# HAPAX QUICKSTART

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 —
Extensive midi connectivity + CV/Gate.

engineered by Squarp instruments
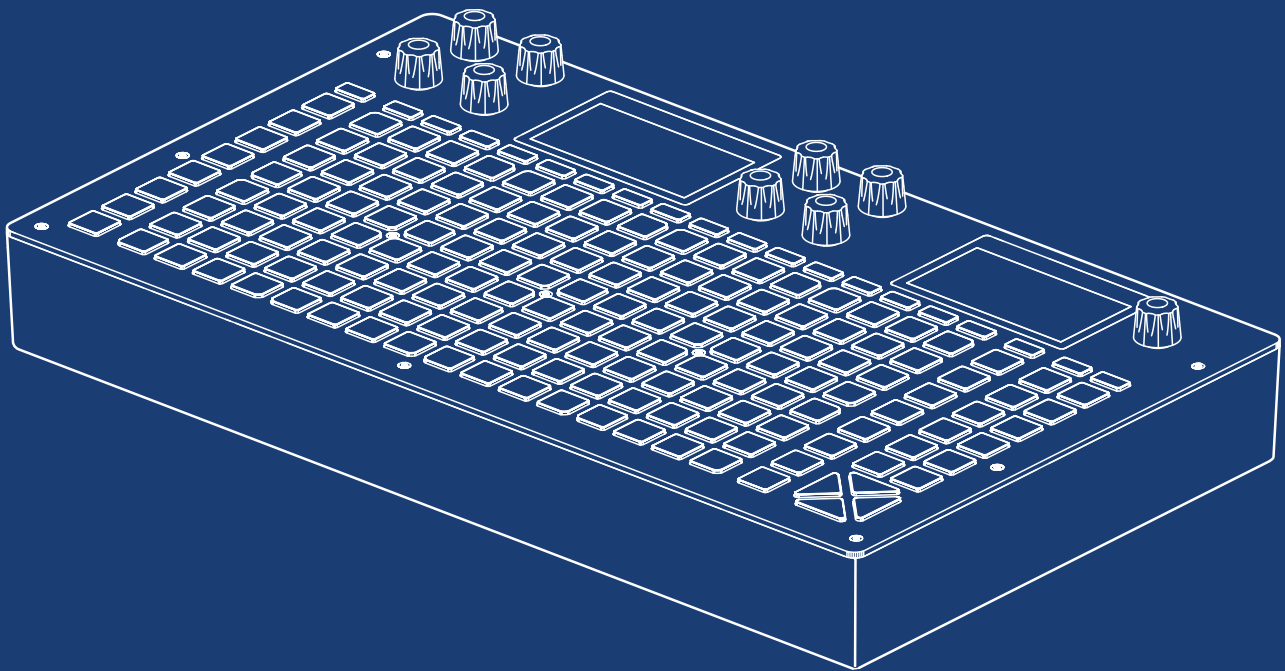
BASICS

Sequencer workflow

Hapax can load and play two projects (proA, proB) simultaneously. Each project has 16 tracks (each track has its own inputs & outputs, its own effects rack and 8 Patterns). A pattern is a loop that contains polyphonic or monophonic notes and automation. Each Pattern has its own events, length, runmode, effect parameter values, ...

Hapax core architecture (simplified) :
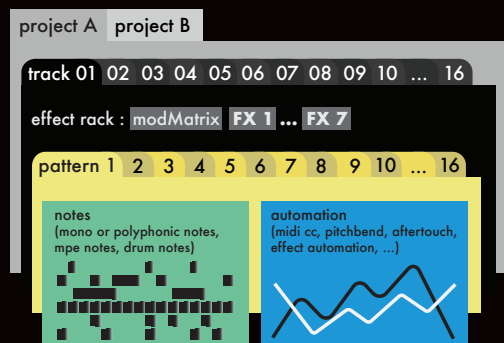
Working with projects

*pro*A and *pro*B are directly accessible 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 *pro*B while *pro*A is running, for never ending live sets!

Save/load, project parameters

Hold *pro*A or *pro*B to access the Save/Load menu. The SD card must be inserted to save or load projects.

Holding *pro*A or *pro*B also displays the project parameters on the left screen, in order to define :
• pScale (the global project scale)
• pTrsp (enable track 16 as the transpose track)
• pQuant (force the quantizer on the 16 tracks)

Tweak parameters

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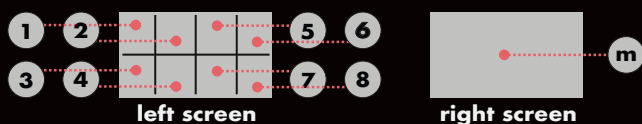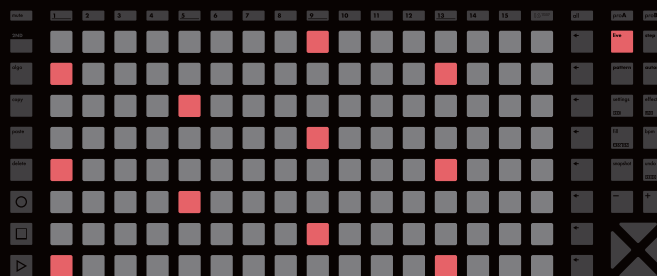

TIP Hold **2ND** and rotate encoders to scroll faster.
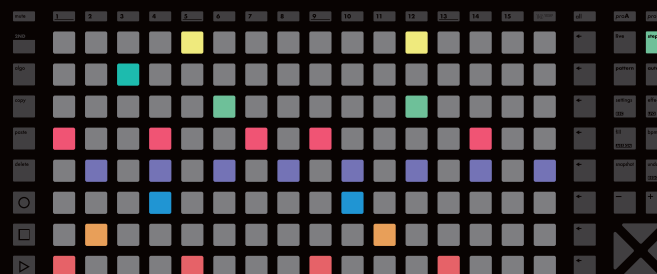
Quick tour of the 4 modes

Hapax is designed around 4 main 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.

• **autom** mode : use the 128 pads to create midi (or fx) automation.
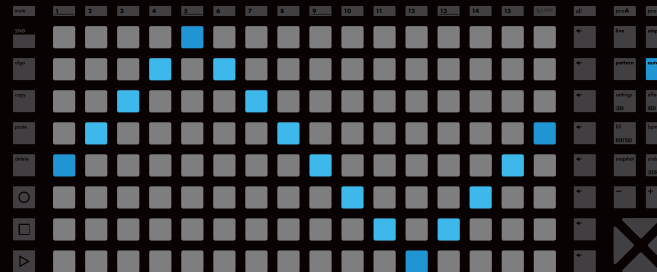
• **pattern** mode : perform in sync by using the 128 pads to set the playing pattern of each track. Create sections (group of patterns). Chain sections to build a song.

