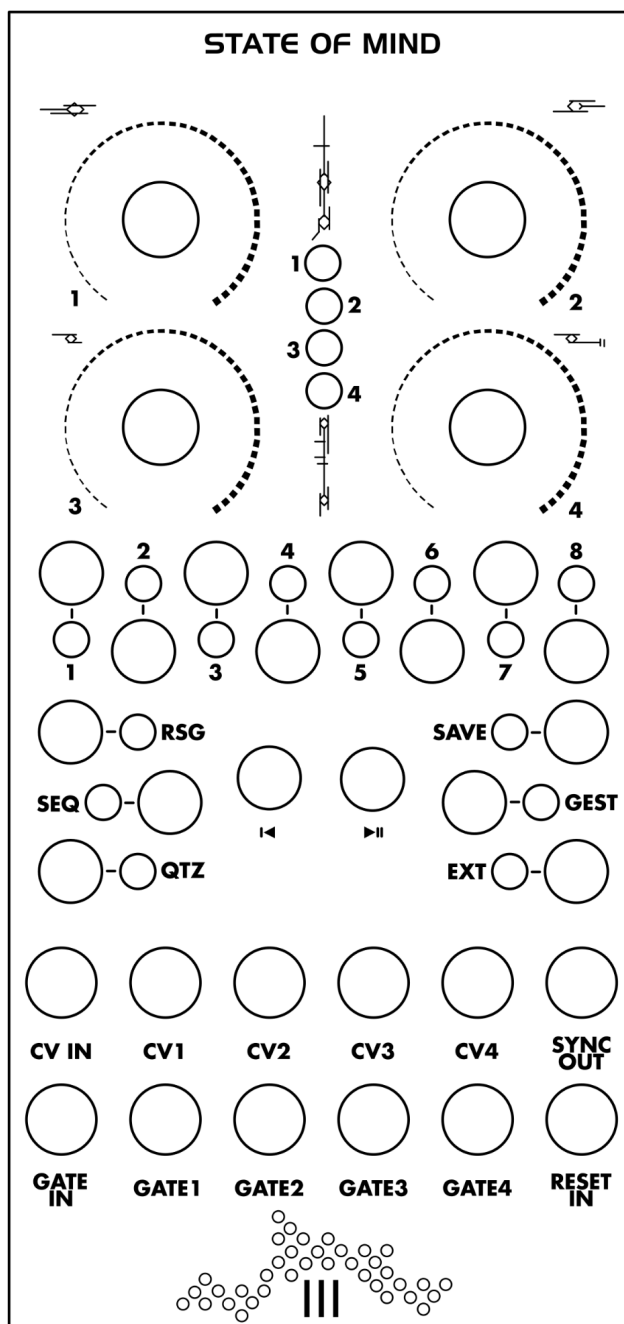


Tre Modular - State of Mind

User Manual

Thank you for choosing Tre Modular
- State of Mind Eurorack module!

This guide will walk you through
the features, and usage of this module.



State of Mind:

State of Mind is a four-channel CV workstation. Four CV outputs, four gate outputs, and four engines that move them. Sequencer, a generative melody engine, recorded gestures and an external CV. Any channel can use any of them, and different channels can use different ones at the same time.

Every output is calibrated to 1 V/oct, so the same four channels work just as well as pitch for oscillators or as slow modulation for filters, VCAs and effects. If you play an analogue oscillator, State of Mind can tune it to itself across eight octaves.

Features:

- Four calibrated 1 V/oct CV outputs, each with its own gate
- Eight snapshots, a morphing sequencer, swing and clock division
- Generative engine
- Potentiometer and CV + gate recording
- Per-channel quantizer with eight scales and twelve roots
- External CV and clock control, SYNC OUT in eight formats
- Automatic tuning of analogue oscillators across eight octaves
- Compact 12 HP size.

Basic control language:

Tap or Hold:

A short tap on a mode button does its quick action. Tap on **SEQ**, **RSG**, **QTZ**, **GEST** or **EXT** activates selected mode.

