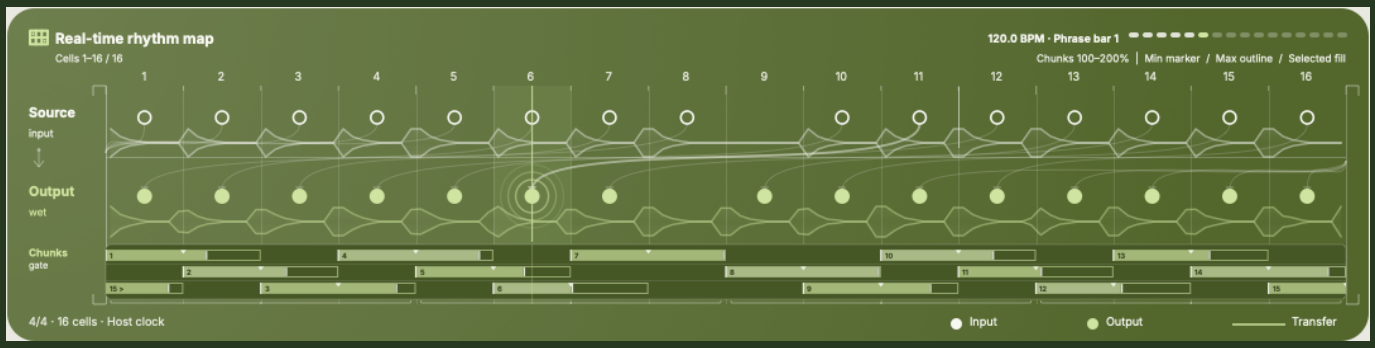
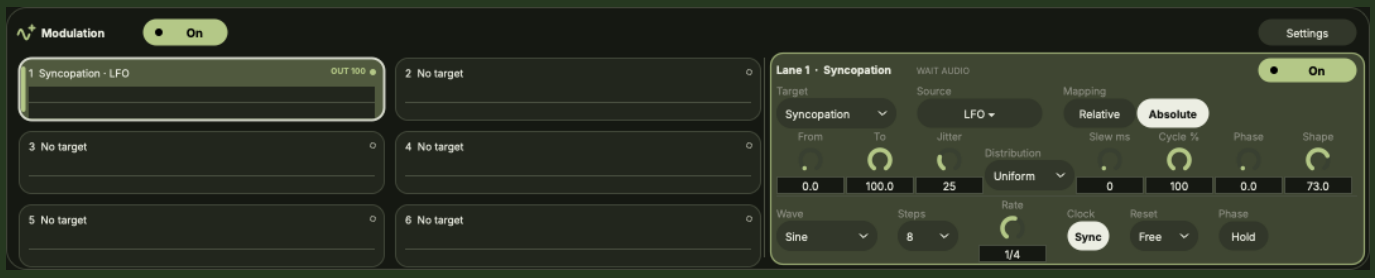
FESIKLABS / AUDIO TOOLS

SyncoPirate

USER MANUAL / VERSION 1.0

A detailed guide to capture, rhythmic transformation, sampling, sound design and modulation.





01	Capture sound and understand the rhythm map
02	Master every sound-shaping control
03	Design six-lane modulation routes
04	Build repeatable workflows and solve problems

English edition • macOS audio effect • AU / VST3

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A new rhythm from your own audio

SyncoPirate transforms captured audio into a new rhythmic performance while preserving the character of its source.

SyncoPirate is an **onset-aware audio effect**. Instead of applying a fixed gate or triggering a library of drum sounds, it listens to an input phrase, identifies attacks, decides how they should be placed on a musical grid, and plays the associated audio fragments in new positions. This is a genuine audio reconstruction process: the source may be a drum loop, bass part, vocal snippet, guitar, percussion stem or a complete stereo mix.

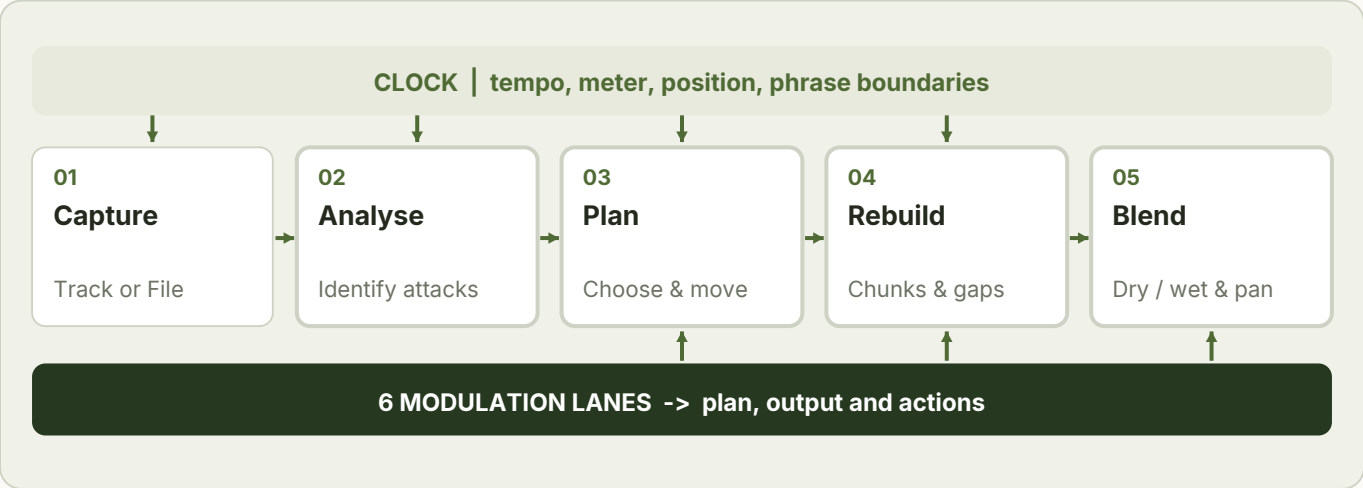


FIG 4.1. Signal path. The host or Free clock defines musical time; six modulation lanes can steer plan controls, continuous output controls and actions.

The result is a playable structure

- **Capture:** build a complete musical window from the current track or a loaded file region.
- **Analyse:** find significant changes in the audio, map them to rhythmic cells and select a playable event budget.
- **Reconstruct:** transfer events, vary lengths, fill or leave gaps, shape swing and accents, then blend the resulting wet phrase with its untransformed counterpart.

> **Not a MIDI generator** SyncoPirate works on audio. It does not require a microphone, MIDI notes, an external instrument or a separate sample bank. A file can supply the material. Individual event moves do not reverse or time-stretch the source.

Think of it as a continuously playable relationship between what was heard and how it is reassembled. You control the material, the rhythm, the continuity and the stereo image independently.

Understand the capture cycle

The time-window model explains most of SyncoPirate's behaviour, including the first phrase, Freeze and changes made during playback.

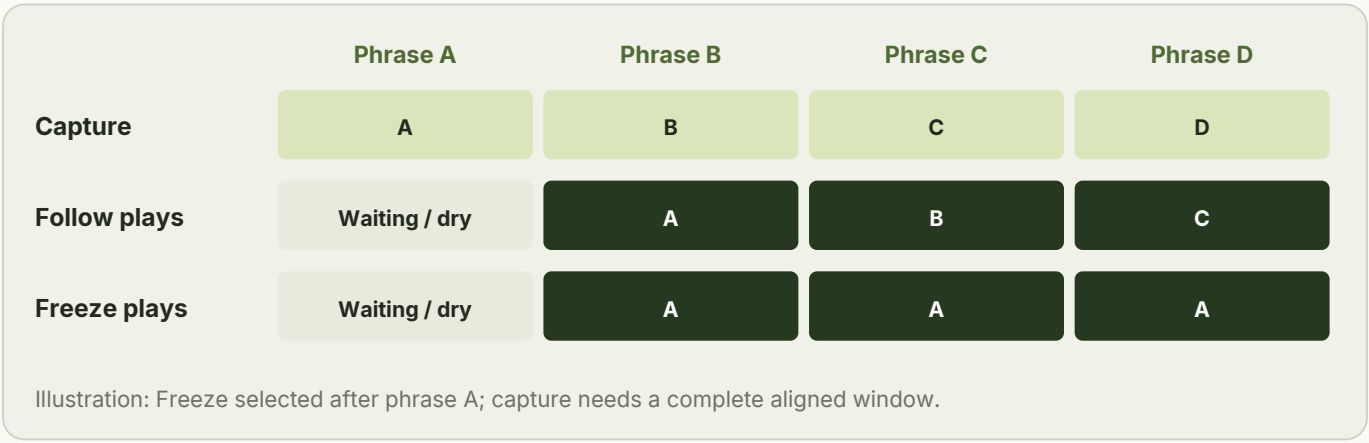


FIG 5.1. Conceptual one-bar example. Follow plays the most recent completed phrase; Freeze repeats the completed phrase it holds. The processing window is musical, not a fixed number of seconds.

Four concepts to keep separate

Concept	What it is
Source	The selected incoming track or loaded audio file region.
Capture	The complete audio window collected according to Phrase Length and musical time.
Plan	The event arrangement and chunk/gap playback decisions calculated from that capture.
Playback	The current sounding plan, plus wet/dry blending and any active modulation.

A control change can request a new plan without replacing the captured audio. A source or phrase-length change may need a new capture. The previously valid plan can continue while the new window is being built; the map indicates the plan that has actually been applied.

> **First phrase** Start on a clear musical boundary and play long enough to collect one whole phrase. With an eight-bar phrase, this may take eight bars. Waiting, dry audio or the existing plan during capture is expected.

Install and find the plug-in

Use the package supplied with your purchase. SyncoPirate 1.0 is a macOS audio effect supplied in AU (Audio Unit) and VST3 formats.

1. Extract the downloaded package into a local folder. Keep the installer together with both plug-in bundles; do not run it from inside the compressed archive.
2. Open the supplied macOS installer. If using Terminal, enter the extracted folder and execute the included **install_macos** command file with /bin/sh. Its default installs both formats; **--au** and **--vst3** select just one.
3. Use **--check-only** together with the desired format option to validate the installer and destinations without installing. Existing bundles are not silently overwritten.
4. Quit and reopen the DAW, enable the applicable plug-in scan locations, rescan, then look under **FesikLabs / SyncoPirate**. Instantiate it on an audio track or effect slot.

Format	Current-user macOS installation folder
AU	~/Library/Audio/Plug-Ins/Components/
VST3	~/Library/Audio/Plug-Ins/VST3/

Host and system requirements

Apple silicon (arm64), macOS 26.0 or later and an AU- or VST3-capable DAW. Use a matching mono or stereo input/output bus. The plug-in is an effect, not a standalone application. Use it inside your host.

> **Keep sessions safe** A DAW project refers to a specific plug-in format and installed identity. Keep the version used by existing projects until you have checked that replacement or migration is safe.

If macOS reports a signing, security or permission problem, see the installation troubleshooting section. Do not disable operating-system protections globally.

Activation and offline access

Try the complete processing engine in the 30/60 demo; activation removes the interruption. AU and VST3 share activation on this Mac.

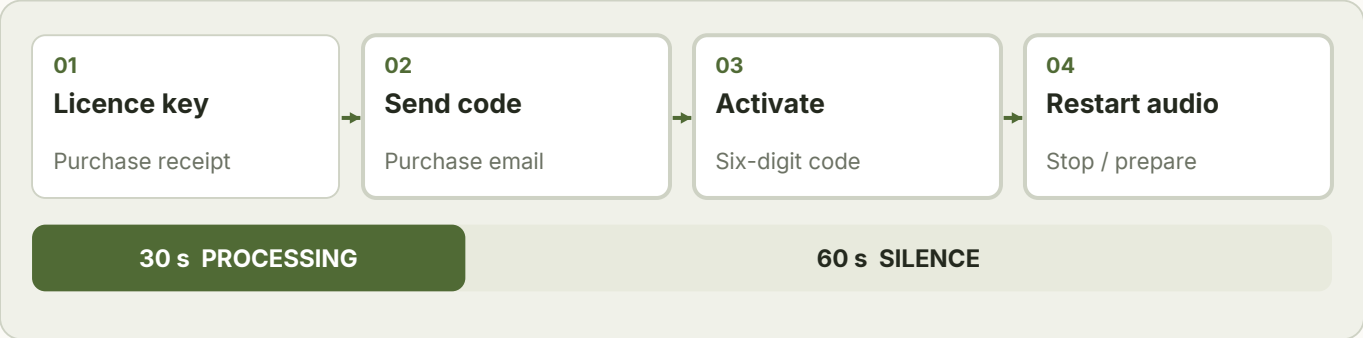


FIG 7.1. Activation steps and the repeating 90-second demo cycle. The red notice explains intentional silence.

