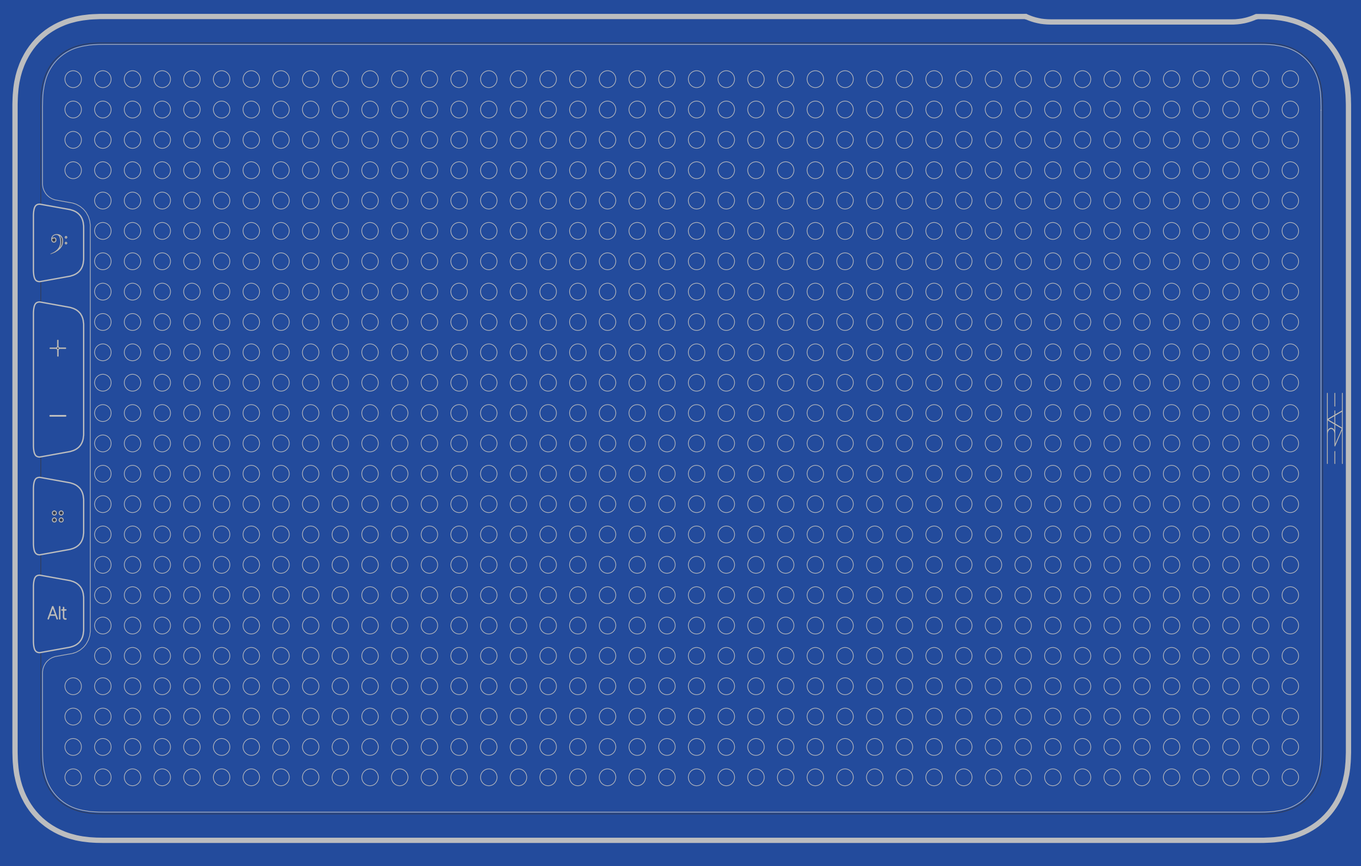
ERAE Touch Polyphonic MIDI Controller

# USER MANUAL






## Read this first.



### Safety Instructions

Do not clean the skin (silicone-based surface) with any detergent or you will deteriorate the coating. Clean with a damp sponge or cloth softly only using water.

Avoid placing heavy objects on the ERAE Touch when you are not using it as it might de-calibrate the sensors.

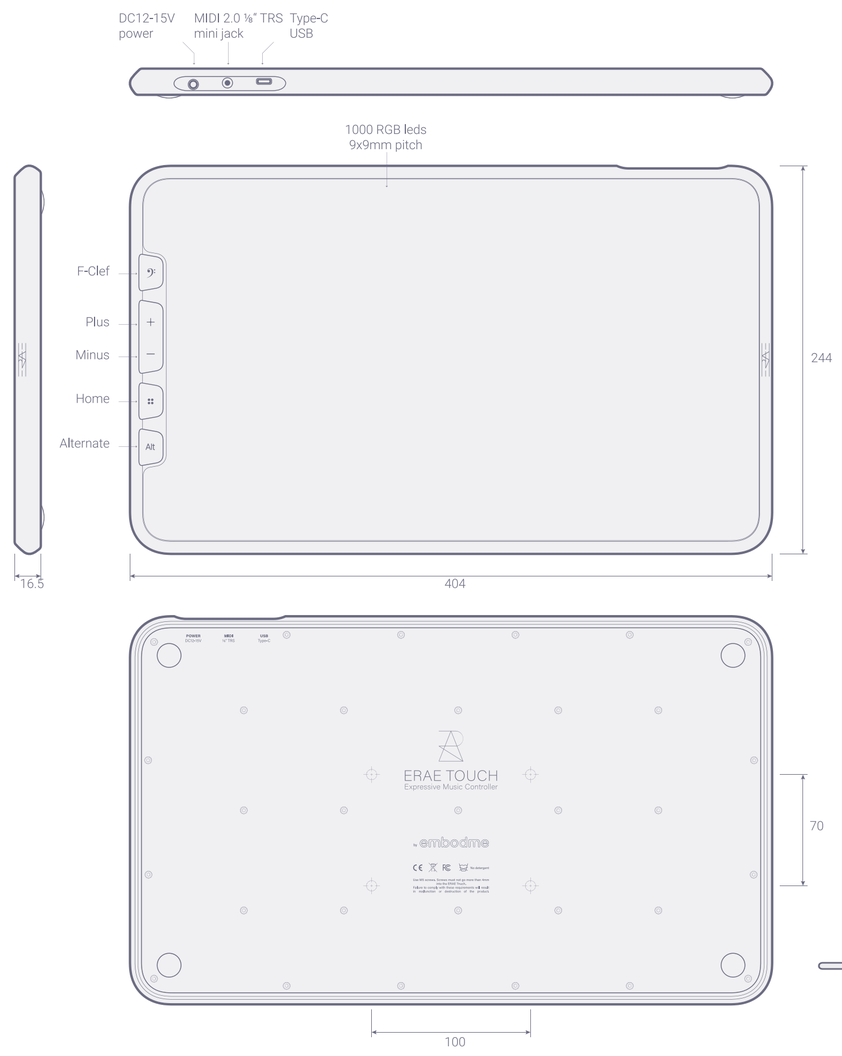
Make sure to use the provided DC 15v-2A adapter for an adequate power source of your ERAE Touch.

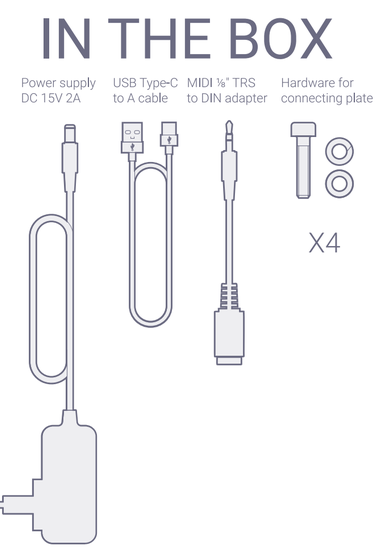
ERAE Lab

In order to have Erae Lab's factory presets, double click on "Erae Lab.pkg/exe" to install it, and follow the instructions.

# Quickstart

## Installation




Plug the ERAE Touch to the provided DC 15V power source. ERAE Touch auto calibrates at startup. Do not touch the surface for a second after plugging the power source.
Connect directly to a synth through the mini jack (MIDI-TRS) port or use the USB-Type C to connect to computers, phones or tablets. ERAE Touch works with any digital audio workstation (DAW) or MIDI compatible synthesizers.

## Customize the ERAE Touch with the ERAE Lab

ERAE Touch comes with ERAE Lab, its companion software.
This companion software is the center hub for layout creation and configuration. Although it is not mandatory for using the ERAE Touch, it opens up the ERAE Touch for custom layout designs.

You can find the latest versions of ERAE Lab and ERAE Touch firmware here :
https://www.embodme.com/downloads

## Updates

Update the firmware by opening ERAE Lab and click “Update Firmware” button. ERAE Touch will start updating its firmware.

# Erae Touch Overview

## What is Erae Touch ?

This innovative control interface is a Midi Polyphonic Expression (MPE) pad controller sensitive to finger touch, percussion mallets, drum sticks or anything that comes to your mind. The ERAE Touch versatility is suited for demanding artists looking for a large surface to create and experiment. Built for creative professionals and confirmed musicians, it is very responsive to a wide range of musical gestures and offers a wide array of creative possibilities.