Select a track, configure a track

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

Hold a **track** pad to enter the track settings menu (midi output, midi input, active pattern length, pattern program change, pattern run mode & trig).
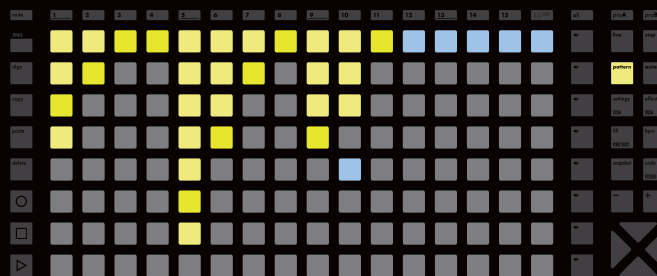
Hold **2ND** + Press a **track** pad to enter the secondary settings menu (track custom name, quantize, pScale enable, pTRSP enable).

Mute tracks

Hold **mute** and press one or more **track** pads. Selected tracks start to flash : they form a mute group. Release **mute** and the tracks are now muted.

TIP mute can also be used to mute a project, a note, an automation lane, ...

Track status on leds

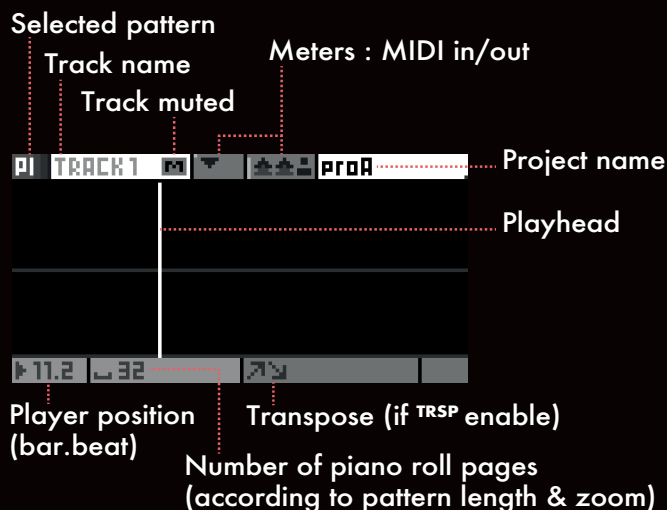|	
`1`	track empty (led off)
`1`	track muted (white led is waving)
`1`	track not empty (medium led brightness)
`1`	track selected (maximum led brightness)

Track type

By default, the 16 tracks are set to track type **POLY**.

Hold **step** and rotate the menu encoder to set the track type :

• **POLY** : recommended when the track controls a standard (mono or poly) synth.

• **MPE** : recommended when the track controls a mpe (midi polyphonic expression) synthesizer, making the recording and editing easier.

• **DRUM** : recommended when the track controls a drum machine.

Upper bar & bottom bar

Selected pattern
Track name
Track muted
Meters : MIDI in/out

`PI TRACK1 M ▼ ▲▲▄ proA` .... Project name

.... Playhead

`▶11.2 ┗32 ▝▚`

Player position (bar.beat)
Transpose (if **TRSP** enable)
Number of piano roll pages (according to pattern length & zoom)

Undo/redo

If you want to undo your last action, like changing a parameter value, entering step notes, or even undo a recording, simply press the **undo** button.

To redo changes, hold **2ND** + press **undo**. You can undo or redo multiple times.

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 (**snapshot**) and your working version (**snapshot**).

Tempo

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

• rotate the **menu encoder** to set the bpm

• to fine tune the BPM, press the **menu encoder** to select the after-decimal digits.

Elasticity (phasing)

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

Hold **bpm**, press the **menu encoder** until the % of elasticity is highlighted, and rotate the menu encoder (you can also fine tune the last digits).

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

• set elasticity 50% : track 01 playback will be 2 times slower = 60 BPM

• set elasticity 200% : track 01 playback will be 2 times faster = 240 BPM

• set elasticity 100.50% : track 01 will be slightly faster and will slowly drift out of phase.

Time signatures

Each project can have its own time signature. Default "TS" is the **4/4** common time, but you can add complexity to your songs by using other signatures.

Hold *pro*A or *pro*B, rotate the pSignature encoder to set the upper numeral (number of beats in one bar). Hold and rotate the encoder to set the beat unit.

TIP Common time signatures : quadruple (**4/4, 12/8**), triple (**3/4 - 9/8**), duple (**2/4 - 6/8**), irregular (**5/4 - 7/8**).

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).

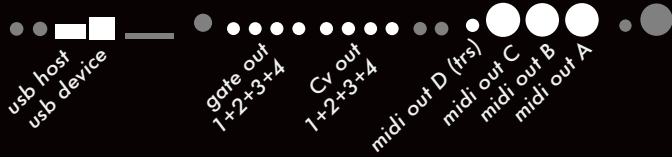usb host
usb device
Cv in 1+2
midi in B (trs)
midi in A

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*.

Connectivity : 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).

usb host
usb device
gate out 1+2+3+4
Cv out 1+2+3+4
midi out D (trs)
midi out C
midi out B
midi out A

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.

Record live & rec settings

Press **rec** while playing to capture your live performance, coming either from :
• the live mode 128 keypads
• the 8 encoders from assign mode
• an external midi instrument or computer
• a modular system sending cv/gate

You can only record on the currently selected track.

Hold **2ND** + press **settings** to enter the rec settings (see chapter "Rec Settings").

Hold **2ND** + press a **track** pad to enter secondary track settings and configure the real-time quantization amount/strength, in order to soften the timing imperfections of your recording.

Play / Stop

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

One press on **stop** stops and resets the playback. Two presses will send an *All Note Off* message to your instruments. A third press will send an *All Sound Off* message to instantly silence midi synthesizers.

TIP When you are in **step** mode, working with multiple pages, pressing **play** will restart all tracks to the current page position.

Choose 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.

Hold *proA* or *proB*, enable pScale with encoder ① and select your favorite scale and key with encoder ②, ⑤ and ⑥. You can set a new scale anytime and in real-time, it's a great studio tool to color your song.

When enabled, the pads in **step** mode are now constrained to the pScale. The **live** mode scale is also overriden with pScale.
A **DRUM** track is never affected by the pScale.

TIP Even with pScale enabled, it's possible to disable it on a specific track : Hold **2ND** + press the **track** pad and set pScale = OFF.

NOTE The built-in midi effects can shift a note off-scale, you can add a **SCALER** FX to re-quantize the notes.

Transpose track (TRSP)

The transpose track is a unique track which leads the transposition of other tracks.