Holding **SEQ**, **RSG**, **QTZ** or **EXT** for about half a second opens its settings page instead. The page stays open when you let go. Inside a page the four knobs become that page's four settings, and the state LEDs show the value you are turning.

Where a page has settings for individual channels, tap state button **1** to **4** to open that channel's individual settings. Tap the mode button once to come back out to global settings. Tap the mode button again to close the page. Changes are saved automatically.

Catching a Knob:

When an engine plays a channel, that channel's knob stops controlling that channel. To take control of the channel back, turn the knob past the voltage the channel is sitting at. It catches there, and from then on the knob is in control. While you move the knob, one state LED shows where the knob is and a blinking one shows where the output is. Turn until they meet.

Settings pages work the same way. A knob changes nothing until it passes the stored value, so opening a page never makes a setting jump to wherever the knob happens to be.

Channels and Engines:

Normally every channel is **Neutral** and follows whichever engine you started last. However, you can assign a channel to specific engine:

1. Hold state button **1, 2, 3** or **4** (for channels 1 to 4) for about half a second. Its LED flashes, and the SEQ, RSG, GEST and EXT LEDs light up to indicate possible routing.
2. Tap **SEQ, RSG, GEST** or **EXT**.

To make the channel Neutral again, hold its state button, then tap the same state button once more.

A channel assigned to an engine belongs to it. It keeps playing that engine even when you recall a gesture set that includes it, and it goes quiet when that engine stops instead of falling back to another one. This is how you build a hybrid patch.

RESET is your way out. Tap it to send a running sequence back to its first step. Hold it for about a second to stop every engine and give all four channels back to their knobs.

Snapshots:

There are eight snapshots, each holding all four channel voltages.

Save: Tap **SAVE**, then tap a state button.

Recall: Tap a state button. If the sequencer shape is Gate the change is instant; with any other shape the module glides there at the sequencer's rate. An empty slot flashes the LEDs.

Edit one channel: Recall the snapshot, turn only the knobs you want to change, then tap **SAVE** and the same state button.

Saving onto a slot that already holds a snapshot replaces only the channels whose knobs you have turned since the last save or recall. The other channels keep what the slot had. An empty slot always stores all four.

SEQ - Sequencer:

A sequence is an order of up to eight snapshots, and the module transitions from one to the next.

To build one, tap **SEQ** (its LED pulses), tap state buttons in the order you want them, repeats are allowed, then tap **SEQ** again or press **PLAY**. Press two state buttons together to add a whole run. For example **1** and **5** together gives 1, 2, 3, 4, 5.

Global settings:

Hold SEQ to enter SEQ global settings.

Potentiometer	Parameter
Pot 1	Rate, 0.05 Hz to 20 Hz
Pot 2	Shape
Pot 3	Swing, 0 to 60%
Pot 4	Direction

Rate is tapered so most of the knob's travel covers musical tempos. The bottom of the range reaches one step every twenty seconds for slow modulation, the top reaches twenty steps a second for ratchets and buzz.

Shape decides how a channel travels from one snapshot to the next, in state LED order:

1. Gate - An immediate jump
2. Glide Linear
3. Glide Log
4. Glide Antilog
5. Linear
6. Sine
7. Log
8. Antilog

The three **glide shapes (2-4)** move for the first quarter of the step and hold for the rest, which works as portamento. The four **continuous shapes (5-8)** take the whole step, which reads as a slow crossfade. Gate outputs always fire at the step, whichever shape you choose

Swing lengthens every other step and shortens the ones between. It works on the clock rather than on your pattern, so sequences of any length stay locked to an external clock.

Direction

1. Forward
2. Reverse
3. Pendulum
4. Random order.

Per-channel settings:

Tap **State buttons 1–4** while in SEQ settings to enter Per-channel settings

Inside a channel's page the eight state LEDs show that channel's gate pattern.

