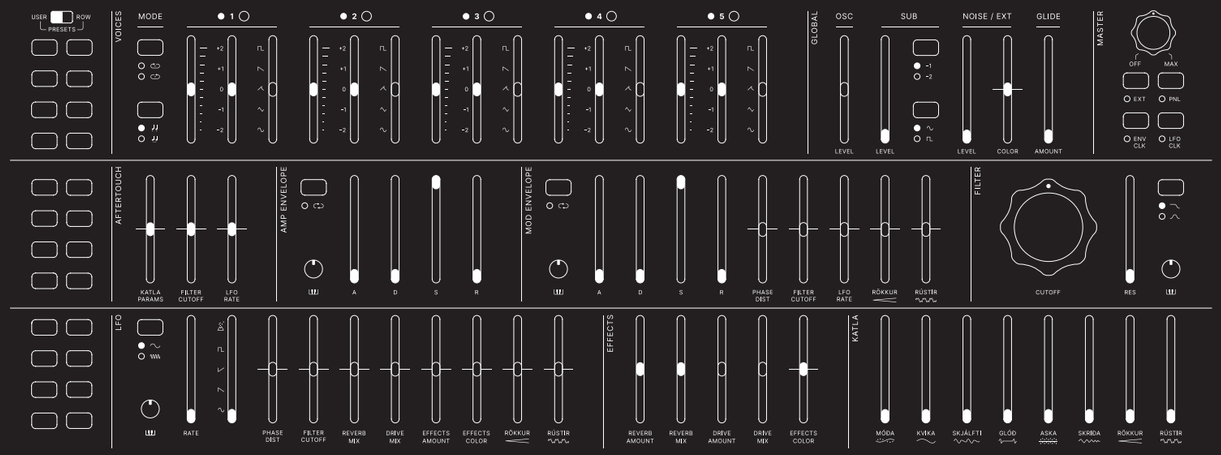
KATLA

Users Manual

Overview



About Katla

Katla is a Voice Rotating Polyphonic Synthesizer inspired by its namesake – Iceland's largest subglacial volcano. We set out to creat an instrument worthy of that legacy, something powerful and expressive. Katla achieves this by utilizing a set of wildcard parameters, infusing itself with unpredictable, organic behavior, adding life and movement to your sound. A volcanic synth must roar, so we equipped Katla with four independent distortion destinations, most unruly of which is a stereo CMOS drive.

At the core of Katla is a voice-allocation engine routing notes across five discrete voices, each with individually adjustable parameters. With six unique voice-allocation modes, Katla excels at generating evolving, multi-layered textures responding distinctly to every note. This feature, combined with Katla's five LFOs and envelopes, enables intricate per-voice modulation, allowing each voice to stir, swell, and erupt in its own unique way.

In The Box

Included with Katla are a power supply and a USB-C cable. Please use only these provided accessories, as we cannot guarantee the performance of third-party cables and power supplies.

Setup and Connections

Audio

Connect the two jack outputs to your mixer or audio interface. You can also plug headphones directly into the headphone jack.

USB

Connect the included power adapter to the leftmost USB port. Please use only the supplied power adapter, as third-party units with reduced power output may cause unwanted noise or distortion. The center USB port is the Genki Link. Use this port to send MIDI from your computer, as well as to update and configure Katla. Use the rightmost USB port to connect a keyboard or any other MIDI controller or sequencer.

Audio Path

In Katla, the audio path begins in the Global section, where the initial output is shaped by the three level sliders. From there, the signal passes through the filter and into our wavefolder, Rústir. It then continues to the Amplifier, where it is shaped by the amp envelope. After amplification, the sound is controlled by the per-voice level sliders in the Voices section. The signal then flows through the reverb and into the drive stage, and finally the overall level is set by the Master knob.

You might assume the per-voice level sliders are the first stage in Katla's audio path, but they actually appear later in the chain. This is because the Voices control far more than just their own audible output. Their level and octave settings also influence the sub-oscillators, filters, LFO, all key-tracking behaviors, and many other aspects of the synth, even when the Main OSC level is muted.

Quick Start

For a basic starting point, first make sure Voice 1 is on by pressing its activation button, located next to the number 1. Set all three of its sliders to the middle of their range. Set the Global OSC Level slider and Master volume knob to their midpoints. Set the Amp Envelope and Mod Envelope sustains to their highest value. Turn the filter cutoff knob fully clockwise.

