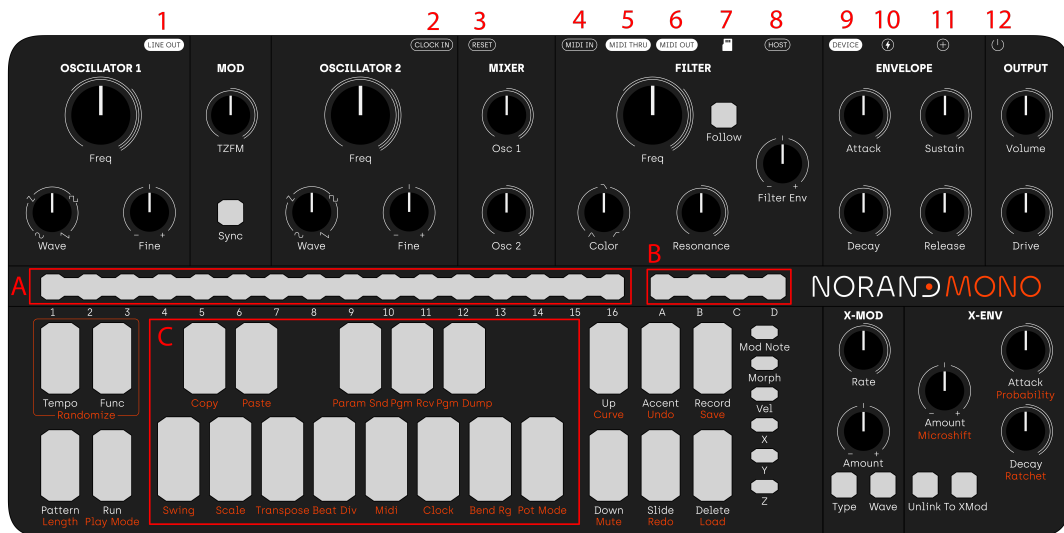


Mono MK2 new features

Hardware



Connectors

Front

A SEQ switches : The SEQ switches are a continuous strip of 3D sensors, capable of detecting the "position" of the finger taps via the pressure distribution applied on it.

B PAGE switches : Similar to the seq switches

C Mini-keyboard keys : 3D sensors chromatic keys for playing, editing, recording notes

Back

- 1 Audio output : Stereo output capable of driving line level, and headphones
- 2 Clock input : For synchronizing with external analog gear, such as eurorack
- 3 Reset input : Reset input for external analog gear
- 4 Midi in : MIDI compliant (Type A) 3.5mm jack MIDI input
- 5 Midi thru : MIDI compliant (Type A) 3.5mm jack MIDI thru
- 6 Midi out : MIDI compliant (Type A) 3.5mm jack MIDI out
- 7 MicroSD card slot : Used for storage, note that Mono needs an SD card to boot.
- 8 USB-C Host port : Connect to a MIDI device, such as a sequencer, external keyboard or other synth
- 9 USB-C Device port : Connect to a MIDI host, such as a computer
- 10 USB-C Power port : Dedicated power port. Use the provided power supply.
- 11 Extension port : For future semi-modular extension. Note that although it uses a USB-C port, it IS NOT USB-C. Although it is protected and there is no risk doing it, do not connect to anything other than the designed extension.
- 12 On-Off switch

Power

Mono MK2 can be powered either via its dedicated power port, or via the USB device port. Note that it requires at least 1A capable ports with broadcast capabilities. MK2 senses the power capabilities of the power source, there are 3 levels of power.

- **Normal mode** : With the included power supply, or a high power capable USB-C host, Mono boots in high power mode, the LEDs are full brightness.
- **Low power mode** : With a 1A capable host, such as a USB 2.0 host, Mono will be in low power mode, with the LED in low brightness.
- **Standby mode** : Mono cannot work correctly with a 0.5A supply, if it senses such a power supply, it will not boot, or go to standby mode.

Drive

MK2 adds a soft overdrive circuit at the output, it is the only change in the signal path. The output DAC is software compensated so that driving the signal doesn't make it louder, it will just add more and more overtones as you push it harder. The drive circuit has been designed to play extremely well with the resonant filter !

Expressivity

MK2 now has dedicated Vel, X, Y and Z switches for expressivity controls. X is the horizontal axis, otherwise known as pitchbend, Y is the vertical axis, it is triggered by moving up or down on the minikkey, Z is the pressure, or aftertouch, and Vel is the velocity.. Here is an exhaustive list of the feature.

Enable/Disable

To enable/disable an expressivity channel, simply press one of the 4 switches. A lit switch indicates that the expressivity channel is enabled. When enabled, you can play the minikkeyboard expressively.

Using the expressive keyboard without triggering note

Sometimes, you want to use the expressivity control on the keyboard without triggering keys, to add liveliness to a pattern. To do so, hold FUNC and press any of the X,Y, and Z switch. The switch will blink. You can now use the expressive keyboard without triggering note on a pattern being played.

Programming the expressive modulation

The way expressive channels modulate Mono's sound is completely customizable. It can modulate any of the parameters of the synthesizer, even the modulation parameter such as XMod rate. To program it, hold the desired expressive channel [X,Y,Z or VEL], and turn a knob's parameter either clockwise to apply positive modulation, or counterclockwise to apply negative modulation. When the knob is at noon, no modulation is applied

to that parameter. Release the switch when you're done with the assignment.

Tuned parameter X behaviour

By default the 2 oscillators and the filter have an offset of 1 semitone by MIDI note. The filter tracking can still be enabled/disabled with the follow switch. On the two oscillators and the filter the X offset is not linear but quantized, this allow for microtonal/macrotonal playing. At center position the oscs/filter don't track, there are then 6 positions on the positive and negative side : $\frac{1}{8}$ semitone - $\frac{1}{4}$ semitone - $\frac{1}{2}$ semitone - 1 semitone - 1 tone - 2 tone.

High-resolution automation

One of the most important, if not the most important feature of MK2. All the automation are now recorded at a very high resolution [1024PPQN]. Allowing for very smooth parameter and expressivity curves. Recording an automation works just like MK1. Enable/disable record with the [RECORD] key, and turn any knobs to record an automation.

Expressivity

Of course, you can also record expressivity when they are enabled. Simply play the minikeyboard expressively !

Step-quantized automation

Sometimes, a good old step-quantized automation is actually more suited. When you hold the [UP] key in record mode, and record any kind of automation, those will be step-quantized just like in MK1, release [UP] and it will immediately go back to high-resolution, making it possible to blend quantized and unquantized steps in the same automation.

Overdub

The standard behaviour is that the automation recording will shortly stop after you stop moving a knob. If you want to overdub the automation lane you are currently recording, hold [RECORD]. It will overwrite the previous automation as the pattern move forward, as long as [RECORD] is held.

Curve mode

What's good of an automation if you cant edit it ? Curve mode allow you to precisely edit a recorded automation. Go to curve mode by holding [FUNC] and pressing [UP]. The [SEQ] LED will show the recorded automation with a color map.

Edit a curve

In curve mode, the recorded automation has anchor points placed at each maximum and minimum points of the curve. Similar to how this works in a DAW. When you move an anchor point, it will move the full curve between the 2 anchor points around the one being moved.

Moving an anchor point

To show every anchor points of the current curve, simply press and hold the [UP] key, the anchor points will blink. To move an anchor point in any direction, press the blinking step you want to move, and drag it up or down, left or right. The curve will update after you release the [SEQ] strip.

Morphing

The continuous strips allow for continuous morphing between all the patterns of a page. To be able to morph between the patterns, enable morphing with the MORPH switch, go to pattern mode by pressing pattern, and use your finger to morph between the patterns on the [SEQ] strip. The "old" morphing feature via [FUNC] + [CUTOFF] is also still available.

Tape Playhead

In player mode, if you enable morphing with the MORPH key, you can use your finger as a playhead. This works in forward or backward direction. When you release the SEQ strip, the

playhead will resume playing where it is supposed to, not ruining your time signature.

Other changes from MK1

Pattern Rotate

The shortcut for pattern rotate has been moved, now you need to hold [FUNC], and press [PAGE A] to rotate left, and [PAGE D] to rotate right.

Storage

Note that on the first time you open a project that has never been used, mono will create it's directory structure, which takes a small amount of time (about 20 seconds). The projects are now stored on an SD card in a serialized format. At any time, you can copy these folders to your computer to save it, and change the projects name to reorder it.