This role is attributed to track 16. To play with this feature, hold *proA* or *proB*, then enable pTRSP.

There are two main ways to use track 16 as a transpose track :
• add step notes to program a transposition sequence
• control track 16 with a midi keyboard (or use the **live** mode isomorphic keyboard) to transpose your following tracks in real-time.

Each time a note is played on track 16, tracks 1 to 15 will be transposed.

TIP By default, tracks 1..15 follow the leader track, except **DRUM** tracks. To exclude other tracks, hold **2ND** + press a **track**, then disable pTRSP.

LIVE MODE

The **live** mode is the quickest way to create tracks from scratch. This mode turns Hapax into a midi controller you can play.

On **POLY** and **MPE** tracks, you can use the *scale* livemode or the *chord* livemode : hold **live** and rotate the menu encoder to switch between modes.

On **DRUM** tracks, you can only use the *drum* livemode.

Livemode SCALE

In this mode, the 128 keypads are arranged to form an isomorphic keyboard. This leverages the property of transpositional invariance : the combination of musical intervals has the same shape when transposed to another key.

By default, the row increment of the isomorphic keyboard is 3 semitones. That means that the upper neighbour of any given pad is 3 semitones higher. This allows for playing chords and scales with one hand easily.

C# D# F G A B
D E F# G# A#
key note (eg **C5**)   C6   C7   C8
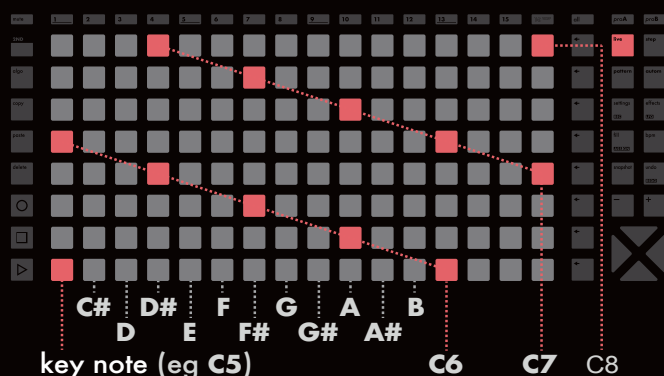
When applying a scale, the increment between pads is no longer in semitones, but in scale degrees. Taking the example of a major scale, the upper neighbour of a pad is no longer 3 semitones up but 5.

Basic actions
- press ▲ or ▼ : set the lowest note octave on pads
- rotate ① : set the lowest note key
- rotate ② : enable hold/relatch mode
- rotate ③ : set the row jump
- rotate ⑤ : scroll through the scale familly
- rotate ⑥ : scroll through the scale

KEY   PLAY   COLOR   SCALE
C 5   --   SUS PENDED   MIXO -LIDIAN   ····· Last note performed
C⁷   C⁶ CMAJ   ····· Real-time chord recognition
100   JUMP 3   RGB VIEW KEY   ····· Played notes

Livemode CHORD

This mode allows you to quickly browse through a large variety of chords, harmonized to the selected scale.

The interface is meant to be played with both hands : one for selecting the modifiers (algorithms processing the chord) and the other hand to perform the basic chord degree.

Apply chord modifiers :
invert, spread, drop, alter, transpose...

Perform a basic chord degree (four-notes)   Perform a basic chord degree (three-notes)
octave –1   octave +1
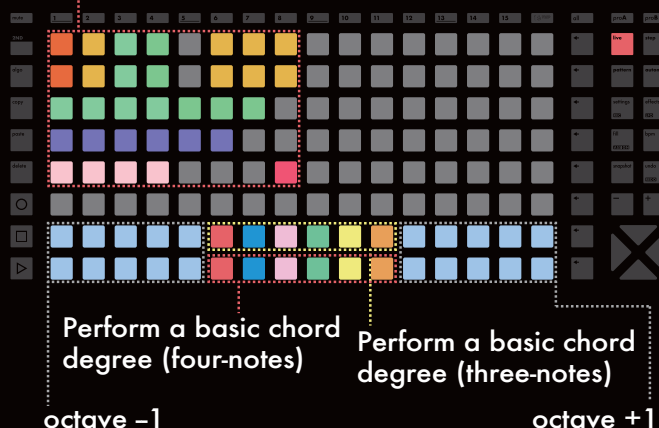
You can stack up to 8 modifiers per track to enrich and perfect your chord. Modifier names are displayed on the left screen.

TIP Hold **2ND** and press a modifier pad to keep the modifier active.

NOTE As with the *scale* livemode, you are free to set the key note, the hold/relatch mode and the scale on the left screen with associated encoders.

Livemode DRUM

This livemode is only available if you work on a **DRUM** track.

In this mode, the 128 pads are divided in 8 zones, corresponding to the 8 drum lanes of the track. Each zone has 16 pads, which will trigger the same drum lane, but with different velocities (low to high).

Trig lane 1   Trig lane 8
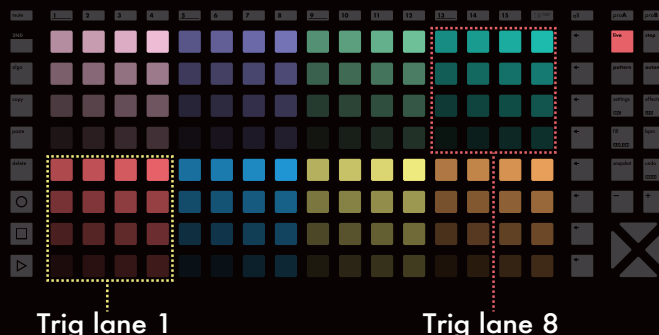
STEP MODE

The **step** mode is another way to create rhythms and melodies. Unlike the **live** mode – where you perform in real-time using the matrix keypads – the **step** mode allows you to program sequencer events directly into the current track. It's a great way to get the best out of your synthesizers and drum machines.
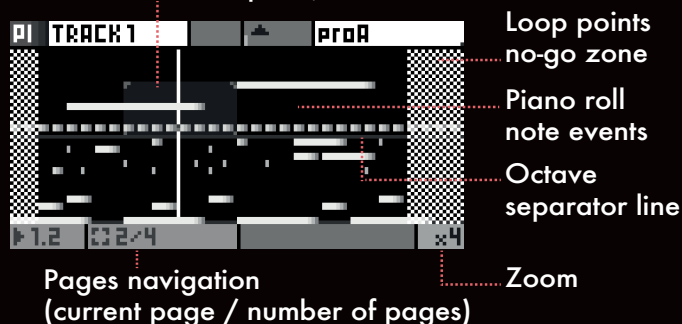
Hapax provides a 128-pad matrix to program your step-by-step rhythms and melodies effortlessly and efficiently. You are free to extend the length of your patterns up to 32 bars. In conjunction with extreme zooms, conditional trigs, chance, loop points, µTime, scale folding, run modes, … possibilities are endless!