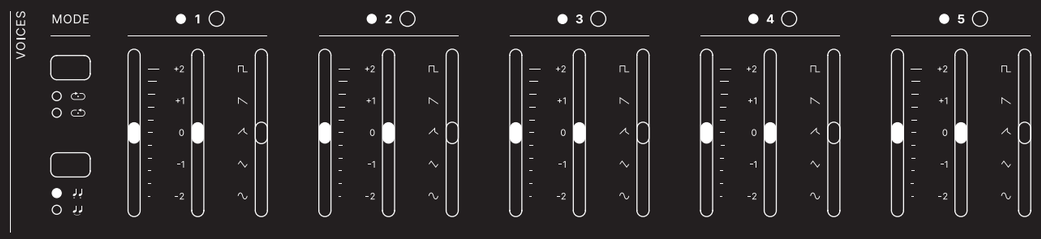
Set all other sliders to their lowest position, except for those marked with a stroke through the middle — set those to their midpoint. Also set the four keyboard-tracking knobs to their middle position.

You should now hear a basic shark-tooth wave. Katla is now ready for further exploration.

Katla Central

By following this link, you can download our software, Katla Central (coming soon). When you connect Katla to your computer via the Genki Link port, you'll be able to update the firmware, adjust settings, and store presets.

Front Panel



Voices

Katla features five voices, each with individually adjustable parameters. For each voice, you can set its level, octave, and waveform, disable it by pressing the activation button. Available waveforms are square, sawtooth, shark-tooth, triangle, and sine. They are arranged from top to bottom in order of harmonic content.

Voice Modes

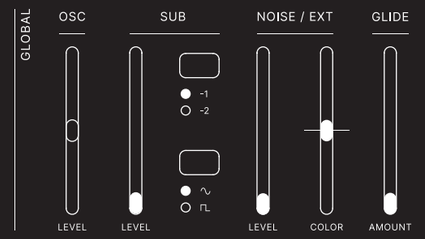
Choose between Round-Robin or Unison voice modes.

Round-Robin Voices Modes

Choose Round-Robin mode by pressing its button, represented by a rotation symbol. In Round-Robin mode, each note is assigned to one of the five voices in sequence, creating a rotating pattern of sound. You can switch between three different Round-Robin modes by pressing the same button. The first mode cycles forward through the voices, the second cycles backward, and the third selects voices at random.

Unison Voice Modes

In unison mode, all active voices are automatically assigned to the notes you play and dynamically adjusted based on how many keys are held. This means that at any moment, up to five voices are in use. You can switch between three different Unison Modes by pressing its button. The first mode is Staccato, where envelopes retrigger with every note trigger. The second mode is Legato, where envelopes retrigger only when all keys have been released. The last mode is Mono Mode, disabling polyphony and allocating all voices to the same note.



Global

OSC

The first slider, labeled OSC Level, controls the global level of all five voices. When pushed beyond its midpoint, the OSC Level slider introduces slight harmonic distortion by gently overdriving the signal.

Sub

The Sub section controls Katla's five sub-oscillators. You can adjust their level, set their octave position, and choose between sine or square waveforms. Each sub-oscillator is linked to its corresponding voice and is influenced by that voice's level and octave settings.

Noise/EXT

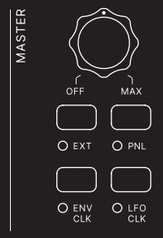
Control the amount of pink noise using this slider. When the EXT button is pressed, the noise is disabled and the slider instead controls the external input level.

The noise and external input is routed through a tilt EQ. Depending on the COLOR slider the EQ wil boost high frequencies above a central pivot point (800 Hz) and cut frequencies below, or vice versa. This feature brightens or darkens a signal with a single control, efficiently shaping the overall tonal balance.

> Tip: Try overdriving the output by combining the sub-oscillators and noise. Set both level sliders to maximum to push the signal into a complex, saturated tone.

Glide

Glide, also known as portamento, creates a smooth transition in pitch between two notes. The amount slider sets the time it takes to reach the new pitch. The glide time automatically scales with the size of the interval: large jumps take longer, while small movements glide more quickly. For example, a two-octave leap takes noticeably more time than a half-step slide. This produces a natural-feeling portamento where big intervals have room to "travel," and small pitch adjustments remain fast and responsive. Descending pitches glide slightly slower than ascending ones (about 10% longer) adding an organic quality.