Sequencer strips common use

When in player mode, You can use the [SEQ] strip to :

- Set note length (from left to right)
- Enable/disable note (from right to left)

There are tons of cosmetic UI changes such as the playhead, parameter offsets visualization etc. Setting offset parameters is not relative to the current potentiometer position anymore, but to the center position. Although it was handy to start record automation or place step locks without jumping to a position, it was pretty much impossible to know exactly what was the starting position, so you needed to only trust your ears anyway. Starting from the middle allows to use the maximum range of offset at any time.

Mono vocabulary

Project : Top structure of mono data architecture, This holds 64 patterns, global settings 40 Mod Notes and 4 custom scales.

Pattern : A sequence of steps to be played in a loop

Step : An element holding information to be sent to the synthesis engine to “play” sound.

Synth parameter : A parameter directly controlling the internal CVs of the underlying analog synthesis engine, such as Wave, Freq, Cutoff ... Even though the envelope is digital, envelope parameters are considered synth parameters as well.

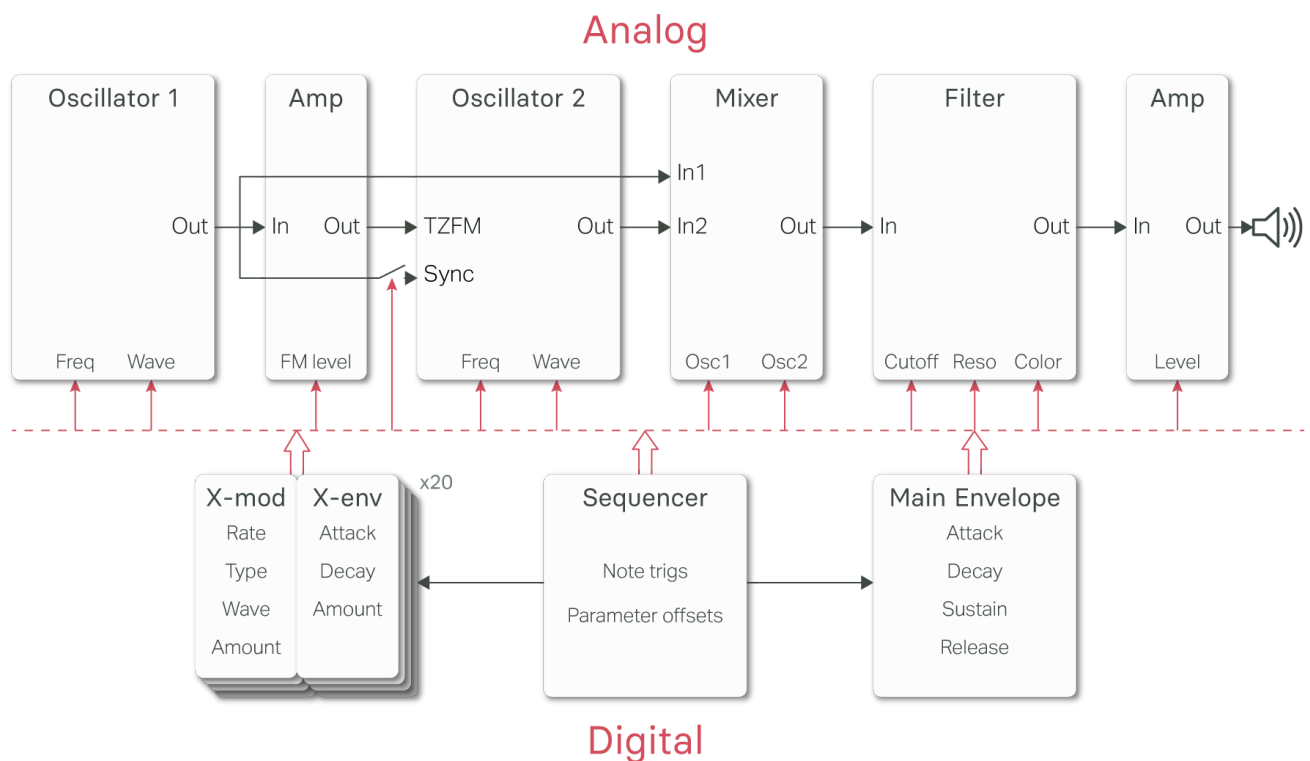
Modulation parameter : A parameter that modulates a given synth parameter. Each synth parameters have dedicated modulation parameters.

Patch : All synth and modulation parameters that form a particular sound. Each pattern holds its own patch.

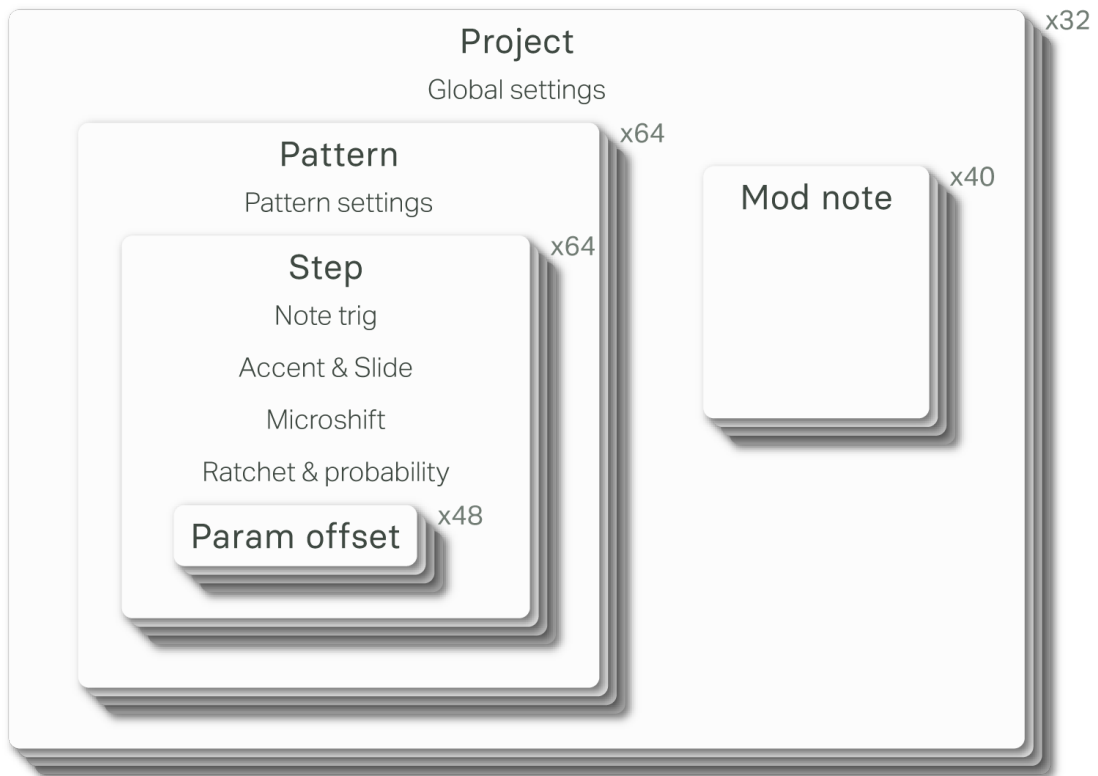
Note trig : Information held in a step, triggering the synth engine with a given note.

Parameter offset : Information held in the sequencer, offsetting the value of a given parameter with high definition.

Mono sound architecture



Mono data architecture



Randomizer

Hold [FUNC] + [TEMPO] and :

- Press a [PAGE] key : add between 1 and 4 random notes to the page, the added note are always in scale.
- Press a [SEQ] key : Randomize every parameter of said step except its pitch
- Press [GLIDE] or [ACCENT] key to add random glides and accents
- Move a parameter's knob to create a random automation
- Remember you can always undo if you don't like what you hear

Mod note mode

In Mod Note mode, the keyboard no longer act as chromatic, each of the 8 bottom mini keyboard [NOTE] keys has its own set of parameters, its own timbre in a way.

Each project has 5 pages of Mod notes, scroll with [UP] or [DOWN] key. When the mode is activated, both [UP] and [DOWN]

key LED are on.

To edit one of the moded note, hold a mini-keyboard key and set its parameter. You can then add steps of the selected moded note, or play live and record it.

Settings cheat sheet

Length : Set pattern length with the [SEQ] and [PAGE] keys.

Play Style : Set play style on the play mode setting :

- 1 Forward [Default]
- 2 Reverse
- 3 Synced Pendulum
- 4 Pendulum
- 5 Drunk [2 Forward, 1 backward]
- 6 Reverse drunk
- 7 Random Drunk [75% chance forward, 25% backward]
- 8 Reverse Random Drunk
- 9 Random

Play Modes : Set play modes with the [PAGE] keys on play mode setting.

