or by adding notes in step mode:

Each new note will define a transposition amount. If you use the default setting (transpose root = C5), the first note in the example above won't have any effect as it is a C5, and the transposition amount will be "+0".

The second note (D) will transpose the following tracks (track 1 to 15) by "+2". The third note will transpose by "+3".

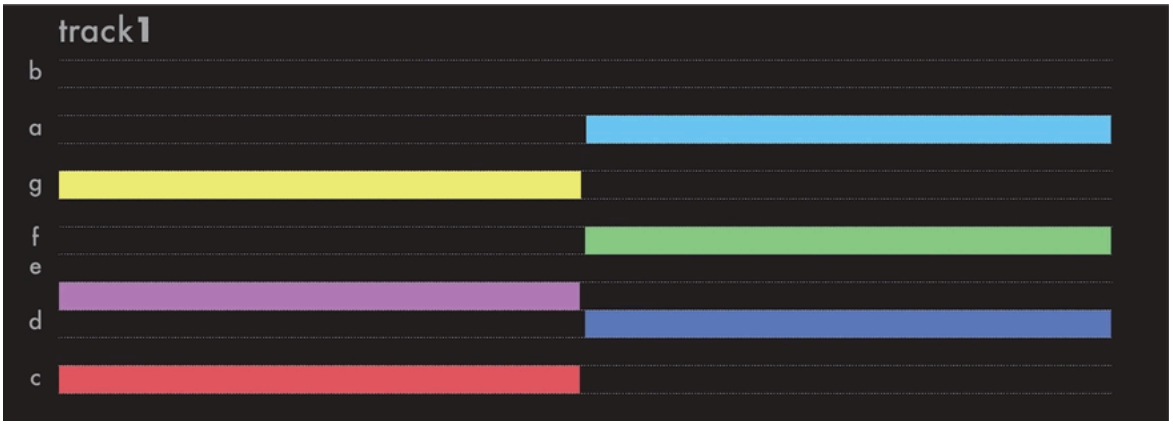
Upon playing, track 1 will therefore be transposed according to track 16 notes:



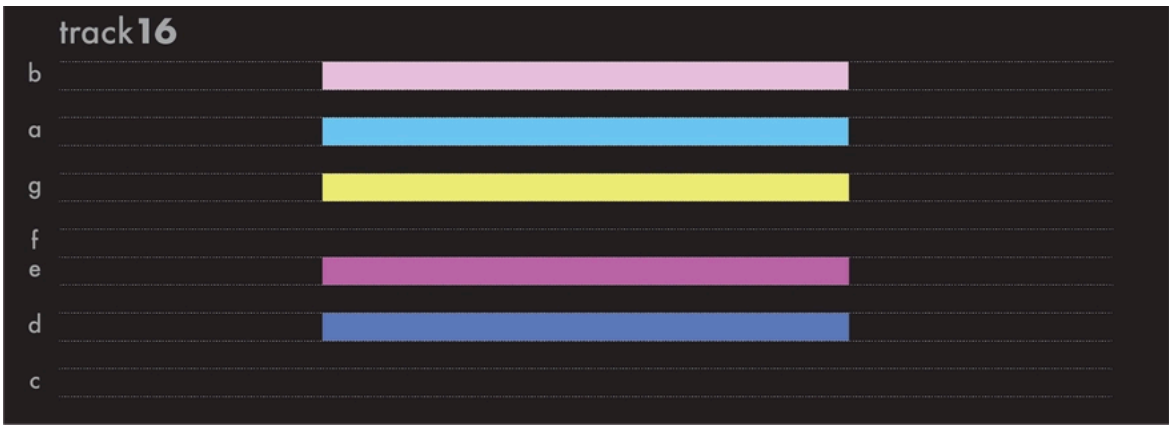
12.8. TRSP Match chord in practice

On track 1, let's add a simple chord progression :

Cmin - Dmin

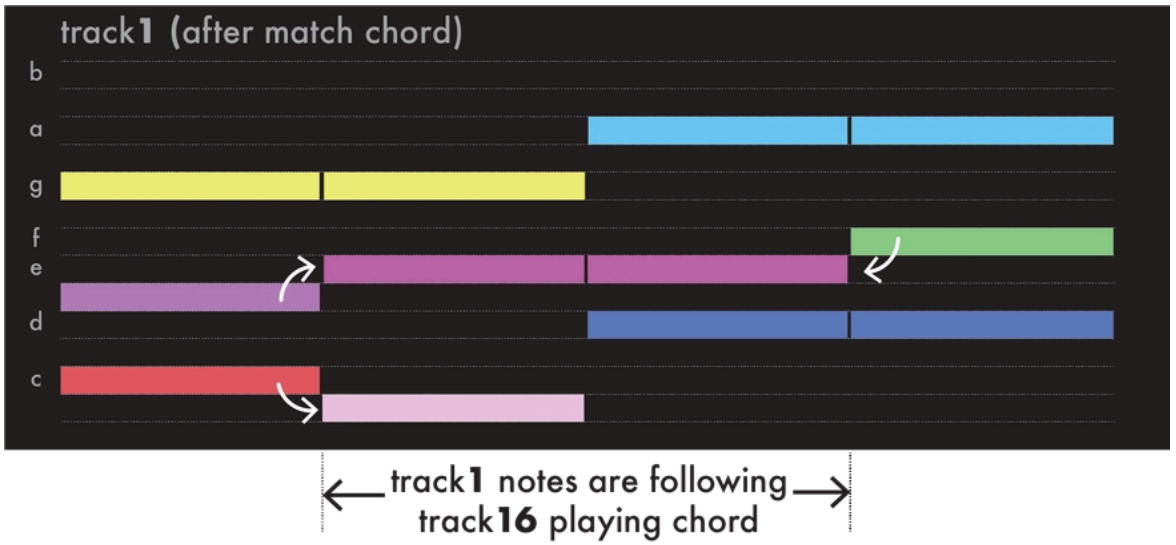


On track 16, with **pTRSP = MATCH CHORD**, let's play a chord either with the live mode keypads, with an external keyboard, or by adding notes in step mode:



This chord defines a new scale to match for every other following tracks. If an existing note from tracks 1 to 15 is equal to a note from the track 16 reference chord, it will remain unchanged. If a note differs, it will be forced to the closest note contained in the track 16 reference chord.

When running, the track 1 will therefore be harmonized to a new scale when track 16 is playing its chord:



A few other examples:

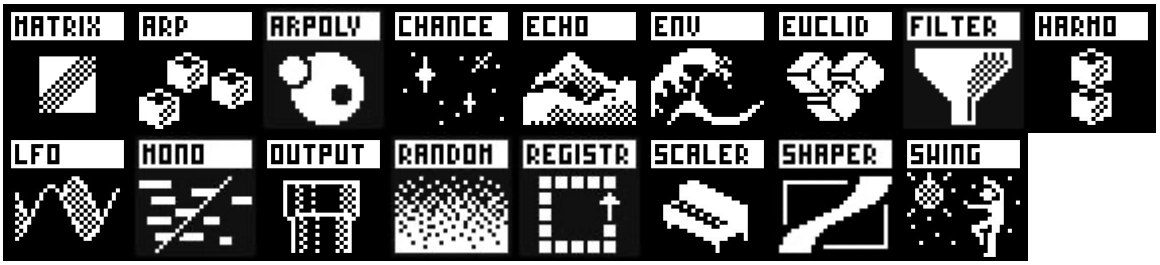
- If track 16 is playing only 1 note (e.g. C), as the other track's notes must match the track 16 chord, track 1 to 15 will only output C notes.
- If track 16 is playing the 12 chromatic notes, the other tracks notes will remain unchanged.

13. Effects

13.1. Overview

Each track can hold up to 8 real-time effects. Notes played live and recorded in a pattern are processed and sent to the outputs in real-time by the effect engines.

All the effects are **non-destructive**, and **polyphonic** capable. The position of an effect in the chain is very important: an Harmonizer placed after an Arpeggiator will not sound like an Arpeggiator placed after an Harmonizer. Experiment with the order of effects to generate eccentric melodies.



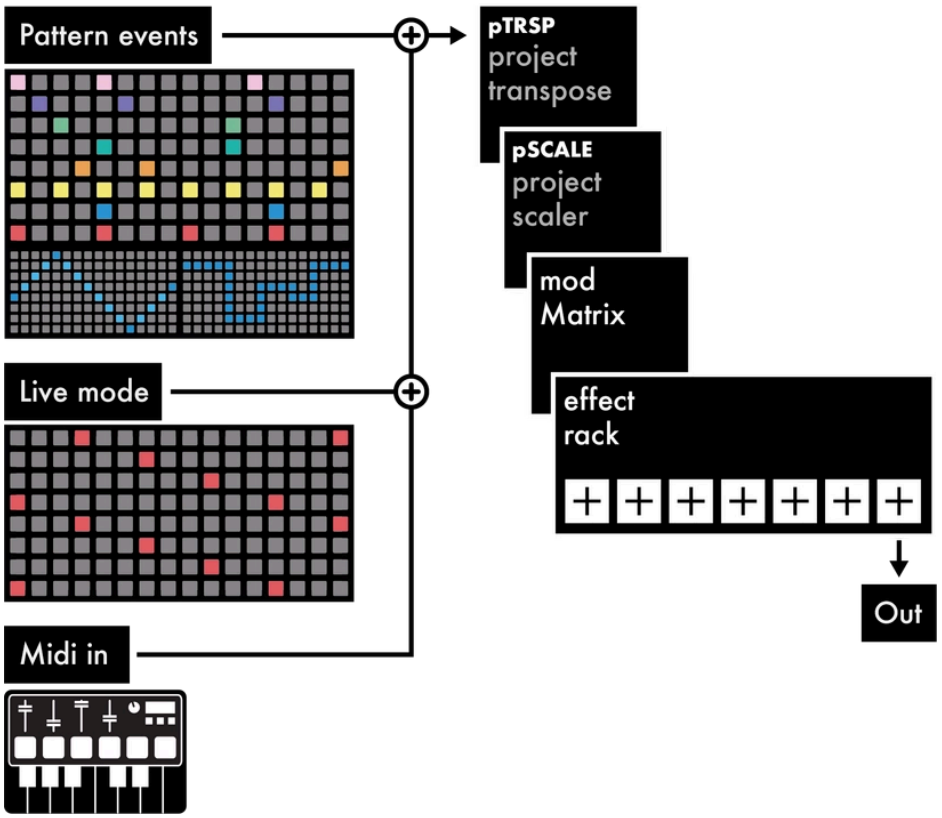
It's also possible to add multiple effects of the same engine on the same track (e.g. chaining two Arpeggiators).

Finally, every effect parameter can be edited in real-time via CC message and CV inputs, thanks to the modMatrix.

13.2. MIDI chain, from track input to output

The diagram below represents the routing of midi events (notes and automation) for 1 track.

Events played live are merged with recorded/programmed events, and then are processed successively by the project transpose and scaler (if enabled), the modMatrix and the midi effects.



13.3. Adding an effect, tweaking parameters

Press **effect**, select an empty slot and Press the menu encoder to add a new effect in the rack.

LFO effect is selected, you can play with its parameters with the 8x encoders

Use left screen and Rotate the 8x encoders to play with the selected effect parameters.

Tip Hold encoder param to reset the value.

13.4. Advanced operations

Select an effect and Press menu encoder to access the following options :

TOGGLE ON/OFF
Mute and unmute the effect.

DELETE
Delete the selected effect.

REPLACE
Replace the selected effect with another one.

COPY
Copy the selected effect.

PASTE
Paste the selected effect on an empty slot, or on a filled slot to replace it.

Tip Select an effect and Hold it with the menu encoder. Then you can change its position in the chain.

Tip Hold 2ND and Press mute to toggle the effect (mute/unmute it).

13.5. Locking effect parameters to patterns

Effect parameter values are per-track by default, but it is possible to lock some values to the current pattern.

This way, each pattern can hold different parameter values for the same effect.