Master

Master volume

In the Master section, you'll find the Master Level knob. This is the final stage in the signal path and controls the output level for both the jack outputs and the headphone output. When the knob is turned to its lowest position, Katla powers off, indicated by a click.

If you ever experience hanging MIDI notes, you can send a MIDI panic message by switching this knob off and on.

EXT

Press this button to enable the external inputs, overriding the noise level slider.

PNL

Also known as manual mode, panel mode lets you override all stored values so Katla behaves exactly as the controls indicate.

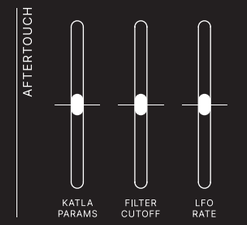
ENV CLK

Sync envelopes to the BPM set by your DAW or external clock. When enabled, the envelope sliders snap to musical intervals such as quarter notes, triplets, or dotted values.

LFO CLK

Sync LFO times to the BPM set by your DAW or any external clock. When enabled, the rate slider snaps to musical intervals such as quarter notes, triplets, or dotted values.

Note: If you ever encounter serious issues with Katla, such as a failed update or the instrument becoming completely unresponsive, you can place the synthesizer in recovery mode by holding all four Master section buttons while switching the Master volume knob off and on. After entering recovery mode, connect Katla to a computer and reset its firmware. Use this only as a last resort.



Aftertouch

Aftertouch adds expressive control by responding to pressure applied after the note was triggered. You'll need a MIDI keyboard that supports aftertouch, or send aftertouch MIDI signals from your DAW. Katla
can also be MPE-enabled (coming soon), allowing per-note aftertouch for even greater control.

Katla Params

The Katla Params Aftertouch slider offers two distinct modes, selected by moving the slider up or down.

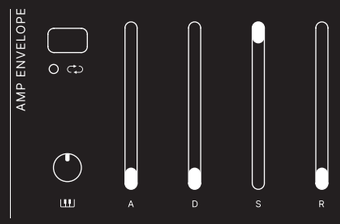
- In the upper position, aftertouch blends in the four pitch-affecting Katla parameters: Móða, Kvika, Skjálfti, and Glóð.
- In the lower position, aftertouch creates harmonic clusters by modulating the pitch of voices 1, 2, 4, and 5 while leaving voice 3 unchanged.

Filter Cutoff

In the upper position, aftertouch raises the filter's cutoff point.
In the lower position, it lowers the cutoff point.

LFO Rate

In the upper position, aftertouch increases the LFO rate. In the lower position, it decreases the rate.



Amp Envelope

Katla features five amp envelopes with shared controls for attack, decay, sustain, and release. You can offset their timing with the key-tracking knob, creating timing differences across the keyboard. Turning the knob clockwise speeds up envelope times for higher notes, while turning it counter clockwise gives lower notes the faster envelopes.

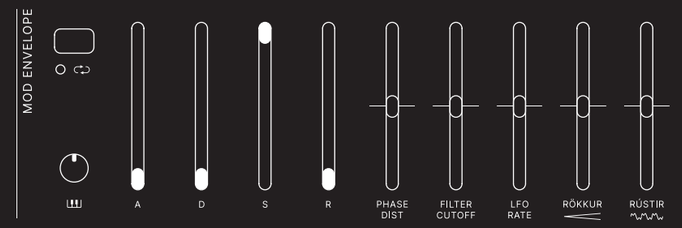
The amp envelopes can be looped by pressing the Loop button. When looping is active, the envelope cycles once it reaches the end of the attack and decay stages. Increasing the sustain value shortens both the attack and decay stages, resulting in a faster loop and also affecting the modulation depth. If you release a note before it has completed its decay stage, the envelope will move into the release stage.

Tip: One interesting way to explore the Amp Envelope is by engaging Katla's Skriða parameter, which randomizes envelope times on every note trigger. Send an arpeggiated sequence into Katla, set the decay shorter than the note length, apply a moderate release, and dial in some Skriða.