### Multitouch tracking

It can support x,y,z tracking of up to 10 simultaneous points of contact with low latency (~1ms) for real-time live performances. The surface is made of soft silicone allowing for smooth transitions with very precise and flawless transitions. This midi controller enables musical touch such as vibratos, portamentos and aftertouch.

### Versatility

The built-in array of 1,000+ Force Sensors and RGB LEDs coupled with the configuration software the ERAE Lab, allows for any configuration with up to 32 layouts stored on the device in standalone mode. The ERAE Lab offers the ability to customize your pad with various musical elements such as faders, xyz pads, isomorphic grids or multi-track step sequencers. It will also come with several pre-made settings and offer the ability to share your templates with other users.

### Silicone skin

Erae Touch is pressure sensitive. Only a semi-rigid material enables smooth pressure variations while providing the sensation of deforming the material. Remember the coating paint does not like detergent!

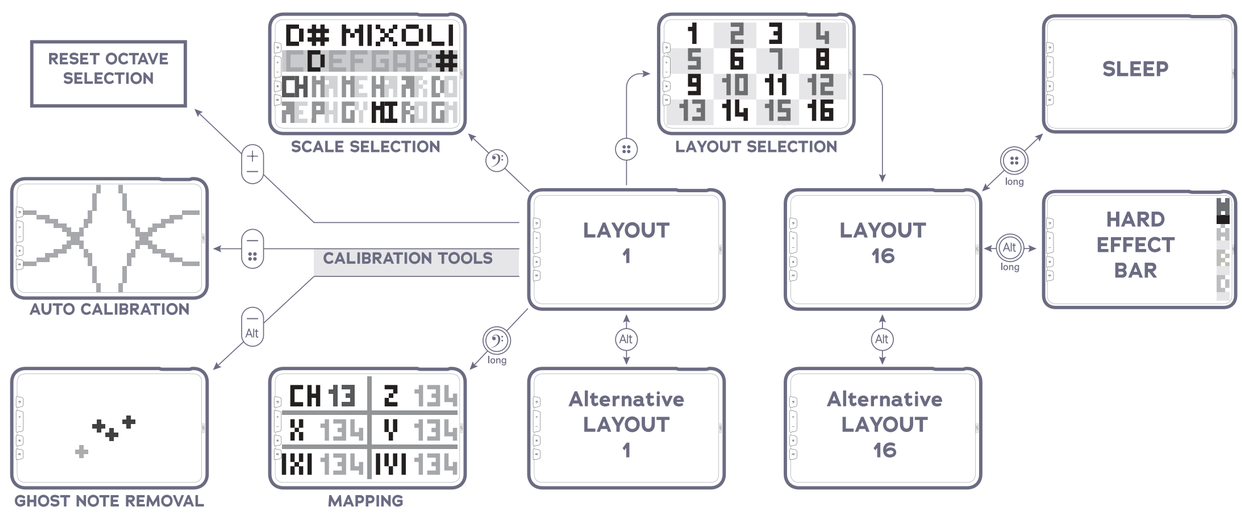
# Global workflow

ERAE Touch can be configured in countless ways with its companion software, the Lab. Graphical and intuitive, it takes seconds to create a “Layout”, which can be a keyboard, a keygrid (inspired by isomorphic keyboards), a drumpad, a sequencer and more. It can also be a combination of all these elements. Up to 32 layouts can be stored in 16 slots, each slot having a “Main'' and an “Alt” mode. Each layout can be edited in the Lab with midi channel settings, velocity curves, control change values, colors, sizes and many more options.

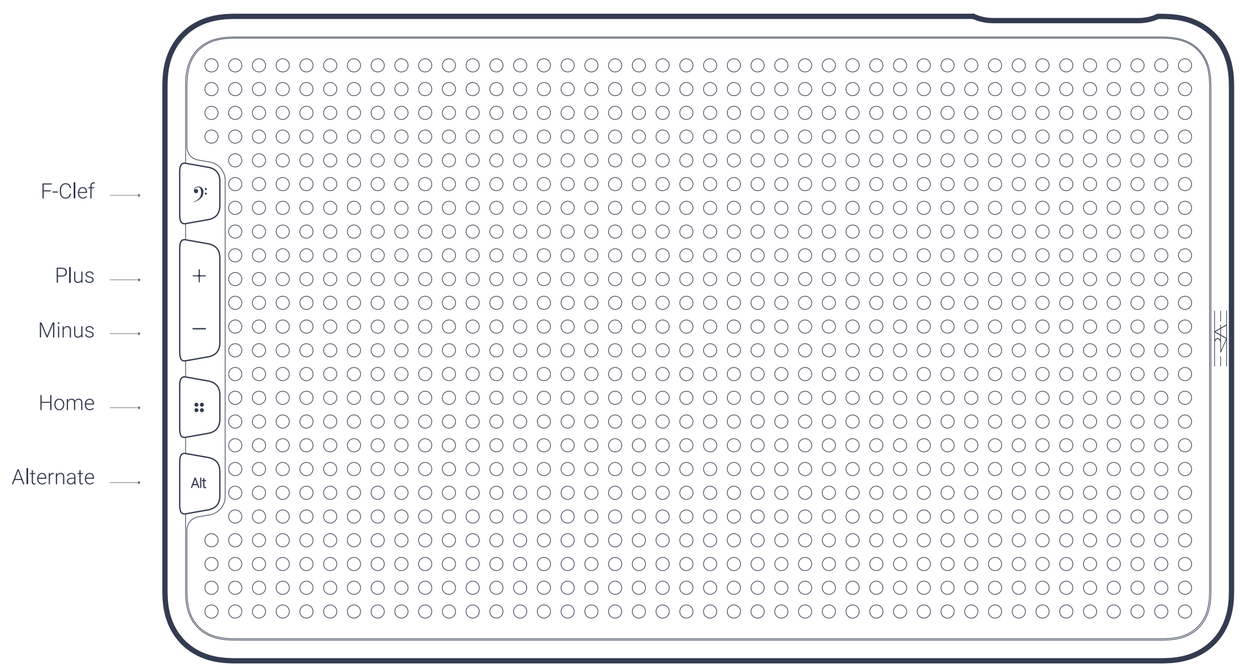
To ensure a playful experience and workflow with the Lab, we have added as many options as we thought was necessary for every element. For instance, Scale selection can be pre-configured on the Lab, but editable on the ERAE Touch within a click. Similarly, control changes are pre-configurable on the Lab but you can also map them directly from the pad. Remember that scale changes will only affect the current displayed layout, and if there are several elements in one Layout, it will affect the last touched element. Selecting a mapping mode is similarly affiliated with one layout and the last touched element if there are several in one layout.

There are two functionalities you cannot access from the Lab: The “calibration mode”(the instrument tuning equivalent for the ERAE Touch), and the FX Bar. MIDI effects are applicable on any layouts apart from the Ableton Launchpad. As for the FX Bar, octave up/down buttons are global to any layouts.

# Navigation




# Erae Touch in details




There are 5 buttons, each can give access to one or two functions depending if you push it briefly or hold it for more than a second. You can read below a list of short press and long press actions and expected behavior.

## F-Clef button

Short press

The F-clef button is dedicated to scale selection when short pressed.

Long press
When long pressing on the F-clef button you can access Midi channel and Control Change (CC’s) settings for dynamic mappings

## Plus and Minus buttons

Plus and minus buttons mainly serve for switching the octave range. In some cases (to be defined) it can be used to scroll up and down in a menu or add or subtract value from a parameter.

## Home button

Short press

Pressing this button brings you to the layout selection menu.

## Alt button

Short press

The alt button primary function is to access alternative layouts. Alternative layouts are like any other layouts, stored in the alternative slot from each of the 16 layouts to gain direct access and allow a smooth workflow.

Long press

Long press the Alt button and the MIDI FX Bar will appear and disappear if you long press again. This is effective in almost all layouts where MIDI effects can be processed. As for now, it is not compatible with the sequencer and launchpad and will therefore not appear with those specific layouts.

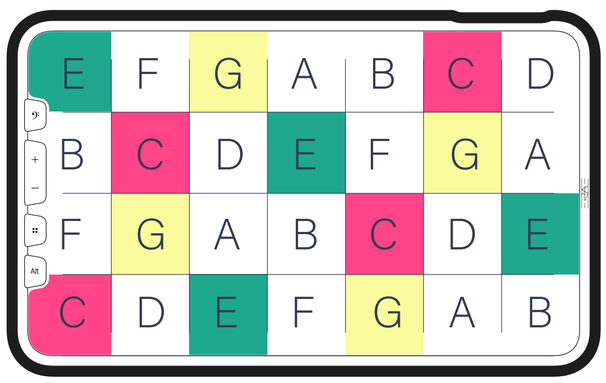
# Scale selection

The F-clef button is dedicated to scale selection when short pressed.

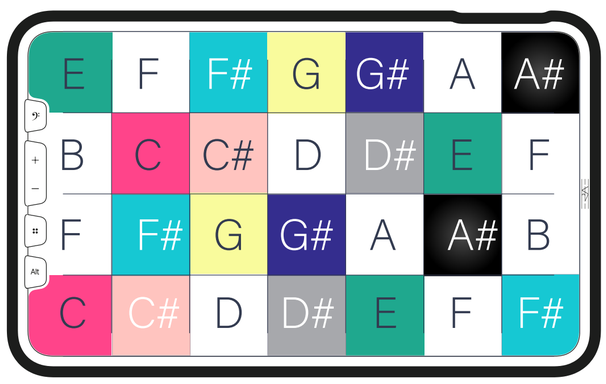

scale selection

Scale changes will affect the current active layout.  e.g. changing the scale to G Minor will affect only the selected keygrid/keyboard/sequencer.