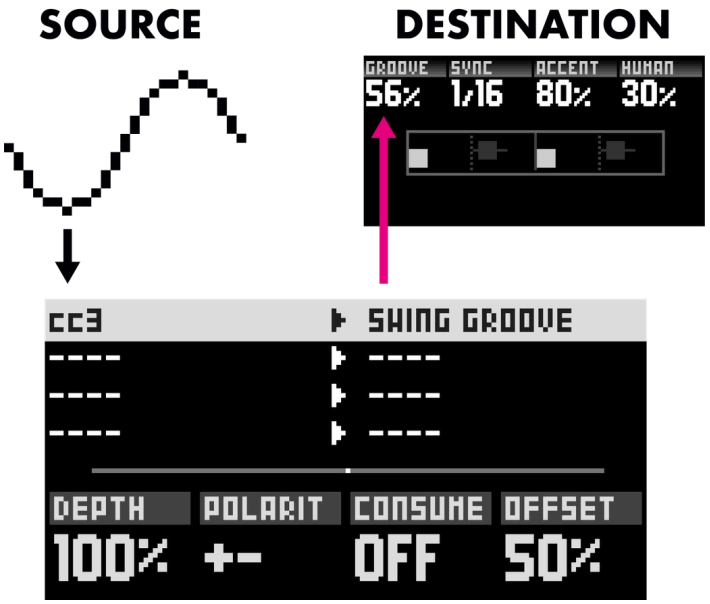
While an effect is selected and the left screen is displaying the effect parameters, Hold 2ND and Press the associated encoder to toggle the param locking.

Below you can see an arpeggiator effect with 2 parameters locked: Octave and Repeat.

Tip In the context menu of an effect, Hold 2ND and Press **TOGGLE ON/OFF** to lock the effect mute/unmute on the selected pattern.
ON* (or **OFF*** if the effect is muted) will appear on the top of the context menu, indicating that this value is locked on this pattern.

13.6. ModMatrix

The modMatrix is always the first effect in the rack and can't be deleted. It allows you to patch sources (encoder ①) to destinations (encoder ⑤) in order to modulate an effect parameter (or a midi output message, or a cv output) with an incoming signal.



SOURCES

CC MESSAGES
PITCHBEND
AFTERTOUCH
KEYTRACKING
CV IN
PROJECT LFO
Each time a note is played, takes the value of the note number. If a chord is played, takes the value of the average off all note numbers.

VELOCITY
Each time a note is played, takes the value of the note velocity. If a chord is played,

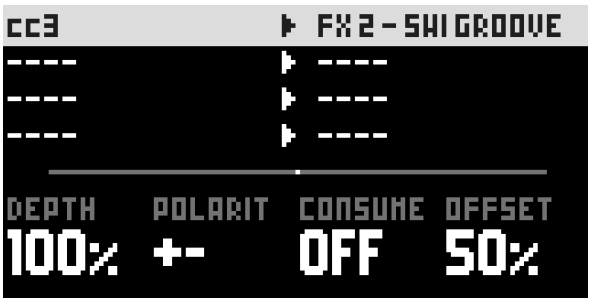
takes the value of the average off all note velocities.

FILL
Reflects whether the **fill** button is pressed.

DESTINATIONS

CC MESSAGES (0 to 119)
PITCHBEND
AFTERTOUCH
PROGRAM CHANGE
VELOCITY
NRPN
CC PAIR
CV OUT (1, 2, 3 or 4)
FX PARAMETERS

MODULATION PARAMETERS



Encoders ③, ④, ⑦ and ⑧ are used to set the modulation parameters shown at the bottom of the screen :

DEPTH
Amplifies, attenuates or inverts the input signal.

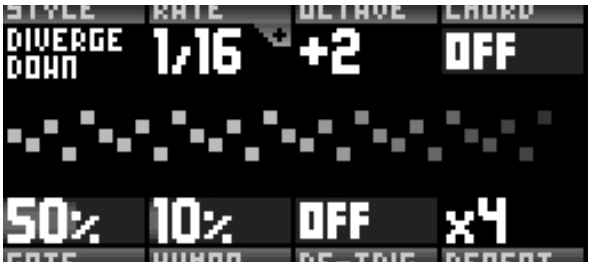
OFFSET
Defines the modulation central value.

POLARITY
Defines whether the modulation takes place around or above the offset value.

CONSUME
Drops the input signal, or let it pass through.

13.7. Arpeggiator

Generates looping arpeggiated patterns from incoming notes.



STYLE ORDER UP DOWN UP/DOWN DOWN/UP UP+DOWN DOWN+UP RANDOM VELOCITY UP VELOCITY DOWN CONVERGE UP CONVERGE DOWN DIVERGE UP DIVERGE DOWN CONVERGE DIVERGE DIVERGE CONVERGE PINKY UP PINKY DOWN THUMB UP THUMB DOWN REGRESS 2 UP REGRESS 2 DOWN REGRESS 3 UP REGRESS 3 DOWN REGRESS 4 UP REGRESS 4 DOWN DOUBLE 1:2 SILENCE 1:2 DOUBLE 1:3 SILENCE 1:3

Direction of the arpeggiated pattern. **ORDER** will play notes in the order they were played. **UP** plays the pattern from the lowest note to hightest. **RANDOM** will play notes in a random order.

RATE 1/1 ... 1/64

Speed of the pattern. A rate of **1/4** will play a note of the arppegio every beat.

GATE 1% ... 200%

Pattern note lengths, depends on the rate.

HUMAN 0% ... 100%

Adds some randomness to the velocity and gate length.

OCTAVE -5 ... 0 ... +5

To create octaves progression. If **OCTAVE = 1** the arpeggiator will play the original pattern, followed by the same pattern one octave higher. If **OCTAVE = -2** the

arpeggiator will play the original pattern, followed by the same pattern one octave lower, followed by the same pattern two octaves lower.

CHORD -2 ... +2

Plays the incoming notes as a chord, on top of the arpeggio, either up to two octaves down, or two octaves up.

RE-TRIG – NOTE 8BAR ... 1BAR 1/2 ... 1/16

When active, the arpeggiator will restart its sequence at the desired interval, or every added note.

REPEAT – x1 ... x16

If enabled, do not play the pattern in a loop, but a defined amount of cycles

⊕ SYNC OFF ON ON (LOCKED)

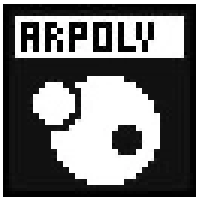
Note To access this parameter, click on **RATE**.

OFF: the rate is free-running and not synced to the grid. The rate parameter becomes continuous, with values ranging from 0% to 100%, allowing fine control over speed without regard to tempo divisions.

ON: the rate is synced to the grid (e.g., 1/8, 1/16 notes), but groove timing is preserved. If the first key is played slightly off-grid, that subtle delay is retained: shifting the entire arpeggio slightly for a natural, groovy feel.

ON 🔒 (LOCKED): the rate is hard-synced to the grid. Playback is strictly quantized: no timing shifts are allowed, ensuring perfect alignment with the grid regardless of when the key is pressed.

13.8. Arpoly



New! Arpoly is a highly versatile effect that transforms your MIDI input into an intricate interplay of melodies, rhythms, and evolving patterns.

This effect serves as a programmable polyphonic arpeggiator for melodic loops, a polymetric loop designer for rhythmic patterns, or both at once. It even allows for polyrhythmic arpeggios for unique creative possibilities.

At its core, Arpoly features an 8-step arpeggiator/sequencer that handles 3 independent loops. Each loop runs at its own speed, with its own step length, while playing the same programmable step arpeggiator.

- The 1st held note triggers **LOOP I**
- The 2nd held note triggers **LOOP II**
- The 3rd held note triggers **LOOP III**

Arpoly has 16 parameters = 2 pages of 8 parameters. To toggle between the 2 pages, Press encoder 1:

T1–T8 -64 ... -1 = OFF TIE RAND JUMP +1 ... +64

= : play the same note (no transpose)

-64 to **+64** : transpose the note

OFF : silence the step

TIE : extend the previous note

RAND : randomly pick another programmed step value

JUMP : randomly jump to T1–T8

SPEED I, SPEED II, SPEED III 1/64 ... 1/16 ... 1/1

Control the playback speed for each loop. Speeds can be synced (e.g. **1/16**) or unsynced (see below). Different speeds will produce polyrhythmic effects.

LOOP I, LOOP II, LOOP III OFF 1 ... 8

Set the loop length. Loops with different lengths become polymetric, creating intricate rhythms. Loops can also be turned **OFF** to disable them. For instance, enabling only one loop allows you to create rhythmic polyphonic chords.

GATE OFF 1 ... 8

Adjust the note gate length, relative to the loop speed.

SHIFT OFF +1 ... +512

Shift the start position of loops to add complexity. Values progress as follows:

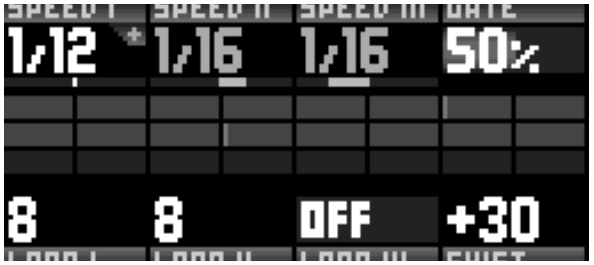
1–7 : shift **LOOP I**

8–63 : shift **LOOP I** and **LOOP II**

64–512 : shift all three loops

Tip add a SCALER effect after ARPOLY to quantize or harmonize the generated notes for seamless melodic control.

Note **SPEED I**, **SPEED II** and **SPEED III** are presented as "linear rates". When these parameters are white (not dimmed), the rate is locked to the displayed grid value (e.g. **1/16**). When dimmed, the rate becomes unsynced to a % of the grid, allowing for fine-tuned speed adjustments.



In the example above:
SPEED I = **1/12** (synced)
SPEED II = **1/16** +33%
SPEED III = **1/16** –50%.

13.9. Chance

This effect plays or does not play a note based on probability. It's a great way to add variations to drums or melodies.

CHANCE 0% ... 100% VELOCITY
If **0%**, the note will never be played. If **50%**, the note has a fifty-fifty chance to be played. If **99%**, the note will almost always be played. If **VELOCITY** the note will have the same probability of being played as its velocity. Very handy for programming different per note probability.

LOT – BAR 1/4 1/8 1/16 1/32
When **OFF**, each note will "roll a die" to either play or not. When active, rather than evaluate each note individually, the Chance effect groups notes in time intervals, and "roll a die" for that interval. Either the full interval plays, or it does not.

SYNC – BAR 1/4 1/8 1/16 1/32

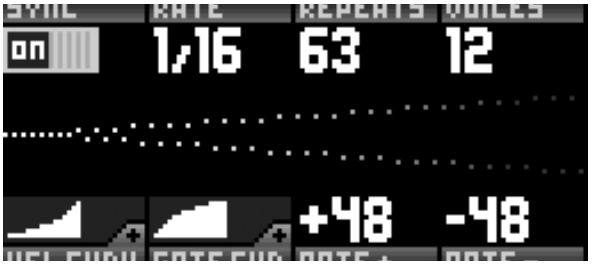
Adds a synced probability ("sync chance" parameter). If sync = **1/4**, all notes that fall precisely on a quarter note will have a different probability of being played. If sync = **1/16**, all sixteenth notes will have a different chance to be played...

SYNC CHANCE 0% ... 100%

The probability of a synced note to be played. For example, if sync = **1/4** and sync chance = **100%**, all beat notes will be played.

13.10. Echo

Creates copies of incoming notes, simulating an audio echo effect by using the velocity data to decrease volume.



SYNC ON OFF

Choose whether the echo rate should be tied to the BPM of the project or not.

RATE(synced) 1/64 ... 1/15 ... 1/7 ... 2/7 ... 2/5 ... 9/16 ... 2/3 ... 1/1

Sets the synchronized rate of repetitions. A rate of **1/4** will output an echo on every beat.