- A Sequential [default]
- B Direct Jump
- C Direct Start

Swing : Set swing value. Default is 9 [no swing]. Greater value add swing and lower value add shuffle. The [PAGE] key is for enable/disable duophonic mode.

- A Disabled
- B Enabled

Scale : Set root note with [NOTE] keys, and scale with the [SEQ] keys.

- 1 Chromatic (default)
- 2 Major
- 3 Melodic minor
- 4 Harmonic minor
- 5 Arabic
- 6 Dorian
- 7 Aeolian
- 8 Phrygian
- 9 Gypsy
- 10 Mixolidian
- 11 Romanian minor
- 12 Gypsy minor
- 13 japanese
- 14 Spanish
- 15 blues

Transpose : Set transpose with [NOTE] keys for semi-tone transposition and [SEQ] key for octave transposition, [SEQ] key 8 is the default value.

Beat div : Set the number of step per beat :

- 1 1:16
- 2 1:12
- 3 1:8
- 4 1:6
- 5 1:4 (Default)
- 6 1:3
- 7 1:2
- 8 2:3
- 9 1:1
- 10 3:2
- 11 2:1

MIDI : Set MIDI channel with [SEQ] key

Clock : Set clock source with [PAGE] key.

1 Internal 2 MIDI 3 USB 4 CV

Bend Rg : Sets pitch bend range from 1 to 16 semitones with [SEQ] key. The [PAGE] keys enable/disable the time quantization.

A Disable time quantization B Enable time quantization

Pot Mode : Sets potentiometer mode.

1 Jump 2 Passthru 3 Relative

Param Snd : Enable/Disable CC parameter send.

1 Disabled 2 Enabled

Pgm Rcv : Wait to receive a project file as sysex.

Pgm Dump : Dump the current project as a sysex file

Synthesis Engine

Intro

By the looks of it, Mono has everything of an East Coast synthesizer. There is a clear signal flow from left to right, starting from the oscillators, through the filter, and finally to the amplifier. But the contextual modulations (X-Modulator and X-Envelope) let any user alter each synth parameter so deeply that one can effectively use west coast synthesis techniques to craft the timbre. Indeed, one can easily make a good sounding patch using a single oscillator with Mono ! Let's dive into each part.

East coast synthesis



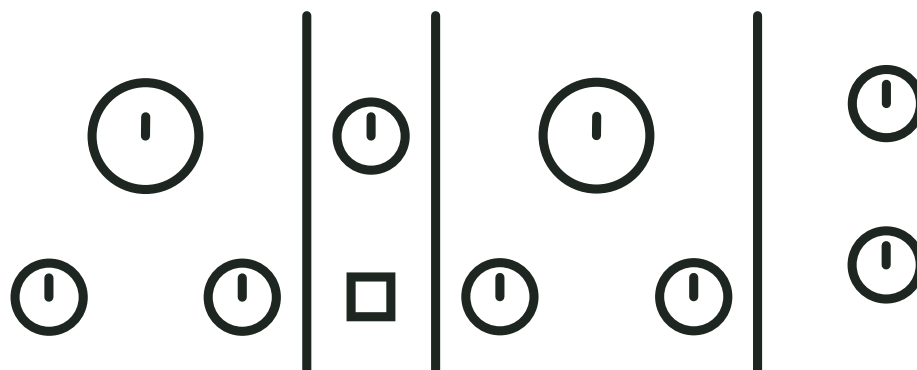
East coast synthesis usually describe subtractive synthesis techniques, where the sound designers start with an oscillator rich in harmonics, and then shape the sound by removing [subtracting] harmonics with filters.

West coast synthesis



West Coast synthesis describes a different approach. It typically feature oscillators with simple shapes, that are then heavily modulated using FM and waveshaping techniques to create complex timbre.

Oscillator block



Mono offers 2 analog oscillators with continuously variable waveforms, thru-zero frequency modulation, and hard sync. For the electronic geeks among us, the oscillators are based around a unique discrete asymmetric integrator. In "layman" terms, it means that the triangle core waveform is not perfect, it is a bit "skewed", which gives it and the sinus wave a slightly richer harmonic content.

Each oscillator has 3 parameters. The big [FREQ] knob adjusts the pitch in semitones, from C0 to C8. The [DETUNE] knob has a range of two semitones, with a pitch perfect 440Hz tuning in the middle.

The [WAVE] parameters smoothly fade from sinus, to triangle, to square and finally to sawtooth wave. You basically go from the duller of sounds to the richest in terms of harmonics.

The two mod parameters give you additional sound design tools : the [SYNC] key synchronizes the wave cycle of oscillator 2 with oscillator 1; the [TZFM] parameter modulates the frequency of oscillator 2 · *the carrier* · with oscillator 1 · *the modulator* ·. It is analog thru-zero frequency modulation, which has a very rich distinctive sound.

Finally you can adjust the amount of both oscillators fed to the filter with [OSC1] and [OSC2] parameters. At high gain, the oscillators overdrive the filter, so you can also use this parameter creatively.

Although limited compared to other big monosynths (only 2 oscillators ?! No noise ?! What is this ?), this oscillator block allows for a huge landscape of timbre. This can range from subtle bell-like sounds to very harsh saturated noise. All this without even touching contextual modulation. Adding the latter makes for a very complex oscillator system.

Just a simple example : use the X-Modulator at audio rate on the Freq parameter of both oscillators - you get a 4-operator hybrid FM synth (for normal people, this translates to: "You can do some pretty cool stuff with this synth").

Oscillator Sync



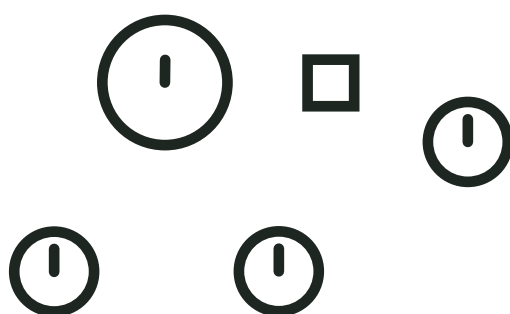
I'm lazy so here is the wikipedia definition : As one oscillator · *the master* · finishes a cycle, it resets the period of another oscillator · *the slave* ; forcing the latter to have the same base frequency. This can produce a harmonically rich sound, the timbre of which can be altered by varying the synced oscillator's frequency. And here is a nice schematic with sawtooth wave example.

Thru-Zero Frequency modulation

FM (Frequency Modulation) is a very deep subject with whole books written about it, I'll do my best to explain it shortly. Let's start with what FM is : the output of one oscillator · *the modulator* · is used to control the frequency of another oscillator · *the carrier* . This will in turn enrich the harmonic content of the carrier, by effectively "splitting" each of it's base harmonic. There are two main type of FM : exponential and linear. Unlike exponential FM, linear FM can reach zero hertz, which basically stops the oscillators, which is not very pleasing in term of musicality. Thru-zero FM alleviate this problem by introducing "negative" frequency. When the oscilator reaches zero hertz, it will reverse it's cycle and start

oscillating backward, and when it crosses zero hertz, it will reverse again back to "positive" frequencies. Note that I put negative and positive in quote, in the real world there is no such thing as negative frequency.

Filter block



Mono's filter is a resonant filter with low-pass, high-pass and band-pass output. Like the oscillator, it is a unique design : discrete integrator cells arranged in a three cell 18dB slope state-variable filter. It features a stable self oscillation at maximum resonance and it is precisely tuned like the oscillators. When driven hard, it saturates the input signal asymmetrically · *only the negative voltage is clipped* :

The [CUTOFF] parameter sets the frequency, from C-1 to C10. Although you won't necessarily hear it because it is smoothed, the filter knob is quantized to semitones [just the knob, not the modulations]. This is a controversial feature, but this is the only way to make the filter resonance perfectly tuned with the oscillator.

The [RESONANCE] parameter goes from a very attenuated cutoff point to self-resonant, with lots of nice things in the middle. The resonance peak is quite shallow, which allows the user to "scan" the harmonic content of the input when swept.