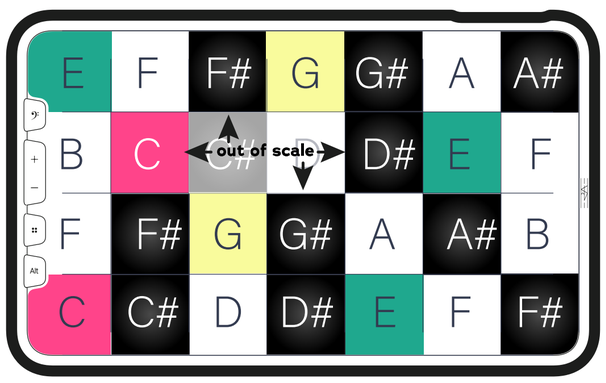
Important feature: By enabling the chromatic mode by pressing on CH, keygrids will display every chromatic note, but will “color” only keys from the selected scale. Off-scale notes appear greyed out by default. Keyboards always display all chromatic notes, selecting a scale will highlight notes from the latter.




C Major



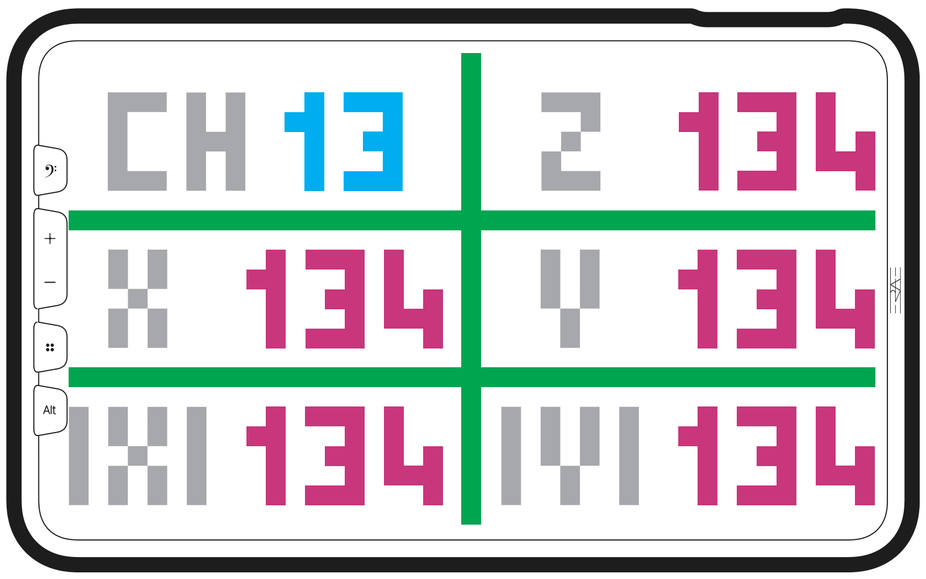

Chromatic




C Major - chromatic display

# Mapping gestures

When long pressing on the F-clef button you can access Midi channel and Control Change (CC's) settings for dynamic mappings



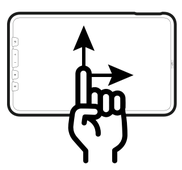

mapping

The mapping mode main purpose is to send your DAW or synth the control change corresponding to the different touch dimensions: X , Y , Z , |X| and |Y|. It also displays the channel number from the active element on current layout.

Here is a description of these 5 dimensions:

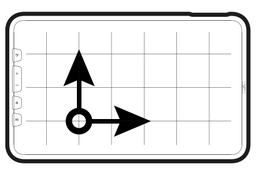
### Z - Pressure

Z corresponds to the finger pressure and can be mapped to any CCs. It is independent from the channel pressure in MPE mode. According to your workflow, it can be useful if your synth doesn't react to aftertouch or doesn't have MPE pressure but you would still want to make use of pressure.



### X, Y

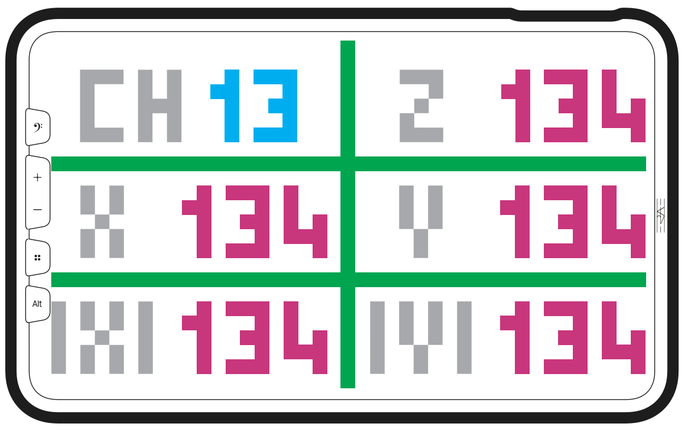
Correspond to relative displacements, from one point to another within a key. No matter where you hit the note, it will always start with a 63 control change value. You can also set the start value in ERAE Lab with the Min/Max slider.



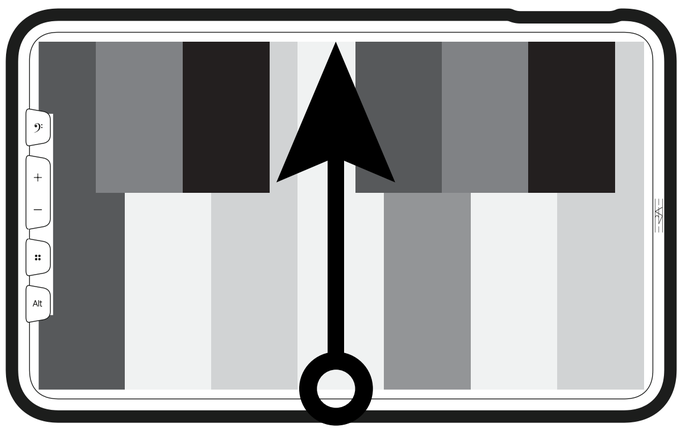
### |X|, |Y|

Symbolized by the mathematical symbol for absolute value, they correspond to X and Y positions in a cartesian frame of reference where (0;0) is at the bottom left corner of the key and (127;127) at the top right hand corner.

Example: Say you want to map the absolute Y axis (|Y|) from your current keyboard grid layout to a filter cutoff. You would need to select your mapping mode in your DAW (or plug-in) press |Y| on the Erae Touch and as a result the vertical axis from each key on your current keyboard layout would be mapped to CC 134 with 0-value at the bottom of the key and 127 at the top.




absolute |Y|, mapping mode screen



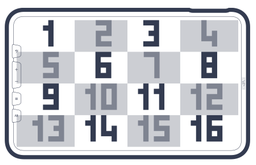

|Y| on a keyboard

The mapping mode also tells you on which MIDI channel your selected element is sending control changes to. This is useful as a layout can be composed of several elements, which in turn can be set to several MIDI channels. In the specific case where you have several music elements (Keygrid or Keyboard), the displayed mapping corresponds to the last element that was touched on the layout.

## Layouts

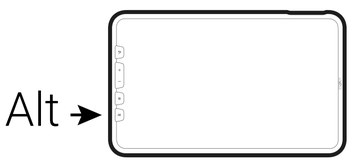
A layout is a single screen that is made of one or several elements. Each layout constitutes an instrument on its own, with a specific arrangement of keys, pads, sliders, etc. The ERAE Touch can store 32 layouts. We name “Main” the main layouts in slot 1,2,...n and “Alt” the alt layout in Alt slot.Main layouts are numbered from 1 to 16 and Alt layouts from 1alt to 16alt.

We explain in this section how these layouts are accessed and arranged. We also describe the factory layouts that are pre-loaded in the ERAE Touch. For custom layout creation, please refer to the ERAE Lab section below.




### Layouts

Access all 32 layouts from the 16 slots in the Layout menu. You can access the menu by short pressing the home button.




### Alternative [Alt] Layouts

Press the [Alt] button once a Main layout has been selected in order to reach the Alt layout. Main layouts are numbered from 1 to 16 and Alt layouts from 1alt to 16alt. For example, in order to reach layout 1alt, you would need to press the Home button, select layout 1, then press Alt.