This causes the decay time to change from note to note, making some notes enter the release phase while others do not, resulting in dramatic variations in note length. Combine this with looping and key-tracking for an even more animated and evolving result.

When looping with the attack, decay and sustain set to their lowest positions, the envelope oscillates at C1 (32.7 Hz). This makes audio-rate amplitude modulation (AM) possible, tuned to each note by using the key-tracking knob.

At the opposite extreme, when the release is set to its maximum value, the envelope's release time is approximately one hour.



Mod Envelope

You will find many similarities between the amp and mod envelopes. Katla features five mod envelopes controlled through a single interface. Their timing can be offset with the key-tracking knob, and they can be looped by pressing the Loop button.

The mod envelope can be routed to five destinations: phase distortion, filter cutoff, LFO rate, Rökkur, and Rústir.

Phase Distortion

Phase distortion reshapes a waveform's phase angle to create new harmonics. Many users are familiar with pulse-width modulation, where the duty cycle of a pulse wave is shifted to alter its harmonic content. Phase distortion applies a similar idea more broadly, bending the phase of any waveform to generate new timbres. Pushing the slider upward introduces phase distortion, while pushing it downward inverts its direction.

Internally Katla's control signals make use of wavefolding. This means that when the envelope or LFO pushes a parameter beyond its limits, the modulation inverts direction and begins to reduce or increase the value instead. In the Mod Envelope, this behavior applies to the Phase Distortion, Rökkur, and Rústir destinations.

Filter cutoff

Pushing the slider upward increases the filter cutoff frequency, while pushing it downward reduces it.

LFO Rate

Increases or decreases the LFO rate.

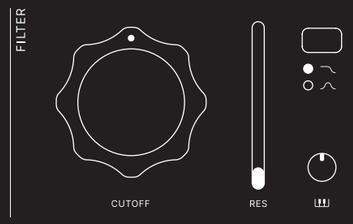
Rökkur

Rökkur is Katla's stereo spreader. Modulating this parameter introduces movement in the stereo field, and when key-tracking is enabled, each note is panned independently. Pushing the slider upward applies panning according to Rökkur's internal logic, while pushing it downward reverses the panning order. When adjusting the Rökkur slider in the Katla section, voice 1 remains centered; however, modulating Rökkur with the Mod Envelope introduces stereo movement to voice 1 as well.

As mentioned earlier, this control signal is wavefolded when pushed beyond its upper or lower limits, causing its direction to invert.

Rústir

Rústir is Katla's wavefolder. Pushing the slider upward increases wavefolding, while pushing it downward reduces it. As mentioned earlier, this control signal is itself wavefolded when pushed beyond its upper or lower limits, causing its direction to invert.



Filter

Lowpass Filter

Katla's lowpass filter is inspired by a blend of MS-20 and SEM characteristics. It is a 4-pole design with a 24 dB/oct slope. The resonance adds a form of overdrive, introducing distortion at higher settings. The filter can be key-tracked by adjusting the key-tracking knob.

Tip: You can make the filter resonance more prominent by reducing the Global OSC Level.

Bandpass Filter

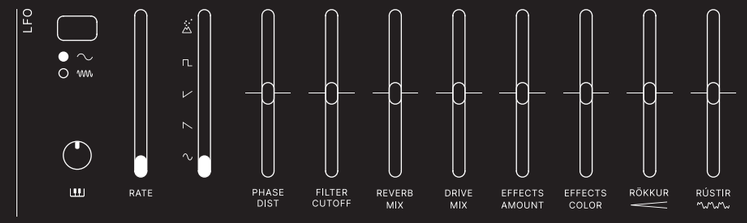
You can switch to a bandpass filter by pressing the filter type button. The bandpass filter is actually a blend of a 36 dB/oct bandpass filter and a small amount of a 12 dB/oct lowpass filter. You'll notice that the bandpass filter reacts more aggressively than the lowpass filter when driven with higher resonance settings.

Filter-tuning

You can tune Katla's five filters and use them as oscillators. To begin, hold the filter type button for 2 seconds. Katla will then listen to its filters and tune them automatically, a process that takes about 30 seconds. During tuning, Katla is muted, and the voice activation lights will blink to show progress.

Once tuning is complete, turn the key-tracking knob fully clockwise and raise the resonance to its maximum value. The filter is now ready to be played and shaped further.