The **step** mode also allows you to edit a previously recorded live performance, using the piano roll view.

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

Piano roll overview

Viewport navigation (selected page you can view on the 128 matrix pads)

Loop points no-go zone

Piano roll note events

Octave separator line

Pages navigation (current page / number of pages)

Zoom

Basic actions

• add or remove a note : press a pad

• note editing : hold a pad (or multiple pads)

• set the bottom note and octave : rotate ① and ② (it will verticaly scroll the piano roll, you can also use the menu encoder or the pads ▲▼)

• set the pattern length : hold the **track** pad to enter track settings, rotate ⑥ to set the length (1-bar, 2-bar, …, 32-bar), or hold and rotate ⑥ to set the length with a 16TH note resolution

• zoom : press **+** to zoom in, press **−** to zoom out

• navigate : press ▶ or ◀ to display the next or previous page

ᵀᴵᴾ Press both zoom **+** and **−** to toggle between binary (default) and ternary zooms. Ternary zooms are very handy to program triplets notes.

ᵀᴵᴾ duplicate/divide pattern: hold **2ND** and press ▶ or ◀.

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 :

Note learn (unlinked)

Parameters icons when value = OFF
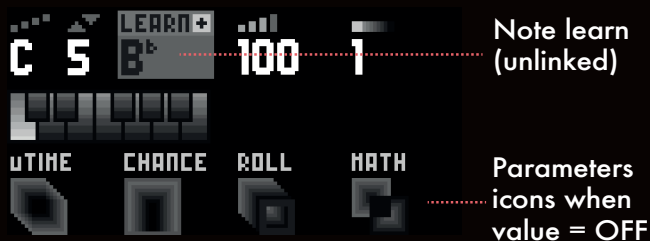
Pitch + **Octave** (C0 to G10)
Set the midi note pitch & octave.

Velocity (0 to 127)
Set the midi note velocity.

Note Length (1 step to infinity)
Length of the note in steps (a step = a 16TH note when using default zoom).

uTime (-50% to +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% to 100%)
Note probability to be played.

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

Math
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

• **FILL** — note plays if the **fill** button is pressed

• **/FILL** — note plays if the **fill** button is released

• **1ST** — note plays on first pattern playback

• **PREV** — 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

For further details, please refer to the online manual.

ᵀᴵᴾ Hold an encoder ①…⑧ to set its default value. As an example, you can select all notes with **all** and hold **µTime** to quantize all notes around their closest time position.

Last but not least : each note can also be muted separately. Hold **mute** and press a pad in order to mute/unmute the note inside.

Note selection & editing

You can always select one or a group of notes to edit their parameters.

Hold a pad 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 Select and hold a note momentarily to update the global parameter values for all new notes.

Multiple selection

Hold a pad on the piano roll, then hold another pad to select multiple notes.
You can now edit the parameters of all the notes contained in your selection.

You can hold **all** to select all events, or hold a **row** to select a single row of events across the pattern, or hold more than one **row** to select a range.

TIP By default, multiple selection will select all notes on the vertical axis inside your selection. Hold **2ND** before making your selection (or press **2ND** when a selection is made) to constrain your selection.

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

TIP While selecting steps :
• press ▶ or ◀ to move your selection left /right
• press ▲ or ▼ to move your selection up/down
• press + or − to warp your selection
• press **mute** to mute/unmute your selection

Copy, paste, delete, mute notes

When you are performing a selection, you can :
• press **delete** to delete the selected notes
• press **mute** to toggle the mute of the notes
• press **copy** to save a copy of the notes

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).

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

MPE tracks

For further details, please refer to the online manual.

Loop points

Loop points help 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's a great way to loop a small part you want to work on. When performing, you can play with track positions and create interesting effects like beat repeat or polymeters.

Hold ◀ and press one of the 1..16 **track** pads to set your loop point start. Hold ▶ and press one of the 1..16 **track** pad to set your loop point end.

TIP Press and hold ▶ + ◀ to reset pattern loop points.

pScale

When a global pScale is enabled (see chapter "Basics – Choose a project scale"), 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 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 of the selected octave.

one octave = the 7 notes of the scale

pScale key note   disabled row
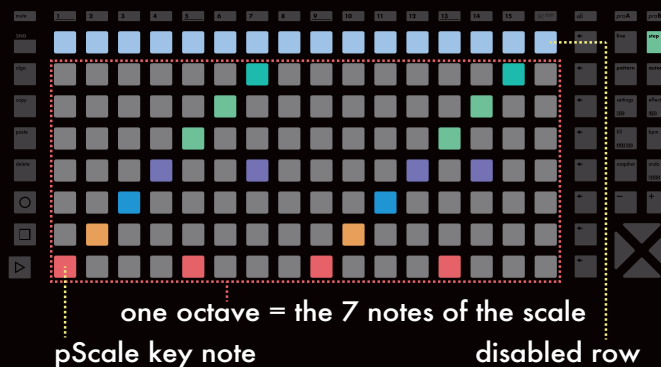
With pScale enabled, only in-scale notes can be added with the matrix pads and you navigate the piano roll by octave. This provides a simpler interface without "wrong" notes.

Note learn

When you play a note (or a chord) with an external controller or using the live mode keypads, these notes are captured in step mode and displayed on the left screen under **"LEARN"**.

Click encoder ② to enable the **LEARN** edit : now the note (or chord) you will add with the matrix pads on the piano roll will be linked to the capture of your external controller (or live mode) played notes.

To exit the **LEARN** edit, simply click the encoder ① or ② (you will go back to normal note selection).

STEP MODE DRUM

As said before, there are three track types :
POLY, **MPE** and **DRUM** (hold **step** and rotate
the menu encoder to set the track type).

POLY and **MPE** works with notes events — the
previous chapter "Step Mode" explains everything
you need to know about these track types.