1. Click **Activate** in the lower status row. Enter the key from your Gumroad purchase. One owner may activate up to three computers.
2. Choose **Send code**; check the purchase email (including spam). Enter the six-digit code within ten minutes and activate while online.
3. Stop and restart the DAW transport in Host clock. In Free, reinstantiate or allow the host to prepare the effect again so authorization can update.

Status / control	What to do
Before activation	30 seconds full processing, then 60 seconds digital silence. The 90-second cycle repeats while processing; Host stop pauses it.
Licence / Check online	After activation, opens management; renew or verify online. Check the offline expiry date.
Deactivate	Confirm removal; seat may remain reserved until the offline entitlement expires.
Three devices / expired code	Contact support for transfers; request a fresh code if expired or already used.
Offline / clock / storage	A valid local entitlement works until expiry. Correct system time, unlock macOS, wait for licence storage and check online as needed.



FIG 7.2. Activate and the red demo notice in the status row.

> **Before performing** Verify authorization in advance. Never share your full key, email code or signed entitlement in screenshots.

First five minutes: Track or File

Start with a complete phrase, then change one musical control at a time.



FIG 8.1. Captured audio, rhythm map and six sound-shaping cards.

1. Insert SyncoPirate on an audio track. **Track / Host / Follow / 1 bar**: play a rhythmic clip from a bar boundary.
2. Or choose **File**, select a region in the waveform, Preview if callbacks are active, then Load region. A 2.0 s excerpt matches one 4/4 bar at 120 BPM. Use Host / Follow and play.
3. Set Mix 1.00, Percussive for drums, Threshold 35, Density 100, Chunk Min/Max 100/100. Wait for the first complete phrase.
4. Raise Syncopation. Compare Classic and Radical. Lower Threshold to recover missed attacks; reduce Density for space. Try different chunks and gaps once movement works. Freeze to hold the audio.

> **Compare like with like** Mix 0 is the aligned untransformed phrase, not necessarily current track input. Use the DAW bypass for a dry track comparison.

Welcome Tour

Seven guided steps help you find the controls, with a gentle spotlight on the current area.

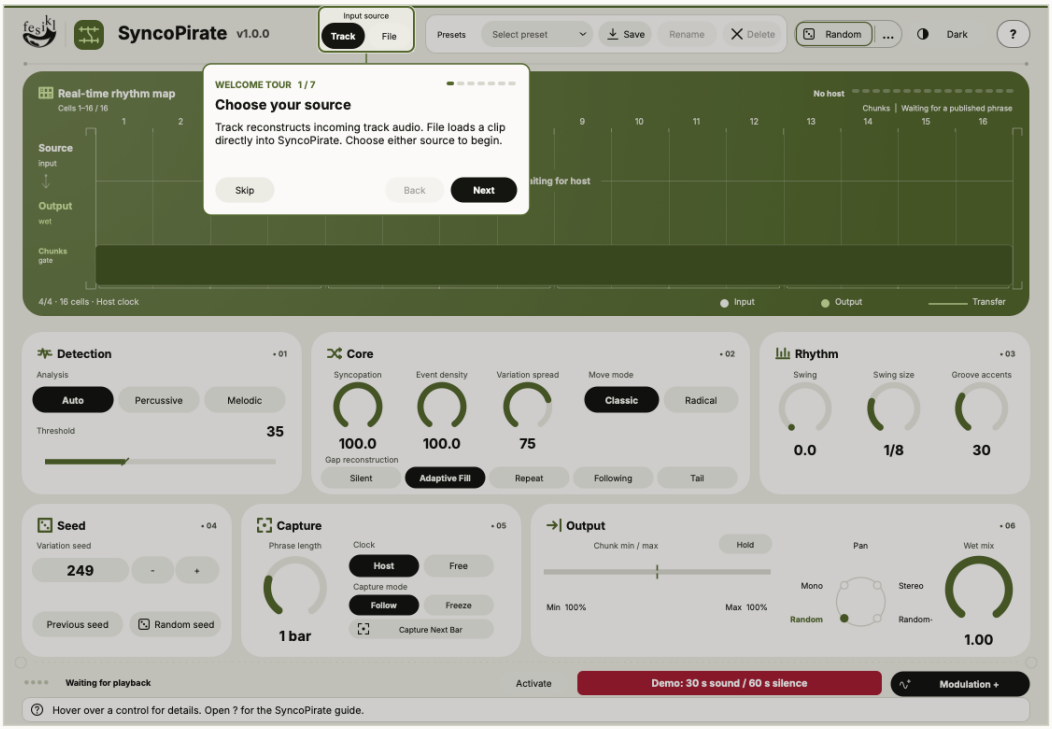


FIG 9.1. First launch: the Track / File switch stays bright and interactive; surrounding controls are gently dimmed.

1. Choose the beginning source: Track or File. Follow the highlighted Capture, Rhythm Map, Syncopation, Chunks, Modulation and Random controls.
2. Click Next and the pointer follows the relocated button. Press Enter when Next is focused to advance. Back returns; Skip or Done remembers your choice.
3. To replay at any time, open the question-mark guide and click Quick Tour. If Random settings opens during another step, the tour pauses until you close settings.

Your project is safe The tour is a local interface preference, independent of presets, DAW automation and audio processing. It works in both themes and at the supported window scales.

Tour of the interface

The screen follows the signal path: source selection, applied rhythm, musical controls, capture and output, then optional modulation.



FIG 10.1. Four contiguous bands of the actual main interface. The numbers are in the gutters above each area. The red activation notice only appears when a licence is required.

Area	Role
1 Rhythm map	Shows the detected source, output events, transfers, chunk gates and timeline.
2 Detection	Analysis mode and threshold: what becomes an attack.
3 Core	Syncopation, density, spread, move mode and gap reconstruction.
4 Rhythm	Swing timing, swing subdivision and accents.
5 Seed	Repeatable variation identity and seed actions.
6 Capture	Phrase length, clock and Follow/Freeze, plus capture/file action.
7 Output	Chunk range/Hold, stereo mode and Wet Mix.
8 Modulation +	Opens six-lane inspector; does not enable or disable modulation.
9 Status / help	Applied/capture status and contextual hover guidance.

The top bar (explained under Presets and Random) contains Track/File, Presets, Random / ..., theme and the offline guide.

Read the real-time rhythm map

The map is a view of audio analysis and the currently applied playback plan. It is not a piano roll or an editable step sequencer.

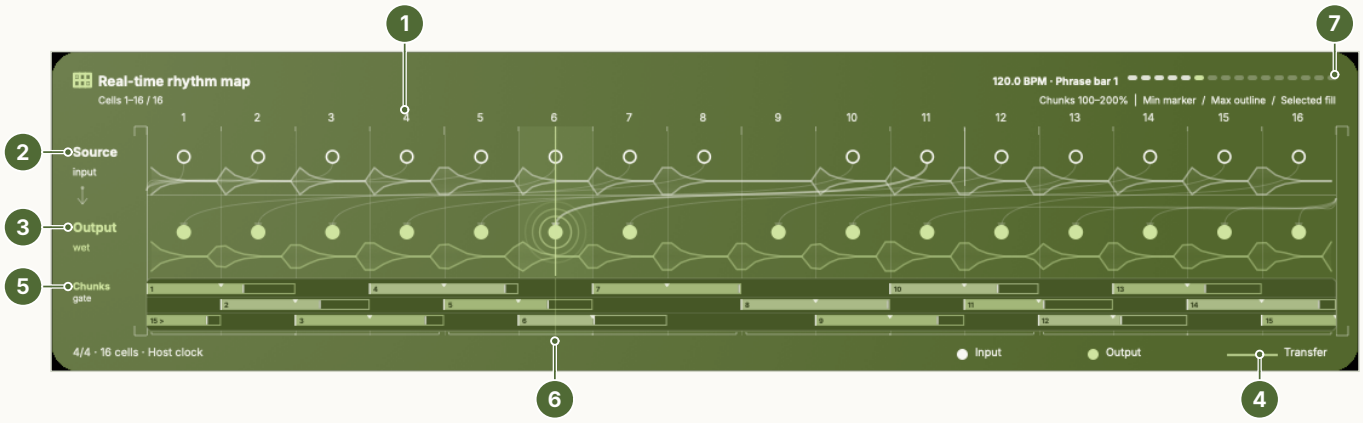


FIG 11.1. Map of 15 detected/playing attacks in a one-bar, 16-cell grid. Marker 4 points to the Transfer legend; the curves above connect the source and output attacks.

Marker	Interpretation
1 Cells	Numbered rhythmic positions; bar boundaries and subdivision lines. The count depends on phrase length and meter.
2 Source	Upper waveform and hollow onset points: original captured attacks.
3 Output	Lower waveform and filled points: currently placed wet events.
4 Transfer	Curves connect source attack to output location. Dense overlaps can make secondary strokes quieter.
5 Chunks	Start/end caps, minimum marker, maximum outline and selected nominal gate.
6 Playhead	Vertical position / active event highlights indicate what is sounding.
7 Context	BPM, phrase page/bar and applied chunk range; not a pending edit.

What is not drawn Release fades and separate gap snippets are not represented as main chunk bars. The final sound also depends on panning, Wet Mix, gains and modulation. A short or silent event need not create a long visible bar.

Three independent decisions

Track/File selects what audio enters; Host/Free selects musical timing; Follow/Freeze selects how the captured window is retained.

Input	Host + Follow	Host + Freeze	Free clock
Track	Captures new whole phrases while transport runs.	Loops a complete captured track window; capture again to replace.	Uses incoming audio while host sends blocks; track must still supply signal.
File	Loops region at original speed, analyses each complete phrase.	Repeats captured file phrase; file region itself remains embedded.	Advances the loaded file and processing clock when host sends blocks.

Track is not Follow; File is not Freeze

You may use **Track / Freeze** to lock a live performance, **File / Follow** to let a mismatched region explore changing phase against a grid, or **File / Freeze** to repeat a selected musical window. Choosing File does not time-stretch or automatically quantize the imported region.

Host vs Free

- **Host:** follows reported DAW play/stop, tempo, musical position and supported meter. A stopped transport normally means waiting for the next playback/capture.
- **Free:** the plug-in advances a sample-based musical clock while callbacks arrive. It uses reported tempo and meter when available; fallback is 120 BPM and 4/4 when host timing is missing.
- Free cannot force an inactive DAW device to be processed. A host may suspend a silent or stopped track, so start playback or route audio if needed.

> **Start with Host** Host is the most predictable choice for rhythmically synchronised project tracks. Free is useful for file exploration, held phrases and compatible always-processing host setups.

Load, trim and preview a file

The import dialog lets you choose a region precisely without modifying the original audio file.