Tip: We especially enjoy combining tuned filter resonance with noise. You can also explore balancing the filter resonance amount, the Global OSC Level, and the noise level to create a wide range of textures.



LFO

Katla's five per-voice LFOs share a single rate knob and can be offset using the key-tracking knob. The LFO also includes a rate-switch button toggling between slow and fast ranges. When the key-tracking knob is centered, the LFO rate is tuned to C at both its slowest and fastest settings.

The slow range spans from 0.064 Hz (C-8) to 4.8 Hz (C-2), while the fast range covers 1.02 Hz (C-4) to 65.4 Hz (C2), giving you a total of ten octaves of modulation range.

Tip: Try setting the LFO rate to its maximum value while in the Fast range, then turn the key-tracking knob fully clockwise. This enables audio-rate modulation that tracks the pitch of each note.

The available LFO waveshapes are sine, sawtooth, reverse sawtooth, square, and Volcano. The Volcano waveshape is a slewed sample-and-hold that generates two random values per cycle.

Phase Distortion

The LFO Phase Distortion works the same way as the Mod Envelope's Phase Distortion. Pushing the slider upward introduces phase distortion, while pushing it downward inverts its direction.

Filter cutoff

Pushing the slider upward increases the filter cutoff frequency, while pushing it downward reduces it.

Reverb Mix

Pushing the slider upward increases the reverb mix, while pushing it downward reduces it. This parameter is the first place where we encounter a feature called LFO min-maxing. Because five LFOs share control of a single stereo parameter, and because their rates can differ dramatically, Katla calculates their combined outputs and uses that to drive the modulation. The result is a uniquely complex, non-repetitive movement.

When you press the slider upward, Katla uses the combined maximum outputs of the five LFOs. When you press it downward, it uses their combined minimum outputs. This min-maxing behavior applies to the Reverb Mix, Drive Mix, Effects Amount, and Effects Color destinations.

Drive Mix

Pushing the slider upward increases the drive mix, while pushing it downward reduces it. This parameter also uses LFO min-maxing.

Effects Amount

Pushing the slider upward increases the reverb and drive amounts, while pushing it downward reduces them. This parameter also uses LFO min-maxing.

Effects Color

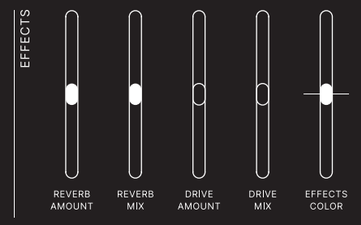
Pushing the slider upward increases the Effects Color value, brightening the reverb and drive signals, while pushing it downward darkens them. This parameter also uses LFO min-maxing.

Rökkur

Applies stereo movement to each voice independently.

Rústir

Rústir is Katla's wavefolder. Pushing the slider upward increases wavefolding, while pushing it downward reduces it. This control signal is also wavefolded when pushed beyond its upper or lower limits, causing its direction to invert.



Effects

Katla features two stereo effects: a lush reverb inspired by iconic 1980s hardware, routed through a ferocious CMOS drive.

CMOS Drive is an analog distortion circuit built around CMOS inverter chips, normally used for digital logic rather than audio. When overdriven, these MOSFET-based inverters transition through their linear region and produce a distinct, harmonically rich clipping response that differs from typical diode or op-amp based distortion effects. The result is a sharp, responsive distortion character with strong dynamic interaction, making CMOS stages useful for adding aggressive edge, asymmetric saturation, and unique timbral shifts to an audio signal.

Reverb Amount

This slider controls a combination of reverb parameters, including reverb length, modulation depth, and stereo width. At its lowest setting, the reverb has a short tail, minimal modulation, and a narrow stereo image. At its highest setting, the tail becomes longer, modulation depth increases, and the stereo field widens.

Reverb Mix

Controls the reverb dry/wet mix.

Drive Amount

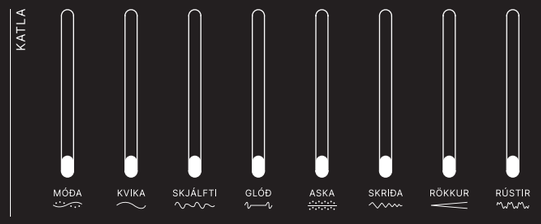
Controls the input level for the CMOS drive—higher levels produce more distortion.