### Factory layouts

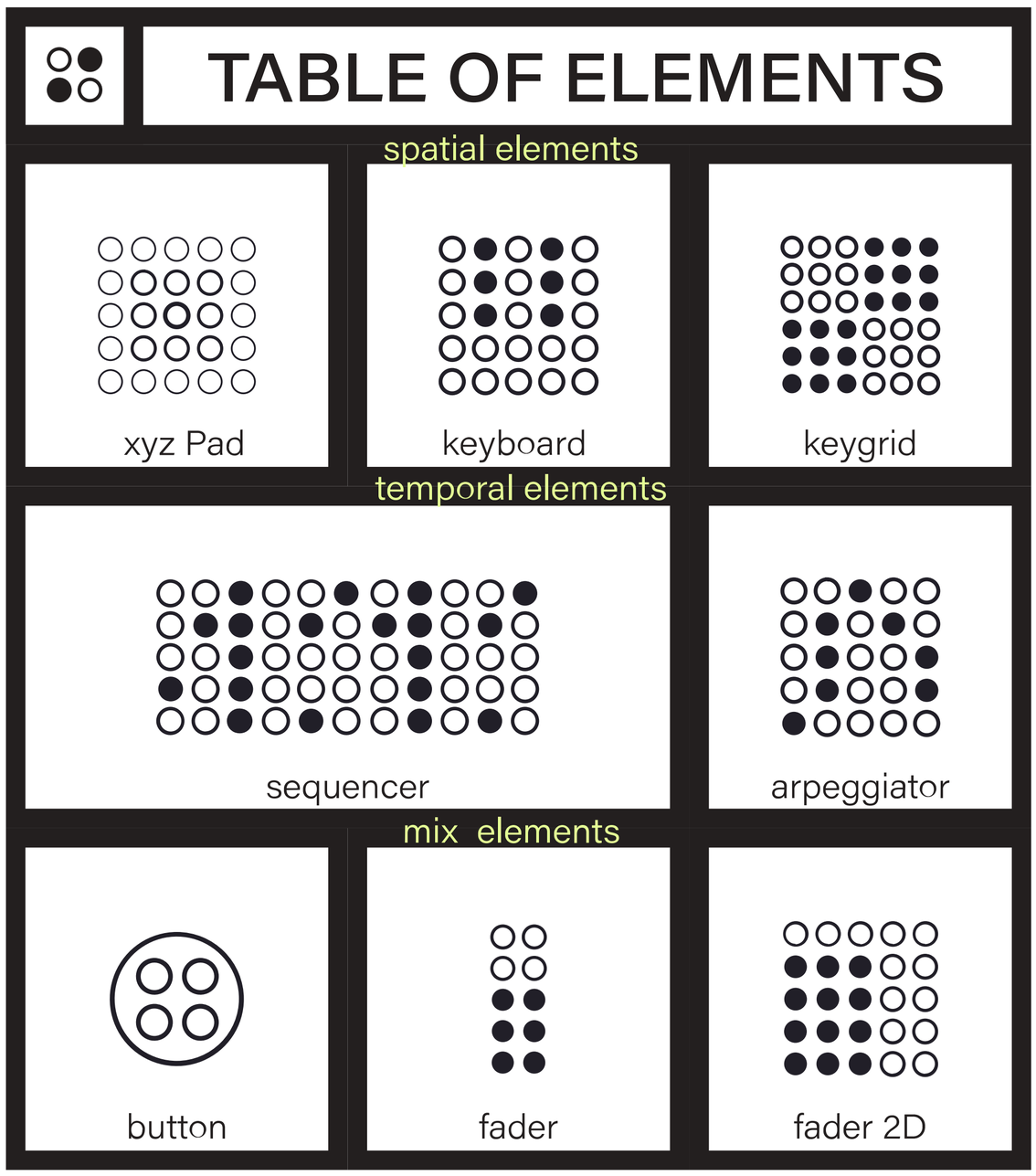
The ERAE Touch comes pre-configured with 32 “factory” layouts. This diversified panel, prepared in collaboration with various professional artists provides a good starting point for you to start playing with the ERAE Touch. You will find simple layouts (keygrids, double keyboards, sequencers, etc.) as well as more complex ones involving different types of elements. We call these more complex layouts “split layouts”. Here are described the 32 factory layouts.


### Custom layouts

Custom layouts are made up from assembling one or several elements together. To start designing, editing and uploading them to your ERAE Touch, please open and eventually update your version of ERAE Lab. See ERAE Lab related information below and learn how to create, edit and manage your custom layouts.

## Elements

Elements, described in this section, are the building blocks to all layouts. A layout can be composed with one or several elements. They can be positioned, duplicated, edited and removed however you need in the ERAE Lab. We describe element sizes using the following notation: NxM represents the size of any element with N being the number on LED lines and M the number of LED columns.



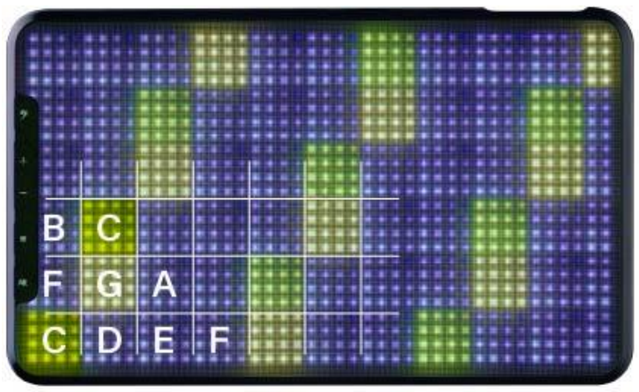
keygrid

## Keygrid

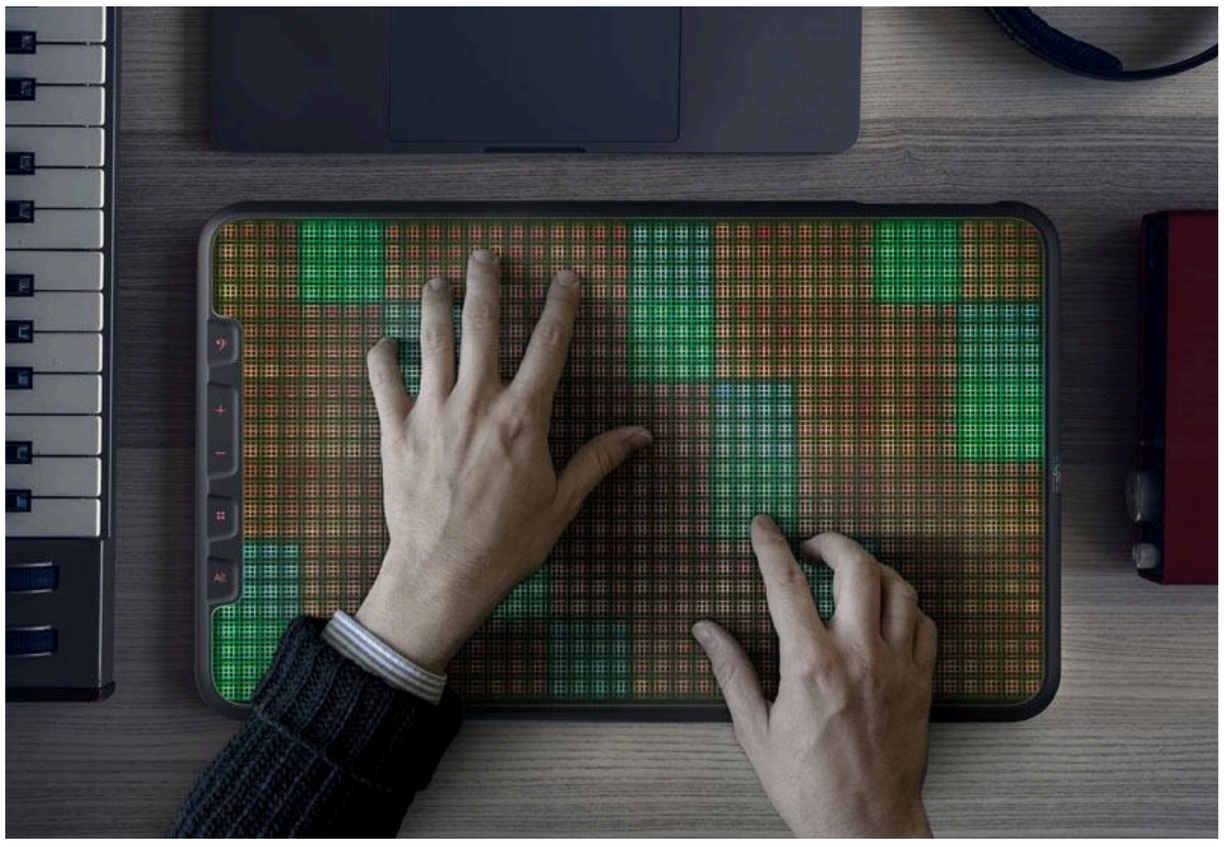
Keygrids are ensembles of rectangle cells, spaced horizontally by a semitone, a tone or more and vertically spaced by a fourth interval (or more using the line offset attribute, like on string instruments. The selected scale will set the specific
intervals between columns and rows.
Keygrids are ensembles of rectangle cells, spaced horizontally by a semitone, a tone or more and vertically spaced by a fourth interval (or more using the line offset attribute), like on string instruments. The selected scale will set the specific intervals between columns and rows.

By default, every note on the Keygrid is in the key of C major. Two joint keys on one same line will be separated by one degree of the same scale. In the C Maj example, the root note (in yellow) is C. Moving to the right, each key is the next note in the C major scale. Moving upward, each key is a fourth higher.

Changing scales using the Scale Selection Menu will rearrange notes intervals but the same logic will be kept, the root note, third and and fifth will be highlighted with different colors. Of course, this can be changed by editing their style in the Lab.




Hitting “CH” in the Scale Selection Menu toggles between In Key and Chromatic Keygrid modes. With In Key selected, the Keygrid is folded so that only notes within the key are available. In Chromatic Mode, Keygrid contains all notes. Notes that
are in the key are lit, while notes that are not in the key are unlit by default. Again, styling can be edited in the Lab.