RATE(unsynced) 0% ... 100%

Sets the unsynchronized frequency of repetitions. A rate of **100%** will output an echo on every bar.

REPEATS 1 ... 63

Determines the total number of times the original note will be repeated.

VOICES RELATCH 1 ... 12

Choose the total number of notes that the echo will process. When 1 voice is set, each new played note will replace the previous one in the echo buffer, so that only the last played note will be repeated. The other settings will allow for polyphonic echoes. Use the **RELATCH** value to automatically adapt the number of voices to the input : each event, whether chord or single note, will have its own voice allocation.

VELOCITY CURVE – LIN EXP LOG

Controls the way the echoes will fade out with a curve. Linear is a straight descending ramp, exponential and logarithmic induce more subtle variations. If no value is selected, the echoed notes will remain at the same velocity as the original note.

GATE CURVE – LIN EXP LOG

Similarly to the previous parameter, choose how the echoed notes lengths will be gradually shortened.

NOTE +/- – +/-1 ... +/-60

Set a target for the pitch of the echos. The last repetition will land on the set semitone. If the + and - notes are set, each repetition will alternate between a positive and a negative pitch until the target is reached. Use those parameters in conjunction with a SCALER effect for more melodic results!

⊕ VELOCITY END 1 ... 127

Note Click on **VELOCITY CURVE** to access this parameter

Sets the velocity target for the repetitions. If this value is higher than the original inputed note, the velocity of each repetition will rise until reaching the target value.

⊕ GATE END 1% ... 100%

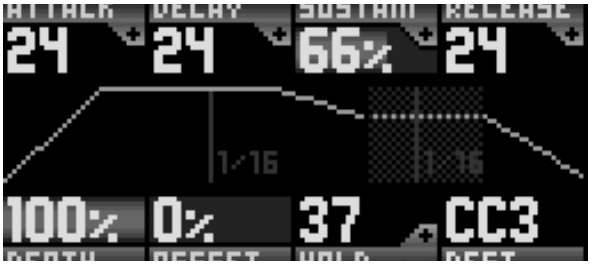
Note Click on **GATE CURVE** to access this parameter

Similarly to the previous parameter, sets the note length target for the repetitions.

13.11. Envelope

AHDSR envelope, with variable curvature per section, which can be assigned to any destination. It is triggered every time a note comes through it.

Tip Click on **ATTACK**, **DECAY** or **RELEASE** encoder to go to the corresponding hidden curve parameter!



ATTACK 0 ... 3072
Duration of the **ATTACK** portion of the envelope, in clock ticks.
Note **48** clock ticks corresponds to 1 step (1/16th note) of 4/4.

DECAY 0 ... 3072
Duration of the **DECAY** portion of the envelope, in clock ticks.

SUSTAIN 0% ... 100%
Level of the steady state (note ON), until the key is released.

RELEASE 0 ... 3072
Duration of the **RELEASE** portion of the envelope, in clock ticks.

DEPTH -100% ... 100%
Scales the envelope

OFFSET 0% ... 100%
Offsets the envelope central value.

HOLD 0 ... 3072

Duration of the HOLD portion of the envelope, in clock ticks. This section is in between the attack and the decay.

DEST CC0 ... CC119 PITCHBEND AFTERTOUCH PROGRAM CHANGE VELOCITY NRPN CC PAIR CV OUT 1 CV OUT 2 CV OUT 3 CV OUT 4 FX PARAMETERS

Destination of the envelope.

⊕ CURVE A -100% ... 100%

Note Click on **ATTACK** to access this parameter

Curvature of the **ATTACK** portion of the envelope. Positive values produce an exponential curve, while negative values produce a logarithmic curve.

⊕ CURVE D -100% ... 100%

Note Click on **DECAY** to access this parameter

Curvature of the **DECAY** portion of the envelope. Positive values produce an exponential curve, while negative values produce a logarithmic curve.

⊕ WAIT AHD OFF, ON

Note Click on SUSTAIN to access this parameter

When set to **OFF**, a note-off message of the sidechain note will immediately short-circuit the envelope to its release stage, regardless of the current stage.

When set to **ON**, upon receiving a note-off message of the sidechain note, the envelope will wait for completion of the Attack, Hold and Decay stages before going into the Release stage. This results in a consistent timing of the envelope regardless of the length of the sidechain note (besides the sustain stage), making this option particularly suited to trigger envelopes with short notes, or trigs.

⊕ CURVE R -100% ... 100%

Note Click on **RELEASE** to access this parameter

Curvature of the **RELEASE** portion of the envelope. Positive values produce an exponential curve, while negative values produce a logarithmic curve.

⊕ SIDECHAIN ALL, C0 (0) ... G10 (127)

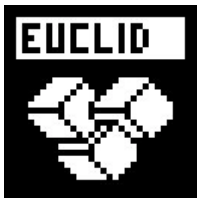
Note Click on **HOLD** to access this parameter

When set to **ALL** any MIDI note-on message will restart the envelope. When set to a specific note, only note-on messages of the selected note will restart the envelope.

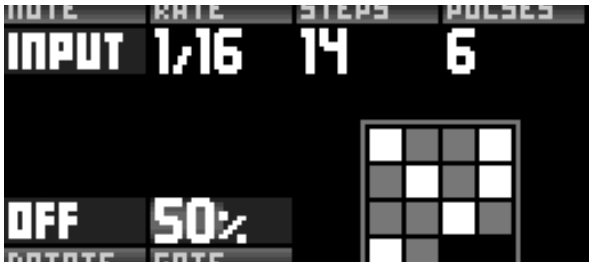
Tip When the destination is set to **VELOCITY**, and the **SIDECHAIN** is set to a specific

note, the sidechain note will not be affected by the envelope. A use case for this is ducking drums when the kick-drum hits, but leaving the kick drum at its full velocity.

13.12. Euclid



Easily generate euclidean rhythms with this effect.



NOTE IN C0 (0) ... G10 (127)
When set to **IN**, Euclid will use the incoming notes, e.g. if you hold the C, E, and G notes, Euclid will play a major C chord in a euclidean rhythm. Alternatively, you can choose to ignore the input, and generate a euclidean rhythm with a fixed note, while incoming notes will be passed on to the next effect untouched. Adding multiple Euclid effects on the same rack (with different notes) is an easy way to generate complex polymetric euclidean sequences.

RATE 1/1 1/2 1/3 1/4 1/6 1/8 1/12 1/16 1/24 1/32 1/64
Determine the clock rate of the internal euclidean sequencer.

STEPS 1 ... 32
Sets the amount of steps in the full cycle.

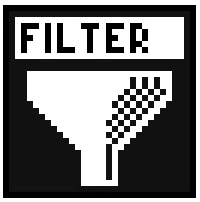
PULSES 1 ... 32
Sets the amount of pulses (filled steps) on which to play notes.

ROTATE 0 ... 31
Shifts the computed rhythm.

GATE 0% ... 200%

Set the gate length of outputted notes.

13.13. Filter



Filters out a range of notes or modulation values.

NOTE MIN – NOTE MAX C0 (0) ... G10 (127)

When **NOTE LO** < **NOTE HI**, this sets the range of notes that can be let through the Filter. When **NOTE LO**> **NOTE HI** however, this sets a range of notes to ignore.

CC MIN – CC MAX CC0 ... CC119

Similarly to notes, CC messages falling in certain ranges can be accepted, or dropped. When **CC LO** < **CC HI**, this sets the range of CCs that can be let through the Filter. When **CC LO** > **CC HI** however, this sets a range of CCs to ignore.

DROP PB OFF ON

When set to **ON**, will drop all pitchbend messages and not forward them to the next effect.

DROP AFT OFF ON

When set to **ON**, will drop all aftertouch messages and not forward them to the next effect.

13.14. Harmonizer

Creates a chord from a single note input.

ORIGIN ON OFF
When **ON**, will let incoming MIDI notes through, and output harmonized version of these notes. When OFF, will drop the incoming notes, and only output harmonized notes.

NOTE 2 ... 8 -36 ... +36
Choose up to 7 intervals with which to harmonize incoming notes, to generate complex chords.

13.15. LFO

Generate different types of high resolution waveforms.

WAVEFORM SINE TRI RAMP SQUARE RAND
Choose the waveform of the LFO.

SYNC ON OFF
Choose whether the rate should be tied to the BPM of the project or not.

RATE (unsynced) 1 ... 100
Exponentially increasing frequency, from roughly 0.1 Hz to 1kHz.

RATE (synced) 64 BARS ... 1 BAR 1/2 ... 1/128
Selects the synchronized rate of the LFO.

PHASE -180° ... 180°
Phase shift the starting point of the LFO.

DEPTH -100% ... 100%
Scales the LFO.

OFFSET 0% ... 100%
Offsets the LFO central value.

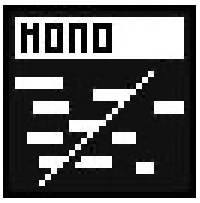
MODE LOOP RLOOP ONCE 2x ... 16x

• **LOOP**: standard free-running LFO that cycles continuously.
• **RLOOP**: retriggers the LFO cycle with every new note.
• **ONCE**, **2X**, ... **16X**: Plays the LFO waveform once or a specified number of times per note, then stops (behaves similarly to an envelope).

DEST CC0 ... CC119 PITCHBEND AFTERTOUCH PROGRAM CHANGE VELOCITY NRPN CC PAIR CV OUT 1 CV OUT 2 CV OUT 3 CV OUT 4 FX PARAMETERS

Destination of the LFO.

13.16. Mono



New! Converts incoming polyphonic notes to monophonic notes.

MODE FIRST LAST RANDOM LOW HIGH

• When set to FIRST, the oldest note will be played while the others will be ignored.
• When set to LAST, the newest note will be played while the others will be ignored.
• When set to RANDOM, each time a new note is played while another is already playing, there is a 50% chance that the new note will replace the old one.
• When set to LOW, the newest note will be played only if this note is lower than the one currently playing.
• When set to HIGH, the newest note will be played only if this note is higher than the one currently playing.

LEGATO OFF ON

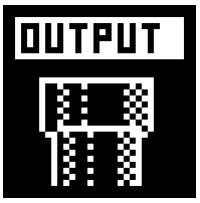
• When set to OFF , and if a note retriggers, there will be no overlap between the 2 notes.

• When set to ON, and if a note retriggers, there will be a slight overlap between the 2 notes, allowing for a legato effect with synths that support it.

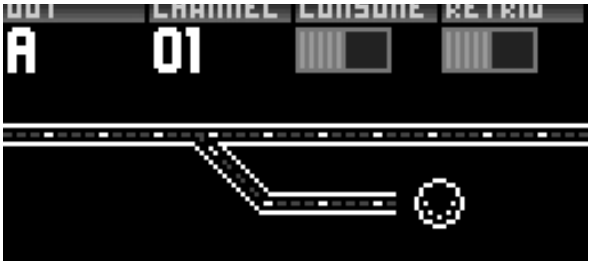
RETRIG OFF ON

• When set to **OFF**, if the currently playing note is released while other notes are still held, none of those are retriggered.
• When set to **ON**, if the currently playing note is released while other notes are still held, one of those held notes will be retriggered. The **MODE** parameter determines which note is retriggered in this case.

13.17. Output



Easily reroute notes and control messages to other outputs.



OUT – A B C D DEVICE HOST CV/GATE 1 .. 4
Selects the secondary output.

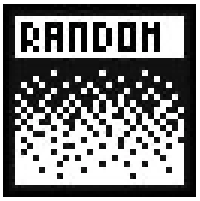
CHANNEL 01 ... 16
Selects the channel of the secondary output.

CONSUME OFF ON
If **ON** and the parameter **OUT** is set, the effect will only send the messages to the selected secondary output. Events will not be duplicated.