Tap any state button to switch that step between a struck gate and a rest

Potentiometer	Parameter
Pot 1	Clock division: $\div 1$, $\div 2$, $\div 4$, $\div 8$, $\div 16$, $\div 32$, $\div 64$, $\div 128$
Pot 2	Shape
Pot 3	Swing offset
Pot 4	Gate Length

Per-step gate length and glide:

Inside a channel page, hold any state button for at least 600ms. While you hold it:

Pot 1 sets the selected step's gate length.

Pot 2 turns glide on or off for that step. Lower half off, upper half on.

RSG - Random State Generator:

RSG writes music for up to four voices and keeps it moving. Each voice plays a bar of sixteen steps and changes it as much or as little as you allow. The voices can each go their own way, or play together. RSG keeps the sequencer's time: its rate (hold **SEQ**, **Pot 1**) or the external clock, one RSG step per sequencer step. Each channel's clock division (hold **SEQ**, tap the channel, **Pot 1**) divides its RSG steps as it divides the sequencer's.

One phrase: With RSG stopped, tap RSG. Each channel moves to a random voltage.

Start: Tap **SEQ**, then tap **RSG**. RSG writes and plays continuously.

New phrase: Tap **RSG** while it plays. Each voice starts a new song at its next step, in a related key.

Fill: Double-tap **RSG** while it plays. Every voice plays for one bar, then the melody carries on.

Global settings:

Hold RSG to enter RSG global settings.

Potentiometer	Parameter
Pot 1	Probability
Pot 2	Musicality
Pot 3	Groove
Pot 4	Relationship

Probability sets how often each voice changes its bar,

1. Never changes
2. A small change every 8 bars
3. A change every 4 bars
4. A change every 2 bars
5. A change every bar
6. Three changes every half bar
7. A new half bar every half bar
8. A new half bar each time, at least half of it is new

Musicality decides how much of the music follows the rules. At LED 1 everything is random. The voices ignore each other, and notes land anywhere in their window unless that channel's quantizer is on. Each LED up, more of the notes follow the style, the scale and the relationship. At LED 8, the factory setting, all of them do.

Groove chooses a style, its rhythm, its note habits and its timing.

1. **Random mix.** A style is drawn at random, and redrawn occasionally.
2. **Steady.** On the beat, unsyncopated.
3. **Lilt.** Shuffled sixteenths with a house swing and an octave bass.
4. **Drive.** Dense and pushed, anticipating the beat, over a pedal note.
5. **Motorik.** Relentless straight sixteenths.
6. **Break.** Broken and syncopated.
7. **Detroit.** Swung and funky, with the most pitch movement.
8. **Halftime.** Sparse, at half rate, with long notes.

A groove is a guideline. Each song leans its own way based on it. The fewer gates a voice plays, the more room its rhythm has to differ from song to song.

Relationship decides how the voices play together

1. **Independent.** Each voice has its own rhythm, chords and key.
2. **Unison.** The other voices play the lead's notes.
3. **Harmonize.** The other voices play a third and a sixth with the lead.
4. **Consonant.** The other voices keep their own rhythm and move with the leading channel.
5. **Triad.** Channels play a triad built on the lead's note: root, third and fifth.
6. **Seventh.** Channels play a seventh chord built on the lead's note: root, third, fifth and seventh.
7. **Sus.** Channels play a suspended chord built on the lead's note: root, fourth and fifth.
8. **Power.** Channels play a power chord built on the lead's note: root and fifth, in octaves.

The lead is the lowest-numbered channel RSG plays that is not Independent, normally channel 1.

Channel settings. Inside the RSG page, tap **state button 1** to **4**.

Potentiometer	Parameter
Pot 1	Note count
Pot 2	Gate density
Pot 3	Span
Pot 4	Position

Note count sets how many different notes a voice can use, from 1 to 8. The same note in another octave doesn't count as a new one. At 1 the voice plays a single pitch, a pure rhythm part; at 8 its melody roams freely.

A voice doesn't have to play all of its notes in every bar. Its figure may use only some of them in one bar and bring in the others over the rest of the phrase.