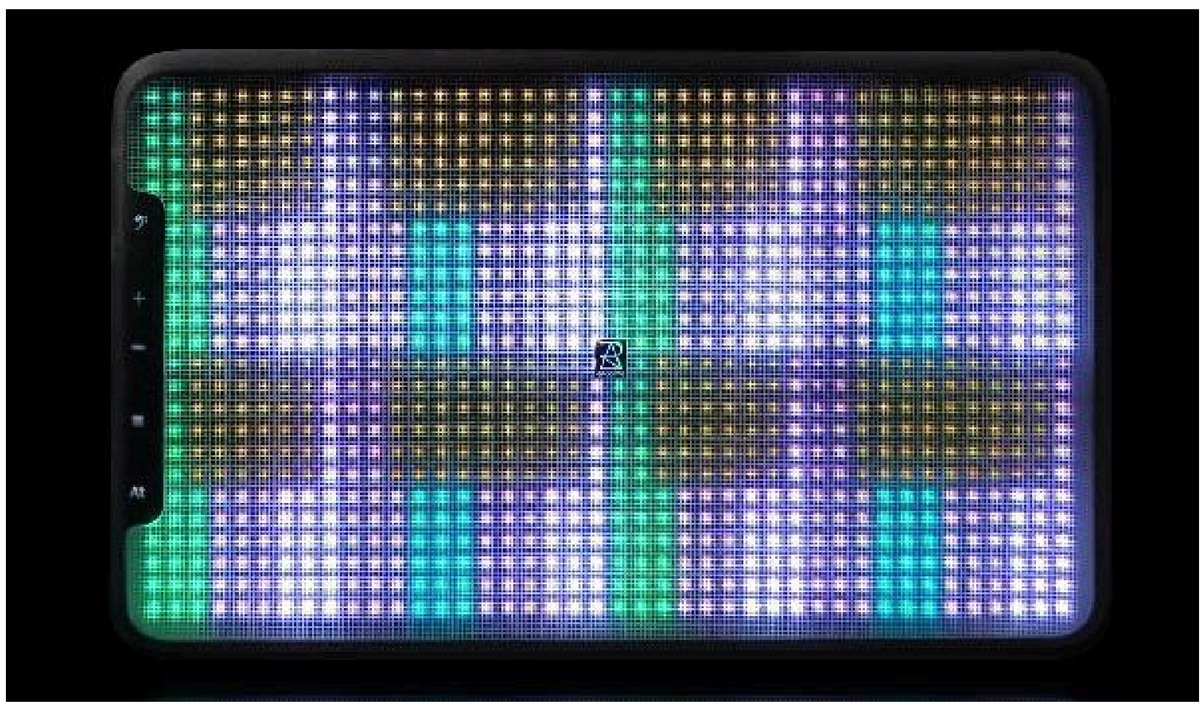
keygrid layout

keyboard

## Keyboard

Keys are replicas of traditional keyboards. There are two ways to represent white and black keys: you can either alternate colors between two joined keys of the same color, or unfill the keys and leave their borders only. Note exact sizes and colors might differ depending on how you style them in the Lab (due to the limited resolution of the Erae Touch LED screen)

SImilarly to Keygrids, chromatic mode is accessible by pressing “CH”.



keyboard layout

button

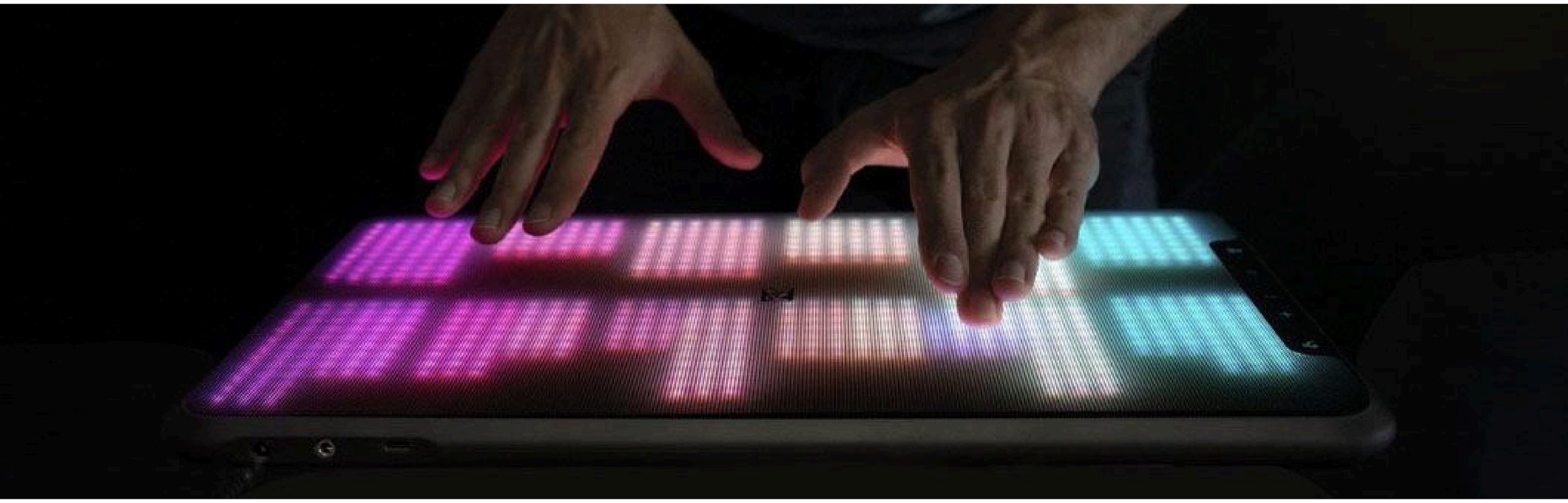
### Buttons

Buttons have a simple functionality: they trigger notes with selected pitch on a selected channel. This note is set by default on a lowest possible pitch C1 since it is not meant to be used as a playable key but for triggering events. They are intended to be used as triggers (eg.Launching clips on Ableton Live or triggering a button on a hardware synth) or switches (eg. muting/unmuting tracks). You can basically map them to anything that requires to be triggered, being switched on or switched off. Furthermore, than can have an “enabled” and a “disabled” color set in the Style Menu. This can be used as a visual cue showing on and off states.

fader

### 1D Sliders

Sliders offer a continuous variation in one dimension, between two selected values with a specific MIDI channel and Control Change. They can be mapped to channel volumes, or any effect continuous parameter. They are more precise than they look like: you can reach values in between LEDs levels. As you push them up or down, notice the grey line appearing, this shows intermediate values. Their value range can be edited in the Lab. They are initially set to value 100 (<--check), but you can change this in the Lab. You can also edit sliders’s lengths, widths, colors and more in the Lab).



1D sliders layout

fader 2D

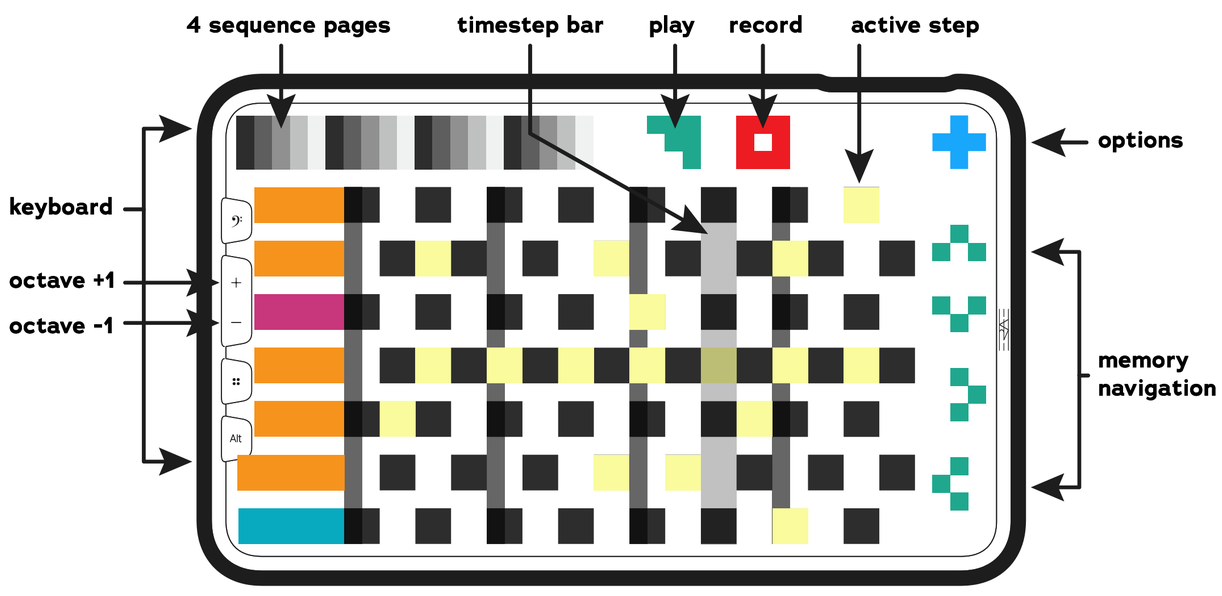
### 2D Sliders

2D Sliders offer a 2D continuous variation in both XY dimensions, between two sets of selected values with a specific MIDI channel and Control Change. They can be mapped to effects, or any plugins continuous parameters. As you move up or down, left and right, they provide useful visual feedback. Their value range can be edited in the Lab, as their initial value.
Sliders can be edited in lengths, width and colors in the Lab. You can change the color of their edges, background and level bar.