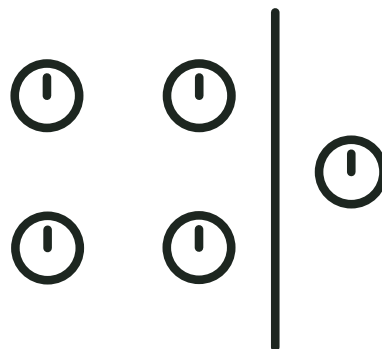
The [COLOR] parameters continuously fade from band-pass, to low-pass, to high-pass output. On these types of continuous

outputs, you'll usually find band-pass in the middle, but I find that quite boring, so there's that. There are some very interesting timbres in between each output. For example, put the knob halfway between low-pass and high-pass, and you get a resonant all-pass filter !

The [FOLLOW] key toggles keyboard follow : when enabled, cutoff frequency is linked to the current note pitch.

Finally the [ENV AMOUNT] parameter adjusts how much of the main envelope contour is applied to the cutoff frequency parameter. It's bipolar : no effect in the center position, positive envelope in the clockwise direction, and negative envelope in the counter-clockwise direction.

Amplifier and main envelope



There is not much to say here, the [VOLUME] parameters surprisingly adjust the output volume. The envelope is a [somewhat] classic exponential ADSR envelope with no retriggering.

There is a case where it doesn't behave like a classic analog envelope though : Usually when given a short trigger, an ADSR will perform its attack cycle only if very short, and then the release cycle. If the trigger is too short or the attack is long, it won't even reach the maximum level. If this was the case here, the attack parameter would be useless when using the sequencer.

Here is how it works instead : when the gate is shorter than the attack time, the envelope acts as an AD envelope : it will perform a full attack cycle, and then a decay cycle down to 0.

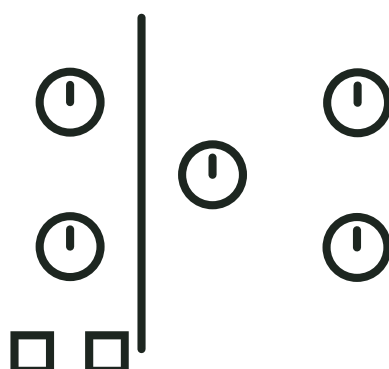
Drive

MK2 adds a soft overdrive circuit at the output, it is the only change in the signal path. The output DAC is software compensated so that driving the signal doesn't make it louder, it will just add more and more overtones as you push it harder. The drive circuit has been designed to play extremely well with the resonant filter !

Master volume

The volumes are recorded into each patch and mod notes separately which make it impossible to adjust the global volume output. Of course we needed to address that : there's a "hidden" master volume control, which is not recorded into project. To adjust it, hold [FUNC] and turn the [VOLUME] knob.

Modulation



Intro

This is where all the fun begins ... Remember your old synth where you get to play with one LFO that you can assign to a 2 or 3 parameters ? Those were great ! Then the digital era introduced the "Modulation Matrix" which are admittedly much better in terms of synthesis possibilities, but are kind of a pain in the arse to work with. One of my favourite features with software synths is the fact that one can have an unlimited amount of modulators for each and every possible synthesis parameter - Mono implements this without menu-diving or 200 potentiometers.

Contextual modulators

When you select something in a software instrument, you usually get a contextual menu appearing somewhere. Mono's X-modulator and X-envelope works in the same way. When you slightly move a parameter's potentiometer, it will be selected (a selected parameter is indicated by a bright orange LED). You can then edit that parameter's AD envelope and modulator.

Every single parameter has its own envelope and modulator with their dedicated settings, there are no limitations. That's 18 Modulators and 14 AD envelopes. the main envelope parameters don't have an envelope, that wouldn't make sense.

X-Envelope

The X-Envelopes are AD envelopes triggered by the sequencer's note trig, incoming MIDI, or their very own trig sequence. Like the main envelope, they always complete their attack cycle before going to the decay cycle. The [ATTACK] and [DECAY] potentiometers control attack and decay times, and the [AMOUNT] potentiometer controls the envelope amount. Like the filter, it is bipolar, you can have negative or positive envelopes. By default, the X-Envelope is applied to the parameter, but it can be routed to the X-Modulator amount : simply press [TO_XMOD] on the selected parameter, the LED should turn on, indicating that the X-Envelope is routed to X-Mod amount.

X-Modulator

The X-Modulators are simple oscillators, I didn't call them LFO because one of their best use cases is in audio rate mode.

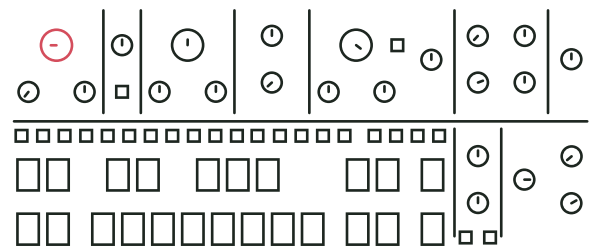
The [WAVE] key cycles between sinusoidal (orange), triangle (light blue), square (yellow), sawtooth (dark blue), and S&H (purple) waveforms.

The [TYPE] key lets you select one of the 3 types : LFO (LED off), synced LFO (LED blinking), and Audio Rate (LED on). LFO mode gives you rates between 40 seconds and 100ms, synced LFO has 12 different sync values, and resets at the beginning of the pattern. At audio-rate you get a tuned modulator ranging from C0 to C8. In audio rate, the X-modulators follow oscillator 1 frequency.

A few examples

Kick drum

A kick drum starts with a simple tone with a pitch envelope.



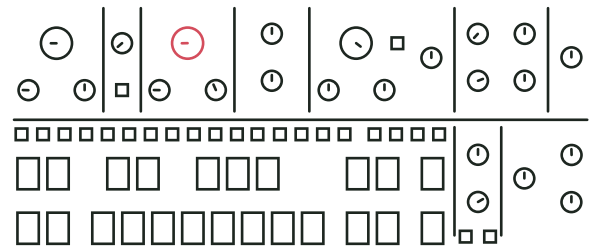
- Open the filter
- turn up oscillator one
- Set oscillator 1 wave to sinus
- Set a low frequency to oscillator 1
- Select Oscillator 1
- Set X-Env Attack to minimum
- Set X-Env Decay center
- Slowly turn X-Env amount clockwise while triggering Mono
- Et voilà, the beginning of your own amazing kick

Evolving phase effect

When 2 oscillator's frequencies are very close, it leads to interesting phase effects. If you modulate that frequency with

an LFO, the effect will evolve in time, leading to even nicer subtle changes.

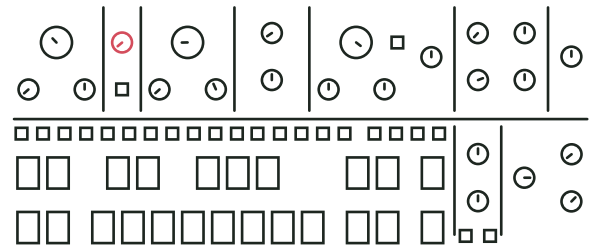
- Open the filter
- Turn up both oscillator
- Set both oscillator frequency to the same pitch
- Select oscillator 1 detune
- Set X-Mod to LFO or Synced LFO
- Set X-Mod Rate as you see fit
- Slowly turn X-Mod amount, either way
- Let the magic happen



Pinged FM sound

Most string instruments have a rich harmonic content at the beginning, and then slowly fade to a more muffled sound. In East-Coast synthesis this is usually imitated with an enveloped low-pass filter. West-Coast approach usually involve FM instead, here is one way to do it :

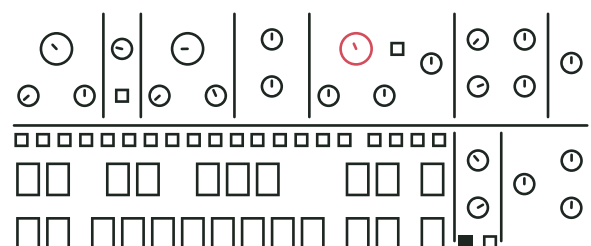
- Open the filter
- Turn up oscillator 2
- Set oscillator 2 to sinus wave
- Set oscillator 1 and 2 frequency 1 octave apart (or not)
- Select FM parameter
- Set X-Env Attack to minimum
- Set X-Env Decay center
- Slowly turn X-Env amount clockwise while triggering Mono
- The more you open it, the bigger the effect



Filter FM

Mono's filter responds really well to frequency modulation, it's a cool option to add harmonic content to any patch.