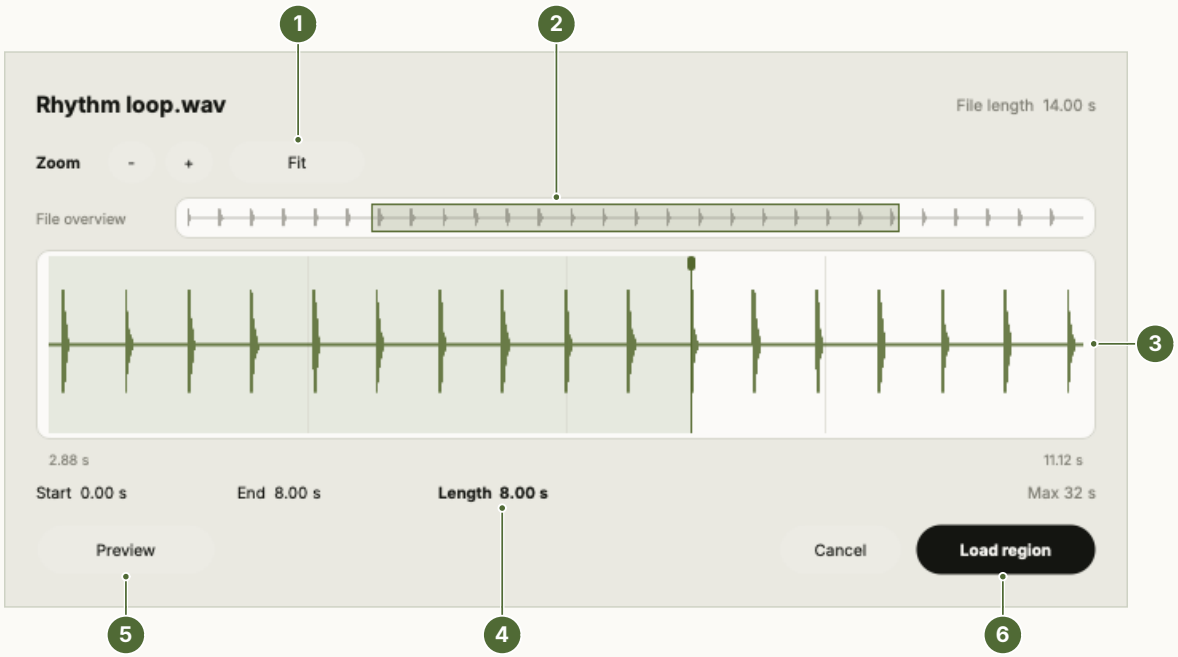


FIG 13.1. Zoomed Load Audio view. The small overview navigates the complete file, while the main waveform retains the selection.

Control	What to do
1 – / + / Fit	Zoom out, zoom in, or fit the complete file. Zoom changes only the view.
2 File overview	Visible when zoomed; click to centre the detailed view on a position in the full file.
3 Waveform	Drag a new range or either edge of the shaded range. Selecting audio and navigating zoom are separate.
4 Start / End / Length	The region's exact position and duration; total file length appears at top right. Maximum selection 32 s, minimum 0.05 s.
5 Preview	Play or stop the selected audio at original speed; preview depends on host providing processing callbacks.
6 Cancel / Load region	Cancel closes without replacing the source. Load region imports the chosen excerpt and selects File.

Initial selection is up to 8 seconds, from the beginning of the file. Mono or stereo only; supported decoder sample rates 8-192 kHz. WAV and AIFF are dependable interchange formats; FLAC and Ogg Vorbis readers are also available. MP3, AAC/M4A and other macOS-decodable formats depend on the system decoder and file integrity.

> **Non-destructive** Only the selected region is embedded. Fit does not change the selection. The original file is not edited.

File timing and phase drift

File mode decouples the audio's original loop period from the DAW's musical capture period.

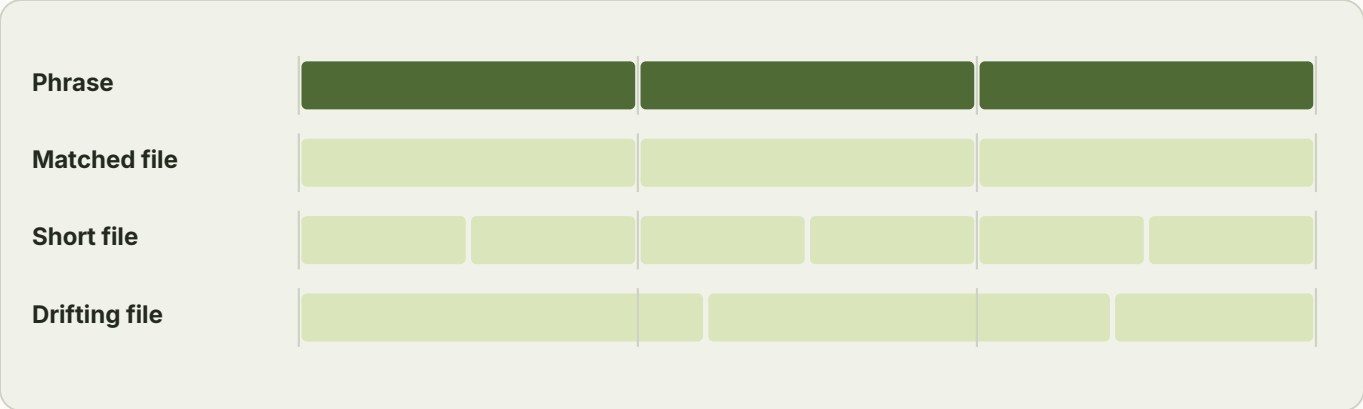


FIG 14.1. Schematic: when periods match, loop boundaries line up. Short loops may divide a phrase exactly; mismatched loop periods walk through the musical grid.

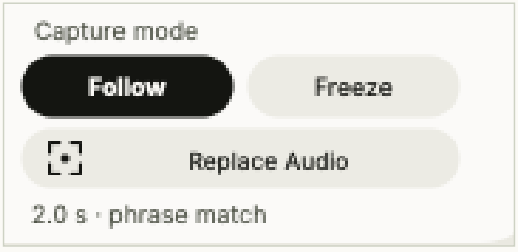


FIG 14.2. Actual File status: a two-second region matches a one-bar phrase at 120 BPM.

Calculate musical duration

Quarter-note duration = 60 / BPM seconds. A bar lasts 60 / BPM x numerator x 4 / denominator. Multiply by Phrase Length (0.5, 1, 2, 4 or 8) to find its duration. At 120 BPM in 4/4: half bar = 1 s, 1 bar = 2 s, 2 bars = 4 s, 4 bars = 8 s, 8 bars = 16 s.

File status	Meaning / remedy
2.0 s · phrase match	The file region and musical phrase have equal duration.
4× / phrase	Four complete file loops fit within a phrase. No period drift.
2 phrases / loop	Two complete phrases fit inside one file loop.
phase drift	The periods are not exact integer relatives. Trim a region or adjust BPM / Phrase Length for tighter repeatability; keep drift for evolving rhythms.
timing unavailable	Valid tempo and supported meter required to compare periods.

No time stretching Changing BPM or Phrase Length changes analysis and the grid, not the speed, pitch or length of the imported file. For an exact tempo-stretched loop, prepare it in the DAW before importing.

Phrase Length and the grid

The phrase is the unit of capture and repetition. It also determines the number of grid cells available for rhythmic movement.

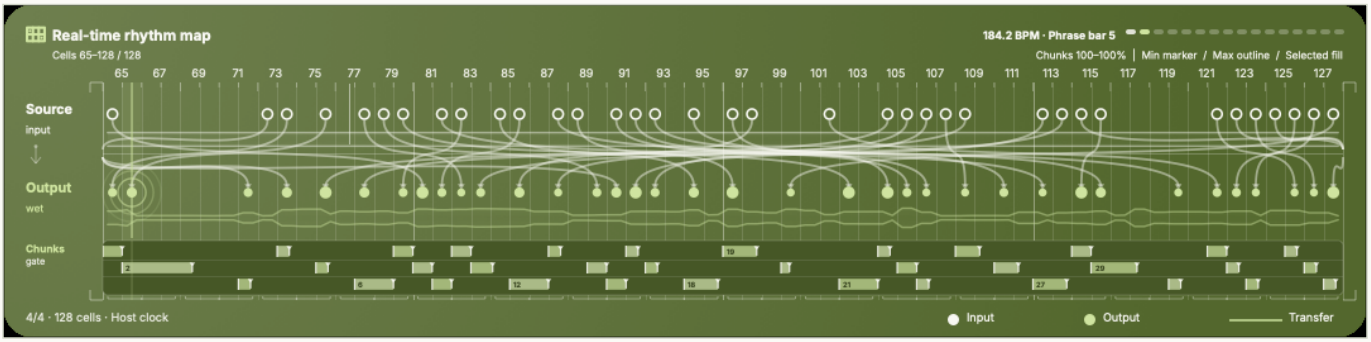


FIG 15.1. An eight-bar cycle uses two four-bar visual pages. The page indicates the current section, not a truncated sound.

Choose **1/2, 1, 2, 4 or 8 bars**. A bar has numerator x 16 / denominator sixteenth divisions. The half bar has half as many cells. Eight-bar phrases use two pages; chunks can cross pages. Each capture page supports up to 36 seconds; File excerpts remain limited to 32 seconds.

Meter	1/2 bar	1 bar	2 bars	4 bars	8 bars
3/4	6	12	24	48	96
4/4	8	16	32	64	128
5/4	10	20	40	80	160
7/8	7	14	28	56	112
9/8	9	18	36	72	144
11/8	11	22	44	88	176
13/8	13	26	52	104	208

Which length should you choose?

- 1/2 or 1 bar: immediate, tightly repeated grooves and fast capture.
- 2 or 4 bars: more context for movement and variation; excellent for musical loops.
- 8 bars: longer phrases, evolving structures and cross-page continuation. Expect a longer first capture.

Meter or phrase too long Use a supported meter. If PHRASE TOO LONG appears, shorten Phrase Length or increase BPM; audio passes through without reconstruction.

Follow, Freeze and Capture Next Bar

Retention, plan updates and replacing the captured window are distinct operations.

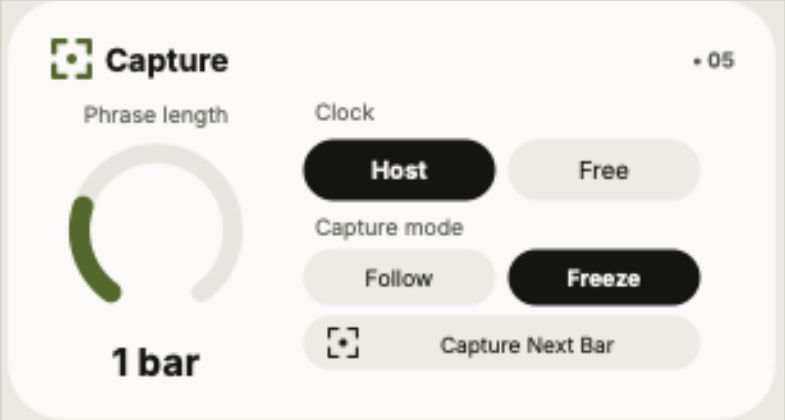


FIG 16.1. Phrase Length, Clock and Capture mode are separate. Capture Next Bar queues a new window.

1. In Track / Follow, play a complete phrase, then select Freeze. This holds an available complete window.
2. To replace it, click **Capture Next Bar** while fresh track audio is available. The action switches capture mode to Freeze if needed and queues the next eligible capture boundary.
3. Wait for the complete requested window (long phrases can span more than one bar). Verify the status and map before making a new request.
4. In File mode, the visible capture button becomes Load Audio / Replace Audio, because it opens the file-region importer. Use Follow/Freeze to choose retention of the selected File audio.

Mode	Behaviour
Follow	Refreshes audio at complete phrase boundaries; analyses and publishes successive plans.
Freeze	Repeats the completed audio window; shaping controls and modulation still work.

In Freeze, changing a manual detector control may reanalyse stored audio. The modulated Onset Threshold target is Follow-only. Changes to Phrase Length or time context may need a complete new capture; the old plan can remain audible until the new plan is ready.

Saving and reopening

Save the DAW project after a completed Freeze capture. The project state can contain the held audio and the embedded File region. A named sound preset stores settings, not captured sound. On project reopen the processor restores its valid state; a failed or incomplete capture needs to be rebuilt.

> **Performance tip** Map Capture Next Bar to a DAW control if your host supports parameter mapping. For repeated automated capture use the dedicated Freeze-only modulation action with a rearming signal; see the target reference.

Detection: find the right attacks

The detector shapes the input from which all later rhythmic decisions are made.

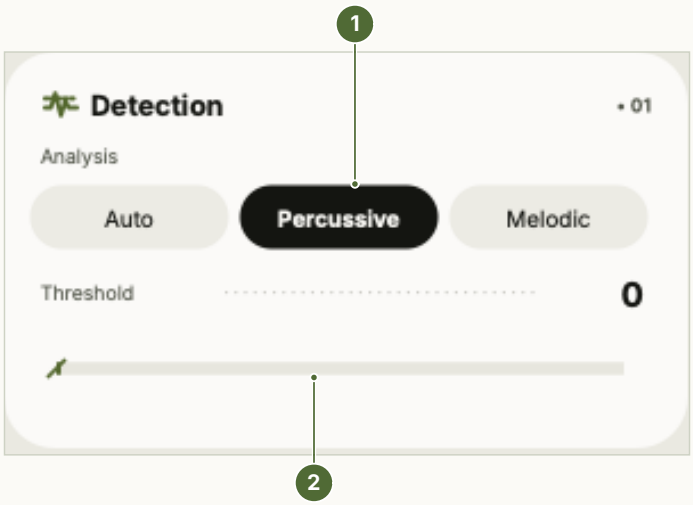


FIG 17.1. 1 Analysis mode: Auto, Percussive or Melodic. 2 Threshold slider. The indicator numbers are outside the control panel.