sequencer

### Sequencer

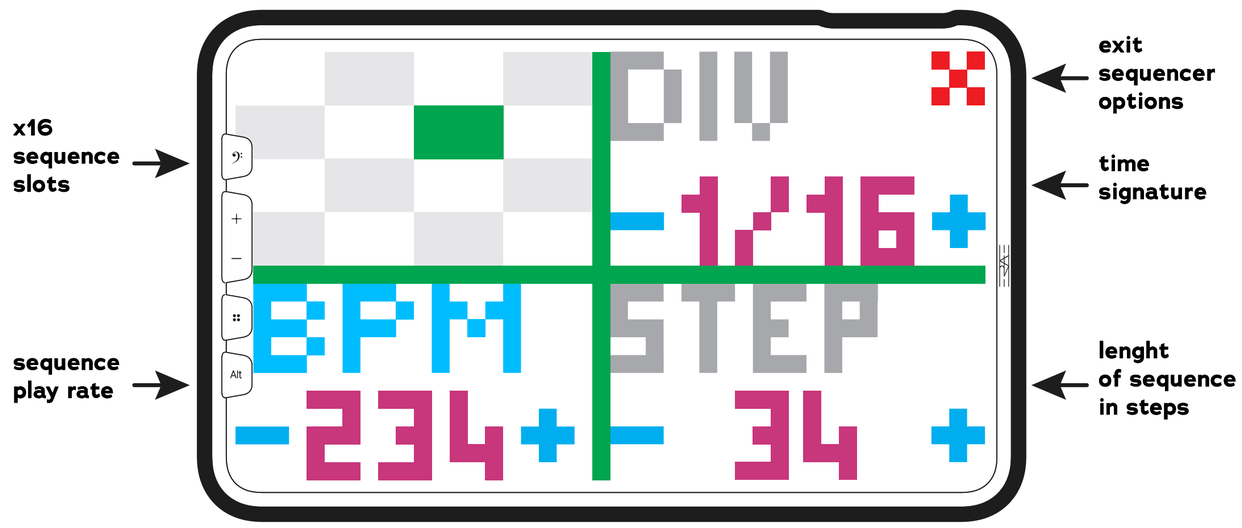
The ERAE Touch sequencer is probably the most complex element. You can create up to 16 sequences, each having up to 4 pages with 16 steps available. Its layout is basically a piano roll with a note vertically lined up on the leftmost column, a 16 time steps grid per page with respective volume sliders at the bottom and on the right end, you find one page selector and three buttons. These various elements are depicted below.




Sequencer main layout

Page selector: ADD PICTO OF PAGE SELECTOR
The page selector indicates the sequence pages with the current one being highlighted in red (white for the first page). It also provides access directly by pressing on their respective bars in order to edit them.
Sequencer options: ADD PICTO OF SEQUENCER OPTIONS (BLUE CIRCLE)

Click on the blue circle to access all the sequencer four options: memory slots, time divisions, BPM control and number of steps. They are laid out as follow:




Sequencer options

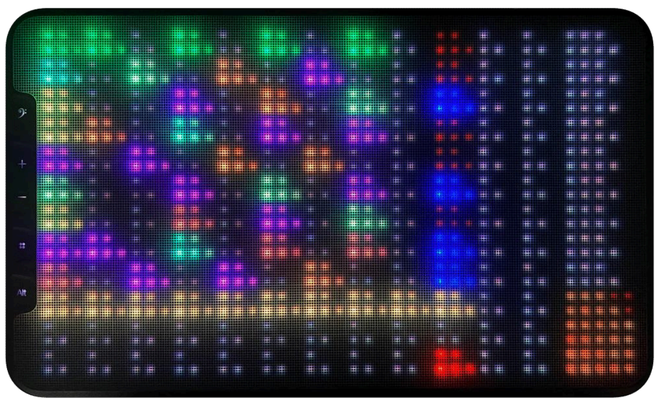
Memory slots (top left):16 cells corresponding to 16 internal memory slots, each containing up to 4 pages of sequence
ADD PICTO OF MEMORY SLOTS of numbers and highlighted example eg. show slot 2 being selected.

Time division "DIV" (top right):
Time division sets the number of beats per time step. The first digit is the number of beats, while the second digit corresponds to the number of divisions. Hence, setting the 1:16 time division would play 16 steps in one beat, while a 2:1 setting would playone step every two beats.
ADD PICTO OF DIV genre number of beats → 1:16 ← number of steps.

BPM selector "EXT/BPM" (bottom left):The BPM selector allows you to switch between slave and master modes. Slave mode "EXT" would draw the Beat Per Minute from your DAW or synth clock. Master mode "EXT" uses the ERAE internal clock.
ADD PICTO OF EXT/BPM genre master mode (ERAE Touch internal clock) → EXT/BPM ←slave mode (DAW or synth clock)

Number of steps "STEP" (bottom right): Choose here the number of steps you wish to cycle through. Set to 4 or 32 (check), it respectively cycles every 4 beats or 32 beats.
Quick overview:
You can play notes directly on the leftmost vertical piano roll (diatonic scales only), and fill the grid by tapping any of the 16 cells. By default, you are on page 1, with 16 steps cycle, a 1:4 division and BPM set to 120. By default, the sequencer uses the DAW clock and is thus set to EXT.

## Livepad for Ableton



Livepad for Ableton

This Launchpad element strips down to the essential: launching Ableton clips, soloing and muting up to 10 tracks.

We have added a record and mute lines. It is possible to make the pads small/bigger by long pressing "alt" the +/-, hence reducing or increasing the number of clips. Also, you can move up-down and left-right by simply holding "alt" and then dragging your finger on the grid.

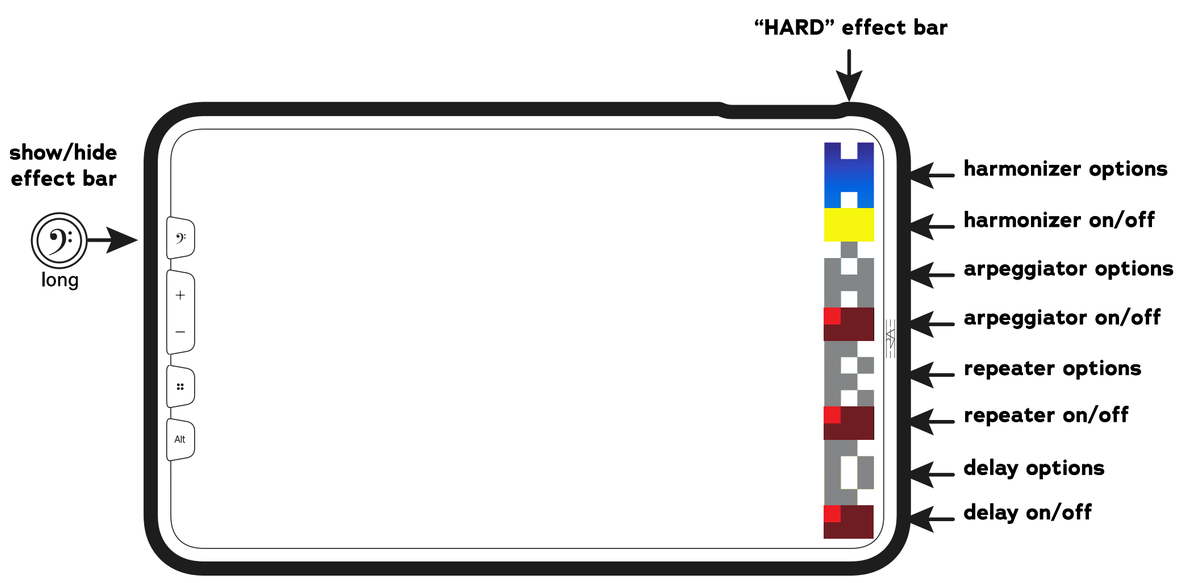
For Windows
Unzip and Add the content of this folder into the following folder:
C:\ProgramData\Ableton\Live 11 Suite\Resources\MIDI Remote Scripts

For OSX:
Click right on the Ableton app and select "show package content".
Unzip and add the "erae_touch" folder to "MIDI Remote Scripts" folder.