Changing Note count doesn't write a new melody. Turning it down folds the melody into fewer notes, and turning it back up brings back the notes it had.

Gate density sets how many gates the voice plays in each bar. Two at 1, two more with each LED, up to a gate on all sixteen steps at 8. Each gate starts a new note on the channel's CV output. The groove decides where the gates fall, filling its strongest steps first, and each song leans its own way within it. Accented gates stay high through the rests that follow them, so a low density gives fewer, longer gates and a high density many short ones.

Span and **Position** set the voice's window. The range of voltages its notes can use. Position sets where the window starts, and Span how wide it is. The window always stays within the output range, so the wider the Span, the less room Position has to move it up. At a Span of 0 the voice plays a single voltage.

On the channel's page, the state LEDs show the window, one LED per octave: LED 1 is 0 to 1 V, LED 8 is 7 to 8 V. The lit LEDs start at Position and run for the width of the Span, rounded to whole octaves; even the narrowest window lights one.

Within its window, each song gives the voice a register, low, middle or high, and keeps the melody close to it, drifting as the song goes on. A wide window lets songs differ more in register; a narrow one keeps the voice in one place. Random notes let through by Musicality can land anywhere in the window.

The windows also set each voice's part in the groove. The voice with the highest window plays the top line, and the one with the lowest plays the bass.

Individual settings:

On the main RSG page, hold the state button **1** to **4**. While you hold it, the four knobs set Probability, Musicality, Groove and Relationship for that channel only.

How songs are created:

Every time RSG starts, and every time you tap RSG while it runs, each voice begins a new song and draws its own character for it.

First, where it sits. Low, middle or high constrained by its Span and Position settings. The register drifts as the song goes on, based on the Probability setting. The voice also draws how widely its notes are spaced. Close together, on every other note of the scale, or on every third.

Then its melody. Each song gives the voice a figure, a shape it keeps coming back to. An arpeggio, an octave bounce, a riff, a question and answer, a rising or falling sequence, a two-note hook, a short figure invented for that song specifically, or no set figure at all, letting the groove's own note habits write the line. The figure keeps returning to an anchor note, which is the root, the fifth or the third. A figure is a guideline, not a template. One to four of every eight notes are drawn freely for each song, so two songs built on the same figure still sound different.

Each song also has a colour, which decides which notes of the chord come forward first, and so which notes you hear at a low Note count. A minor third, a suspended note, a dark sixth or a seventh.

The rhythm leans its own way inside the groove. Each voice favours a few steps and avoids others, sometimes leaves out one of the beats, and sometimes adds a syncopation of its own. About a third of the groove's fixed steps become likely rather than certain for that song. The downbeat always stays.

In Consonant, a middle voice also draws how it supports the lead for that song. Moving in parallel with it, holding a chord tone, or playing a line of its own.

At Probability LED 6 and above, the song also moves on by itself in sections. A new figure every few phrases, or every phrase at LEDs 7 and 8. Below LED 6, a song keeps its figure until you tap.

Freeze: inside the RSG page, press **PLAY**. The melody stops changing and repeats exactly. Press **PLAY** again to let it go. A frozen melody is remembered through a power cycle; holding **RESET** releases it. While frozen, note count and gate density only change what you hear: narrow the count and the melody folds into fewer notes, widen it again and the original notes come back.

Save. Inside the RSG settings page, tap **SAVE**, then a **state button**. Occupied slots show solid, empty ones blink. The slot keeps what you hear, every voice RSG is playing, its notes, its rhythm and its key.

Recall. Hold **PLAY** and tap **RSG** to open the melody browser, then tap a **state button** to select a saved melody to recall. Tap RSG to leave the recall page.

GEST - Gestures and Recordings:

Knob gestures record a knob movement and loop it.

1. Hold **GEST**.
2. Turn a knob. Recording starts with the first movement.
3. Perform, for up to 20 seconds.
4. Let go of **GEST**. The gesture loops on that channel straight away.