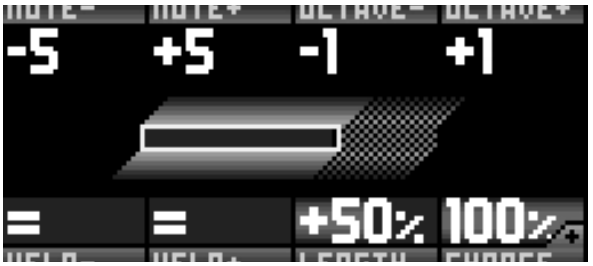
RETRIGGER OFF ON
If **OFF**, changing **OUT** or **CHANNEL** will not retrigger held notes, allowing to stack

successive held notes on multiple synths. If **ON**, then modulating **OUT** or **CHANNEL** will shut held notes on the previous output and retrigger them on the new one.

13.18. Randomizer



Randomly alters notes velocity/pitch/octave.



NOTE– / NOTE+ –36 ... +36
Defines the random pitch range. For example:
• an incoming note of C5 (=60) with **NOTE– = –1** and **NOTE+ = +4** will be randomly assigned to a pitch between B4 (=59) and E5 (=64).
• an incoming note of C5 (=60) with **NOTE– = +2** and **NOTE+ = +4** will be randomly assigned to a pitch between D5 (=62) and E5 (=64).

OCTAVE– / OCTAVE+ –5 ... +5
Defines the random pitch range, based on octaves.

VELO– / VELO+ 0% ... 100%
Increase the random velocity range downwards and upwards respectively.

LENGTH 0% ... 100%
Randomly increase the length of incoming notes by delaying their NOTE OFF messages. At **100%**, notes can be increased up to a whole note (4x 1/4 notes = a bar in 4/4).

CHANCE 0% ... 100%
Probability per note of random having an effect on the note parameters.

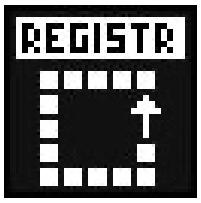
⊕ USE VELO OFF ON

New!

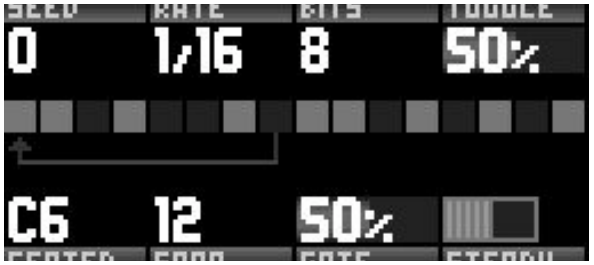
Note Click on **CHANCE** to access this parameter.

When **ON**, the velocity of an incoming note will scale the chance parameter. With a **CHANCE** parameter at 50%, a velocity of 127 will have a 50% chance of being affected by the randomizer, while a velocity of 64, it will have a 25% chance, and so on.

13.19. Register



New! Generates a free running random looping sequence of notes that can be locked or allowed to mutate over time. Freely inspired by the Music Thing Modular's *Turing Machine*.



This effect operates by constantly shifting and feeding back a 16 bits register into itself at a specified rate. A bit value can be either '0' or '1'.

Each step (synchronized with the defined **RATE**) shifts the register value. The last bit is placed in the first bit (the arrow on the screen) and can be randomly flipped using **TOGGLE** for generative uses.

When the leftmost bit of the register is '1', a note is generated, forming the basis of the rhythm. The pitch of this note is determined by this register value, using only the first 8 bits.

SEED 0 ... 65535

A change of this parameter immediately resets the 16-bit register with the parameter

number, ranging from 0000000000000000 (0) to 1111111111111111 (65535). It is a quick way to change the pattern generated by the register.

RATE 1/1 ... 1/64

Sets the speed at which the register value is shifted.

BITS 1 ... 16

Determines the bit depth of the TURING effect, ranging from 2 bits to 16 bits, defining the sequence loop length.

TOGGLE 0% ... 100%

The probability of the first bit to be flipped at each step. This parameter is a way to introduce randomness in the generated sequence.

- **0%**: the bit remains unchanged, causing the sequence to be "locked".
- **100%**: the bit is always flipped when it is re-added to the front of the register.
- **1%** .. **99%**: the bit is flipped with the probability defined, creating an evolving sequence. The closer the value is to 50%, the more random the sequence becomes. Conversely, values closer to 0% or 100% produce sequences that are more repetitive.

CENTER C0 ... G10

The central note of the generated sequence.

SPAN 0 ... 60

The range of notes (positive and negative) that can be generated. The register value is scaled to determine the pitch of the note to be played.

GATE 0% ... 800%

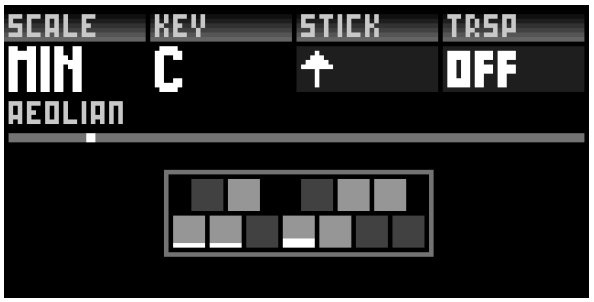
Pattern note lengths, depends on the rate.

STEADY OFF ON

When set to **OFF**, the first bit of the register determines if a note is generated.
When set to **ON**, a new note is generated at each step, regardless of the first bit value.

13.20. Scaler

Quantizes incoming notes to a given scale.



The keyboard displays the quantized notes of the selected scale, as well as the number of currently playing notes in the pattern.

SCALE pSCALE MAJ ... OCTAVE

Choose the scale to quantize to. Select the **pScale** value if you want to use the scale defined into project scale.

KEY C ... B

Choose the root note of the scale.

STICK DOWN UP FILTER

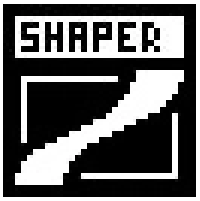
When an incoming note is out of scale, the algorithm can quantize this note "down", "up" or "filter" it. For example, if selected scale is C Maj, an incoming out of scale note C# will be processed like:

- **DOWN** : C# scaled to C
- **UP** : C# scaled to D
- **FILTER** : C# is ignored (not played)

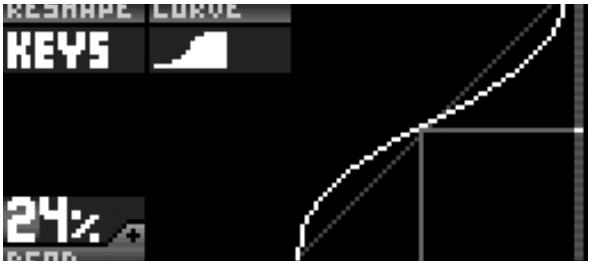
TRSP -36 ... +36

Transpose notes before applying selected scale.

13.21. Shaper



New! Applies a non-linear transformation to incoming events.



RESHAPE KEYS VELOCITY PITCHBEND AFT CC0 ... CC119
Selects the type of event to reshape.

CURVE EXP SIGMO
Selects the type of curve to apply to the selected event.

BEND -100% ... 100%
Sets the amount of bending. Negative value inverts the mapping.

⊕ OFFS IN -100% ... 0% ... 100%
Sets the amount of offset to apply to the event before the transformation.

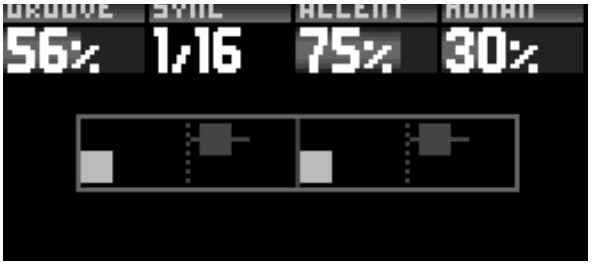
⊕ SPAN IN 0% ... 100% ... 400%
Sets the amount of scaling to apply to the event before the transformation.

⊕ OFFS OUT -100% ... 0% ... 100%
Sets the amount of offset to apply to the event after the transformation.

⊕ SPAN OUT 0% ... 100% ... 400%
Sets the amount of scaling to apply to the event after the transformation.

13.22. Swing

Shifts the positions of incoming notes to produce rhythmic variations.



GROOVE 0% ... 50% ... 100%
Percentage of swing.
50% has no effect on notes position.
51% to **100%** will delay the off–grid notes position.
49% to **0%** will delay the on–grid notes position.

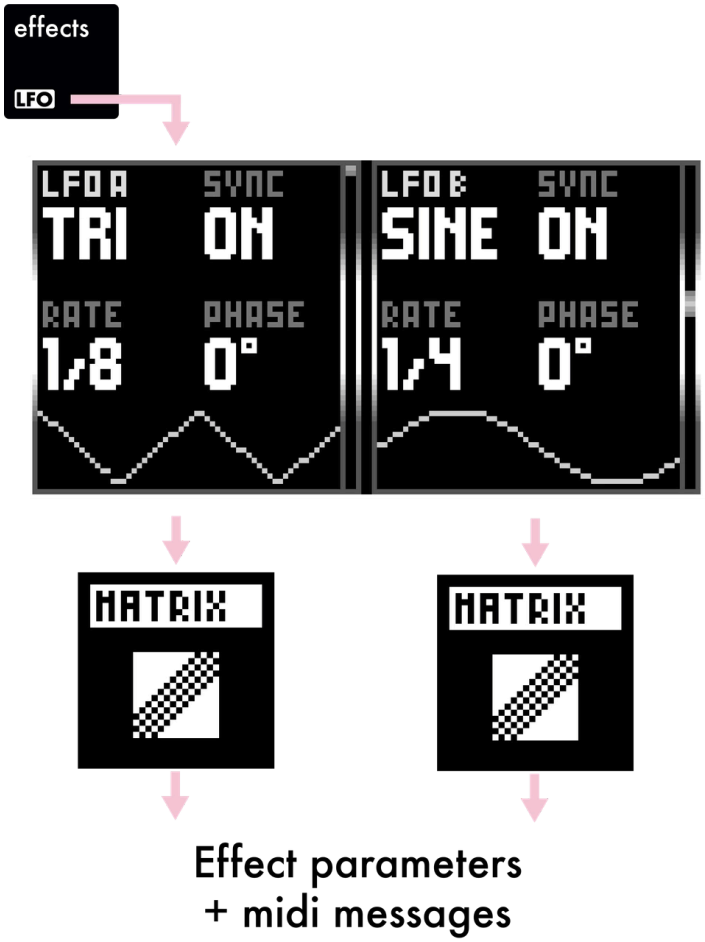
SYNC 1/3 1/4 1/6 1/8 1/12 1/16 1/24 1/32 1/64
Swing quantisation grid. **1/16** is the classic value.

ACCENT 0% ... 100%
Amount of swing velocity accent. This parameter affect all notes.

HUMAN 0% ... 100%
Slightly randomize the position of swung notes (humanizer).

13.23. Project LFOs

Press **2ND** + **effect** to enter the Project LFOs submode.



Each project has two global LFOs that can be used across multiple tracks. They are available as sources in each track's modmatrix.

13.24. Quantizer

The quantizer is located in **2ND** + **track** window and aligns notes to a time division to improve timing precision.

Press **2ND** + **track** to enter secondary tracks settings.

QUANTZ – 1/64 1/32 1/24 1/16
Quantizer time division (usually 1/16).

STRENGTH 0% ... 100%
Amount of quantization. As a **100%** strength value will apply maximum quantization to the notes, lower values will allow the notes to be slightly off grid.

14. Algo

14.1. Overview

In Hapax, algo (algorithms) are operations that are *not* performed in real time, but rather applied "offline", directly on the sequences you programmed or recorded.

When working in **step** or **automation** modes, press **algo** to enter this submode.

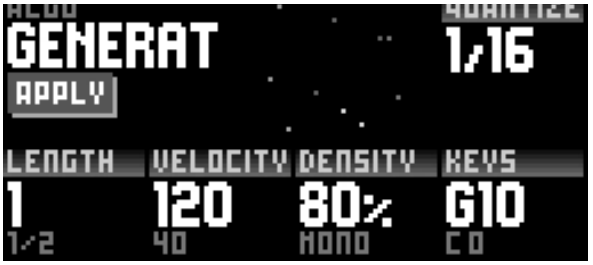
Select the algorithm by scrolling encoder ① and **Press** it to apply the algorithm on the pattern you are working on. The other encoders let you configure the algorithm parameters.