- Start with any patch you want
- Select filter cutoff parameter
- Set X-Mod to audio-rate



- Set X-Mod rate dead center (frequency will be the same as osc1)
- Turn X-Mod amount left or right to add FM
- Changing X-Mod wave gives a different FM "flavour"

Sequencer

Projects and basic pattern operation

Projects

Mono holds up to 64 projects in the SD card. Projects need to be saved before turning off the synth, save by holding [FUNC] and hitting [SAVE]. To load a project, hold [FUNC] and hit [LOAD], you will see a blinking LED on the [LOAD]. Projects are organized into pages of 16, use the [PAGE] key to select a page (projects 1 to 16 are on page A, projects 17 to 32 on page B, and so on until page D), then hit a [SEQ] key to load the desired project. Don't forget to save the current project before loading another one ! Saving and loading is very fast (less than a second) and doesn't break tempo, you can safely load and save in the middle of a live show.

- Projects can be changed while the sequencer is running
- While in project load mode, hold [FUNC] + [PASTE], then press once a [SEQ] key to select the desired slot to paste the current project. The selected [SEQ] LED is blinking, then press again the [SEQ] key to confirm the project paste.

Patterns

The 64 patterns of a project are organized into 4 pages. Hit the [PATTERN] key to open pattern mode. Patch load on pattern shift is deferred to the first trig of newly loaded pattern. In pattern mode, the bright key indicates a slot with a pattern, the dimmed key indicates a slot with a patch but no pattern, the current pattern [KEY] blinks, and the next pattern's [KEY] pulses. To

switch pattern, select a [PAGE] and hit a [SEQ] key to set the current pattern. For example, press C, then 5 to select the C05 pattern. To play a pattern temporarily, hold [FUNC] and press the pattern [SEQ] key, when releasing [FUNC] the previous pattern will resume playing. Press [PATTERN] again to quit pattern selection mode.

- Patterns can be changed while the sequencer is running.
- Patterns can be changed with program changes messages.
- While in pattern selection mode, hold [FUNC] + [COPY] and hit a [SEQ] key to copy the desired pattern, then hold [FUNC] + [PASTE] and hit the destination [SEQ] key.
- Hold [DELETE], and hit a [SEQ] key to clear the desired pattern. Note that [DELETE] + [PATTERN] won't clear the patch.

Pattern control

Press [RUN] to start the playback of a pattern, press [RUN] again to stop and reset. The [SEQ] keys LEDs indicate the playback position. If a pattern contains more than 16 steps, the [PAGE] keys LED indicate the position.

Pattern Length

Hold [FUNC] and hit [LENGTH] to open the pattern length setting. You are now familiar with the next step : select "page" length with a [PAGE] key, then the actual length with a [SEQ] key. For example, for a 50 step pattern, press [PAGE] D and [SEQ] 2 [3x16+2], should be doable even after a few beers. Hit [FUNC] to leave setting mode.

Tempo

When clocked internally, there are several ways to change the current tempo.

- Hold [TEMPO] and press [UP] or [DOWN] to increment or decrement the tempo by 1.
- Hold [TEMPO] and enter a number with the 0 to 9 [SEQ] key. For example, for 135 BPM, hold [TEMPO] press [SEQ] 1, then 3, then 5, and release [TEMPO].
- Tap the [TEMPO] key in a steady rhythm at least 4 times to set a tempo manually. After four consecutive taps, the average tempo of the taps will be calculated. By continuing tapping, the average tempo will keep on updating.

- Hold [TEMPO] and rotate the X-MOD [AMOUNT] potentiometer to speed up/slow down tempo by +/-16%, the pot center being 0. Similar to a turntable pitch fader.

Play styles

Play styles allow you to alter the order in which the sequencer plays the steps of a pattern. The default of course is forward. When you switch to a non default play style, going back to the forward mode will position the play head to where it should be e.g it won't ruin your sync.

- 1 Forward (Default)
- 2 Reverse
- 3 Synced Pendulum
- 4 Pendulum
- 5 Drunk (2 Forward, 1 backward)
- 6 Reverse drunk
- 7 Random Drunk (75% chance forward, 25% backward)
- 8 Reverse Random Drunk
- 9 Random

You can change play style by going to the Play mode menu, [FUNC] + [RUN], and select one of the 9 play modes with the [SEQ] keys 1 to 9.

Play modes

You can change the behaviour of the sequencer when a pattern switch occurs with the play mode setting. There are 3 play modes, if you are familiar with Elektron gear, they are equivalent (no need to reinvent what's already great right ?).

- A. Sequential (default) : The pattern switch occurs at the end of the currently playing pattern
- B. Direct Jump : The pattern switch occurs immediately, the new pattern will start from the position where the previous pattern left off.
- C. Direct Start : The pattern switch occurs immediately, the new pattern will start playing from the beginning.

You can change play mode by going to Play mode menu, [FUNC] + [RUN], and select one of the 3 play modes with the [PAGE] A, B or C keys.

Live mode

Live mode allows musician to heavily edit the running pattern without affecting it in memory. When live mode is enabled, a snapshot of the active pattern is taken when it starts. You can edit everything (patch, pattern, automations ...), but when you switch to another pattern or recall the same pattern, it will revert back to its saved state. Live mode also affect Mod Notes : when a Mod Note is selected on the mini keyboard, you can edit it, but when you select another Mod Note or reselect the same one, it'll revert back to the saved state. Toggle live mod by holding [PATTERN] + [RUN] and hit the [RECORD] key. [RECORD] blinks when live mode is enabled.

If you do want to save the changes you've made to the pattern while live mode is enabled, you need to save the project. Note that disabling live mode will also revert the pattern back to the saved state, so don't forget to save if you want to retain your changes.

Loop mode

Loop mode is a live oriented feature that allows you to play a small part of a pattern temporarily. It is especially useful in live situations to create movement on-the-fly. To enable it, hold [FUNC] and select your start point byt hitting a [SEQ] key, then the end point with another [SEQ] key. You can also set a reversed loop selecting the ending step before the starting step. The loop will start at the next step after releasing the [FUNC] key. To leave the loop, hit [FUNC] again. The full pattern will resume playback as if it was running in the background. Loop mode only works on a single page, selecting a start point located after the end point plays the loop backward.

Song mode

The number of chained pattern to create a song is unlimited. When a song is playing, it will play the selected pattern sequentially, and loop back to the first one at the end. To create a song, you need to be in pattern mode, press [PATTERN], the LED should be on. Once in pattern mode, hold [PATTERN] and hit the [SEQ] key of the pattern you want to add to your song in the correct order (you can add the same pattern several times). Once you release [PATTERN], your song will start playing. To leave song mode, press a [SEQ] key.

Patchless pattern

When playing a song with normal patterns, the patch of the patterns will be called at each jump, so if you have the same patch on several patterns, it will be recalled as it was on each jump. If you are modulating a parameter live, this is not the behaviour you expect from the synth.

To remedy this issue, you can set a pattern in "patchless mode". A patchless pattern won't call its associated patch when it starts, it will keep the previous pattern patch. This way you can create a song with the same patch by setting each pattern in patchless mode (not the first one obviously).

To set a pattern in patchless mode, hold [PATTERN] and hit [RECORD], the blinking [PATTERN] LED indicates that the current pattern is patchless. Hold [PATTERN] and press [RECORD] to disable patchless mode.

Pattern morphing

When activated, it allows you to morph between two patterns and explore the "in between" patterns. What does it do? Every synth parameter of a current pattern will shift to the selected pattern parameters. When in pattern mode, hold [FUNC] + [PATTERN] and press a desired pattern you want to morph with. The selected pattern should blink. Then hold [FUNC] and turn the [CUTOFF] pot clockwise to morph between the main and the morphing pattern. You can also use the [SEQ] strip to morph between patterns, just turn on morph mode by pressing the [MORPH] key, be sure to be in pattern mode, and glide your finger on the [SEQ] strip.

Duophonic note mode

In this mode you can set a different pitch to each oscillator. Press [FUNC] + [SWING] and select [B] to enable the mode. Hold or press two [NOTE] on the mini keyboard to set the duophonic pitch and press a [SEQ] to put the duonote trig on the sequence. You can also edit the second pitch of a duonote by holding [FUNC] + [SEQ] position, and selecting a pitch on the mini keyboard (allows for spreads wider than an octave). The first [NOTE] pressed will trigger the first oscillator and the second [NOTE] pressed will trigger the second one.

Editing a pattern

There are three ways of adding notes and automations with Mono : by inputting it manually, by recording it live while the sequencer is running in record mode, or randomly. Each step contains information concerning the note, and all the automation are now recorded at a very high resolution (1024PPQN).