Record more knobs the same way to layer them. Gestures are captured 20 times a second, which suits filter sweeps and slow modulation rather than melodies.

CV and gate recordings capture whatever arrives at CV IN and GATE IN.

1. Patch a CV source into **CV IN**, and its gate into **GATE IN** if you want one.
2. Hold **GEST** and tap state button **1** to **4** to choose the channel. It starts listening to the input.
3. If you like, tap **QTZ** to make the recording the same length as the loop that is already playing.
4. Press **PLAY** to record, for up to 48 seconds.
5. Press **PLAY** again to stop. The recording loops on that channel.

Recordings are captured 1000 times a second and played back at their real voltages, negative ones included, so they work for melodies as well as modulation.

Saving, recalling and sequencing

Saving. While recording is being played back, tap **SAVE**, then a **state button**. The whole four-channel arrangement of gestures and CV recordings with Gates goes into that slot.

Recall. tap **GEST**, then a **state button**.

Switch at the end of the loop. While gestures or takes are playing, a tap on a **state button** switches when you let go. Hold it for a moment instead, and that slot waits for the end of the loop, the longest loop playing, then takes over with every channel starting from the top together. Its light blinks while it waits.

Hold another slot to change your mind, hold the waiting one again to cancel it, or tap any slot to switch straight away.

Leaving GEST mode drops a waiting slot. With nothing playing, a press switches at once.

Sequencing. Tap **SEQ**, then **GEST**, then tap **state buttons** in order, then **SEQ** to start. The sequence loops, and each slot plays for its own length.

QTZ - Quantizer:

QTZ constrains channels to a scale. Tap **QTZ**, then tap **state buttons 1–4** to switch quantizing on or off for those channels. Tap **QTZ** again to leave.

The quantizer picks the nearest allowed note and then holds it. Once a note is sounding, the incoming voltage has to move about a quarter of a semitone past the midpoint before the output changes. A voltage resting between two notes therefore stays on one of them instead of wavering, while a real move of a semitone or more still lands immediately.

Melodies from RSG are not affected by that hold. They are snapped once, when they are written.

Global settings:

Hold **QTZ** to enter QTZ global settings.

Potentiometer	Parameter
Pot 1	Scale
Pot 2	Root

Scale.

1. Chromatic
2. Major
3. Natural Minor
4. Harmonic Minor
5. Major Pentatonic
6. Minor Pentatonic
7. Dorian
8. Phrygian

Root. Pot 2 selects one of twelve roots. The eight state LEDs show it approximately, some LEDs are covering two neighbouring roots.

1. C, C#
2. D
3. D#, E
4. F
5. F#, G
6. G#
7. A, A#
8. B

Inside the settings page, tap **State buttons 1–4** to set channels individual scale and root.

Things worth knowing. A quantized channel that is following an external CV becomes unipolar, tracking 0 V and above only. And under a glide shape, a quantized sequencer transition steps through the scale, while an RSG glide slides smoothly between its two quantized notes.

EXT - External CV and Clocking:

EXT drives the snapshots from any clock, trigger or CV in seven ways, follow or harmonize an incoming melody, and clock the whole module from the outside source.

Tap **EXT** to run or stop the external engine. While it runs, the state LEDs show which snapshots are in its active set, and you tap state buttons to add or remove them.

EXT settings:

Hold **EXT** to enter EXT settings.

Potentiometer	Parameter
Pot 1	Behaviour
Pot 2	SYNC OUT
Pot 3	Input clock
Pot 4	Clock source

Behaviour decides what the external input does:

1. **Trigger.** Each rising edge at GATE IN advances to the next snapshot in the set.
2. **Scan.** CV IN sweeps continuously through the set, interpolating between snapshots: -5 V is the first snapshot, 0 V the middle, +5 V the last.
3. **Direction.** Each edge steps the set forward while CV IN is above +0.2V and backward while it is below -0.2 V, holding in between.
4. **Address.** At each trigger, CV IN jumps straight to the snapshot of its voltage addresses, over the same -5V to +5V range.
5. **Random.** Each trigger picks a different snapshot.
6. **Follow.** The channels output CV IN directly, with the gate passed through.
7. **Harmonize.** Incoming pitch is harmonized against the interval a snapshot describes.