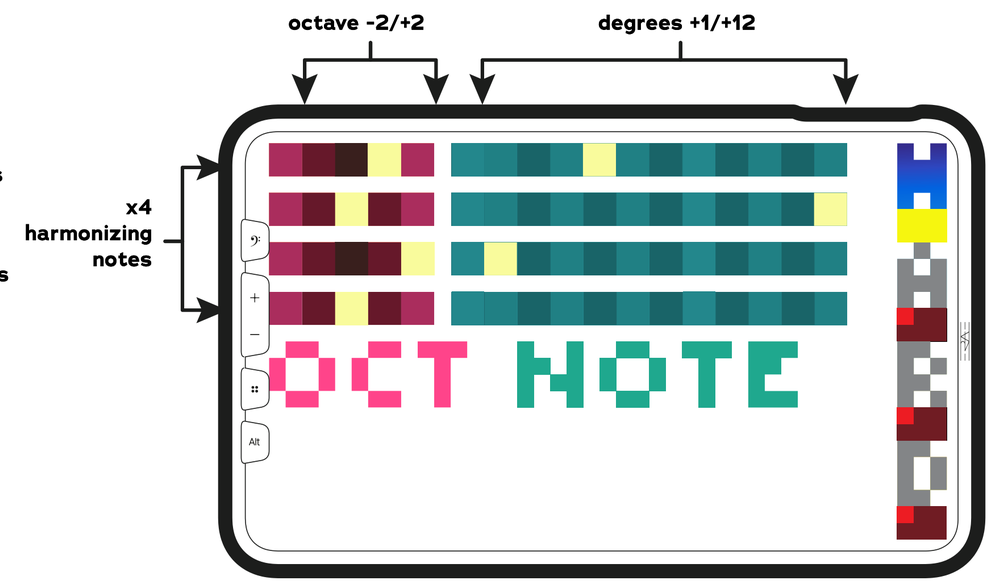
**Make sure to close your DAW before updating the firmware**

# FX Bar

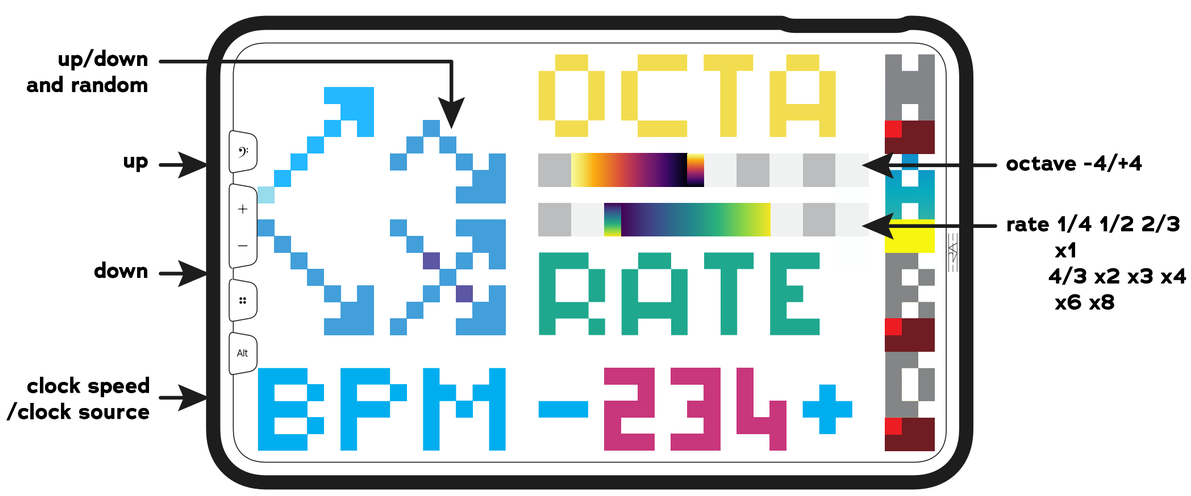
MIDI effects can be accessed on a pop-up bar by long pressing the “alt” button There are four MIDI effects: Harmonizer, Repeater, Arpeggiator, Delay. Press any FX selection button picto to unfold the corresponding midi effect. Press their respective on/off button to trigger them on/off. Effects can be played on the fly and chained together. These effects are applicable on any layouts apart from the Ableton Launchpad and Sequencer.



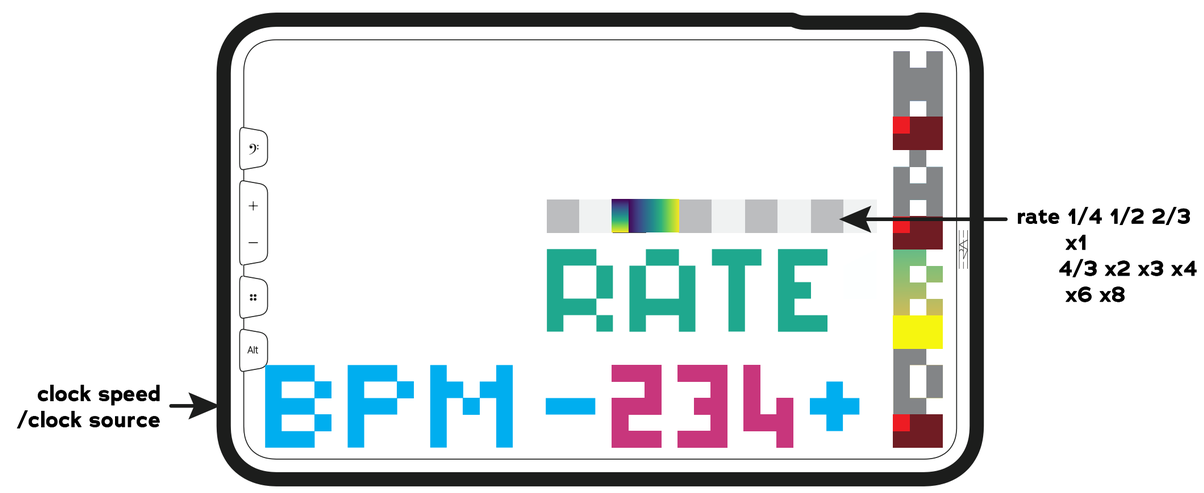

Effect bar



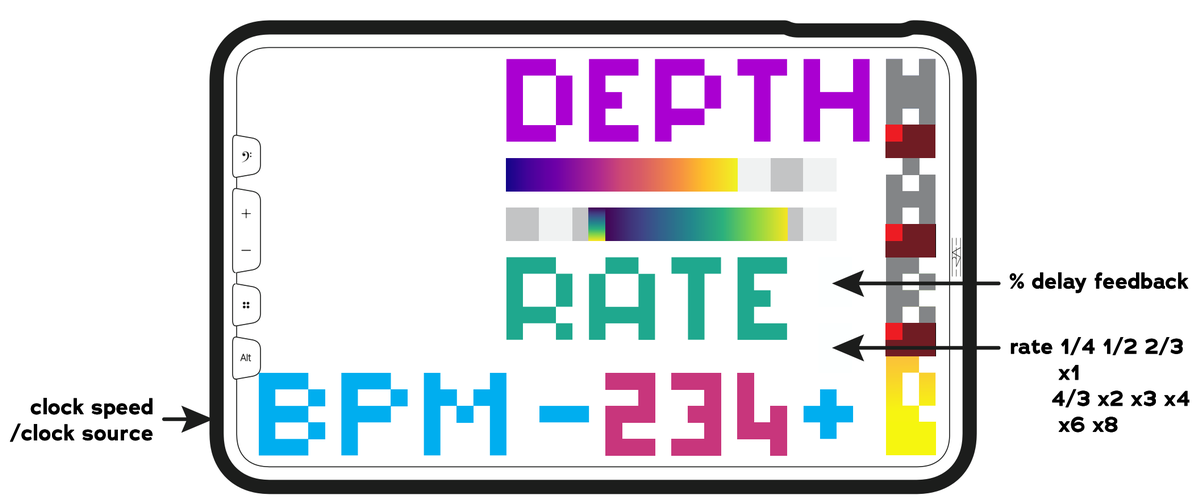

Harmonizer options




Arpeggiator options




Repeater options




Delay options

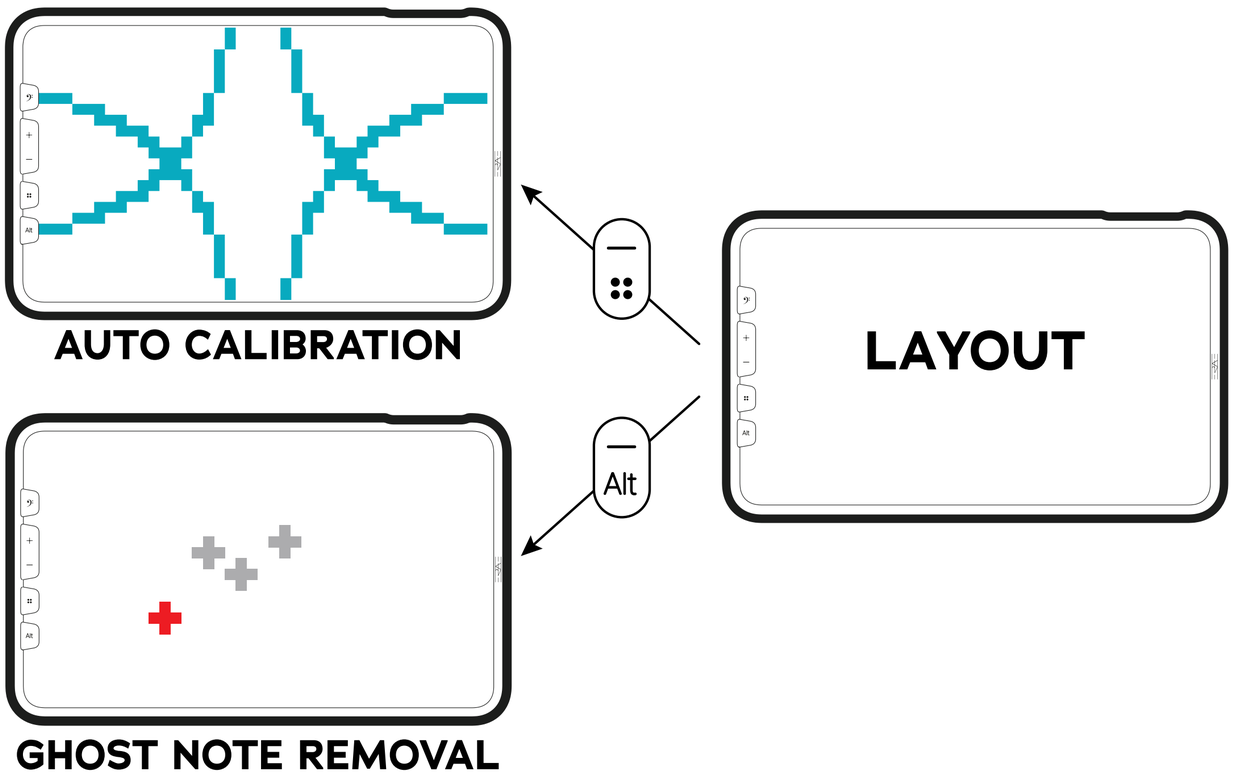
## API

The ERAE Touch API is a custom sysex library with messages enabling you to take full control of the ERAE Touch point detection and LEDs states.