Mini keyboard

The [NOTE] keys act like a one octave keyboard. You can play a note to preview your current patch, use it in record mode, and select the currently active note. When booting up, the active note is C4, the selected note is indicated by a bright [NOTE] key LED. Press a [NOTE] key to change the currently selected note. Use the [UP] and [DOWN] key to change the current octave. There are 9 octaves available, from C0 to C10.

When you hold a [NOTE] key, the [SEQ] key containing that note will pulse.

Adding notes manually

Adding note trigs manually on Mono is quite simple : just hit the desired [SEQ] key, it adds a note trig on that step with the currently selected [NOTE]. An active step is indicated by a bright LED. Select the page where you want to add a note with the [PAGE] key. To remove a note trig, hit a step with an active note trig, the led will turn off.

Recording notes

You can record incoming notes live using the [NOTE] keys or an external keyboard. Enable recording by pressing the [RECORD] key. The [RECORD] key LED indicates wether the record mode is enabled or not. Recording a note on top of an already active note trig overwrites it. The recorded notes are quantized to the closest step by default but can be disabled. Press [FUNC] + [Bend Rg], select [PAGE A] to disable quantization and [PAGE B] to enable it.

SH-style sequencing

When the pattern is not playing and [RECORD] is enabled, a step [SEQ] key LED pulses, indicating the active step. Playing a note with the [NOTE] key adds a note to the active step and advances by one step. Keep playing notes to fill the pattern. You can place the "record head" anywhere by pressing the associated [SEQ] key.

Change the pitch of a note

Hold the [SEQ] key of an active step and hit the desired [NOTE] key. You can also change the octave by holding the [SEQ] key and hitting [UP] or [DOWN].

Note length

Single step note trigs, and very short recorded notes have a particular behaviour on Mono. Classic ADSR envelope will not do much with a short pulse - if the attack is longer than a few ms, you won't hear anything ... Fortunately Mono's envelopes are digital ! Basically, when the sequencer hits a single step note trig, the envelope will act as an AD envelope, ignoring sustain and release values. It was actually implemented by mistake, but I found it amazing so I kept it.

Anyway, to edit a note length, hold the [SEQ] key of the desired step, and hit the [SEQ] key where you want the note to end. The length will be visible with dimmed [SEQ] LEDs. You can also hold the [SEQ] key, and drag your finger to the desired step on the [SEQ] strip (to the right).

Step parameters

Accent

Accent can be added on a per step basis. Hit [ACCENT] to open accent mode, and hit the desired [SEQ] key to add or remove accents from steps. In accent mode, the active note trigs are shown by a dim [SEQ] key LED, active accents are shown by a green [SEQ] key LED. Hit [ACCENT] again to leave accent mode. The same can be done when just holding the [ACCENT] key.

Accent parameters

By default an accent slightly increases the amp level and the filter cut-off frequency, but this is entirely customisable. To set

your own accent parameters on the active pattern, start by setting default offsets to 0 by holding [ACCENT] and set Cutoff and Volume to the middle. Keep holding accent and set pots to the desired value. The value stored in memory is an offset from the initial value to the last position of the potentiometer. For example, if the cutoff value is set dead center and you move it 20% to the right while holding [ACCENT], every accented step will have a higher cut-off frequency by this amount, whatever the current value is, or if there is automation on that step. You can add as many values as you want, by it synth parameters or modulation parameters.

Global Accent ratio

The global accent ratio is a useful live feature. When holding [UP] + [ACCENT], the X-Mod amount potentiometer allows to set the ratio of the accent applied to the accented note. At full right, 100% of the accent is applied (default behaviour), at noon, 0% is applied, and at full left -100% of the accent is applied, creating a "negative accent". The global accent ratio is reset to zero when switching patterns.

Slide

Slide can be added on a per step basis. Hit [SLIDE] to open slide mode, and hit the desired [SEQ] key to add or remove slide to a step. When a slide is active on a step, all the step parameters will slide linearly to the next step parameters (note as well as parameter offsets). In slide mode, the active note trigs are shown by a dim [SEQ] key LED. Active slide trigs are shown by a bright [SEQ] key LED. Hit [SLIDE] again to leave slide mode. The same can be done when just holding the [SLIDE] key. To clear all slides, hold [SLIDE] and hit [DELETE].

Microshift, probability, ratchet

Each step of a pattern contains a microshift, probability, and ratchet value. These 3 parameters together allow musicians to create very organic sequences - it's an excellent way to break the 4/4 monotony that usually haunts an x0x-style sequencer. To edit one of these parameters, hold [FUNC] + the desired [SEQ] key, and set the value with [MICROSHIFT], [PROBABILITY] or [RATCHET] potentiometer, the [SEQ] LED strip is going to show the value saved in the step (blue is the lowest, red is the highest).

You can record microshift, probability, and Ratchet automation when [RECORD] is enabled, by holding [FUNC] and moving the associated knob.

Hold [DELETE] + [FUNC] (in that order), and move the associated knob to delete all microshift/probability/ratchet of the current pattern.

- Microshift : The microshift parameter shifts the starting point of a step forward or backward by up to $\frac{1}{2}$ step.
- Ratchet : The ratchet parameter multiplies the number of note trigs in a single step. From 1 (default behaviour) when the pot is fully counterclockwise to 16 fully clockwise. The trigs are evenly distributed on the time between the start of the selected step and the start of the next step, even when both have different microshift values.
- Probability : The probability as its name suggests gives note trigs a certain probability to be sent to the synth engine or not. From 100% probability hard left, to 0% hard right. When combined with the ratchet value, each ratcheted note trigs are subjected to the probability parameter.

Step Mutes

To create interesting variations on the fly, it is possible to Mute individual steps of a pattern. To do so, hold [DOWN] and hit the step's [SEQ] key you want to mute/unmute. All the selected steps will be muted/unmuted upon releasing the [DOWN] key. The muted steps are indicated by a blinking [SEQ] key. Of course you can mute steps that only contain offset informations.

To unmute all steps (and mod notes : see mod note mutes) all at once, hold [DOWN] and press [DELETE].

Parameter offsets or automations

On the Mono Mk2, every automations is now recorded at a very high resolution (1024PPQN, or 256 per step). This allows for very smooth transitions between steps, and a lot of possibilities when it comes to sound design. The sequencer can record offsets to every parameter, either synth parameters (filter cut-off, oscillator waves, envelope decay...) or modulation parameters

[filter resonance X-MOD Rate, oscillator frequency X-ENV amount ...].

Say a parameter value ranges between 0 and 100, and the potentiometer of this parameter is set dead center. At this setting, the current value, or potentiometer value is 50. If you add an offset value to a step by holding a [SEQ] key and turning said potentiometer a bit to the right, say to 60. Then you are adding a parameter offset of 10 to that step. Now each time the sequencer plays that step, it will add an offset of 10 to said parameter, and go back to the current value, or to the actual potentiometer value at the next step.

This feature really turns the Mono sequencer into a powerhouse, everything can be sequenced, and sequencing parameters doesn't "fix" the parameters value, but it adds a sequence "on top" of the current potentiometer position. This approach gives the user the freedom to adjust the knobs while performing in a live situation.

Parameter offset visualization

You can visualize parameter offsets immediately on potentiometer LEDs. LEDs intensity will show you how the offset strength is. The Curve Mode is also a great way to visualize unique parameter offsets.

Adding parameter offsets

To add a parameter offset on a step, hold a [SEQ] key, and turn the desired knob either way to add an offset - the more you turn the knob, the bigger the offset. The same can be done to modulation parameters - don't forget to select the synth parameter on which you want to add the modulation parameter offset first [that's a lot of words - sorry about that].

Curve Mode

One of the big update on Mono Mk2 is the addition of Curve mode. Curve mode allows you to see the parameter offset curve on [SEQ] LEDs. To enable Curve mode, hold [FUNC] and press the [UP] key. The [SEQ] LEDs will show the offset curve of the selected parameter. To show the curve of an expressivity, simply press the corresponding switch ([X], [Y] or [Z]), it will turn orange, showing the selected expressivity. You can then edit the curve by holding [UP] and pressing any [SEQ] key where the LED

is blinking. Now drag your finger left or right and up or down to edit the curve. The curve will update when you release your finger from the [SEQ] strip.

Recording parameter offsets

You can also record parameter offsets while in record mode. To enable the mode, press the [RECORD] key, and turn a parameter knob while the sequencer is playing. This will record a high definition automation offset where a parameter knob position change is detected, so you need to continually move the knob to add offsets. This is a bit strange at first but it was mandatory, otherwise everything would be recorded at 0 offset as soon as [RECORD] is enabled, that's obviously not the best behaviour ...