The third track type, **DRUM**, has a different
interface, events are organised in 8 "Drum Lanes" :

Lane 8

Lane 1

lane 1   lane 8
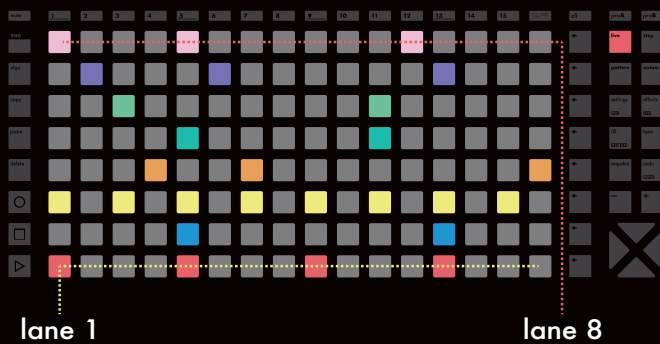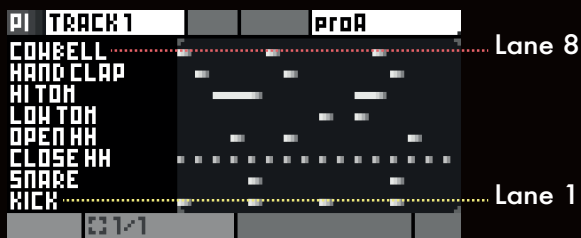
The principle of this special step mode is very close
to **POLY** / **MPE** tracks, including basic actions,
selection & editing, copy paste delete, mute, loop
points. A "drum event" also shares the same
parameters as a "note event" : Velocity, Length,
µTime, Chance, Roll and Math.

The main difference : instead of pitch & octave
parameters, a "drum event" has a midi note and a
midi channel, defining which drum the lane will trig.

Select a lane

Press a **row** button to select the lane (the lane
name will be highlighted).

TIP Hold a **row** and press **mute** to mute/unmute
this lane.

Lanes names

Each lane has a default name (kick, snare, …) that
can be renamed : select the lane, then press the
menu encoder.

Drum lane midi routing

A lane is characterized by its note. That means
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.

You can even give each lane its own midi channel.
One lane could be triggering note:48 channel:01,
another note:63 channel:02, etc…

It's also possible to have a lane triggering a Cv or
gate output : you can mix and match multiple
machines to create your drums ensemble.

To change the midi note & channel output of a lane,
hold a **row** to select the lane, then rotate the
corresponding parameter on the left screen.

NOTE Unlike **POLY** and **MPE** tracks, the midi out
channel defined in track settings (**track** hold)
does not affect the lanes outputs, although it will be
used for midi automation output.

Trig drum lanes

Drum lanes can be triggered using an external midi
controller, handy for live performance recording.

By default, the output midi note & channel combo
is used to trig a lane. For example, if your track 01
(midi in = all) receives a note 48 on channel 01,
it will trig a lane only if this lane is configured
to note:48 channel:01.

For easier use with external MIDI, you can customize
which midi in note is triggering the lane. Hold a **row**
to select the lane, then hold and rotate the
encoder ① to set the midi in note. The input channel
has to be set into track settings (**track** hold).

Velocity View

To enter velocity view mode, hold **2ND** and press
a **row** to select the lane you want to edit.

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

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

max velocity   min velocity   lane 1 selected
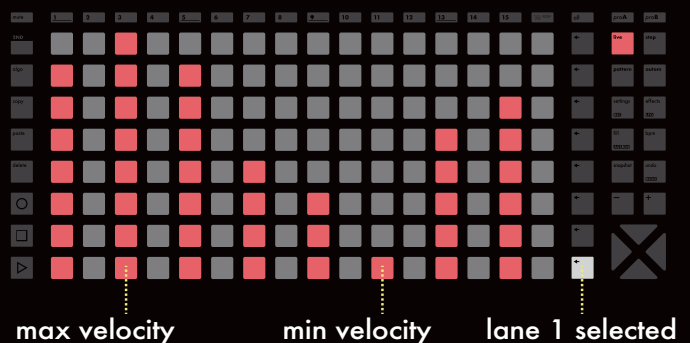
AUTOMATION MODE

The **autom** mode enables you to either record or draw in automation. Automation lanes can emit CC messages, control effect parameters on their track, and even output control voltages (Cv).

Each track has its own set of automation lanes. Each track's pattern has its own automation events.

Creating an automation lane

Automations are organised in "lanes". Scroll to the bottom of the list, then click on "+ADD". You will be prompted to choose a destination, or in other words what you wish to automate. It can be :

• CC message

• Pitchbend

• Aftertouch

• Program change

• NRPN messages (non-registered parameter number)

• CV in (analog input, for recording purposes)

• CV out (analog output)

• Effect parameter

Once the automation lane is created, simply use the matrix pads to add/remove automation points.

TIP Hold **2ND** and press a matrix pad to insert a point at the very end of the step for sharp transients.

If you add a midi event (cc message, pitchbend, aftertouch, pc, nrpn) : the events will always be sent on the track midi channel + output you defined in track settings (**track** hold). Effect parameter automation applies to effects only in the active track.

Selection & editing

Hold an automation point, its value will be displayed on left screen and the pad color will change. You can then scroll the associated encoder to fine-tune its value (e.g. 0 to 127 for a midi CC message).

When performing a multiple selection, you can set the selections minimum value, maximum value and the central value.

Interpolation

By default, the points are interpolated : this is very intuitive to draw lines and curves, with a very few events. By rotating encoder ⑧ you can disable interpolation to get a more traditional, stepped CC event sequencing.

Default value

Encoder ⑥ allows you to define a default value that will be used when this automation lane is empty. Automation events are stored per pattern. A default value is useful to "reset" a parameter when no automation is needed.

Recording an automation lane

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

For midi messages, such as CC, pitchbend or aftertouch, automation lanes are created automatically. For CV in, you must create the lane before recording.

NOTE Recording program changes and NRPN messages is unsupported.

TIP To prevent overwriting a lane with incoming data, use the "Lock" function in the automation lane context menu.

Automation lane context menu

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

• Mute lane : mute the automation lane.

• Delete lane : delete the lane from the entire track. Please note it will delete all events in all patterns.

• Set destination : change the destination of a lane, without changing the events.

• Copy : copy the automation lane events and destination. This is useful when you want to copy and paste lanes across tracks.

• Paste : in coordination with "copy", this pastes an entire automation lane.

• Max rate : automation lanes can be configured to output events at a given maximum rate.

• Lock : if enabled, the lane's automation events cannot be modified, and recording can't overwrite.

TIP You can also mute an automation lane by holding **2ND** and pressing the **mute** button after selecting the lane.
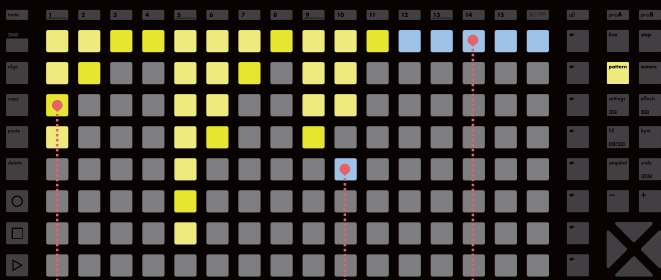
PATTERN MODE

Once your tracks are created, the **pattern** mode enables you to play with your 128 patterns.