Some parameters have a secondary value that can be accessed with a **Hold** + **Rotate** of the associated encoder.

Tip Make a selection before applying an algorithm to only alter the selected zone.

14.2. Generator

Availability:
step POLY tracks
step DRUM tracks



This algorithm replaces the existing notes with a new randomized pattern. Generated notes are quantized to the specified grid. The min & max pitch, velocity and length of the new notes can also be adjusted. Lastly, it is possible to set the amount of events (density %) and to decide whether the generated notes are monophonic or chords (mono ... poly 4).

QUANTIZE 1/1 ... 1/64
Rotate encoder ⑥ to set the grid on which the generator will place the generated

notes.

LENGTH 1 ... 64
Rotate encoder ③ to set the maximum note length of generated notes, in steps.
Hold + Rotate encoder ③ to set the minimum note length.

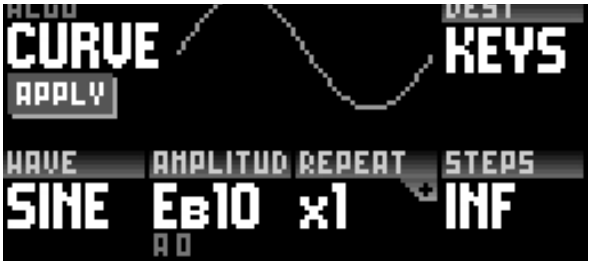
VELOCITY MIN/MAX 0 ... 127
Rotate encoder ④ to set the maximum velocity of generated notes.
Hold + Rotate encoder ④ to set the minimum velocity.

DENSITY 0% ... 100%
Rotate encoder ⑦ to set the density of notes in the generated pattern.
Hold + Rotate encoder ⑦ to define the polyphony:
Mono Only one note can be created per time division.
Poly 2 / 3 / 4 Enables chord generation (polyphony).

PITCH C0 ... G10
Rotate encoder ⑧ to set the maximum pitch of generated notes.
Hold + Rotate encoder ⑧ to set the minimum pitch.
Note This option can only be accessed from POLY tracks.

14.3. Curves

Availability:
step POLY tracks
step DRUM tracks
automation mode



This algorithm modifies note parameters by applying a curve on their values. The waveform (sine, triangle...), its min & max amplitude and its rate can be adjusted. By default, the modified note attribute is the velocity, but other destinations can be set (length, chance...).

For example, a ramp applied on velocity will result in a "velocity fade in".

WAVE SINE TRI RAMP SQUA RAND PERLI
Rotate encoder ③ to set the waveform of the curve. The last parameters **RANDOM** and **PERLIN**, which are two types of random generators, have extra parameters that are described below.

AMPLITUDE Depends on destination
Rotate encoder ④ to set the upper value of the curve amplitude.
Hold + Rotate encoder ④ to set the lower value of the curve amplitude.

DESTINATION
Rotate encoder ⑥ to set the note parameter to modulate:
PITCH Pitch
VELO Velocity
LENG Length
CHAN Chance
ROLL Roll
MATH Math condition
uTIME Micro timing

REPEAT x1 ... x128
Rotate encoder ⑦ to set the number of repetitions of the selected waveform in the selected zone.

STEPS INF 1 ... 256
Rotate encoder ⑧ to downsample the curve using a fixed number of steps. **INF** has the best definition, calculating new values for each steps.

⊕ PHASE -180° ... 0° ... +180°
Note Click on REPEAT to access this parameter.
Rotate encoder ⑦ to offset the curve by adjusting its phase.

⊕ SEED – 0 ... 9999
Note If **RANDOM** or **PERLIN** selected, click on STEPS to access this parameter.
Rotate encoder ⑧ to choose a seed for the random curve. A specific seed will always

produce the same curve, that can be reused to obtain the same *controlled random* modulation.

⊕ VALLEYS 0 ... 100
Note If **PERLIN** selected, click on STEPS twice to access this parameter.
Rotate encoder ⑧ to adjust the level of peaks and valleys to the curve.

14.4. Shuffle

Availability:
step POLY tracks

New! This algorithm shuffles the notes in several ways. There is a mode where you can shuffle individual notes or note parameters between themselves called STEP. The other mode, called PART, segments the notes in equally spaced partitions and shuffles them. In both mode, there is a probability parameter that controls the probability of each note or interval to be shuffled, allowing for partial shuffling.

As usual, selecting a zone before applying the algorithm will only shuffle the selected zone. In the PART mode, the interval starts at the selection start. Events at the end and outside a whole multiple of the partition size, will not be shuffled. In addition, the algorithm doesn't take into consideration the micro time parameter, which means that negative micro timing at the very start of a partition will be considered as in the previous partition.

MODE
Rotate encoder ③ to toggle between the two modes.
STEP Sets mode to shuffle individual notes or note parameters.
PART Sets mode to shuffle note segments.

PROBABILITY 0% ... 100%
Rotate encoder ④ to set the probability of each note or segment to be shuffled.

DESTINATION

Note This parameter is only available in STEP mode.

Rotate encoder ⑦ to set the note parameter to shuffle.

ALL Shuffles all note attributes simultaneously.

KEYS Keys

VELO Velocity

LENG Length

CHAN Chance

ROLL Roll

MATH Math condition

INTERVAL 8BARS ... 1/64

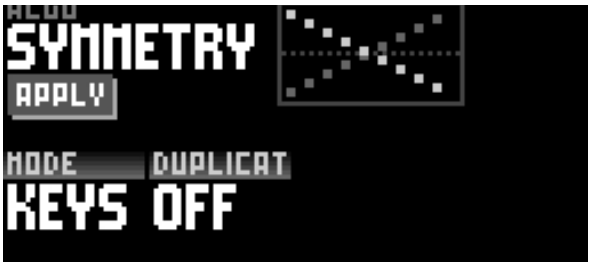
Note This parameter is only available in PART mode.

Rotate encoder ⑦ to set the interval at which notes will be shuffled.

14.5. Symmetry

Availability:

step POLY tracks



This algorithm flips events horizontally (time) or vertically (pitch). The original events can either be kept or replaced.

MODE TIME PITCH

Rotate encoder ③ to toggle between horizontal and vertical symmetry.

DUPLICATE OFF ON

Rotate encoder ④ to enable the superposition of the generated notes onto the original notes.

14.6. Every N

Availability:
step DRUM tracks

This algorithm creates evenly spread notes with accents and ghost notes, based on the N parameter. Very powerful for sequencing drum sounds. Beware of the wild grooves you'll end up with.

GRID 1/1 ... 1/64
Rotate encoder ③ to adjust the grid on which the generated notes will be placed.

N 1 ... 16
Rotate encoder ④ to set the accent placements on the grid.
With N = 2, every second note in the pattern will be accentuated.

ACCENT VELOCITY MIN/MAX 0 ... 127
Rotate encoder ⑦ to adjust the maximum velocity for each accent.Hold + Rotate encoder ⑦ the minimum velocity.

GHOST VELOCITY MIN/MAX 0 ... 127
Rotate encoder ⑧ to adjust the maximum velocity for each ghost note.Hold + Rotate encoder ⑧ the minimum velocity.

15. Mixmute

15.1. Overview

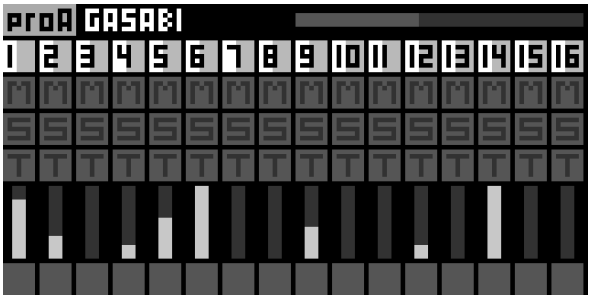
Simply Press **mute** to enter this mode.

Note If you Hold this button, you will not enter this mode but you will be able to mute tracks with groups. (Click here for more info).

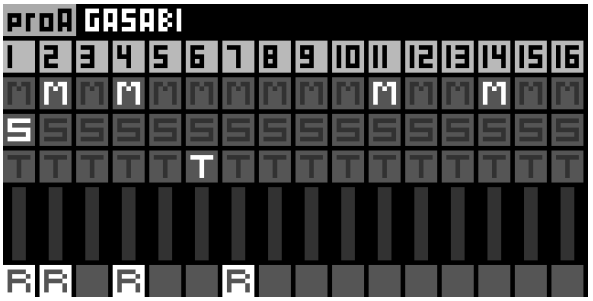
This mode lets you easily perfom with mutes of your 32 tracks in the same view (16–track × 2–project). You can also solo tracks, temporary toggle the final state and enable multitrack recording.

The left screen is showing the 16–track states of the project **proA**, while the right screen is showing **proB** :

The vertical vumeters are showing midi activity (number of notes currently playing) per tracks:



The icons **M** (mute), **S** (solo), **T** (temporary toggle), and **R** (multitrack recording) are showing the track states when highlighted:



Thanks to the 128 pads, you get a direct access to the **M S T R** of your 32 tracks. The top rows represents the states of the project **proA**, while the bottom rows represents **proB** :

15.2. Mute tracks

Press the **MUTE** row pads to instantly mute/unmute tracks of **proA** and **proB**.

A muted track will highlight its pad:

Tip If a track has midi activity (notes are currently playing), its mute pad will blink if the track is unmuted.

15.3. Solo tracks

Press the **SOLO** row pads to instantly solo/unsolo tracks of **proA** and **proB**.

If a track is solo, every other tracks will be silent. Only the solo track will play, even if this track is muted.

A solo track will highlight its pad:

Tip Hold a **SOLO** pad and Press other pads to solo multiple tracks.

15.4. Temporary toggle

Press the **TOGGLE** row pads to temporary toggle the track state (silent or playing) of **proA** and **proB**. In other words, pressing toggle will momentary invert the mute state of the track.

Releasing the pad will untoogle the state.

A track toggle will highlight its pad:

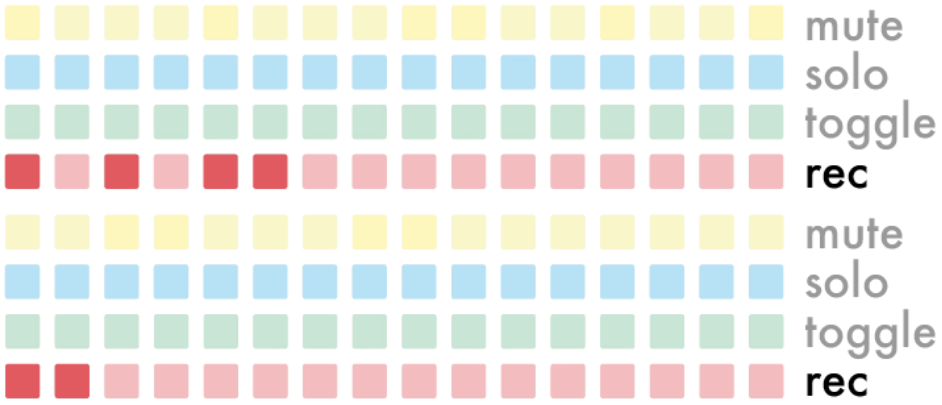
In the example above:
• the proA **TR01** is toggled: this track will be silent, as it was unmuted.
• the proA **TR02** is toggled: this track will be playing, as it was muted.
• the proA **TR03** is toggled: this track will be silent, as it was muted but solo (and solo override the mute state).

15.5. Multitrack recording

By default, pressing O will record only on one unique track : the active track. (Click here for more info).

But thanks to this mode, you will be able to configure the multitrack recording.

Press the **REC** row pads to "arm" the recording state of your 16–track per project:



Then, pressing O will record your performance on all previously selected tracks. Of course, tracks will start to record only if there is MIDI or CV/GATE routed to their inputs.