Mode	What it emphasises	When to use it
Auto (default)	Combines rhythmic and melodic analysis heuristics.	Mixed loops, songs and sources with both hits and tonal content.
Percussive	Sharp energy changes and transient envelopes.	Drums, clicks, percussion and picked attacks.
Melodic	Sustained/tonal changes, including softer attacks.	Bass, sustained notes, voices and harmonic textures.

Threshold: 0-100, default 35

Lower values accept more relative signal changes; higher values require clearer events. It is not a fixed input dB threshold or a number of events. The audio itself and the analysis mode influence how many usable attacks are detected.

- Missed notes: lower Threshold gradually or choose Melodic for soft changes.
- Too many detections: raise Threshold or choose Percussive for discrete transients.
- If detections look right but the rhythm is crowded, keep Threshold and reduce Event Density instead.

> **Two detectors, two purposes** Detection Threshold controls the rhythm analysis. Modulation's Sens. and Min gap control a separate input-trigger detector for input-driven lanes.

Core: movement and density

The central controls decide which detected events play and where their rhythmic positions move.

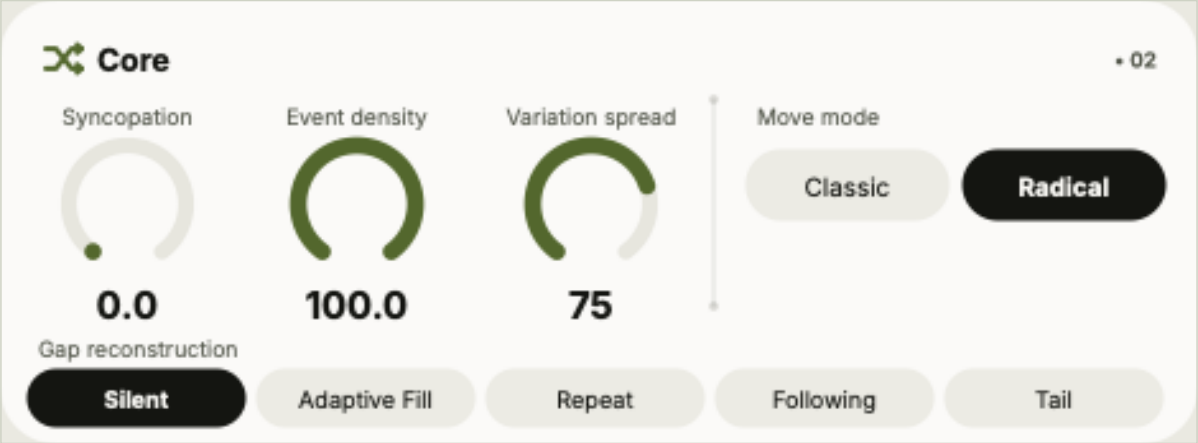


FIG 18.1. Core card. The three knobs alter different stages; Classic and Radical determine the movement strategy.

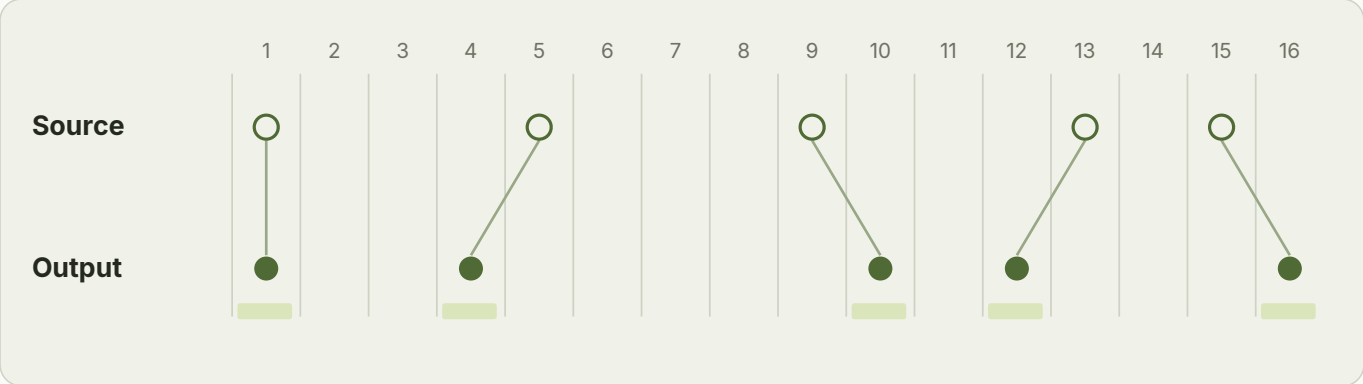


FIG 18.2. Illustrated five-onset map: hollow source attacks connect to filled output attacks. Movement changes location, not playback direction.

Control	Range / effect
Syncopation	0-100; default 100. Higher values request stronger/more rhythm displacement; 0 removes movement attributable to this control. Distinct patterns depend on grid and event availability.
Event density	0-100; default 100. Budget of detected events that are allowed to play. Low values deliberately leave space; 0 aims for one event over two bars, 20 around one per bar in applicable patterns.
Variation spread	0-100; default 75. Sets seeded variation reach, also controls the reach of Radical moves.
Move mode	Classic (default) moves events one metrical level; Radical can explore deeper group transfers and more distant slots.

Dense-grid tip A full grid leaves fewer vacant positions. Lower Event Density, then increase Syncopation or select Radical; don't equate a high threshold with rhythmic space.

Gap Reconstruction

Control what fills the spaces created by moving or shortening the original events.

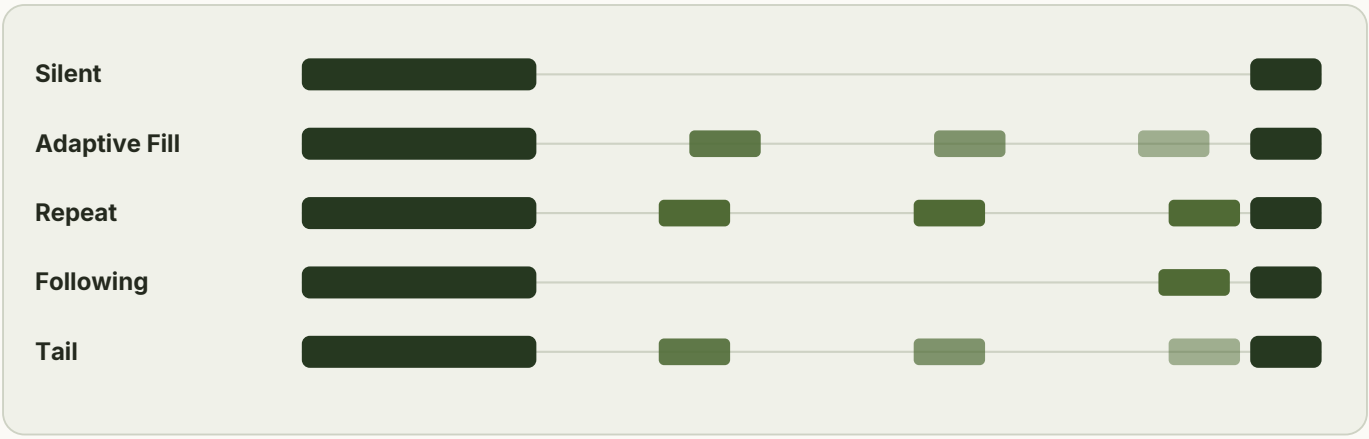


FIG 19.1. Schematic, not sample-accurate: dark blocks represent main events; smaller green blocks represent possible fill snippets inside gaps.

Mode	Sound and use
Silent	Leaves space after a main chunk fades. Best for clear offbeat attacks, cuts and sparse texture.
Adaptive Fill (default)	Chooses suitable nearby/post-attack or tail fragments to reduce abrupt texture breaks. May leave a risky gap empty.
Repeat	Retriggers a short fragment at the previous attack, creating a stutter-like fill.
Following	Adds a short faded preview of the upcoming attack near the end of the gap.
Tail	Repeats a fragment of the previous ending with progressively lower level and fade.

Interaction with density and chunk length

Gap fill is derived from the input material; it is not generated silence noise or an external sample library. Lengthening a chunk can leave less remaining gap available for reconstruction. Shortening creates more space, but intentional omissions caused by Event Density are not simply re-added as gap events.

> **Clean control experiment** Freeze a loop, set pan Stereo, density 100, swing and accents 0, then keep the seed fixed while auditioning each gap mode. Compare at 100/100 chunk length before introducing shorter or overlapping chunks.

Rhythm: Swing and Groove Accents

Move timing and shape dynamic contrast independently of the event selection.



FIG 20.1. Rhythm card: Swing amount, Swing size and Groove accents.

Parameter	Range / musical effect
Swing	0-100, default 0. 0 is straight; 100 places the affected duplet subdivision toward a triplet position. Does not change source playback speed.
Swing size	Five metrical levels: Fastest, then 1-4 levels slower. Default 1 level slower (commonly 1/8 in 4/4). The UI shows the actual available note size for the current grid.
Groove accents	0-100, default 30. 0 retains equal/full event level; high values reinforce strong metrical positions and suppress weaker ones. At 100 some weak levels can be silent.

Interactions

Swing is applied to the chosen grid after event-placement decisions; the overall rhythm remains structured. Groove accents change level, not the count of detections. If a weak event becomes almost inaudible, check accents before changing detection. The source plays forward at original speed, not as elastic warped notes.

Not all slower levels have a valid parent pulse in every meter and phrase. The status can report selected Swing size unavailable; select a faster eligible size, or use a compatible grid.

> **Try this** For a shuffled drum part, keep density and seed fixed. Try Swing 35-60 with 1/8, then raise accents from 0 to 25-40. Compare with a straight version at Swing 0.

Variation seed: repeatable exploration

A seed is a numerical identity that makes a random-looking arrangement reproducible when the audio and settings match.

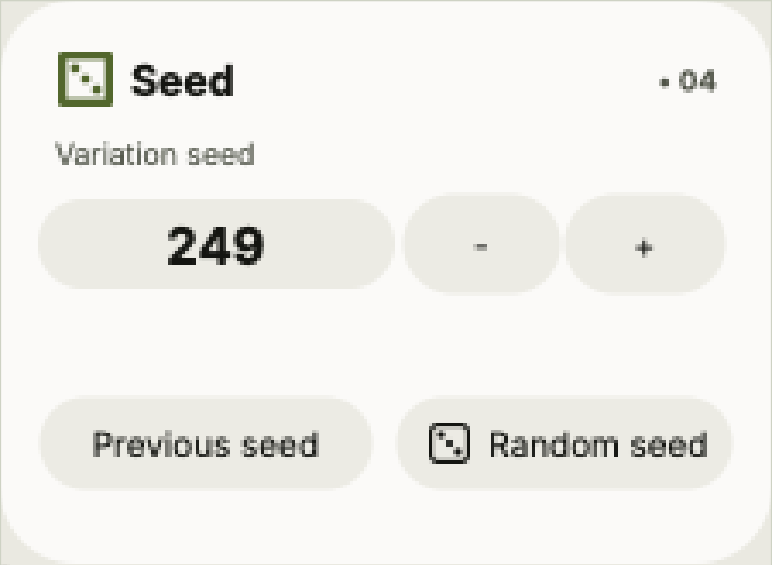


FIG 21.1. Seed card: numeric field, minus/plus, Previous seed and Random seed.

Control	Behaviour
Variation seed	Integer 1-9999, default 249. Type a value or use -/+ to make deliberate changes.
Random seed	Rolls another numeric seed; variation may change event selection, moves, panning and chunk lengths.
Previous seed	Recalls earlier seeds recorded by the dedicated Random seed action in the current session.
Header Random	May also randomise the seed if its Variation seed checkbox is selected; it changes selected base parameters rather than firing the dedicated previous-seed history action.