Unlike most sequencers, each track is independent from the other tracks : you can play track 01 pattern 3 and, at the same time, track 02 pattern 4.

This allows great flexibility when building and live performing your songs!

You can even chain sections (group of patterns) to create a complete, structured song : see next chapter "Section & songs".

On the matrix pads, each column represent eight patterns of the 16 tracks :

Track 1 has 4 patterns, pattern 3 is playing.

Track 14 has no created patterns : a light-blue color means no events inside pattern.

Track 10 has 3 patterns, pattern 5 is selected but is empty : the track behaves like it's muted.

TIP From any mode, you can hold **pattern** and press a pad to quickly select the pattern you want to edit.

TIP Each track includes up to 16 patterns. By default, your are viewing the 8 first patterns. To scroll through your 16 patterns, use the navigation pads ▲▼.

Pattern mode has two playback types that you choose using encoder ① :

• **PERF** — for live performing your patterns (default).

• **SONG** — see next chapter.

Synchronous pattern change

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 ② to set the sync division. Pattern leds blink when waiting to changes.

Launch patterns

There are 2 ways to launch patterns :

• Press the matrix pads to select the playing patterns, track by track.

• Use the 8 **row** buttons to select, at the same time, the 16 patterns of the row.
This is the classic sequencer workflow, where one sequence = a set of 16 patterns.

Copy, paste, delete

To delete a pattern, hold **delete** and press a pattern pad.

To copy a pattern, hold **copy** and press a pattern pad.

To paste your copied pattern, hold **paste** and press a pattern pad.

Editing pattern parameters

As with **step** and **autom** mode, **pattern** mode does have selections : hold a pattern pad to edit a pattern's parameter, namely :

• Run : sets the pattern playback mode. It can be played normally, in reverse, in ping-pong, or randomly (every bar, every beat, every 16TH note).

• Length : the duration of the pattern, in 16TH notes (you can hold the encoder while choosing the length for more precise increments).

• PC, MSB, LSB : Program change midi message to be sent when transitioning to this pattern. Optional extended PC logic with MSB/LSB.

• Trig : "re-start" will reset the new pattern position to its beggining after a pattern change. Default value "free" will keep the previous pattern position : the playhead will not jump.

Hold multiple pattern pads within the same track to edit all pattern parameters. To edit parameters within a range of patterns, hold **2ND** before making the pattern selection.

Mute / unmute

It's not possible to mute a single pattern, but you can mute a track by holding **mute** and pressing one (or more) **track** buttons.

A muted track will never output midi events, coming from either a routed external controler, live mode, step mode or effects.

TIP Another way to mute a track is to select an empty pattern. Please note this method does not mute incoming midi messages, or messages generated by effects.

SECTION & SONGS

While the matrix pads are very convenient to perform patterns by hand and following your instincts, you might want more control using written "sections".

A section is a precise arrangement of patterns.

Section and Song configuration only uses the right screen of the **pattern** mode :

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. By default, they're named "SECTION A", "SECTION B", and so on.
Once saved, this section is added into your pool of available sections.

To launch a section (recall all pattern states for the 16 tracks), select the section and press the main encoder.

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

Edit a section

To edit a section, hold **2ND** and press the main encoder to open the section context menu :

• Override : saves the current conformation of patterns in this section.

• Rename : change the name of the section.

• Move : change the order of the section in the pool.

• Delete : remove this section from the pool.

Song workflow

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 …

Create a song

First, you need to toggle between the section tab and the song tab by pressing **pattern**.

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 menu encoder for more resolution, enabling very short sections and polymeters.

TIP You can use the same section multiple times.

"section b" is currently playing

duration (1/16TH note)
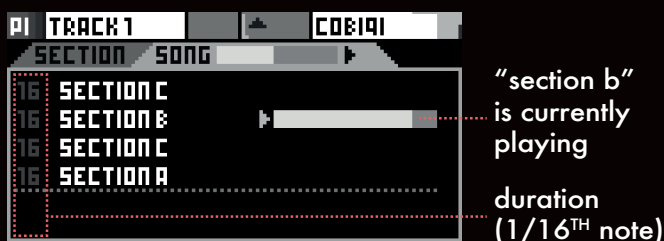
Press the menu encoder to edit a section :

• Launch : reset the song cursor to this section.

• Set time : change the duration of this section.

• Move : rearrange this section within the song.

• Delete : remove this section from the song

Play the song

On the left screen, instead of using the **PERF** mode, you need to enable one of the 2 song modes :

• **SONG PLAY**: the song will stop playback when reaching its end.

• **SONG LOOP**: the song will play in an infinite loop.

Then, you can start the song playback by pressing the **play** button.

TIP When a song is playing, it's possible to set the mode to **PERF** : the song playback will be paused, allowing you to do live improvisation, manual pattern change, … Then you can go back to **SONG PLAY** or **SONG LOOP** to continue the song playback.

EFFECTS

You can add up to 8 effects per track. Notes played live or recorded in a pattern are processed by the effect engines in real-time, and sent to the outputs.

All these effects are non-destructive, and polyphonic capable. The position of an effect in the chain is very important : a Harmonizer placed after an Arpeggiator will not sound like an Arpeggiator placed after a Harmonizer. Experiment with the order of effects to generate eccentric melodies!
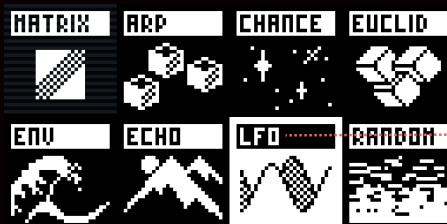
LFO effect is selected, you can play with its parameters with the 8x encoders

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 controlled in real-time thanks to the encoders, automated via **autom** mode, or linked to incoming CC or CV, using the modMatrix.

Add an effect, tweak its parameters

Press **effects**, select an empty slot and press the menu encoder to add a new effect in the rack. Use the left screen to play with the selected effect parameters.

Advanced actions

Select an effect and press the menu encoder : a context menu will appear, allowing you to toggle the effect on and off, replace it or delete/copy/paste it.

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

The 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.

With the associated encoders, you can configure each of the 4 modMatrix parameter slots :

• Depth : amplify, attenuate or invert the input signal

• Offset : set the modulation central value

• Polarity : modulate value around or after the offset

• Consume : drop the input signal

Effects in brief

ARPEGGIATOR
generate a musical pattern

• Style : direction of the arpeggiated pattern

• Rate : speed of the pattern

• Octave : create octaves progression

• Chord : also plays the pre-arp notes as a chord, on top of the arpeggio

• Gate : pattern notes length, % of the rate

• Human : add some randomness to velocity / gate

• Re-trig : if enabled, restart arp sequence at the desired interval, or every added note

• Repeats : if enabled, do not play the pattern in a loop, but a defined amount of cycles

CHANCE
roll a die for each note

• Chance : the % probability to play the note

• Lot : if enabled, rather than evaluate each note individually, the effect groups notes in time intervals

• Sync : if enabled, adds an other synced chance affecting notes that fall on the selected time

• Sync chance : the synced % probability

EUCLID
generate rich euclidean rhythms

• Note : when set to **IN**, uses the incoming note to create the rhythm. You can also set a fixed note.