SYNC OUT sends a clock to the rest of your system through SYNC OUT output.

1. 50% gate. One pulse per step, high for half of it. The pulse grows and shrinks with the tempo.
2. Gate thru. A clean copy of GATE IN, whether or not anything is playing.
3. Trigger. A short 5 ms pulse on each step.
4. Clock ×2. Two pulses per step.
5. Clock ×4. Four pulses per step.
6. Clock ×24. Twenty-four pulses per step
7. Loop reset. A 5 ms pulse at the start of each loop, to keep other sequencers in step.
8. Run gate. High while the transport runs, low when it stops.

Input clock sets how many incoming pulses make one step:

1. 1 pulse per step.
2. 2 pulses per step.
3. 4 pulses per step.
4. 24 pulses per step, the DIN sync and MIDI clock rate.

Clock source chooses where the module takes its clock from:

1. Internal, the sequencer's own rate knob.
2. GATE IN.
3. RESET IN.

When the module is clocked from outside, the sequencer and RSG take their time from the incoming pulses, while knob gestures and recorded takes keep the speed you made them at. If the clock stops, the module holds its place and drops its gates, and recordings wait with it, so everything carries on together when the clock comes back.

Translating a clock. The EXT page can turn one clock rate into another. Set the clock source (Pot 4) to GATE IN or RESET IN, set the input clock (Pot 3) to the incoming rate, and choose what SYNC OUT sends for each step (Pot 2). For example, 24 pulses per step in and Trigger out gives one trigger per step or 1 pulse per step in and Clock $\times 4$ out multiplies the clock by four. This works with the 50% gate, Trigger and the three clock formats. Gate thru is the exception: it is always a plain copy of GATE IN.

Performance:

Mutes: hold **PLAY** and tap state buttons **1** to **4** to mute and unmute channels; state button **8** mutes or unmutes all four. Mutes are not saved, so a power cycle always brings every channel back.

Scenes: a scene is the whole instrument: all eight snapshots with the sequence, clock divisions, gate patterns, swing and shapes. To save one, tap **SEQ**, tap **SAVE**, then tap a state button. Hold **PLAY** and tap **SEQ** to open the scene browser:

- Tap a state button to switch scenes, even while playing.
- Hold **SAVE** and tap a state button to copy the scene you last recalled into that slot.
- Hold **SEQ** and tap state buttons in order to chain scenes. Let go of **SEQ** and the module works through them by itself.
- Tap **SEQ** to leave the browser.

Carrying on after power off: if the module was playing when the power went, the LED of whatever was running pulses at the next power-up. Press **PLAY** to carry on where you left off. Nothing starts by itself.

Tuning an Oscillator:

State of Mind can measure an oscillator and play it in tune. The tuning applies to notes, not voltages. Turn QTZ on for any channel you want the tuning calibration to apply.

1. Patch the channel's CV output to the oscillator's 1 V/oct input.
2. Patch the oscillator's output to **CV IN**.
3. Tap **QTZ**, then tap **EXT**. State LEDs 1 to 4 flash.
4. Tap that channel's state button, **1** to **4**.

The module measures the oscillator across ninety-six semitones, finding the exact voltage for each note and storing the table. It takes about two minutes and ends with a sweep across the state LEDs. If the oscillator is too unstable to measure reliably, the module refuses the table rather than storing a bad one. Because it measures every note rather than assuming the oscillator is linear, this corrects both scale and offset errors.