Reproducibility requires the same capture or embedded audio, context, tempo/meter, base controls and modulation settings. Follow may receive new audio each phrase; a saved seed alone does not reproduce different captured material. A modulation target can temporarily choose another effective pattern seed without changing the saved Seed knob.

> **Find a keeper** Use Freeze, disable modulation while comparing, set a seed, and save the preset once you like the result. Save the DAW project as well if you need the original captured audio.

Chunk Min / Max and Hold

Shape each attack's nominal duration rather than imposing one global gate time.

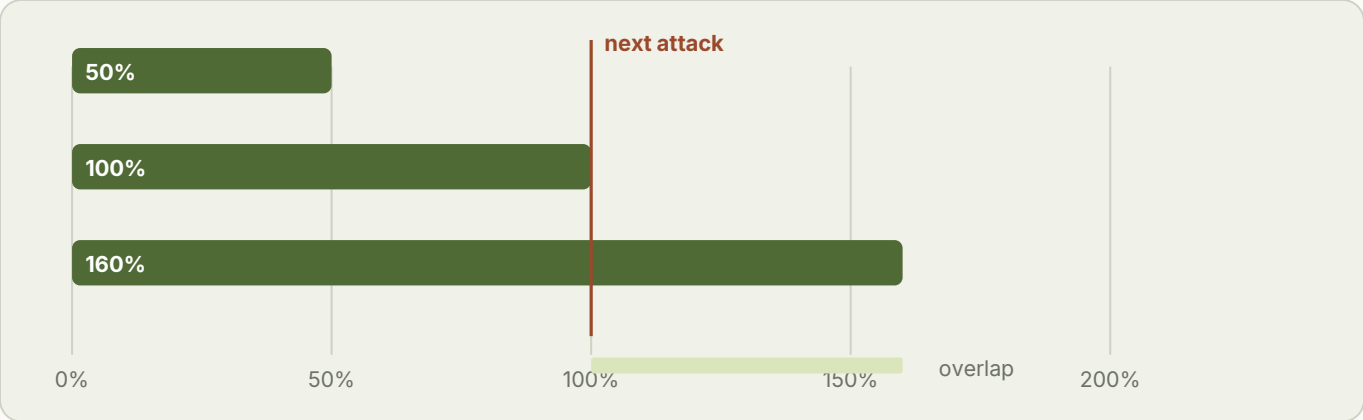


FIG 22.1. Illustration of a 100% available interval: at 50% the main fragment stops early; at 160% it extends into a subsequent event and may overlap.



FIG 22.2. Applied 100-200% range visualised in multiple compact rows. The map represents nominal start and gate length, not a release envelope.

Setting	Effect
Min / Max	Both 0-200%; default 100/100. Drag the respective range endpoints; double-click range to reset. Each attack receives a percentage between the endpoints.
0% and 100%	0 can skip the main fragment; 100 uses the event's available interval. Equal Min and Max select a fixed percent.
Above 100%	Reads farther through the captured loop, possibly across later events and phrase/page boundaries. Overlapping voices can layer together.
Hold	Keeps assigned lengths when the same captured audio repeats. A new source/capture or changed range can still alter the result.

Avoid surprises Min cannot exceed Max. Random respects an unchecked endpoint. Modulation also orders the effective pair; independent modulation lanes can cause the displayed bounds to converge or cross and be reordered internally.

The Chunks lane in detail

A compact, information-rich illustration of the currently sounding main-event gates.



FIG 23.1. 25-75% range: shorter gates make more empty time around individual events.



FIG 23.2. 100-200% range: outlines extend beyond selected fills, overlapping intervals occupy separate rows.



FIG 23.3. 200/200% with dense attacks: multiple compact rows remain distinct, including cyclic continuation.

Visual element	Meaning
Left / right caps	Precise start and selected nominal end of that main fragment.
Triangle	Minimum possible gate end for that event's effective percentage range.
Outline	Maximum possible nominal interval.
Solid fill	Selected actual gate length in the published plan. Number identifies the event if there is enough width.
Separate rows / page spill	Prevent overlapping max spans from obscuring their boundaries. Cyclic intervals wrap or continue on the next long-phrase page.

Reading the right value The plan may lag a requested knob or modulation movement during a transition. Compare the Chunks lane with applied range readouts, not just the target knob's base value.

Pan and Wet Mix

Choose the stereo character of reconstructed events and the balance between source and processed audio.

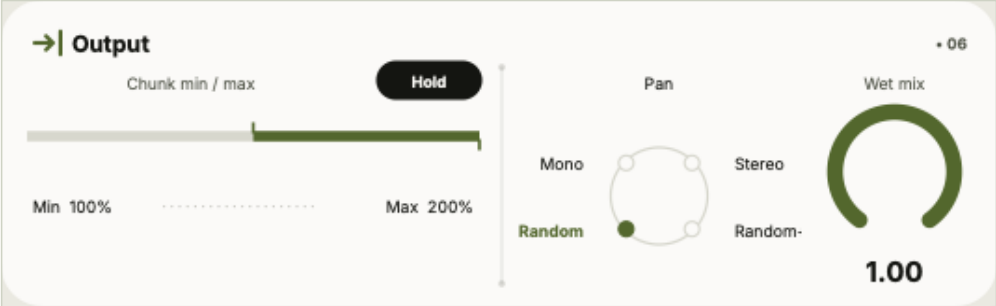


FIG 24.1. The Output card contains Chunk Min/Max and Hold, the four-position Pan selector, and Wet Mix.



FIG 24.2. Illustrative spatial patterns. Mono centres the sound, Stereo preserves the source image, Random changes event positions and Random+ restrains repeated same-side choices.

Pan mode	Behaviour
Mono	Phase-aware fold to dual mono; added chunk panning is disabled.
Stereo	Keeps the source stereo image; no extra per-chunk pan.
Random (default)	Seeded deterministic positions for each chunk across left-centre-right.
Random+	Limits same-side runs to at most three successive choices; positions can be anywhere from centre to that side's edge.

Wet Mix: 0.00-1.00

0.00 returns the untransformed captured phrase; 1.00 selects the transformed wet phrase. Intermediate values blend them in the same musical window. The wet branch has bounded level compensation and soft peak control, not LUFS matching or a true-peak limiter. Use your DAW meters and leave headroom.

> **Layered output** Wet Gain and Dry Gain modulation can independently scale the branches; Wet Width affects the stereo difference of the wet branch. Mono makes stereo pan/width modulation ineffective. The base knob stays unchanged when a route moves its effective value.

Random: a controlled surprise

The header control is one split button with two distinct actions.



FIG 25.1. The shared Random control: left = roll; right = settings.

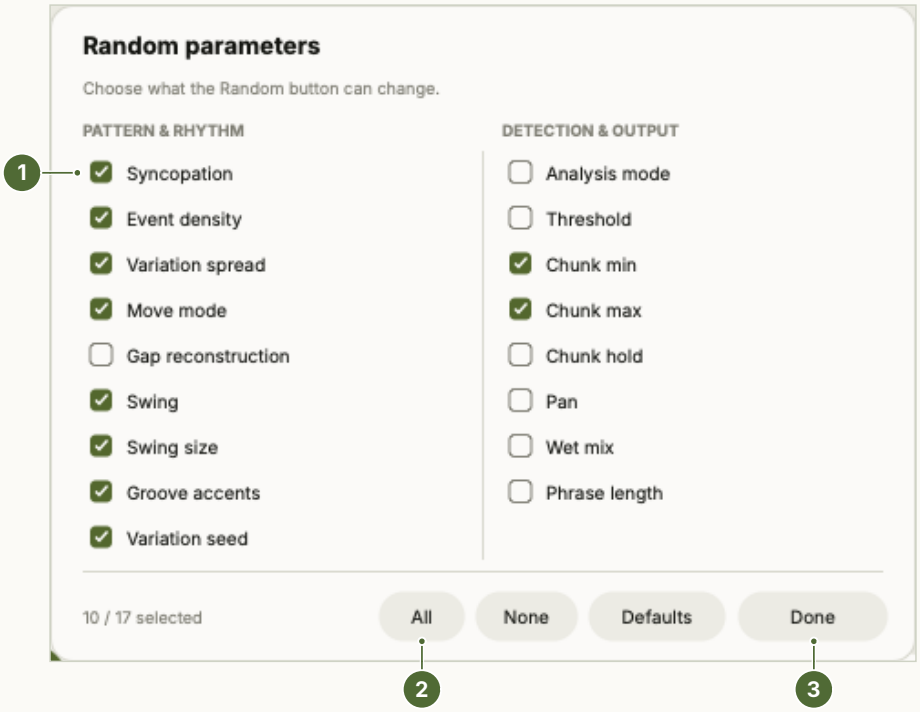


FIG 25.2. 1 Select individual parameters. 2 Use All / None / Defaults. 3 Close with Done. Checked options are included in the next roll.

1. Click the right **...** segment of Random. Check the musical parameters you want to change; uncheck anything you want to keep.
2. Use All, None or Defaults to quickly select a mask. Defaults enables ten musically useful controls. A count shows how many are selected.
3. Choose Done or click ... again to close the settings. Nothing is randomised when you simply edit the checkboxes.
4. Click the left Random action. Only checked base controls are changed. You can also roll while the panel is open.

The mask is a local UI preference, not saved in a sound preset or the host project. A new editor restores the persisted mask; other already-open instances need not update in real time. With None selected, Random is disabled but ... remains accessible.

> **Protect your session** Track/File, the audio file, Clock, Follow/Freeze, capture actions, modulation routing and licence are excluded. Phrase Length is available but opt-in because it can require a new capture.

Random selection reference

Every eligible checkbox, its selection defaults and range. Rolls use valid parameter steps; the full manual knob range can be wider.

Option	Default	Random range / choices
Syncopation	Yes	0-100%
Event density	Yes	30-100%
Variation spread	Yes	0-100%
Move mode	Yes	Classic / Radical
Gap reconstruction	No	Silent / Adaptive Fill / Repeat / Following / Tail
Swing	Yes	0-100%
Swing size	Yes	Five stored metrical levels
Groove accents	Yes	0-100%
Variation seed	Yes	1-9999
Analysis mode	No	Auto / Percussive / Melodic
Threshold	No	5-80%
Chunk min	Yes	25-100% (constrained if Max is fixed)
Chunk max	Yes	100-200% (constrained if Min is fixed)
Chunk hold	No	On / Off
Pan	No	Mono / Stereo / Random / Random+
Wet mix	No	0.25-1.00
Phrase length	No	1/2, 1, 2, 4, 8 bars

Tip Choose just Variation seed and Syncopation to keep the timbre and density stable. Choose Chunk min/max only for new gate shapes. Use dedicated Random seed and Previous seed if you specifically need the seed-history workflow.

Presets, theme and everyday controls

The top bar manages sound settings and presentation independently of the current capture.

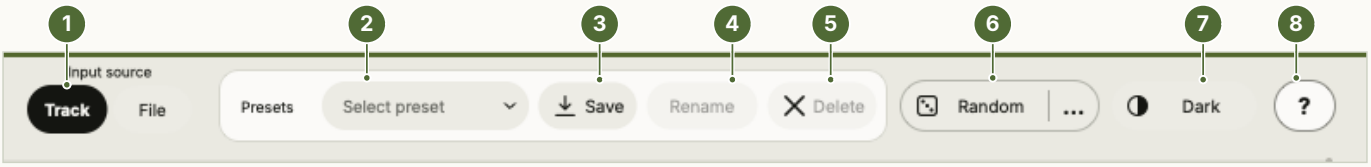


FIG 27.1. Header controls from Input source onward; the Random split button includes the three-dot configurator.

Control	Function
1 Track / File	Audio source selector; File opens file chooser if no region is loaded.
2 Presets selector	Load saved named sound and modulation parameters; refreshes list when opened.
3 Save	Name and save current settings. Existing name requires overwrite confirmation.
4 Rename	Rename existing preset; no changes to sound or parameter values; cannot silently replace another name.
5 Delete	Remove selected preset file after confirmation. Current sound stays unchanged.
6 Random / ...	Roll checked controls / configure selection.
7 Dark / Light	Switch FesikLabs palette; presentation only.
8 ?	Open the offline guide. Click the product name/logo/build caption to open About and Copy build info.