• Rate : speed of the internal euclidian sequencer

• Steps : amount of steps in the full cycle

• Pulses : amount of fills (on which to play notes)

• Rotate : shifts the computed rhythm

• Gate : set the gate length of outputted notes

FILTER
drop a range of notes and/or CC

• Note lo/hi : when **NOTE LO < NOTE HI**, sets the note range that will pass through the Filter (otherwise, sets the note range to ignore)

• CC lo/hi : same as notes, but for CC messages

• Pitchbend : drop pitchbend midi messages

• Aftertouch : drop aftertouch midi messages

HARMONIZER
turn notes into chords

• Origin : when off, will drop the incoming notes

• Notes 2..8 : choose up to 7 intervals to harmonize incoming notes and generate complex chords

LFO
generate a low frequency oscillation

- Waveform : sinus, triangle, ramp, square or random
- Sync : the rate can be tied to the bpm, or free
- Rate : the frequency
- Phase : offsets the starting point of the LFO
- Depth : scales the amplitude
- Offset : waveform central value
- Dest : destination of the lfo

RANDOMIZER
randomly changes note parameter

- Note -/+ : set the random pitch range (downwards and upwards)
- Octave -/+ : set the random octave range
- Velo -/+ : set the random velocity range
- Length : set the random note length
- Chance : probability of random having an effect on the note parameters.

SCALER
quantize note pitches to a defined scale

- Scale : set the defined scale (when **pSCA** selected, the effect will follow the project scale).
- Key : the scale key note
- Stick : define if the out-of-scale notes will be picked up or down (**FILTER** = drop out-of-scale notes)
- Trsp : transpose all incoming notes before scaling

SWING
go off the grid, perfect for rhythms

- Groove : percentage of swing, 50% to 100%
- Sync : swing quantization grid
- Accent : amount of swing velocity accent
- Human : randomize position of notes after swing

More effects to come in future firmware versions.

Lock FX parameters to pattern

While effect parameter values are per-track by default, a pattern may lock an effect parameter to a specific value. Changing the parameter's value on another pattern will not change the value on the pattern onto which it is locked.

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

PROJECT LFO

Each project has two global LFOs. They are available as sources in each track's modmatrix.

Hold **2ND** and press **effects** to enter this submode.

QUANTIZER

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

- Quantz : quantizer time division (usually 1/16)
- Strength : amount of quantization

ALGO

When working in **step** mode, press **algo** to enter this submode.

Select the algorithm with encoder ① and click to apply it on the pattern you are working on. The other encoders let you configure the algorithm parameters. Some parameters have a secondary value that you can set when holding the associated encoder.

TIP When you apply an algo while performing a selection, the algo will process only the selection.

GENERATR availability : step poly, step drum
Clear notes and generate a randomized pattern. Generated notes are quantized to a grid that you define, and you can set the min & max note *pitch/velocity/length* range. You can also set the amount of events (density %) and decide to generate mono notes or chords (mono ... poly 4).

CURVES availability : step poly, step drum, autom
Modify parameters of existing notes following a curve. You can set the LFO wave (sine, triangle...), its amplitude min & max, its rate. The default parameter to be processed is the velocity, but you can also set other destinations (length, chance...).

SYMMETRY availability : step poly, step drum
Reorganize your existing pattern with symmetry. Events can be flipped horizontally (time) or vertically (pitch). If duplicate enabled, events will be generated on top of your previous pattern.

More algorithms to come in future firmware versions.

For further details, please refer to the online manual.

PROJECT TRANSITION

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` `proB`   *proA is playing, proB is empty*
`proA` `proB`   *proA is playing, proB is loaded + muted*

Then, while on the freshly loaded project B, you are free to mute/unmute tracks and organize your patterns, in order to prepare your transition.

Of course, you can also select project A and mute some tracks or change patterns in order to get ready for the project mix.

When you are ready to launch project B, hold **mute** and press *proB* : both projects are now playing!

`proA` `proB`   *proA is playing, proB is playing*

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

`proA` `proB`   *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.

MIDI MONITOR

Hold **2ND** + press **live** to display the midi monitor, showing midi in events (left screen) and midi out events (right screen).

SETTINGS

Press **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.
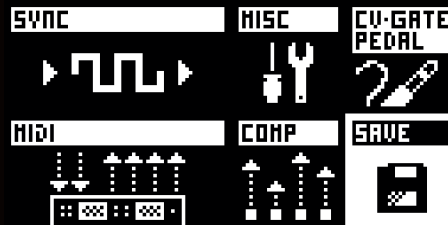
Sync input

CLOCK SOURCE
internal : hapax is the synchronisation leader
midi a .. usb host : hapax follows the midi clock input
cv in 1 .. 2 : hapax follows an analog gate input

MIDI START/STOP
on : hapax receives & reacts to midi start/stop

CV RESET
cv in 1 .. 2 : use analog gate to reset the playback

CV RUN
cv in 1 .. 2 : use analog gate to start the playback

CV CLOCK DIV
1/96 .. 1/4 : when CLOCK SOURCE = CV IN, sets the speed of the expected incoming clock

Sync output

MIDI A, B, C, D, USB DEVICE, USB HOST
clock : send midi clock to selected outputs
transport : send midi start/stop to selected outputs

CLOCK ON STOP
send : send midi clock even when hapax is stopped

DIN SYNC
1/96 .. 1/1: din-sync clock (available on midi out C)

GATE RUN, GATE RESET, GATE CLOCK
gate 1 .. 4 : use an analog gate output to send play, reset or clock states

GATE CLOCK DIV
1/96 .. 1/1 : sets the speed of GATE CLOCK.

Compensation

Latency compensation settings, per outputs and channels (advanced feature).