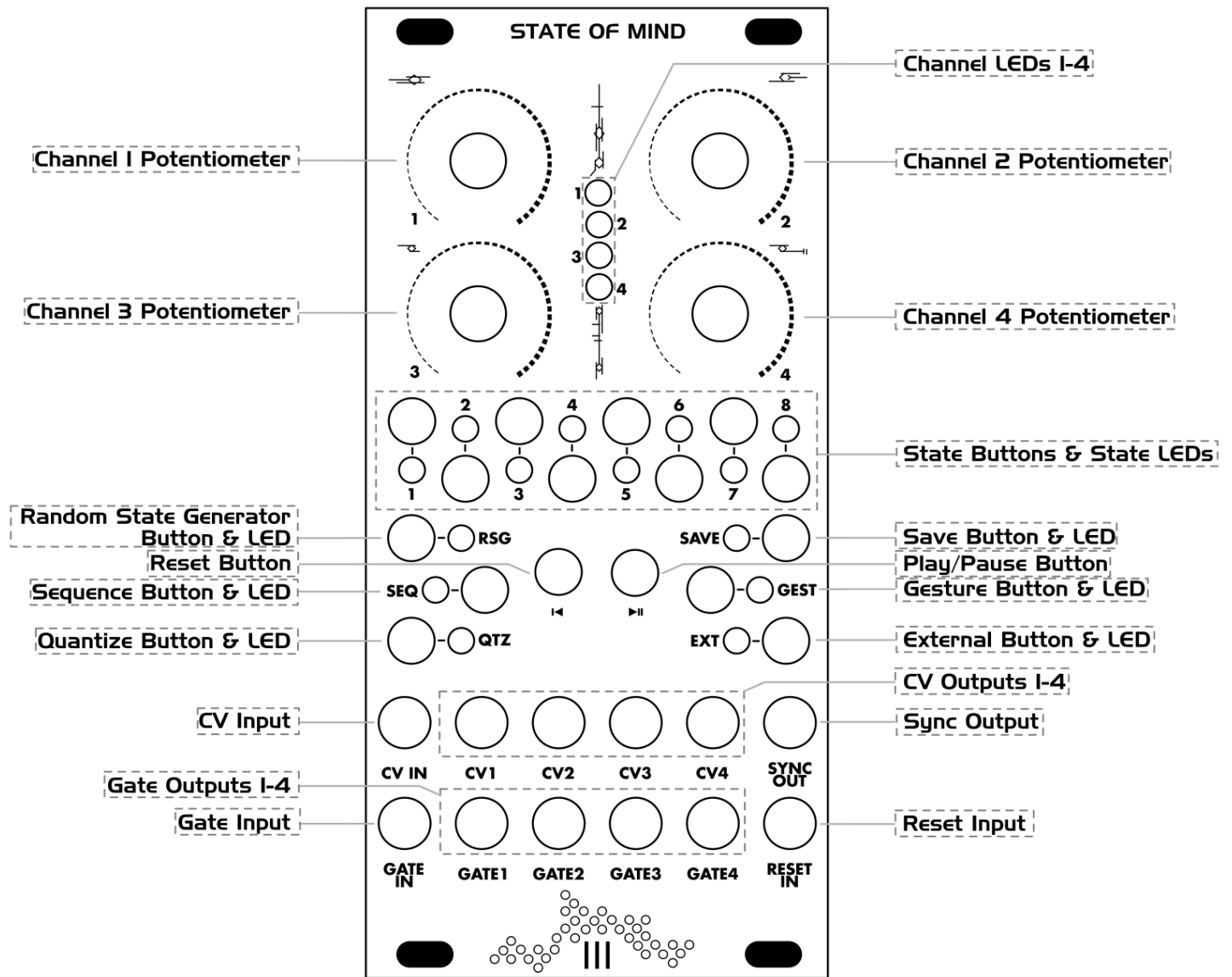
Tuning belongs to the oscillator that was patched when you tuned. If you change oscillators, tune again.

Factory Reset:

Power off. Hold **SAVE** and **QTZ**, power on, and keep holding until the start-up light sweep has finished. Snapshots, scenes, gestures, recordings and every setting return to the factory state, including the factory phrase.

The output calibration is kept. Oscillator tuning is cleared, because it belongs to whichever oscillator was patched at the time, so tune again after a reset.