Tip After "arming" your tracks, you can quit the Mixmute mode and multitrack O from

any other mode.

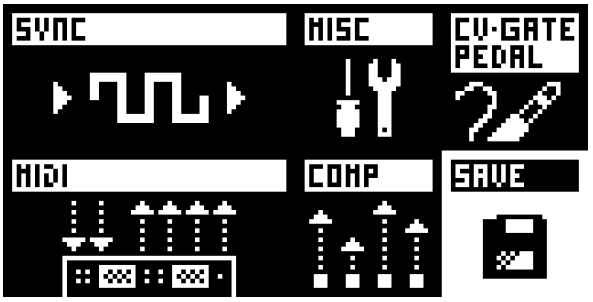
Note Dual–project recording is not possible. Only the active project will allow its tracks to be recorded.

Note If the multitrack recording is enabled (at least one track is armed), the active track will not be recorded, only the armed tracks will be recorded.

16. Settings

16.1. Overview

Toggle **settings** and navigate the parameters to configure Hapax according to your needs.



Select the **SAVE** icon to store settings onto the SD card : they will be loaded at startup. Settings are global and are used by both projects **proA** and **proB**.

16.2. Sync input

CLOCK SOURCE

INTERNAL Hapax will use its internal clock (to be the synchronisation leader).

MIDI IN A Hapax will follow the midi A clock input.

MIDI IN B Hapax will follow the midi B clock input.

USB HOST Hapax will follow the usb host clock input.

USB DEVICE Hapax will follow the usb device clock input.

CV IN 1 Hapax will follow an analog gate input, if connected on the CV input 1.

CV IN 2 Hapax will follows an analog gate input, if connected on the CV input 2.

MIDI AUTO Hapax will automatically follow an incoming clock (MIDI and USB). If no input clocks are detected, Hapax will use its internal clock.

Tip When using **CV IN 1** or **CV IN 2**, Hapax is synchronized in a "step advance" (trigger) style. The setting **CV CLOCK DIV** lets you choose how much ppqn the sequencer will run for one input trig. Please note that you also need to set the tempo thanks to the BPM popup, allowing a great flexibility. For example, if you want to sync

Hapax with an external eurorack sequencer analog clock, running at 140bpm and sending a gate each 1/16, you need to set **CV CLOCK DIV = 1/16 (4ppqn)** and set Hapax tempo to **140 BPM**.

MIDI START/STOP

– Start and stop Hapax only with ▷ and □ pads.

ON (CLOCK INPUT) Hapax receives & reacts to midi in start/stop messages (on same input as **CLOCK SOURCE**, that must be set to an external source).

ON (ANY INPUT) Hapax receives & reacts to midi in start/stop messages. All inputs can receive these messages (even when **CLOCK SOURCE** is set to **INTERNAL**).

CV RESET

CV IN 1 Use an analog gate on CV input 1 to reset the playback position.

CV IN 2 Use an analog gate on CV input 2 to reset the playback position.

AUTO If **CLOCK SOURCE = CV IN**, Hapax will automatically reset its player when not receiving an incoming CV clock for more than 2 seconds. This setting will also allow the player to automatically start the player when an incoming clock is received.

CV PLAY ENABLE

CV IN 1 Use an analog gate on CV input 1 to start the playback. A high state will run the sequencer, a low state will stop & reset the playback.

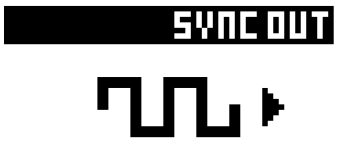
CV IN 2 Use an analog gate on CV input 2 to start the playback. A high state will run the sequencer, a low state will stop & reset the playback.

CV CLOCK DIV 1/96 = 24 PPQN 1/64 = 16 PPQN 1/48 = 12 PPQN 1/32 = 8 PPQN 1/16 = 4 PPQN 1/8 = 2 PPQN 1/4 = 1 PPQN

When the above option **CLOCK SOURCE = CV**, sets the expected speed of the incoming clock.

Note This parameter is displaying 2 different units, meaning the same thing. The first one is the time division (e.g. **1/16**) : it's the expected rate of the clock. The second one is the expected number of pulses per quarter note (e.g. **4 PPQN**).

16.3. Sync output



MIDI A, B, C, D, USB DEVICE, USB HOST

– Do not transmit clock, start and stop messages to the selected midi output.

CLOCK+TRANSPORT Send midi clock + start/stop to the selected midi output.

CLOCK Send only midi clock to the selected midi output.

TRANSPORT Send only midi start/stop to the selected midi output.

CLOCK ON STOP

– Send midi clocks only when Hapax is playing.

SEND Always send midi clocks, even when hapax is stopped.

SEND (ONLY MIDI) Always send midi clocks on midi ports, even when hapax is stopped.

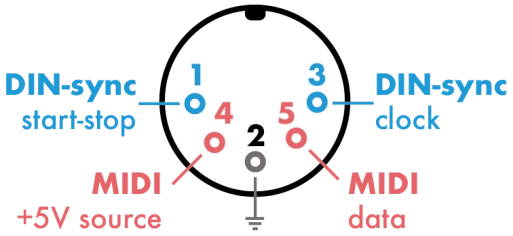
SEND (ONLY GATE) Always send midi clocks on gate outputs, even when hapax is stopped.

DIN SYNC – 1/96 ... 1/1

Set the DIN-sync analog clock pulse resolution (also known as Sync24, enable some vintage gear synchronization, like the TR-808) available on midi output C port. When a clock value is set, this DIN-sync port also send the start/stop message.

Tip When using Hapax DIN-sync to synchronize some units (TR-909, TR-808, ...) it may be preferable to use a special DIN-5 connector with pins 4 and 5 disconnected: these pins are used to transport midi data and may cause sync issues with some machines.

HAPAX DIN-5
male connector
front view



GATE RUN – GATE 1 (RUN = HIGH) ... GATE 4 (RUN = HIGH)
GATE 1 (RUN = LOW) ... GATE 4 (RUN = LOW)

When **RUN = HIGH**, selected gate output will be set to high level when Hapax is playing and low level when Hapax is stopped. When **RUN = LOW**, selected gate output will be set to low level when Hapax is playing and high level when Hapax is stopped.

TRIG RESET – GATE 1 (ON START) ... GATE 4 (ON START) GATE 1 (ON STOP) ...
GATE 4 (ON STOP)

Selected gate output will trig (for a few ms) a high level signal, either at the start of playback, or at the end (on stop).

GATE CLOCK – GATE 1 ... GATE 4

Selected gate will output a synchronisation clock, with a 50% duty cycle.

GATE CLOCK DIV 1/96 1/64 1/48 1/32 1/16 1/8 1/4 1/2 1/1

When the above option **GATE CLOCK** is enabled: sets the speed/resolution of the clock.

16.4. Misc

INFO

Displays system and performance data, great to troubleshoot potential bottlenecks, including:

- Current hapaxOS version
- Real–time CPU usage
- RAM Monitor (memory usage of Notes+Drums memory space, MPE memory space and Automation memory space)
- MIDI Bandwidth Monitor (to visualize outgoing MIDI load)

Note The MIDI bandwidth monitor displays four vu–meters (one for each of Hapax's MIDI outputs). Each meter shows the real-time amount of MIDI data being transmitted through its respective port. Each vu–meter pixel represents one millisecond of transmission time (the time it takes for a MIDI message to be sent from the Hapax output to the receiving device). This tool is especially useful for identifying overloaded outputs that may cause latency or dropped messages, balancing MIDI traffic across multiple outputs for optimal performance and troubleshooting complex setups with high automation or dense note data. Thanks to the high bandwidth of the USB outputs, they are not affected by these limitations and therefore do not require monitoring.

PALETTE

Enter the color palette mode, to customize RGB leds colors thanks to encoders ①…⑧ (read section color palette).

SCREEN

Access to screen hardware settings. These settings have been configured to reduce flickering when filming HAPAX. If you don't plan on filming, you should keep the default settings.

METRONOME

MIDI If metronome enabled in the rec settings, the metronome will be send thanks to MIDI notes messages.

CV OUT 1/2/3/4 If metronome enabled in the rec settings, the selected CV output will output an audio sound that you can directly plug to your mixing console or portable speaker.

METRONOME MIDI ACTIVE TRACK MIDI A/B/C/D CH01..CH16 USB HOST/DEVICE CH01..CH16

Only applicable if the previous **METRONOME** setting is set to **MIDI**. Choose which MIDI output+channel should be used to send the metronome note messages.

METRONOME AUDIO VOLUME 10% VOLUME 100%

Only applicable if the previous **METRONOME** setting is set to **AUDIO**. Choose the metronome audio output level (100% = 10Vpp = eurorack level, 30% = 3Vpp = professional line level).

METRONOME BAR C0 ... C6 ... G10

MIDI note to play on the first beat of the bar.

METRONOME BEAT C0 ... C6 ... G10

MIDI note to play on other beats of the bar.

TRANSPOSE ROOT C0 ... C6 ... G10

Set the "center note" defining **TRSP** = +0 (no transposition). Works only is **pTRSP=TRSP** is enabled on your project.

pTRSP SYNC INSTANT BEAT 1 BAR ... 4 BARS

Choose the time interval on which transposition should be synced to. Works for **pTRSP=TRSP** (classic transpose) and **pTRSP=CHRD** (match chord).

RESTART SYNC INSTANT BEAT 1 BAR ... 4 BARS

Choose the time interval on which pressing play (when Hapax is already running)

should restart the player. Useful to synchronize a restart to a beat, a bar, ... when live performing.

PATTERN TRIG FREE RESTART
New! Sets the default value of a pattern trig mode.

LED BRIGHTNESS 0% ... 100%
Adjust leds brightness level to best match your environment.

SCREEN CONTRAST 0% ... 100%
Adjust screen contrast to best match your environment.

HOLD TIME FASTER FAST NORMAL SLOW EXTRA SLOW
Change the time for a button press to be registered as a Hold action.

MUTE GROUP
OFF Instant track mute.
ON When muting tracks, enables group selection: all tracks mute states will be toggled after the mute pad release.

SPLIT BARS
OFF In **step** mode, a new bar is a continuation of the previous one.
ON In **step** mode, a new bar is always on a new page (useful for odd time signatures).
Note This is an advanced setting, default value **ON** is probably what you need.

NOTE CHASING
OFF When unmuting a track, notes currently played by the playhead are not retrigged.
ON Retrig notes that should be playing when unmuting a track.

UNISON

Unison = the simultaneous playing of multiple identical notes.

OFF When multiple notes of the same pitch are played, only one can be active at a time. If a new note-on of the same pitch is received, a note-off for the previous instance is sent immediately before the new note-on (retrigger-style behavior).

ON When two or more notes of the same pitch are played simultaneously on a pattern, they are layered. This allows you to create "chords" consisting of repeated notes. For example, if the STEP mode is playing a C5 and you press another C5 in LIVE mode, both note-on messages are sent. Their corresponding note-off messages will be sent simultaneously, but only when the last active instance of that note is released. Some synthesizers are supporting unison to create a fuller sound. It's also useful within Hapax, as internal MIDI effects are unison-compatible. For instance, the Arpeggiator can process a chord containing multiple instances of the same note (e.g., two C5, three D5, and one E5), treating each one individually for more dynamic patterns.

SELECT +/- WARP ROTATE

Determines the behaviour of the + and - buttons during a **step** mode multiple-events selection.

BACKGROUND RGB LIVE 0% ... 100%

Adds a colored preview of notes in the background of the 128-pad Matrix (when in **live** mode **SCALE**).

BACKGROUND RGB STEP 0% ... 100%

Adds a colored preview of notes in the background of the piano-roll. (when in **step** mode **POLY** and **MPE**).

MIDI MONITOR ALL MESSAGES ONLY NOTES ONLY CC ONLY PITCHBEND ONLY PRESSURE ONLY PC ONLY REAL TIME

Configure the **MIDI MONITOR** mode, in order to log all messages, or only the selected midi events.