Window and editing conventions

The editor supports proportionate resize, approximately 85-125% of its base size. Open Modulation + to reveal the panel; width is retained. Knobs: drag vertically/horizontally as appropriate; text fields accept exact values where visible. Many controls reset with double-click; a numeric Seed uses its dedicated -/+ actions rather than accidental reset.

> **Modulation readouts** When modulated, a moving marker can indicate requested modulation and an inner tick the applied value. The saved/base knob setting remains separate.

Chunk range: drag either endpoint; double-click resets both to 100/100. Pan double-click resets to Random. Segmented choices select one state; hover for context help.

Six modulation lanes

A modulation lane generates a control signal, maps it to a destination and lets that destination change while the audio plays.

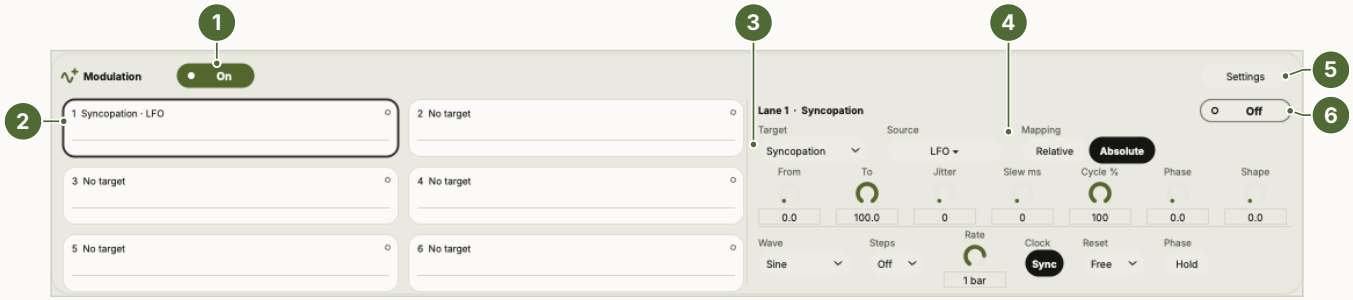


FIG 28.1. 1 Modulation master. 2 Lane cards. 3 Target. 4 Source and mapping area. 5 Settings. 6 Selected lane On/Off. Numbers sit outside the inspector.

1. Open **Modulation +**. Turn the master **On** if off. This master pauses/resumes all active lanes without deleting individual settings.
2. Click a lane card to select it. Assign a Target (None disconnects the lane), choose a Source, then set Relative or Absolute mapping.
3. Turn the selected lane **On**. Make sure the Depth/Offset or From/To produces a meaningful range. Start a complete capture and playback.
4. Watch the lane scope and OUT. The scope is the generated and shaped source, not the audio waveform. OUT is the actual applied destination while route and master are On.

Fresh instance behaviour

The master is On by default; all lane switches start Off. Lane 1 is assigned to Syncopation, other lanes start at None. Mapping defaults to Absolute 0-100; select a smaller range before enabling it on a live performance.

> **Important distinction** Expanding or collapsing the inspector changes visibility only. Selecting a card changes which lane you edit, not which lane processes. To pause the audio contribution, switch the master Off.

Read the lane states

Selection is a neutral outline; enabled routing is an accent fill/stripe. Neither colour alone proves an audible change.



FIG 29.1. Selected but Off: a neutral outline identifies the editor focus; no active accent.

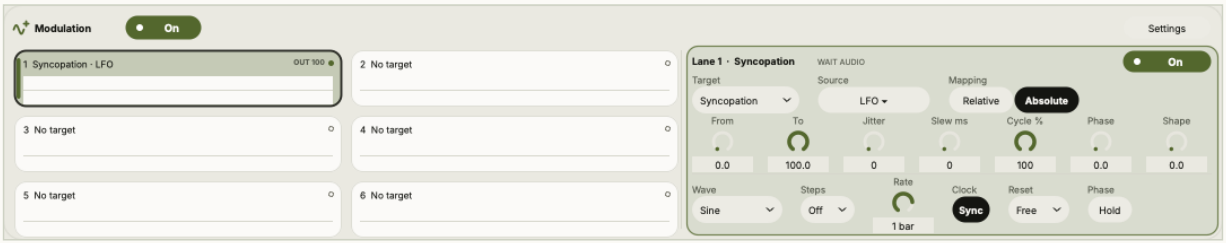


FIG 29.2. Selected and On with an assigned target and master On: accent card tint, stripe, enabled switch and accented inspector.



FIG 29.3. An enabled lane can remain active when another lane is selected.

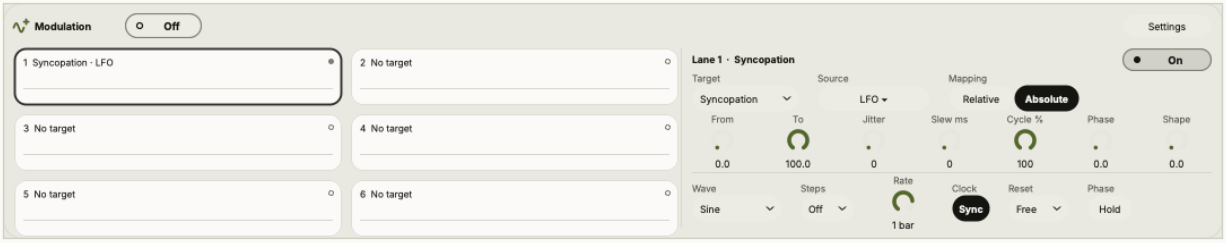


FIG 29.4. Master Off: a stored local On becomes neutral and OUT is hidden; settings are retained.

Indicator	Meaning
Neutral outline	Current selection; edit controls on the right.
Accent fill / stripe	Allowed route: a target is assigned, lane On and master On.
OUT	Visible only on enabled/assigned lanes with master On; shows target applied value.
None / disconnected	No target; choose one before source/mapping controls appear.

The selected disabled lane remains editable. Turn master Off to edit all routes safely, then resume. An enabled route with a muted source, zero depth or flat range may still produce little or no change.

Mapping: relative versus absolute

The most important creative choice is whether the lane offsets a knob or owns a destination range.

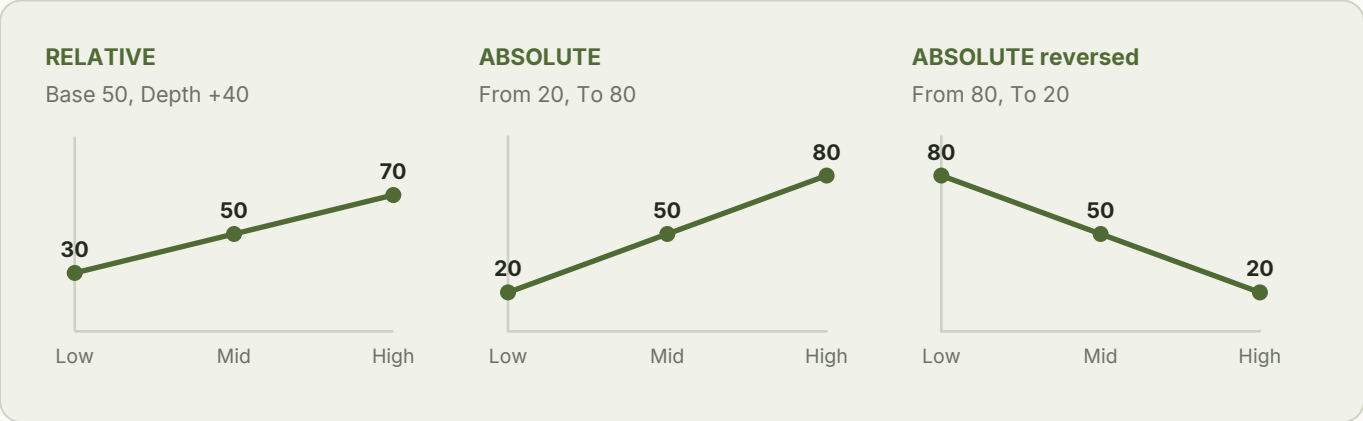


FIG 30.1. Examples for a 0-100 target using an ideal bipolar source. Relative depth +40 yields ±20 percentage points around base 50. Absolute directly uses endpoints.

Relative	Absolute
Based on the main parameter's current value. Choose Depth -100..100 and Offset -100..100; choose polarity.	Directly maps source low/high to From/To, ignoring the base knob for this lane. Both endpoints can be equal or reversed.
Bipolar: Depth 100 means ±50 percentage points of a standard 0-100 target; Unipolar: one-direction depth 100 spans 100 points.	From 20 / To 80 travels 20-80; From 80 / To 20 reverses. Equal endpoints hold a constant target.
Negative Depth reverses direction, Offset moves the centre. Muted sources contribute neither relative signal nor offset.	Polarity is implicit bipolar mapping; Relative controls are hidden. A muted source contributes no absolute override while muted.

Normalised versus displayed units

For Chunk Min/Max, each Relative percentage point is a physical fragment-length point; the main knob and final range reach 200%, but Absolute From/To are 0-100 physical length percent. To explore lengths above 100%, use Relative around a higher base (e.g. base Max 125%, Bipolar Depth 50% gives 100-150%). Output trims instead use normalised mapping across 0-200%; absolute midpoint 50% equals unity. Observe OUT to confirm each destination.

> **Safe starting point** Absolute 35-65 on a rhythm knob or Relative Depth 15 with Offset 0 usually makes small changes easy to compare.

How multiple lanes interact

You can route different lanes to the same target, but their combination is deliberately constrained.

Relative lanes add

Relative contributions sum in target space, then the final result is clamped to the target's valid range. Example: base Syncopation 50, one bipolar relative lane contributes +10 and another contributes -5, giving an effective 55. High offsets and depths can hit a range boundary; the scope may keep moving while OUT stays clamped.

One absolute range owner per destination

If two enabled Absolute lanes target the same destination, the first enabled lane in lane order owns that absolute mapping. The other reports RANGE CONFLICT and does not add a second full mapping. Relative lanes for that target may still add their contributions. A muted owner does not make a second Absolute lane automatically replace it.

Scenario	Result
Lane 1 Absolute Syncopation 20-80; lane 2 Relative depth 10	Lane 1 maps the core value; lane 2 contributes its relative offset. The result is clamped.
Lane 1 and lane 3 both Absolute Syncopation	Lane 1 owns the range; lane 3 reports RANGE CONFLICT. Change its target or switch it to Relative.
Min and Max routed independently	Effective fragment endpoints are ordered before playback, so the nominal minimum cannot exceed maximum.
Two actions or a constant high signal	Action targets use a rising threshold with rearm, not continuous randomisation. Avoid competing action lanes.

Recommended strategy Assign one main destination per lane while learning. For complex sounds use a single Absolute owner and deliberate small Relative offsets. Separate a pattern-building lane from a continuous level or width lane.

Time: rate, clock and Rhythm response

There are three time domains: the capture clock, the source's modulation rate, and how quickly the event plan can be replaced.



FIG 32.1. Settings in the modulation header reveals Rhythm response. This is not a rate selector for an LFO.

Time domain	Controls and consequence
Capture clock	Host/Free, Phrase Length and DAW meter define musical time and capture windows.
Source clock	Rate and Clock Sync/Free determine the speed of clocked sources. Phase and Reset anchor a cycle. Input-driven sources have no periodic rate dial; Phrase Ramp follows the phrase.
Rhythm response	In Modulation Settings: 1/16 note (default), 1/8, 1/4, 1/2 or 1 bar. Maximum interval between rhythm-plan requests. Fast sources may be sampled more often.
Applied transitions	Plan transitions can wait for a previous crossfade to settle. Continuous output targets have separate smoothing; they need not wait for a rhythm rebuild.

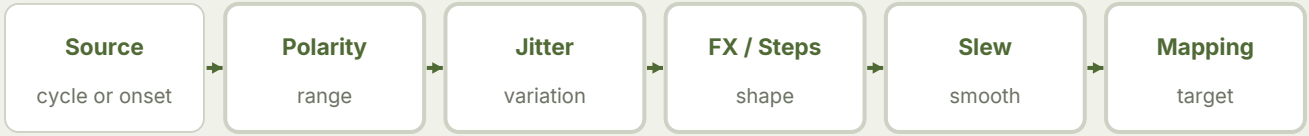
Practical implications

A 1/4-note LFO is still a 1/4-note LFO with Rhythm response set to 1/16 or 1 bar. You can change the latter to limit how frequently rhythm changes are requested, not to change the generator's frequency. Fast sources may cause several requests per cycle; not every request produces a distinct event arrangement.