Controls:



Inputs:

CV IN: External control voltage, for recording, scanning, following and harmonizing. Also the measuring input for oscillator tuning and calibration.

GATE IN: External clock or trigger, and the gate for CV recordings.

RESET IN: Sends the transport back to the start, or works as a second clock input.

Outputs:

CV1 to CV4: The four channel outputs.

GATE1 to GATE4: A gate for each channel, following whichever engine plays it.

SYNC OUT: Clock or trigger output in one of eight formats.

Buttons:

State buttons 1 to 8: Recall and save snapshots, build sequences, choose slots, channels and values.

SEQ: Sequencer. Tap to build a sequence, hold for its settings.

RSG: Generative melodies. Tap for a new phrase, hold for its settings.

GEST: Gestures and recordings. Hold to record, tap to recall.

QTZ: Quantizer. Tap to choose channels, hold for scale and root.

SAVE: Tap, then tap a state button, to save.

EXT: External CV and clock. Tap to run, hold for its settings.

PLAY: Starts and stops. Held, it opens mutes, scenes and melodies.

RESET: Tap to restart the sequence. Hold to give every channel back to its knob.

LEDs:

State LEDs: Show snapshots, steps, values and knob positions.

Mode LEDs: One beside each mode button. Solid when running, a slow pulse when waiting for your next press, a fast pulse when recording.

Channel LEDs 1 to 4: Show each output's voltage: blue for positive, red for negative, brighter for more.

Specifications:

Module width: 12 HP

Module depth: 28mm

Power Consumption: 80mA at +12V / 30mA at -12V

CV Output range: 0 V to +8 V, (recorded CV -5 V to 8v)

Gate output range: 0 to 5.5v

CV input: -5v to +8v

Gate input range: +3v to +10v

Reset input range: +3v to +10v

Sync out: 0 to 7v

Clock: 0.05 Hz to 20 Hz internally. Externally accepts 1, 2, 4 or 24 PPQN.

Input overvoltage protection

Reversed polarity protection

Quick Reference:

Recall a snapshot: Tap a state button

Save a snapshot: SAVE, then a state button

Give a channel to an engine: Hold state 1 to 4, tap SEQ, RSG, GEST or EXT

Make a channel Neutral: Hold state 1 to 4, tap the same state button

Build a sequence: SEQ, state buttons in order, SEQ

Sequence a run: SEQ, two state buttons together

SEQ settings: Hold SEQ

SEQ channel settings: Hold SEQ, tap state 1 to 4

One step's gate and glide: In a SEQ channel page, hold a state button

Start RSG: SEQ, then RSG

New RSG phrase: Tap RSG while it plays

RSG fill: Double-tap RSG

RSG settings: Hold RSG

Freeze RSG: In RSG settings, press PLAY

Save a melody: In RSG settings, SAVE, then a state button

Recall a melody: Hold PLAY, tap RSG, tap a slot

Record a knob gesture: Hold GEST, turn a knob, let go of GEST

Record CV and gate: Hold GEST, tap state 1 to 4, PLAY, PLAY

Recall a gesture set: GEST, then a state button

Sequence gesture sets: SEQ, GEST, slots in order, SEQ

Quantize a channel: QTZ, then state 1 to 4

Scale and root: Hold QTZ

Run external engine: Tap EXT

EXT and clock settings: Hold EXT

Mute: Hold PLAY, tap state 1 to 4 (8 for all)

Save a scene: SEQ, SAVE, then a state button

Scene browser: Hold PLAY, tap SEQ

Restart the sequence: Tap RESET

Everything back to the knobs: Hold RESET

Tune an oscillator: QTZ, EXT, then state 1 to 4

Factory reset: Hold SAVE and QTZ while powering on

Installation:

Power off your Eurorack system.

Insert the module into an available slot.

Connect the power cable, ensuring correct polarity.

Power on your Eurorack system.

Enjoy!

Additional Information:

For any additional questions or support, please contact Tre Modular at support@tremodular.com.

Happy patching!