Custom expressive parameter offsets

Mk2 allows you to set velocity, pitchbend, vertical and aftertouch. Each of these MIDI parameters can affect the patch according to custom offsets on any and all parameters and their modulation values. To check nor set these offset, the corresponding switch needs to be held, when the switch is held the LED brightness of the parameter shows the offset "strength". Offset can be negative, a potentiometer at center position means no offset, full CCW means maximum negative offset, full CW means maximum positive offset.

Here are the 4 switches :

- [Vel] - Velocity
- [X] - Pitchbend
- [Y] - Vertical [CC74]
- [Z] - Aftertouch [pitchbend]

These MIDI parameters can be recorded in high definition, like automation when played from an external keyboard or directly from the Mono keyboard. To record these parameters from Mono, press the desired expressive parameter switch, it turns on, and then press [RECORD] then [RUN], and record your expressivity.

Unlink X-Env Sequence

To create interesting effects in a pattern, it is possible to unlink the X-Envelope triggers from the note trigs. When doing so, the X-Envelope of the selected parameter will be replaced by the one entered on the [SEQ] keys.

To create an unlinked X-Env sequence, start by selecting the desired parameter - [CUTOFF] for example. Then press [UNLINK], and hit [SEQ] keys to create your unlinked sequence. As you see the green [KEY] show the unlinked sequence. To disable an unlinked sequence and trig the X-Env with the note trigs again, you need to disable all the unlinked trigs.

Unlinked X-Env trigs will also reset the LFO phase !

Copy paste and clear

To copy a step, hold [FUNC] + [COPY] then hit the [SEQ] key of the step to be copied. To paste, hold [FUNC] + [PASTE], and hit the destination [SEQ] key. You can also copy a range of steps, hold [FUNC] + [COPY], hold the start [SEQ] of the range and press the end [SEQ]. Then hold [FUNC] + [PASTE], the starting [SEQ] step where you want to paste, and then the end [SEQ]. Clear a step by holding [DELETE] and hitting the desired [SEQ] key. These step operations act on every parameter - note, accent, slide, parameter offset and so on.

The same can be done with full pages, use the desired [PAGE] key instead. You can now copy a page and paste it on an other page without having to set the pattern length. Hold [FUNC] + [COPY] and press the [PAGE] to copy, then hold [FUNC] + [PASTE] and press the [PAGE] where you want to paste.

To copy a whole parameter automation (all parameter offsets on the pattern), hold [FUNC] + [COPY] and slightly move the potentiometer of the desired parameter. To paste, hold [FUNC] + [PASTE] and slightly move the target parameter. To clear a whole parameter hold [DELETE] and slightly move the desired potentiometer.

You can also copy, paste and clear a patch. To do so, use the [RECORD] button : To copy, hold [FUNC] + [COPY] and press [RECORD]. Navigate to the pattern where you want to paste the patch, hold [FUNC] + [PASTE] and hit [RECORD]. To delete a patch,

hold [DELETE] and press [RECORD]. The patch will be cleared to the default patch.

Undo/Redo operations

Every single action of the sequencer is undoable. If you are not quite happy with a recorded automation, you can undo it. Hate that change of pitch on the last 4 notes ? Undo it. Not so bad in the end ? Redo it. Simple hold [FUNC] and hit [UNDO] to undo and ... you guessed it, hold [FUNC] and hit [REDO] to redo.

Pattern settings

Scale and root note

To set up a scale and a key, hold [FUNC] and hit [SCALE]. Set up the root note with the [NOTE] key and set the scale with the [SEQ] key. Here is the list of the scale and their related [SEQ] key. Scale and root are mostly useful with the randomizer, more on the next section. You can visualize the selected scale on the mini keyboard. Only the [NOTE] key LED in the selected scale are on, with the root note a bit brighter. If you are allergic to music theory, this is a pretty handy tool.

Custom scales

Each project hold 4 custom scales on top of the 16 fixed scales. You can select it with the [PAGE] keys while the scale setting is active. To add/remove note from a custom scale, hold the desired [PAGE] key and hit [NOTE] keys on the MIDI keyboard.

Scale autoquantize

When scale autoquantize is enabled, changing the scale will move the notes of the pattern according to the new scale, it uses a smart algorithm that works pretty well even on custom scale. The algorithm is however destructive : if you go from a 7 note scale to a custom scale of 4 notes and switch back to a 7 note scale, you wont get back the same pattern.

Transpose

To transpose a whole pattern hold [FUNC] and hit [TRANSPOSE], you can select the transposition level with the [NOTE] keys. Use the [SEQ] key to select the octave. Key 8 is the default value.

Beat division

To set up the pattern beat division, hold [FUNC] and hit [BEAT DIV]. The selected [SEQ] key defines how many steps are played each beat, default is 4.

Swing

To set up the swing value of the current pattern, hold [FUNC] and hit [SWING]. The default value is 9 [no swing]. A smaller value will add shuffle to the pattern [advance odd step], and a greater value will add swing [delay odd step].

Mod Note mode

The mod note mode is a little bonus mode that allows users to create up to 40 custom temporary patch or timbre settings per project to be played and recorded. Hit [MOD NOTE], the key LED should be on indicating that you enabled Mod Note mode. The 8 bottom [NOTE] keys each represent a timbre, you can't use them to play pitch anymore.

The mod notes are scoped to the project, each project can hold 40 mod notes, separated into 5 pages. You can scroll the pages with the [UP] and [DOWN] key.

To set up the timbre, select one of those Mod Note keys, say the D [NOTE] key. When you select an empty Mod Note slot, the current patch will be copied to that mod note slot. Editing the timbre by rotating knobs will now edit that Mod Note's timbre. Every time you play that key, the timbre that you recorded will be played. It will virtually turn the potentiometer to the recorded positions. You can add note trigs just as you would do in normal mode to create a sequence of Mod Notes.

The next "normal" note trig played by the sequencer after a mod note will revert the synth parameters back to the pattern's patch values. So you can use these Mod Notes to create "happy accidents" in an otherwise simple pattern by playing it live for

example, or to create weird patterns using different timbres. Go back to normal mode by pressing [MOD NOTE] again.

Note that you can't edit the pattern's patch once in Mod Note, for that you will need to go back to "normal" player mode. You can check whether or not a note is a Mod Note by pressing [MODNOTE] key, if a note is purple, then it's a Mod Note. If you want to check if a particular Mod Note is present in your current Pattern, just hold that Mod Notes [KEY]. The [SEQ] key containing it will pulse.

Mod Note pitch

You can edit a Mod Note note pitch : hold the mod note [KEY] and press [UP] or [DOWN] to set the mod note octave. Hold [UP] + [DOWN] and press a [KEY] to set the current modnote semitone. Hold a step [SEQ] that contains a modnote and press [UP] or [DOWN] to change its pitch.

Automation on Mod Note

Mod Notes can be affected by automation, just like the patch notes.

Mod Note Mutes

To create interesting variations on the fly, it is possible to Mute individual Mod Notes of a pattern. To do so, hold [DOWN] and hit the mod note's [NOTE] key you want to mute/unmute. All the selected mod notes will be muted/unmuted upon releasing the [DOWN] key. The muted mod notes are indicated by a blinking [NOTE] key.

To unmute all mod notes (and steps : see step mutes) at once, hold [DOWN] and press [DELETE].

Copy and paste operations

One can copy/paste a Mod Note - hold [FUNC] + [COPY], hit the mod note [NOTE] key you want to copy, then hold [FUNC] + [PASTE] and hit the destination [NOTE] key.

You can also "import/export" mod note to the current patch. To copy the current patch to a mod note, hold [RECORD] and press the desired [NOTE] key. Inversely, hold a [NOTE] key and press [RECORD] to copy a mod note to the current patch.

Randomizer

Mono features several randomizing features to assist the musician's creative process. They allow users to explore the depth of Mono's synthesis engine. There are different randomize options : randomize page, step, parameter, accent, slide, and Mod Note.

Page randomizer

The page randomizer is useful to get a pattern going quickly, or to create alternative patterns starting from a base pattern. It adds between 1 and 4 note trigs with random pitch on said page. The pitch is always quantized to the scale of the pattern - this way, you can safely use it in live situations. Of course, you can undo/redo this operation. The page randomizer was designed to be used as an "additive tool" - you can start from scratch on an empty pattern or create alterations on a rhythmic pattern, and then undo to go back to the original pattern. The added step won't contain parameter offsets, probability, ratchet or microshift.

To randomize a page, hold [FUNC] + [TEMPO], and hit the desired [PAGE] key.