Misc

MUTE GROUP
on : when muting tracks, enables group selection

METRONOME
midi : outputs midi note metronome (MIDI output)
cv out 1..4 : outputs audio metronome (CV outputs)

METRONOME MIDI, BAR, BEAT
set the midi metronome output & channel, the midi
note to play on first beat of the bar, and the note
to play on other beats of the bar

TRANSPOSE ROOT
C0 .. G10 : the "center note" defining TRSP = +0

TRANSPOSE SYNC
instant .. 4 bars : enables transposition in sync

LED BRIGHTNESS, SCREEN CONTRAST
adjust brightness levels to best match your
environment

HOLD TIME
fast .. slow : set the time enabling hold features

SPLIT BARS
on : in step mode, a new bar is always
on a new page (useful for odd time signatures)

NOTE CHASING
on : retrig notes that should be playing when
unmuting a track

PALETTE
configure RGB pads colors using encoders ①...⑧

INFO
displays hapax information like firmware version

Cv/gate pedal

CV IN RANGE
set the input voltage range Hapax can process

CV OUT RANGE
set the voltage range Hapax can output

PEDAL HOT, PEDAL COLD
assign a command (rec, play, ...) to execute
when using a footswitch (single or dual pedal)

Midi in

NOTES, CC, PITCHBEND, PRESSURE, PC
ignore selected incoming midi messages

Midi Thru

MIDI IN > **MIDI A .. HOST** > **DEVICE**
configure midi thru from each input to each output

REC SETTINGS

Hold **2ND** + press **settings** to enter recording
preferences :

LEARN
enable note learn for step mode

NOTES
overdub / enable hard rec
(overwrite previous notes)

PUNCH IN
start the playback when an incoming note is played

LOOPER
enables auto–length : length and pattern start are
set automatically, like a looper pedal

COUNTDOWN
enables a count-in when recording from a stopped
state

METRONOME
enables the midi or the audio metronome

REC OFF
disable rec when the player reaches the pattern end

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 : click one of the 8 encoders and
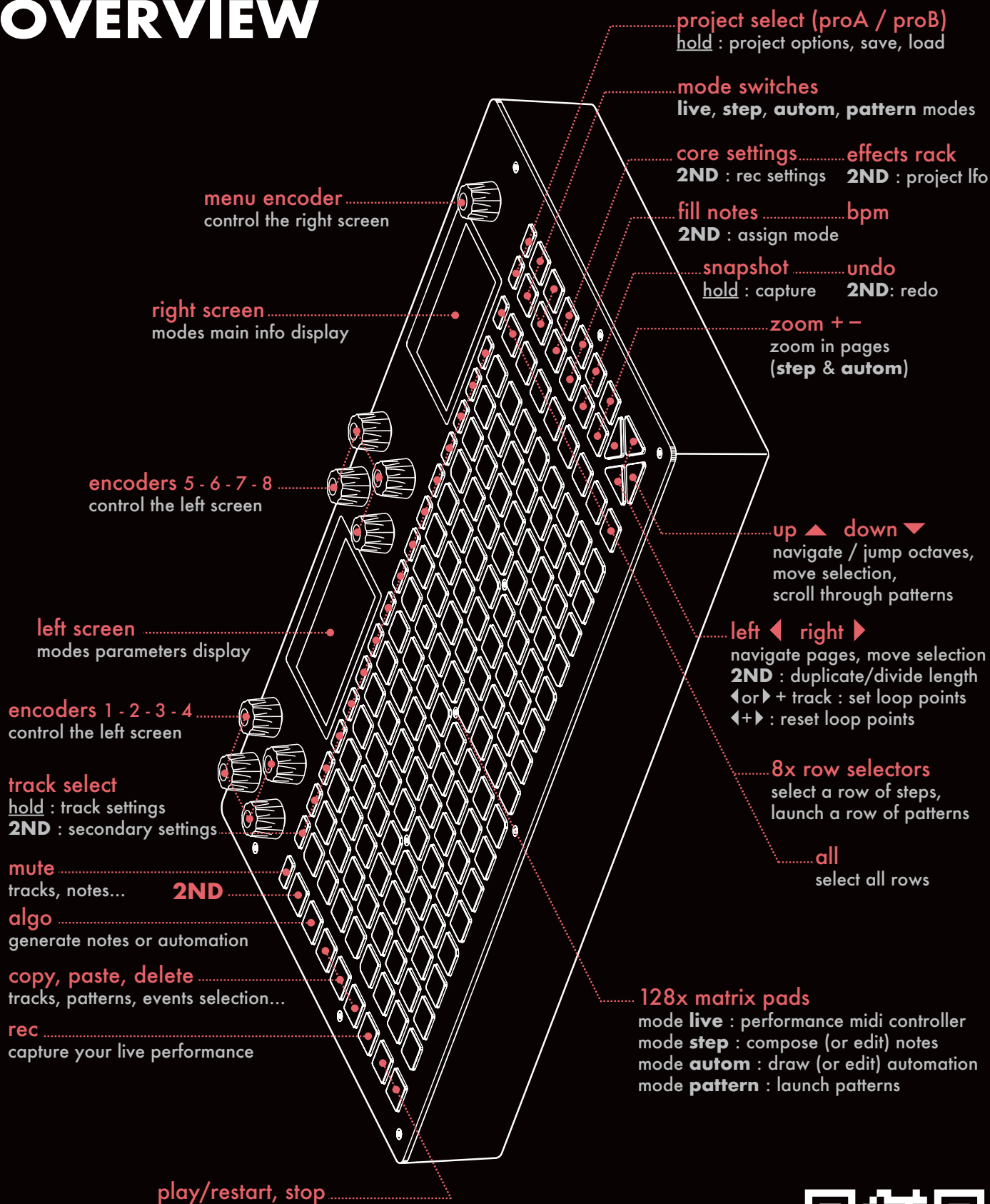select the destination.

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.

7x encoders
are assigned

INTERFACE OVERVIEW

project select (proA / proB)
<u>hold</u> : project options, save, load

mode switches
live, **step**, **autom**, **pattern** modes

core settings
2ND : rec settings

effects rack
2ND : project lfo

fill notes
2ND : assign mode

bpm

snapshot
<u>hold</u> : capture

undo
2ND: redo

zoom + −
zoom in pages
(**step** & **autom**)

menu encoder
control the right screen

right screen
modes main info display

encoders 5 - 6 - 7 - 8
control the left screen

up ▲ down ▼
navigate / jump octaves,
move selection,
scroll through patterns

left ◀ right ▶
navigate pages, move selection
2ND : duplicate/divide length
◀ or ▶ + track : set loop points
◀ + ▶ : reset loop points

left screen
modes parameters display

encoders 1 - 2 - 3 - 4
control the left screen

track select
<u>hold</u> : track settings
2ND : secondary settings

8x row selectors
select a row of steps,
launch a row of patterns

all
select all rows

mute
tracks, notes…

2ND

algo
generate notes or automation

copy, paste, delete
tracks, patterns, events selection…

rec
capture your live performance

128x matrix pads
mode **live** : performance midi controller
mode **step** : compose (or edit) notes
mode **autom** : draw (or edit) automation
mode **pattern** : launch patterns

play/restart, stop

HAPAX