> **If it looks delayed** The map and OUT report applied values. A requested value can move before a new plan is published. Compare with the continuous Wet Gain target to understand the difference.

The modulation source pipeline

Know which signal each control modifies. A source is not the same thing as its target or its audio input.



Scope shows shaped source; OUT reports the applied destination.

FIG 33.1. Signal chain in a typical lane. Shape is applied within periodic waveform generation; the optional Steps quantizer and host-exposed Source FX operate before Slew. Mapping then targets the destination.

Shared control	What it changes
Source / Target	Generator and destination. None disconnects a lane; changing either may reset source context.
Jitter 0-100	Adds a seeded smooth random offset to an active source. Random Walk uses Jitter as maximum step distance instead. Zero means clean output.
Distribution	Uniform = even tendency; Center concentrates values near centre; Edge favours larger excursions. Shown for random generators and when relevant Jitter is active. Does not change Chance.
Slew 0-2000 ms	Smooths the generated source prior to mapping; high values reduce fast movement or soften steps. Zero leaves the original movement.
Chance	Source-specific acceptance control, often named Cycle %, Trig %, Upd %, Step %, Gate % or Hit %. It is not the same as depth or density.
Phase / Reset	Visible where a cycle clock is meaningful. Not relevant to Input Envelope, Triggered Random, Attack Envelope or Phrase Ramp.

Scope versus OUT The scope shows the source after polarity, Jitter, shaping and Slew. OUT reflects the mapped destination actually applied. A held or gated source can make the trace flat; a clamped target can be flat even while its source moves.

LFO: the waveform family

A low-frequency oscillator supplies periodic control; choose its shape based on the gesture the destination should make.

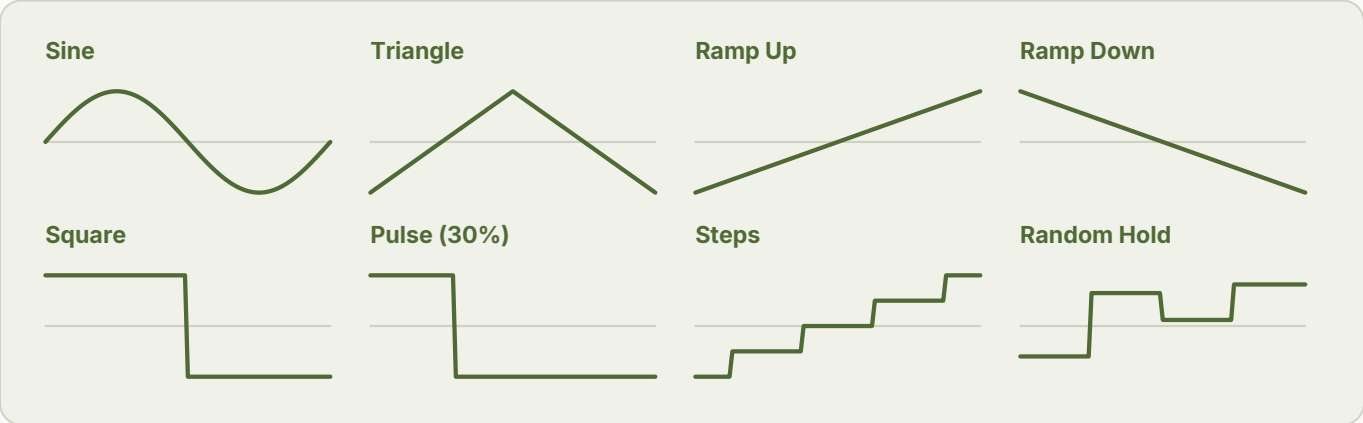


FIG 34.1. Schematic waveform shapes. The Random Hold drawing illustrates successive random cycle values; interpolation may instead connect them linearly or smoothly.

Wave	Typical use
Sine	Smooth rise/fall; musical continuous movement.
Triangle	Even ascending and descending motion.
Ramp Up / Down	Progressive direction then reset; rises into a phrase or decays from it.
Square	Two levels, roughly equal portions; binary-like switching.
Pulse	Two levels with adjustable high portion (Pulse %, 2-98%; default 50).
Steps	A staircase-shaped periodic waveform.
Random Hold	A seeded random value per cycle; choose Hold/Linear/Smooth interpolation.

Shape and Steps are different

Shape (0-100; default 0) reshapes an eligible periodic waveform toward longer dwell/squarer motion without changing its cycle or range. Steps (Off or 2-32) quantizes output levels across the source range; it can be used on a continuous wave independently of the Steps waveform. It is not a free-editable step sequencer.

> **For a flowing LFO** Start Sine, Shape 0, Steps Off, Jitter 0 and Cycle % 100. Apply a modest target mapping and increase selected controls one at a time.

LFO: rate, phase, reset and hold

Clocked sources use musical divisions or frequency in hertz. The rate determines timing; phase and reset determine alignment.



FIG 35.1. Free-running LFO example: the rate can show effective Hz, Scale 10x and Retrig. Control availability depends on the source/wave.

Control	Options / use
Clock Sync	On: musical Rate. Off: saved free Hz rate. Each mode retains its own setting while you switch.
Rate	1/64 through note divisions (normal, T triplet, D dotted), and 1, 2, 4, 8, 16 bars.
Rate Hz	0.01-20 Hz base, default 1 Hz. Scale 10x multiplies effective free rate (0.1-200 Hz while engaged). It does not affect synced rate.
Phase	0-360 degrees, default 0. Cycle starting offset.
Reset	Free: continuous; Start: anchor transport start; Bar: anchor each bar; Trigger: anchor accepted input onset.
Hold / Retrig	Hold freezes current LFO phase; release resumes project phase. Retrig restarts a Free Hz LFO from Phase at next audio block.

Sync note choices

1/64, 1/32T, 1/32, 1/32D, 1/16T, 1/16, 1/16D, 1/8T, 1/8, 1/8D, 1/4T, 1/4, 1/4D, 1/2T, 1/2, 1/2D, then bars. A 1/4 cycle at 120 BPM lasts 0.5 s; 1 bar in 4/4 lasts 2 s. Triplet divisions are two-thirds of their regular duration; dotted divisions are 1.5 times.

> **Chance with Trigger reset** Cycle % normally determines whether each LFO cycle is active. With Trigger reset, Trig % governs accepted input anchors instead. Rejected anchors leave phase unchanged.

Random sources: choose the movement

Random modulation is repeatable with the same source seed and timing; its smoothness and repeat structure differ by source.

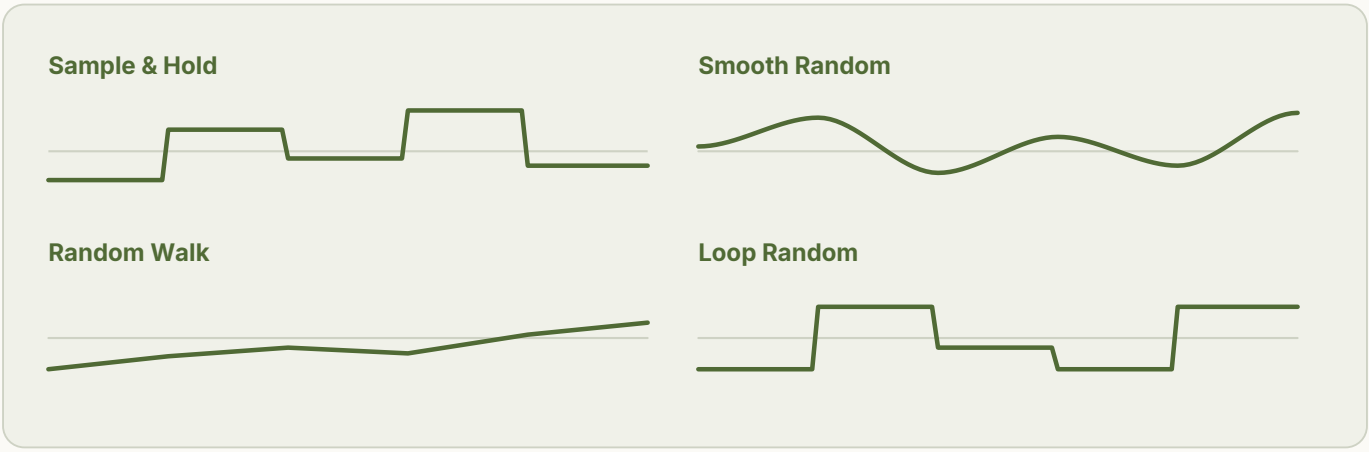


FIG 36.1. Conceptual random source traces: held steps, smooth connections, bounded movement and a repeating seeded loop. Values are illustrative.

Source	Core behaviour
Sample & Hold	One random value held for a cycle. Upd % decides whether a new value is accepted; rejection holds the previous value.
Smooth Random	Seeds consecutive values and smoothly connects them. Step % accepts new updates or retains the earlier value.
Random Walk	A constrained random walk. Jitter determines maximum movement per accepted step, bounded by source limits.
Loop Random	Repeats a seeded sequence of 1/2/4/8/16/32 slots. Step % may leave slots empty; an empty slot holds the most recent earlier populated slot; none keeps neutral.

Shared controls

Loop Random: one step lasts the Rate cycle; 8 steps at 1/4 note repeat after two 4/4 bars. Empty slots retain an earlier accepted value; loop Jitter is loop-aligned.

Distribution	Bias
Uniform	Even across available values.
Center	Favours values near centre.
Edge	Favours more extreme values.

Distribution changes where a draw lands; Chance decides whether a draw is accepted; Jitter changes variation or walk distance; Slew smooths motion. LFO Random Hold has its own Hold, Linear or Smooth interpolation, not a repeating Loop Random slot sequence.

Input-driven sources: the detector

Input Envelope, Triggered Random, Attack Envelope, and Trigger reset use information from selected pre-effect audio.

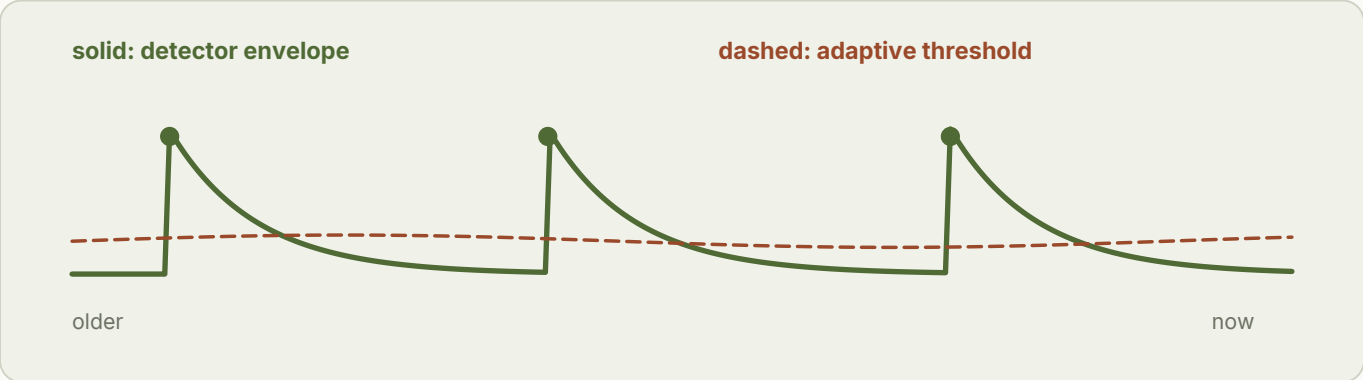


FIG 37.1. Detector concept: solid fast envelope compared against an adaptive opening threshold; dots indicate detected onsets before lane Chance. This is illustrative rather than measured audio.