Drive Mix

Controls the drive dry/wet mix.

Effects Color

This slider affects both the reverb and the drive in different ways to shape their perceived brightness. In the reverb, it adjusts several parameters within the algorithm, including a tank filter and a tilt EQ. In the drive, the Effects Color slider controls a mid-scoop filter by shifting the frequency of the dip. When modulated, it can produce a phaser-like effect.



Katla Parameters

The Katla Parameters are a set of wildcards designed to infuse the synthesizer with unpredictable, organic behavior, adding life and movement to your sound. The first four parameters affect pitch in different ways, while the remaining four influence a variety of other controls throughout Katla.

Móða

Móða outputs a new random value with each key press, detuning each voice by a different amount. Its behavior is reminiscent of vintage synthesizers drifting out of tune with age. Pushing the slider upward increases the amount of detune.

Kvika

Kvika applies slow, gradual pitch fluctuations to each voice independently using a slewed random waveform. This behavior is inspired by the wow modulation found in vintage tape machines.

Skjálfti

Skjálfti applies faster pitch fluctuations to each voice, reminiscent of the flutter behavior found in vintage tape machines.

Glóð

Glóð produces brief bursts of detuning, similar to the effect of momentarily slowing a tape by pressing the reel.

Aska

Aska is the most complex of the Katla Parameters. It inserts random modulation on per-voice volume and filter cutoff, and also introduces short bursts of noise, resulting in a chaotic and unpredictable sound.

Skriða

Skriða applies random values to the attack, decay, and release times of the Amp Envelope.

In Skriða, the attack and decay stages are closely linked. If the attack slider is at its lowest value but some decay is set, Skriða will modulate only the decay time and skip the attack stage. Conversely, if attack is non-zero while the decay slider is at zero, Skriða will modulate only the attack and skip the decay. When both attack and decay are set to their lowest values, Skriða will modulate both.

Skriða will always modulate the release time unless the release slider is set to its maximum value.

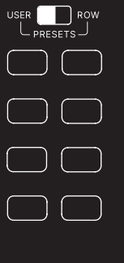
Rökkur

Rökkur is Katla's stereo spreader. When applied, it positions voices 4 and 2 to the left, voices 3 and 5 to the right, and keeps voice 1 centered. When modulated by the Mod Envelope, Rökkur reverses the pan order and introduces movement to voice 1 as well. When the LFO is applied to Rökkur, each voice is moved independently.

When applying heavy modulation to Rökkur—whether from the Mod Envelope or the LFO—you can think of the Rökkur slider as an offset control, shifting the baseline from where all modulation occurs.

Rústir

Rústir is Katla's wavefolder, often considered a hallmark of West Coast synthesis. When a pure waveform, like a sine, is fed into a wavefolder, it generates rich harmonics by inverting the wave's direction and creating complex timbre. Rústir can be modulated by both the Mod Envelope and the LFO, and applied independently to each voice.



Presets

Katla features 24 preset slots and a toggle between User and Row presets.

- User presets are snapshots of the entire front panel. You can store 24 user presets.
- Row presets store only the settings of the row they belong to. This means you can, for example, load a preset for the Katla Parameters and the LFO while keeping the Voices section unchanged. Each row contains 8 row-preset slots.

To save a preset, hold the desired preset slot for 2 seconds.

In Katla Central, you'll find a preset manager where you can store presets, rearrange them, and view the preset slots currently saved on device.

Back Panel

USB Ports

Power

Katla accepts 12W power through this USB-C port. We recommend using only the provided power supply, as we cannot verify the performance of other cables or power adapters.

Genki Link

Use this port to send MIDI messages and clock signals from your computer. You can also use this port to update and configure Katla via Katla Central.

Keyboard

Use this port to send MIDI messages via USB-C, for example from a MIDI keyboard or an external sequencer.

MIDI

Katla is equipped with two DIN ports used to send and receive MIDI data. In Katla Central, you can enable Voice Specific MIDI, in which Katla will output MIDI data from each voice independently in MIDI Channel 2 through 6.

MIDI Channel

In Katla, channel selection works by counting in binary.

Switch 1 = 8
Switch 2 = 4
Switch 3 = 2
Switch 4 = 1

Choose your MIDI Channel by adding up the numbers and adding 1. By default MIDI Channel 1 accepts all MIDI messages.