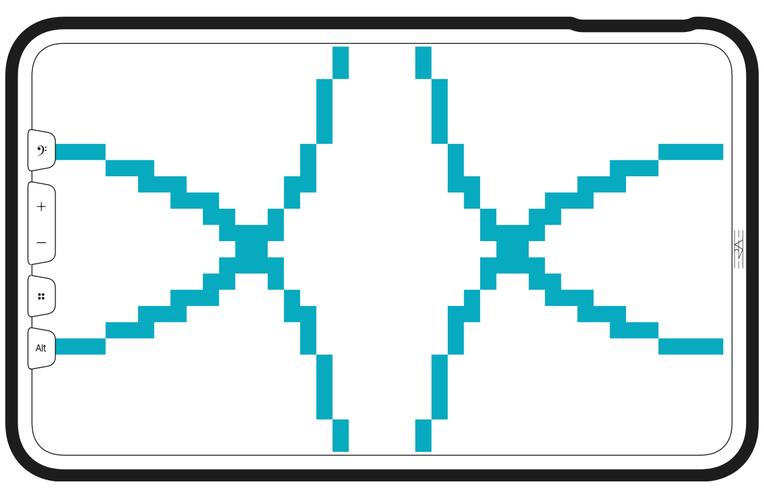
Download the full specs on www.embodme.com

## Calibration

The ERAE Touch silicon material is flexible by nature. This same property enabling deformation under your finger's pressure may have a drawback: it moves slightly when you carry around the ERAE Touch vertically or when it is pressed against another object. The Force Resistive Sensors being highly sensitive to any pressure, it can sense any tiny deformation of the silicon and lead to unwanted noise or wrong note generation. Therefore, like a guitar needing to be re-tuned after a certain time, the ERAE Touch needs calibration. A calibration is similar to a tare weighing operation, where the ERAE Touch determines the amount of pressure equivalent to zero in a specific zone, meaning it is not detecting any touch .

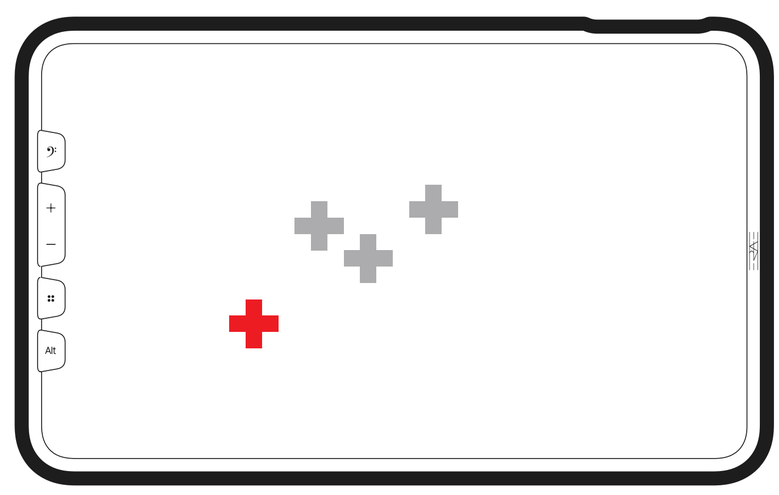



ERAE Touch can be calibrated in three different ways, you can either opt for an automatic calibration, semi-automatic or do a manual calibration. There are two possible issues to be solved with calibration:
"Ghost notes" are random and rapid bursts of false positives, positives being a finger detection
"Stuck notes" are a worst version of ghost notes where the rapid burst becomes long and steady.



Automatic calibration
Hold - & home button

This is a transparent operation for you. An automatic calibration happens when you switch on the ERAE Touch during the startup screen (when the four wavesellipses sweep the surface). Automatic calibration determines the optimal sensitivity threshold that would prevent unwanted detections due to tiny deformations of the silicon parts. Do not touch the surface while the ellipses are sweeping as the ERAE Touch is setting the tare.

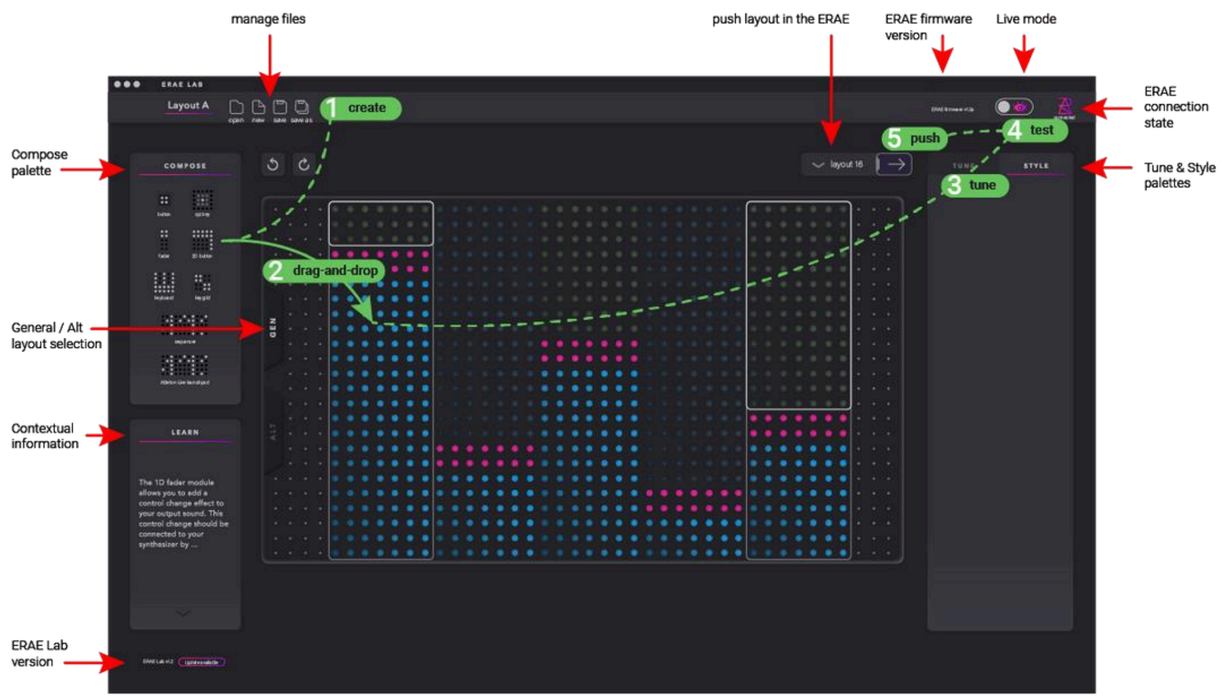


Ghost note removal
Hold -

Show the last positions detected and select the one that you suspect to be a detection error (ghost note), this will slightly raise the detection treshold of the related sensor.
Tresholds added this way will be reformated when automatic calibration is used (manually or during ERAE touch startup).

# Erae Lab

This companion software is the center hub for layout creation and configuration. It opens up the ERAE Touch for custom layout designs.




Lab overview

Let's dive in the different sections to learn how to create a layout step by step.

## Layout creation

First of all, make sure to switch the live mode on (PICTO WITH THE LIVE MODE EYE TOGGLE) in order to display your editing on the ERAE Touch in real time. You do not necessarily have to be in live mode in order to configure and upload your current layout, but it is useful to visualize how the layout looks both on your computer screen and on the ERAE touch simultaneously.
To create a layout, simply drag and drop elements from the "compose" left side panel to the center grid (5).

These 7 elements, can be edited on the right side panel with the "tune" and "style" tabs.
The next two sections review how to set parameters related to midi parameters under the "tune" section and colors under the "style" section.

## Tune

The Tune tab displays each element's specific attributes, grouped under different sections. However these latter being element specific, section names differ from one element to another. Keygrid, Keyboard and Button elements feature "Note" and "Expressivity"; also they can be set to Multi Polyphonic Expression or MPE. Multi Polyphonic Expression, or MPE allows the performer to vary the pitch and timbre of individual notes while playing polyphonically. Slider 1D and Slider 2D elements feature "Midi" and "Expressivity" attributes. Launchpad and Sequencer elements feature no Tune attributes.

### Tune Keygrids

Keygrids are inspired by string instruments, they can be set to isomorphic by setting any scale in chromatic.  Enable or disable the MPE mode on Keygrid or Keyboard elements under the Tune tab by toggling the MPE selector.

Both in MIDI 1.0 and MPE modes, the main elements of the Tune tab are the *Note* and *Expressivity* attributes. *Note* attributes define elements such as scales, pitch bend ranges and midi channels, while Expressivity sets gesture-related attributes such as finger X-Z positions and X-Y relative displacements and pressure advanced options.