STEP NOTE PREVIEW OFF ON

When enabled, outputs a short note upon creating a new event in **step** mode, or modifying the pitch/velocity of an existing event.

APPLY SUSTAIN OFF ON

When enabled, incoming sustain pedal messages (MIDI CC 64) will directly affect the note lengths. When the sustain pedal CC is high (pedal is pressed), all note-off events are held.

Note When this option is turned on, all inbound MIDI CC 64 messages will be consumed, and not be forwarded down the effects chain.

Note This does not apply to *outbound* MIDI CC 64 messages.

Click here for more information.

FOLLOW PLAYHEAD OFF ON

While PLAY is active and this setting is enabled, the piano-roll automatically jumps to display the currently played page.

Disable this option if you prefer to keep a manual navigation between pages, only using ▶| or |◀.

AUTOLOAD OFF ON

When enabled, the last saved project will be automatically loaded when the unit is powered on.

SCREENSAVER TIME NEVER 1MIN 5MIN 10MIN 30MIN 1HOUR

Determines the time to wait before starting the screensaver when no action is performed on the unit.

DEBUG ENABLED OFF ON

Enables debugging shortcuts for extra error messages.

Tip When enabled, Press **2ND** + **pattern** to save in the SD card a screenshot of the 2 OLED displays.

16.5. CV/Gate + pedal

CV IN RANGE -5.0v > +5.0v 0.0v > +5.0v -1.0v > +1.0v

Set the input voltage range Hapax can process, for the two CV inputs.

CV OUT RANGE -5.0v > +5.0v 0.0v > +5.0v

Set the voltage range Hapax can output, for the 4 CV outputs.

CV OUT TYPE 1V/OCTAVE 1.2V/OCTAVE HZ/V

Pitch information is most often expressed as a control voltage using the **V/OCTAVE** standard. It is used by Eurorack modules and most other modular systems.
However some synthesizers require the use of other standards to respond correctly.
The **1.2V/OCTAVE** standard is mainly used by Buchla-compatible systems, while the **HZ/V** standard is an older standard used by the Korg MS series and the Yamaha CS series, among others.

	V/OCTAVE	HZ/V
C0	- 5 V	+ 0.0312 V
C1	- 4 V	+ 0.0625 V
C2	- 3 V	+ 0.125 V
C3	- 2 V	+ 0.25 V
C4	- 1 V	+ 0.5 V
C5	+ 0 V	+ 1 V
C6	+ 1 V	+ 2 V
C7	+ 2 V	+ 4 V
Eb7	+ 2.25 V	+ 4.75 V
C8	+ 3 V	out of range
C9	+ 4 V	out of range
C10	+ 5 V	out of range

Comparison of the available notes in the Volt-per-octave standard, and the Hertz-per-Volt standard

GATE POLARITY HIGH=5V HIGH=0V

Set the gate ON level (5V or 0V).

GATE OUT RETRIG ON OFF

When a new note is played while a note was already playing, determines whether the gate is retrigged or not.

PEDAL (TIP) – REC PLAY/STOP PLAY/RESTART FILL UNDO REDO TAKE SNAPSHOT TOGGLE SNAPSHOT TRACK MUTE TRACK SOLO TRACK TOGGLE PREVIOUS SECTION NEXT SECTION PREVIOUS PATTERN NEXT PATTERN TAP BPM STEP-REC REST STEP-REC TIE

Assign a command to execute when using a footswitch. Pedal hot is the tip channel of the cable, available on mono (single) and stereo (dual) pedals.

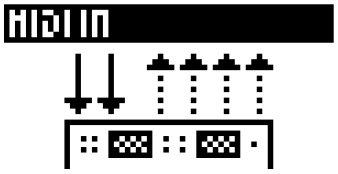
PEDAL (RING) – REC PLAY/STOP PLAY/RESTART FILL UNDO REDO TAKE SNAPSHOT TOGGLE SNAPSHOT TRACK MUTE TRACK SOLO TRACK TOGGLE PREVIOUS SECTION NEXT SECTION PREVIOUS PATTERN NEXT PATTERN TAP BPM STEP-REC REST STEP-REC TIE

Assign a command to execute when using a footswitch. Pedal cold is the ring channel of the cable, available on stereo (dual) pedals.

PEDAL POLARITY NORMALLY OPEN NORMALLY CLOSED

Change pedal polarity helps support a wider range of footswitch types, especially for sustain pedals which may be normally open (NO) or normally closed (NC).

16.6. Midi input



NOTES

– Accepts all incoming midi notes

IGNORE Ignores all incoming midi notes

REC ONLY Ignores but allow record (avoid midi echo)

CC MESSAGES

– Accepts all incoming midi CC

IGNORE Ignores all incoming midi CC

REC ONLY Ignores but allow record (avoid midi echo)

PITCHBEND

– Accepts all incoming midi pitchbend

IGNORE Ignores all incoming midi pitchbend

REC ONLY Ignores but allow record (avoid midi echo)

PRESSURE

– Accepts all incoming midi aftertouch

IGNORE Ignores all incoming midi aftertouch

REC ONLY Ignores but allow record (avoid midi echo)

PROGRAM CHANGE

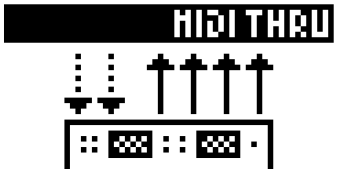
– Accepts all incoming midi PC

IGNORE Ignores all incoming midi PC

ACTIVE TRACK PORT – MIDI IN A MIDI IN B MIDI IN DEVICE MIDI IN HOST
Allows for routing MIDI messages to the active track regardless of the track's input parameters.

ACTIVE TRACK CHANNEL 01 ... 16
When the previous setting "Active Track Port" is active, this sets the channel which messages should be sent to the active track.

16.7. Midi thru



When Midi thru is enabled, between an input and an output it forwards instantly any Midi event (including notes, Cc...) directly to the selected output.

MIDI IN > MIDI OUT A/B/C/D
ON Configure MIDI thru from the MIDI inputs to any selected MIDI output.

MIDI IN > USB DEVICE/HOST
ON Configure MIDI thru from the MIDI inputs to any selected MIDI output.

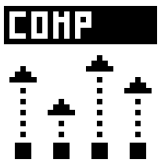
USB DEVICE > MIDI A/B/C/D
ON Configure MIDI thru from the USB device input to any selected midi output.

USB DEVICE > USB HOST
ON Configure MIDI thru from the USB device input to USB host output.

USB HOST > MIDI A/B/C/D
ON Configure MIDI thru from the USB host input to any selected midi output.

USB HOST > USB DEVICE
ON Configure MIDI thru from the USB host input to USB device output.

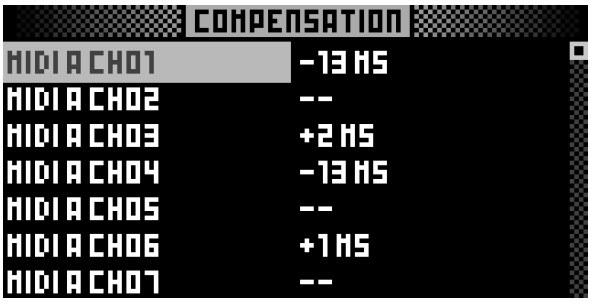
16.8. Compensation



Some hardware machines (MIDI or USB) and some software plug-ins may introduce latency. Hapax can compensate for these delays with the latency compensation, so all your notes and automation are dispatched and arrive with the best possible timing. Even the clocks/transports messages can be compensated separately, so your external gear will perfectly follow Hapax synchronization.

This latency compensation values are set in ms (milliseconds), and it can be negative value (midi will be sent early) or positive value (midi will be sent late). They have to be globally configured per outputs (MIDI A, MIDI B, ...) and per channels (CH01 .. CH16), as each output/channel corresponds to one of your instruments.

For example, if you are using a synthesizer introducing latency in your song (you are hearing a small delay when playing with it), set a negative compensation value on its channel/output, so its midi events will be sent earlier than the other.



These compensation values are saved with the settings and will be loaded at startup, so every project will use the same settings.

MIDI OUT A (CH01, CH02, ...) -500MS ... -1MS 0MS +1MS ... +500MS
Compensation per channel, for notes and automation.

MIDI OUT A CLOCK -500MS ... -1MS 0MS +1MS ... +500MS
Compensation for real-time messages (not specific to a MIDI channel).

MIDI OUT B (CH01, CH02, ...) -500MS ... -1MS 0MS 1MS ... +500MS
Compensation per channel, for notes and automation.

MIDI OUT B CLOCK -500MS ... -1MS 0MS +1MS ... +500MS
Compensation for real-time messages (not specific to a MIDI channel).

MIDI OUT C (CH01, CH02, ...) -500MS ... -1MS 0MS 1MS ... +500MS
Compensation per channel, for notes and automation.

MIDI OUT C CLOCK -500MS ... -1MS 0MS +1MS ... +500MS
Compensation for real-time messages (not specific to a MIDI channel).

MIDI OUT D (CH01, CH02, ...) -500MS ... -1MS 0MS 1MS ... +500MS
Compensation per channel, for notes and automation.

MIDI OUT D CLOCK -500MS ... -1MS 0MS +1MS ... +500MS
Compensation for real-time messages (not specific to a MIDI channel).

USB DEVICE (CH01, CH02, ...) -500MS ... -1MS 0MS 1MS ... +500MS
Compensation per channel, for notes and automation.

USB DEVICE CLOCK -500MS ... -1MS 0MS +1MS ... +500MS
Compensation for real-time messages (not specific to a MIDI channel).

USB HOST (CH01, CH02, ...) -500MS ... -1MS 0MS 1MS ... +500MS
Compensation per channel, for notes and automation.

USB HOST CLOCK -500MS ... -1MS 0MS +1MS ... +500MS
Compensation for real-time messages (not specific to a MIDI channel).

CV/GATE OUT (1...4) -500MS ... -1MS 0MS 1MS ... +500MS
Compensation for each CV/GATE output pairs, for notes and automation.

Note Midi events can't be delayed in the past, so when using negative values, the lowest negative value will make the selected channel/output as the 'not delayed' channel/output. But the other channels/outputs will be delayed.
If **OUTA CH01** = -10ms, **OUTA CH02** = -4ms, **OUTA CH03** = 0ms, and **OUTA CH04** = +10ms :
OUTA CH01 events will not be delayed, **OUTA CH02** will be delayed by 6ms, **OUTA CH03** by 10ms, and **OUTA CH04** by 20ms.

Tip In the TRACK HOLD menu, you can see the compensation value of the selected track when the combination of output/channel match the setting (under **CHANNEL**).

16.9. Color Palette

Under Palette you will be able to finetune custom HSL led colors. This is very usefull if you already have strong synesthetic habits.

Toggle **settings** button and enter "Settings > MISC > Palette".

You will see the colour chart on the matrix pads (a HSL color is made of 3 elements: hue, saturation and lightness).

Palette
For customizing colors of Hapax RGB leds. This parameter allows you to scroll among all assignables palettes with encoder ①, and then scroll between the type of color you want to edit with encoder ⑤ :

NOTES Each of the 12 notes, from C to B.

MISC Miscellaneous colors:

- **SELECTION** : selections on the 128 pad-matrix.
- **MUTED** : muted notes.
- **VOID** : automation events of "void lane" (no destination set).
- **DISABLED** : disabled areas (loop points, out of pScale).

DRUMS Each of the 8 lanes, from 8 to 1.

AUTOM Automation colors:

- **REGULAR** : automation regular events.
- **DEFAULT** : automation default values.

PATTERNS RGB pattern colors from 1 to 8, used when holding a pattern and setting a custom color.

MIXMUTE Mixmute page colors:

- **MUTE** : mute active.
- **!MUTE** : unmuted inactive.
- **SOLO** : solo active.
- **!SOLO** : solo inactive.
- **TOGGLE** : toggle active.
- **!TOGGLE** : toggle inactive.
- **REC** : record active.
- **!REC** : record inactive.