Configuration

Options

You can alter Katla's behaviour by setting the DIP switches on the back. By default they are switched off.

1. **MIDI Mode**

   Switch between MIDI and MPE.

   Off MIDI

   On MPE (Coming soon). MPE (MIDI Polyphonic Expression) lets each note have independent pitch bend, timbre, and aftertouch by assigning it its own MIDI channel.

2. **Slider Behaviour**

   Set how the sliders interact with the synth's internal parameter values.

   Off Latch. The moment you turn the physical knob, the internal value immediately jumps to the knob's position.

   On Catch. The parameter will not change until your physical knob "catches" the current internal value. You must move the knob until it passes through the stored value, only then does the value change.

3. **Round-Robin Reset**

   Set how Katla selects voices when operating in Round-Robin mode.

   Off By default, Katla will always continue from the last-used voice when selecting a voice.

   On When enabled, Round Robin Reset returns the voice selection to voice 1 each time all held keys are released. The next incoming note always starts from voice 1.

4. **Unison Grace Period**

   When in unison mode, all voices are allocated to a note. This means that when releasing a chord, one note will naturally linger slightly longer than the others, causing all voices to collapse onto that note and produce a monophonic release phase. When Unison Grace Period is enabled, a slight timing offset is introduced, allowing Katla to smoothly fade out.

   Off No timing offset

   On Note release timing offset enabled

5. **Mono Note Priority**

   Mono Note Priority determines which note is heard when multiple keys are pressed in mono mode. In Katla Central, you can change the active priority from Lowest to Highest.

   Off Last. Katla will favor the newest note.

   On Lowest. Katla will favor the lowest note.

6. **LFO Retrigger**

   When enabled, the LFO will reset with each key-press.

   Off LFO runs freely

   On LFO resets with every note

7. **Global Detune**

   Set the behavior of the detune trim pot located next to the DIP switches.

   Off Detune. Rotate the trim pot to detune all voices uniformly.

   On Pitch Drift. When enabled, turning the trim pot counter clockwise affects Katla's tracking accuracy. Turning the trim pot clockwise detunes all voices globally.

8. **External In Level**

   Set the input level of the five external inputs. In Katla Central, you can change the input mode from Line (Consumer) to Instrument or Modular.

   Off Line (Professional)

   On Line (Consumer)

   Level Guide

   Line (Professional): Pro audio equipment (Mixers, audio interfaces)
   Line (Consumer): Consumer electronics and older audio equipment)
   Instrument: Electric guitars and basses with passive pickups
   Modular: Eurorack/modular synths

Global Detune

Rotate the trim pot to detune all voices uniformly, for example to play alongside instruments tuned to 432 Hz. Turn it to the right to raise the pitch and to the left to lower it. The detune range is up to a half step in either direction.

By switching DIP Switch 7 to on, you turn this knob into a Pitch Drift pot instead. When enabled, turning the trim pot leftwards affects Katla's tracking accuracy. Each voice is assigned a center note, and the further a played note is from that center, the more it will drift in pitch. Because the center notes differ between voices, the amount of detune varies from voice to voice.

Turning the trim pot rightwards detunes all voices globally. Using this feature, each voice is shifted by the same amount every time you play a note, uniformly across the entire keyboard.

External Inputs

Katla features five external inputs. To enable them, press the EXT button located in the Master section. You control their level with the Noise/EXT level slider and shape the tone using the tilt EQ via the Color slider. After this stage, the external signal is routed through the rest of Katla. Use the filter, distortions, envelopes, and LFOs to process the external audio, blending it with Katla's internal voices.

> Tip: Need even more distortion? Try routing the headphone output to External Input 1. This feeds Katla back into itself.

Katla shares external signals across the inputs in different ways depending connected inputs. If External Input 1 is the only used, Katla routes that signal to all voices, allowing you to hear the input on every played note. If only Inputs 1 and 2 are connected, Katla treats them as a stereo pair and hard-pans the signals, while also distributing them to voices 3, 4, and 5.

If empty, the External Input will receive its signal from the source indicated by the arrow.

Outputs

Katla provides two jack outputs and a headphone output. Use the leftmost jack for mono, or combine both jacks for stereo. The level of all outputs is controlled by the Master level knob.