Pitch/Mod Note randomizer

The pitch randomizer allows the user to randomize the pitch of all the active notes in the current pattern. It won't add or remove notes. As you might expect, the pitch of the randomized pitch will be quantized to the current scale.

The pitch randomizer is contextual, when you are in player mode it won't affect the mod notes. When in mod note mode, it won't affect the patch notes, and will randomize the mod notes of the pattern, picking only mod notes from the current page.

To randomize pitch, hold [FUNC] + [TEMPO], and hit the [PATTERN] key.

Step Dice

Step dice will take all the trigs of a selected range and randomly reassign them to a new position. Just like the pitch randomizer it is contextual. It will dice only the patch notes in player mode and the mod notes in mod note mode. Hold your breath, this is the only 4-keys combination on Mono. To step dice, hold [FUNC] + [TEMPO], hold the [SEQ] key ending your range, and press the [SEQ] key starting your range in this order.

Step randomizer

The step randomizer as its name suggests randomizes a single step. It adds a random note trig to the desired step, the pitch is also quantized to the pattern. It will also randomize some synth parameter offsets. The parameter offsets being randomized are selected at random, and the value as well. To avoid going too wild, only the synth parameters are randomized, not the modulation parameters. The Freq and detune parameter are never randomized to keep the randomized step in tune.

To randomize a step, hold [FUNC] + [TEMPO], and hit the desired [SEQ] key.

Parameter randomizer

The parameter randomizer basically creates a random automation on a modulation or synth parameter. There is a 50% chance that a parameter offset is added on each step. The random value is also restricted to a range set by the musician, the offsets will never exceed these values.

To randomize a parameter, hold [FUNC] + [TEMPO], turn the desired parameter to the desired lower value, then turn it the

other way, to the desired upper value. On releasing [FUNC], the parameter will be randomized.

Randomize a step range

To randomize a range of step, hold [TEMPO] + [FUNC], hold the [SEQ] starting the range, and then press the [SEQ] ending the range, release, and voila ! It will randomize all parameters of mixer, filter and envelope section.

Randomize automation range

Randomize automation range : hold [TEMPO] + [FUNC], set the desired range by holding the first [SEQ] and pressing the end [SEQ]. Release the [SEQ] switches (not [TEMPO] and [FUNC]) then turn the desired knobs parameter left and right to set the randomisation range, just like the randomize automation feature.

Accent and slide randomizer

To randomize accent or slide on a pattern, hold [FUNC] + [TEMPO], and hit [ACCENT] or [SLIDE]. This will clear the current accent/slide and place accent/slide on note trigs at random.

Mod note randomizer

The Mod note randomizer is the wildest of all. It allows musicians to randomize a Mod Note in the Mod Note mode. The result will usually be extremely weird bleeping noises, but we all love that don't we ?

To randomize a Mod note you need to enable the Mod Note mode with [MODNOTE]. Hold [FUNC] + [TEMPO], then hit one of the 8 bottom [NOTE] keys to randomize the desired mod note.

Project settings

First things first, let's be honest - editing settings on Mono is not the best user experience. There is no way to make the process easy without a display, so you either need a good memory, or you need to keep the manual close. The process is always the same though, hold [FUNC], hit the desired settings, use the [SEQ] and [PAGE] key to select the desired value. Exit by hitting [FUNC] again.

MIDI

This setting allows user to set the Mono MIDI channel. Use the [SEQ] button to select the midi channel from 1 to 16.

Pot mode

The [POT MODE] setting changes the behaviour of the potentiometers when the physical potentiometers doesn't reflect the internal stored value. This happens on synth parameters when switching patterns, and on modulation parameters when selecting another synth parameters or editing ratchet, probability or microshift. There are three modes :

- Jump [SEQ 1] (default) : Uses absolute value based upon the position of the pot when edited. Turn a pot and the parameter value jumps immediately from the stored value to the edited value.
- Passthru [SEQ 2] :Turning the pot has no effect until after the edited value equals the stored value (that is, until the edited value "pass through" the stored value).
- Relative [SEQ 3] : Changes are relative to the stored setting. In relative mode, the full value range is not available until either the minimum or the maximum value and the respective lower or upper limit of the pot's travel is reached. For example, let's say

the cut-off parameter has an internal value range of 0 to 100 [chill out geeks, it is 16 bit internally]. The physical position of the pot is at 80 and you load a program with a stored value of 20. Turning the pot all the way up will only set the parameter to 40. To get the maximum value you first have to turn down until the value is at the other bound of the range, in this case 0, or fully counterclockwise.

Bend Rg

The [BEND RG] sets the range of the pitch wheel bend in semitones. Use the [SEQ] keys to select the range from 1 to 16, 3 being the default value.

Clock

This setting allows the user to set the sequencer clock source. Use the [SEQ] keys to select the 4 clock sources available:

- Internal [SEQ 1] (default) : Mono uses its internal clock, and [RUN] key to manage playback.
- MIDI [SEQ 2] : Mono uses the clock received on the MIDI port, playback operation is handled with MIDI start stop messages. The [RUN] key can still be used to handle transport.
- USB [SEQ 3] : Mono uses the clock received on the USB port, playback operation is handled with MIDI start stop messages. The [RUN] key can still be used to handle transport.
- CV [SEQ 4] : Mono uses its CV clock input as clock. In this mode, each step is triggered by an incoming pulse signal at the CV clock input, and the pattern restarts everytime a pulse is received at the reset input. Note that when using CV clock, some features of Mono can't work : microshift, ratchet, and swing. This mode really shines when using a weird semi-random clock source like a Make Noise Wogglebug.

Update and calibration

Updating firmware

To update the software, simply put the "mono_mk2_update.bin" file in the root folder of the SD card, then press [PATTERN] + [RUN] when turning on the synth. The update will start, the [SEQ] LED strip will start to blink. When the update is done, the synth will restart.

Oscillators calibration

Like every analog synthesizer, the oscillators need to be calibrated from time to time. Mono's oscillator and filter are no exception. To calibrate the oscillator and filter, turn off the unit, hold [UNLINK] + [TO XMOD] on the mini-keyboard, and turn the unit back on. The calibration procedure will start. The [SEQ] LEDs indicate the progress of calibration of each oscillator and filter, so it will restart at the beginning twice. The calibration procedure takes about 3 minutes. It is recommended to calibrate Mono when it is hot, after being powered for at least 15 minutes.

Restart the synth once calibration is done.

Resonance calibration

The maximum amount of resonance you want to get out of your synth is very subjective. Some people like very distorted self-oscillating resonance, others prefer no self-oscillation. On Mono it is possible to calibrate the maximum resonance level. To do so, turn off the synth, hold [TYPE] + [WAVE], and turn it back on. [PATTERN] and [RUN] LED will flash. You can play the synth

normally and set the resonance at desired maximum level (best way is to turn down both osc levels, hold a note and increase resonance until you are happy with the self-oscillation level). When you're done, press [RUN], the resonance maximum will be saved.

Midi implementation

Velocity

The velocity value from the synth or from of an incoming MIDI note affects the amplification level of that note, internal default value is 100, any value below 100 will result in a quieter note. The values above 100 will apply an accent with a ratio between 0 and 100%.

Parameter editing via CC

Mono synth and modulation parameters can be edited via control change message, it is also possible to select the active parameter via CC. Potentially, the synth engine can be entirely controlled via MIDI. It is also possible to send the parameter automation with the [PARAM SND] setting, on the same CC. This is disabled by default.

CC parameter table

7	Output Volume	56	Oscillator 2 Wave
14	Reset Modulator Phase	57	Oscillator 2 Volume
15	Go To Step	74	Vertical Level (Filter Freq + Out Vol)
43	Attack	75	Filter Resonance
44	Decay	76	Filter Color
45	Sustain		

46	Release	77	Filter Follow On/Off
47	Filter Envelope Amount	78	Active X-Mod Rate
48	Oscillator 1 Freq	79	Active X-Mod Amount
49	Oscillator 1 Detune	80	Active X-Env Attack
50	Oscillator 1 Wave	81	Active X-Env Decay
51	Oscillator 1 Volume	82	Active X-Env Amount
52	FM Amount	83	Active X-Mod Type
53	Sync On/Off	[Cycle]	
54	Oscillator 2 Freq	84	Active X-Mod Wave
55	Oscillator 2 Detune	[Cycle]	
		85	Accent
		86	Slide

Program change

Mono supports program change to switch pattern, send a program change between 0 and 63 to set the current pattern. Note that play mode will affect the behavior just as it would if you switch pattern manually.