HUE 1% ... 100%

Rotate encoder ③ to select the base color of the selected palette item.

SATURATION 1% ... 100%

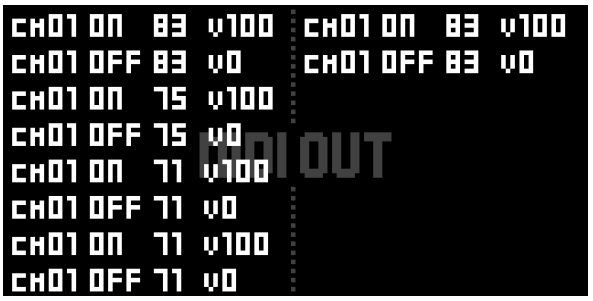
Rotate encoder ④ to select the saturation of the selected palette item.

LIGHTNESS 1% ... 100%

Rotate encoder ⑦ to select the brightness (distance from black) of the selected palette item.

16.10. Midi Monitor

Hold **2ND** + Toggle **live** to display the **MIDI MONITOR**, showing midi in events (left screen) and midi out events (right screen).



16.11. How to calibrate the 4 CV outputs

You can fine tune Hapax's 4 analog outputs in order to get a very precise note pitch:

Hold encoder ⑦ encoder while powering on Hapax:**CALIBRATE VOICE 1, ADJUST -4V** must appears on the screen.

With the help of an accurate voltmeter and a patch cable, measure the CV1 output and rotate the menu encoder to adjust the output voltage (-4.00V).

Click the menu encoder to select and calibrate the next voltage (-3.00V). Repeat this operation for each CV values (-2.00V, -1.00V, 0.00V, 1.00V, 2.00V, 3.00V, 4.00V).

Once you calibrated all the voltages for CV1 output, the next CV output (CV2, CV3, and finally CV4) will be automatically selected. Ajust each voltages of this selected output, always with the help of your voltmeter and by rotating the menu encoder.

At the very end of this procedure, this calibration will be saved in the SD card. Then you can reboot Hapax and start playing with your CV outputs!

Tip Hapax outputs -5.00V for a C0 note (midi note 0), -4.00V for a C1 note (midi note 12), -3.00V for a C2 note (midi note 24), ..., 0.00V for a C5 note (midi note 60), ..., 5.00V for a C10 note (midi note 120).

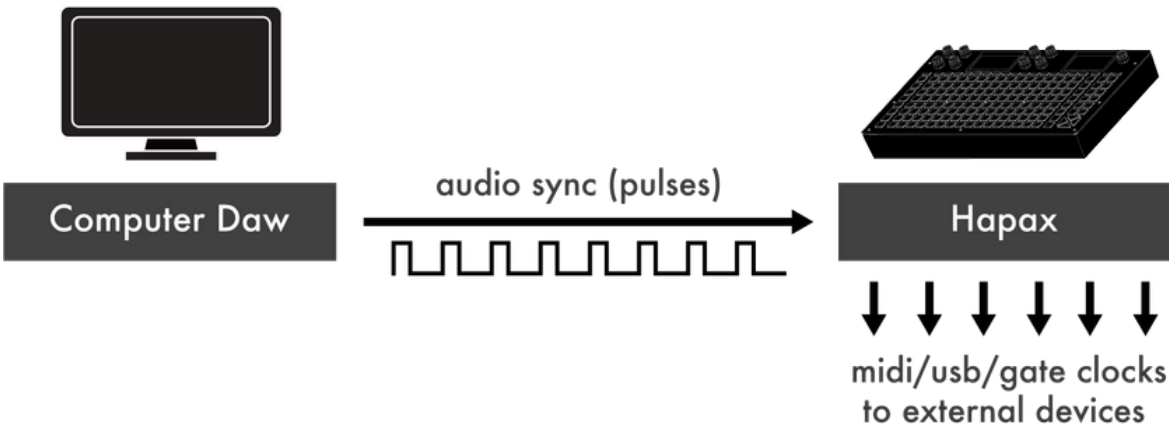
16.12. Audio synchronization from a DAW : enable sample-rate precision

If you need a perfect synchronization of Hapax to your computer DAW, it can be done thanks to an incoming audio signal.

Indeed, DAWs often generate jitters and delays on the computer USB midi output, due to the weak real-time architecture of computers OS.

For rock solid synchronization, it's advised to use a dedicated audio output of your computer (sending a clock output signal), if possible using a soundcard with multiple audio ports. Hapax will receive this accurate analog sync signal on one of its CV input, and will relies on it to synchronize its tempo and play/stop features.

This way, you don't have to use a "audio sync to midi" device to connect Hapax with your DAW.



How to enable audio synchronization :

- On your DAW, create a track playing (in a loop) this 1-bar 120BPM audio file (warp it so it will follow your DAW BPM)
- ... or use a synchronization plugin to gererate a sync signal, like the Ableton CV Tools "CV Clock Out"
- Output this audio "clock" signal on a separated port (for example by using a soundcard)
- Make sure the volume of this output is set to maximum level
- Use an audio cable to connect the computer audio output to Hapax CV input 1

• Configure Hapax **SYNC IN** > **CLOCK SOURCE** = **CV IN 1**
• Configure Hapax **SYNC IN** > **CV RESET** = **AUTO** (so Hapax will automatically play when receiving a signal, and will stop no signal is detected)
• Configure Hapax **SYNC IN** > **CV CLOCK DIV** (**1/64** when using the audio file)
• Set the same BPM for Hapax and your DAW
• Start playing your DAW : Hapax will receive the sync signal and will immediately start to play, with zero jitter.

Note do not use any usb midi sync between your DAW and Hapax.

Tip if your computer audio output does not deliver a volume high enough to trig the Hapax input clock detection, you can configure Hapax **CV/GATE** > **CV IN RANGE** = **-1V > +1V**

17. Shortcuts

17.1. In any mode – track/pattern shortcuts

SELECT A TRACK
Press any **track** button

SELECT A PATTERN
Hold **pattern** and Press one of the 128-pattern pad (the track will also be selected)

SWAP TRACKS POSITIONS
Hold a **track** button, then Press either ▶ or ◀

CHANGE TRACK TYPE
Hold **step** + Rotate the main encoder to select poly, MPE or drum type

MUTE A GROUP OF TRACKS
Hold **mute** and Press one or more **track**, then release **mute**

INSTANT TRACK MUTE
Hold **2ND** + **mute** and Press a **track**

TRACK SETTINGS (Track output, track input, pattern length, run mode, trig mode)
Hold any **track** button

SECONDARY TRACK SETTINGS (quantize/strength, enable pTranspose/pScale, track name, import/export midi files, import instrument definitions)
Hold **2ND** + Press **track**

CHANGE PATTERN LENGTH (BARS INCREMENTS)
Hold a **track** and rotate **LENGTH**.

CHANGE PATTERN LENGTH (1/16 INCREMENTS)
Hold a **track** and rotate **LENGTH** while holding this encoder.

DELETE TRACK
Hold **delete** and Press any **track** button

DELETE NOTES IN CURRENT PATTERN

Hold **delete** and Press the **step** button

DELETE AUTOMATION IN CURRENT PATTERN

Hold **delete** and Press the **automation** button

17.2. In any mode – project shortcuts

SELECT A PROJECT

Press **proA** or **proB**

PROJECT SETTINGS & SAVE/LOAD

Hold **proA** or **proB**

MUTE A PROJECT (IN SYNC)

Hold **mute** and Press **proA** or **proB**

MUTE A PROJECT (INSTANT)

Hold **2ND** + **mute** and Press **proA** or **proB**

17.3. In any mode – misc shortcuts

SCROLL FASTER

Hold **2ND** and rotate an encoder

RESET PARAMETER TO DEFAULT VALUE

Hold an encoder

REC SETTINGS

Press **2ND** + **settings**

MIXMUTE MODE

Press **mute** button

BYPASS AUTOLOAD

Hold **step** at startup to directly load a new project.

MIDI MONITOR

Hold **2ND** + **live**

UNDO

Press **undo**

REDO

Hold **2ND** + Press **undo**

TAP BPM

Press **2ND** + regularly tap **bpm**

17.4. Live mode

ACCESS CHORDS SUBMODE

Hold **live** and Rotate the main encoder (unavailable in DRUM mode)

KEEP A MODIFIER ACTIVE (CHORDS SUBMODE)

Hold **2ND** and Press the modifier's pad

17.5. Step mode – basics

RESTART ALL TRACKS TO THE CURRENT PAGE POSITION :

- **IF PLAYER IS RUNNING :** Press ▷
- **IF PLAYER IS STOPPED :** Hold **2ND** + ▷

TRIPLETS ZOOM

Press **+** and **-**

DOUBLE/HALVE LENGTH

Hold **2ND** + **+** or **-**

DOUBLE/HALVE LENGTH WITH DUPLICATE

Hold **2ND** + ▶| or |◀

STEP ONLY

QUICK STEP LENGTH

Hold a pad containing the note and tap another pad

FOCUS ON THE CLOSEST NOTE

Press **step**

QUICK COPY NOTE PARAMS

Hold a pad of the matrix (then press another pad to add a note with the same set of parameters)

ENABLE/DISABLE MONO EDIT

Hold 2ND + Press step

DRUM ONLY

DRUM LANE SETTINGS

Hold a row

VELOCITY VIEW

Hold 2ND and Press a row

17.6. Step mode – selections

VERTICAL SELECTION

Hold one or more pads

CONSTRAINED SELECTION

Hold 2ND + Hold one or more pads

SELECT ALL PAGES

Hold all

SELECT CURRENT PAGE

Hold all + Press 2ND

SELECT A ROW

Hold a row

SELECT A ROW (CURRENT PAGE)

Hold 2ND + Press a row

MOVE A SELECTION

Press ▶, ◀, ▼ or ▲

WARP A SELECTION

Press + or -

17.7. Step mode – loop points

START POINT :
Hold ▶ and Press one of the 1...16 **track**

END POINT :
Hold Hold ◀ and Press one of the 1...16 **track**

RESET LOOP POINTS :
Press both ▶ + ◀

17.8. Automation mode

PUT AN EVENT AT THE VERY END OF THE STEP
Hold **2ND** and Press a pad

MUTE/UNMUTE SELECTED AUTOMATION LANE
Hold **2ND** and Press **mute**

17.9. Pattern mode

PATTERN SETTINGS (pattern length, run mode, trig mode, program change, pad color, follow actions)
- Hold any pattern pad
- or Hold multiple patterns pads to edit multiple patterns

VIEW SECOND PATTERN PAGE
Press ▲ (display **P9** to **P16**)

VIEW FIRST PATTERN PAGE
Press ▼ (display **P1** to **P8**)

SCROLL THE PATTERNS
Press ▶ or ◀

RESTART A PATTERN
Press a **pattern** already playing (pattern **TRIG=RE-START** must be enable)

PATTERN INSTANT LAUNCH
Hold **pattern** + any matrix pad

LAUNCH A ROW OF PATTERNS

Press one of the 8 **row** buttons

MUTE A SINGLE PATTERN

Hold **mute** and Press a pad containing a pattern

MOVE A PATTERN

Hold a pattern + Press ⧗ or ⧖.

TOGGLE BETWEEN SECTIONS AND SONG TAB

Press **pattern**

Tip START A SONG

- Create sections
- Press **pattern** To go to **SONG** tab
- Create a song by arranging **SECTIONS**
- Use encoder ① to select the song mode: **PLAY SONG** or **LOOP SONG**

17.10. Effects

RESET A PARAMETER TO DEFAULT VALUE

Hold encoder parameter

LOCK EFFECT PARAMETER TO CURRENT PATTERN

Hold **2ND** and Press the associated encoder to toggle the parameter locking

TOGGLE EFFECT MUTE

Hold **2ND** and Press **mute**

SWAP EFFECT POSITION IN CHAIN

Select an effect, Hold it with the menu encoder rotate this encoder