Global trigger settings

Control	Range / effect
Sens.	0-100, default 65. Input transient sensitivity. Adjust if hits are missed or noise is opening the gate.
Min gap	5-1000 ms, default 80. Minimum spacing between detected input onsets; the detector must also rearm.
Monitor	Solid curve = actual fast input envelope. Dashed = adaptive opening threshold. Points = detected onsets before lane Chance. Newest history at right.
Chance	Per-lane acceptance after detection. Triggered Random and Attack Envelope label Trig %. Input Envelope uses Gate %. Rejected input-reset anchors do not restart that lane.

Input-driven sources listen to the selected **pre-effect** Track or File source, including in Freeze. The input monitor uses an automatic display zoom (about 36 dB range); zoom changes the graph only. Input detector Sens./Min gap are global, so adjust them with other input-driven lanes in mind.

> **Do not use the wrong threshold** Main Detection Threshold affects rhythm onsets. Follower Gain/Rise/Fall/Delay, source Slew and Jitter do not alter the trigger detector.

Input Envelope

Follow incoming amplitude and turn it into musically useful target movement.

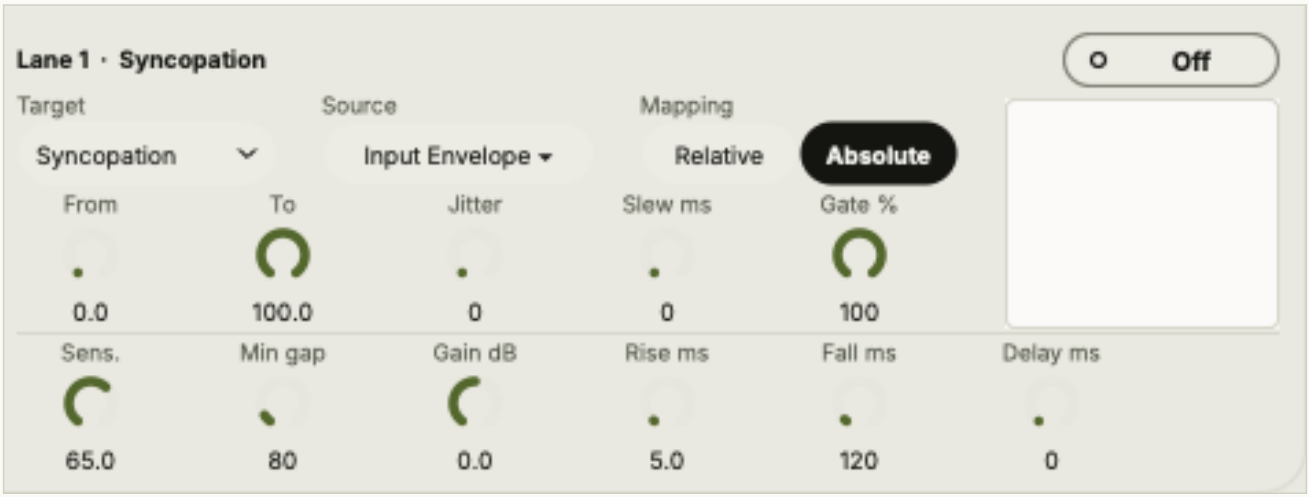


FIG 38.1. Input Envelope layout with global Sens., Min gap and follower Gain/Rise/Fall/Delay. The monitor describes detector activity, not the follower output itself.

Follower control	Range / default / role
Gain dB	-24..+24 dB, default 0. Gain applied to the envelope follower feed only, not the audio output or trigger detector.
Rise ms	0.1-500 ms, default 5. How quickly a rising level is followed.
Fall ms	1-5000 ms, default 120. How quickly the follower decays.
Delay ms	0-2000 ms, default 0. Offsets follower output, with a short transition when changed.
Gate %	Each detected onset can open the envelope gate. A rejected onset closes it until another accepted onset.

Mapping an envelope

Unipolar Relative tracks level in one direction. Absolute maps the low and high source levels between From and To. To make loud hits pull Wet Mix down, reverse an Absolute range (e.g. From 85, To 35). Very little source energy may keep the envelope low; adjust follower gain without affecting the input trigger detector.

> **Example** Input Envelope -> Wet Gain Absolute 45-60 normalized (roughly 90-120% physical gain), Rise 5 ms, Fall 180 ms; Gate % 100. Reduce range if it pumps too strongly.

Triggered Random

Generate a new seeded random control value on accepted detections rather than clock cycles.

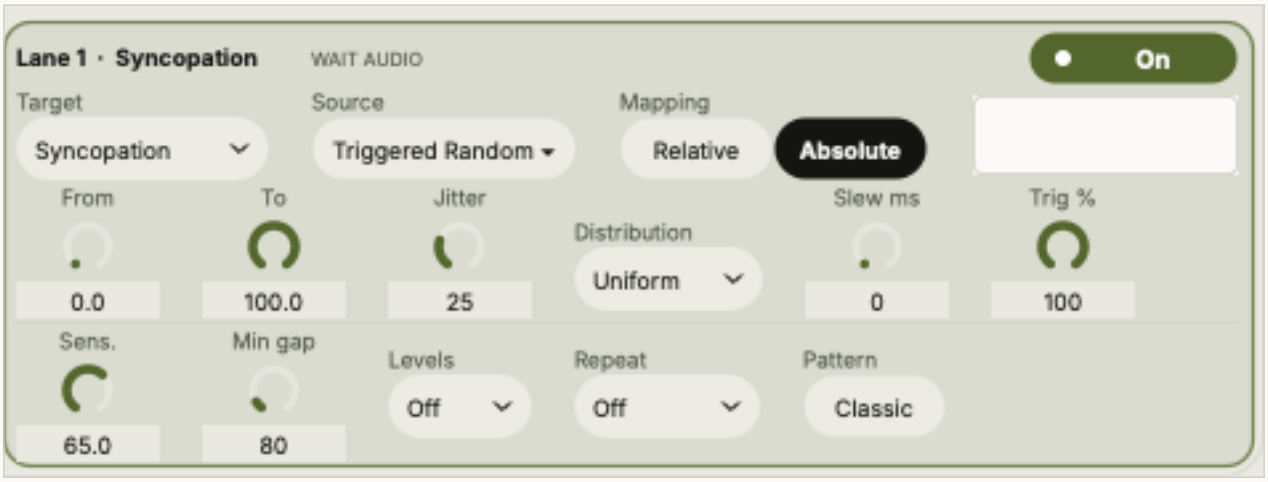


FIG 39.1. Triggered Random selected. Mapping, Jitter, Distribution, Slew, Trig %, levels and repeat define the random behaviour.

Control	Behaviour
Trig %	0-100. Chance each detected input onset accepts a new random value. Until the first accepted hit, the source is muted; rejected hits retain the previous value.
Levels	Off = continuous targets. 2-32 = evenly spaced levels for newly accepted targets before Jitter and Slew. Changes apply on the next accepted hit.
Repeat	Off or 1/2/4/8/16/32 accepted hits. Rejected hits do not advance the sequence. Changing repeat length restarts its seeded cycle at the next accepted hit while holding the current value.
Pattern / Classic	Classic uses the earlier seeded pattern when Repeat is Off. Off permits varied values on accepted hits; choose for compatibility vs variation.
Monitor	Click input detector area to expand/collapse in Triggered Random. Lower trigger controls stay accessible.

Use a percussive source and set Trig % 100 while tuning Sens. and Min gap. Then reduce Trig % for less frequent changes. Use Slew for smoother target transitions. Unlike Sample & Hold, this source has no periodic Rate; hit times determine update times.

> **Tonal detail** If no accepted trigger arrives, look at the solid/dashed curves and onset points first; a waiting trace does not imply that the target is disconnected.

Attack Envelope

Turn each accepted input onset into a shaped control impulse with explicit rise and fall times.



FIG 40.1. An illustrative rise/fall envelope after accepted onsets. Repeated hits may arrive while the previous envelope is still running.



FIG 40.2. Attack Envelope inspector. Sens. and Min gap belong to the shared detector; Rise and Fall are the selected lane's envelope shape.

Control	Range / default
Rise	1-250 ms; default 12. Rise from the current envelope level to its peak after an accepted onset.
Fall	5-2000 ms; default 220. Decay from peak to the low endpoint.
Trig %	0-100 acceptance. Rejected onsets leave the current envelope running.
Mapping / Slew	Absolute endpoints or Relative depth define the target motion; Slew smooths the envelope further.

Example: pulse with the sound Route Attack Envelope to Wet Width. Start in Stereo / Random with From 35, To 65 normalized, Rise 10 ms and Fall 180 ms. Each accepted attack widens then relaxes the wet image. On a mono output width cannot change the stereo image.

Euclidean Gate

Distribute high steps as evenly as possible over a chosen number of steps. This is a timing source for modulation, not a sample sequencer.

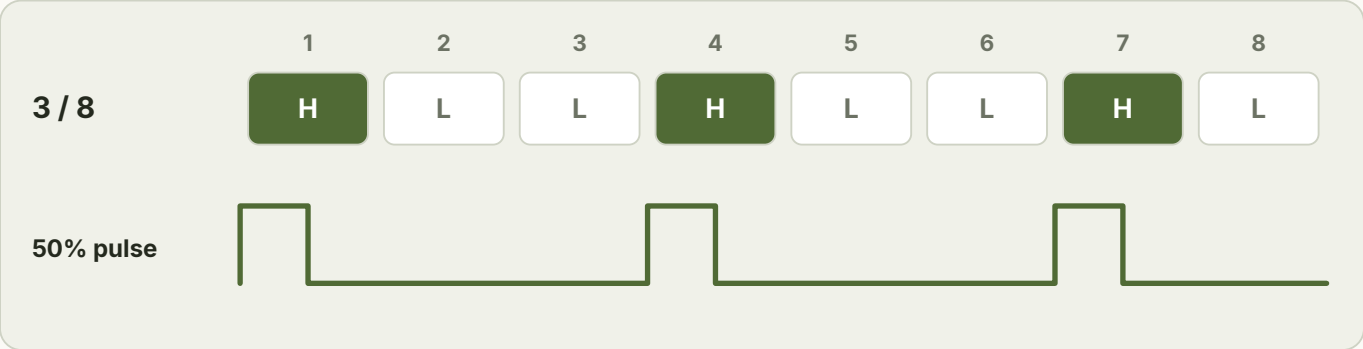


FIG 41.1. Illustration: 3 hits across 8 steps, 50% pulse. H is a high step; L is a low step. Rotate can shift the evenly distributed pattern.

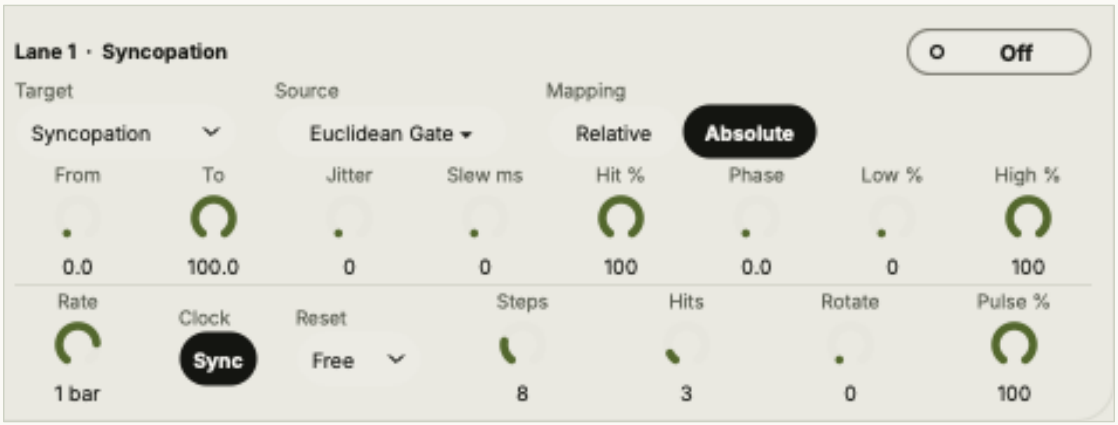


FIG 41.2. Euclidean Gate inspector: Low/High, Rate, Steps, Hits, Rotate and Pulse define the pattern.

Control	Range / behaviour
Steps / Hits	Steps 1-32 (8 default); Hits 0-32 (3 default). Hits above Steps fill the pattern. Hits 0 yields no high steps.
Rotate	0-31 shift; wraps around the pattern.
Low / High	0-100 source output levels; default 0/100. These are source levels, not mapped target endpoints.
Pulse %	1-100, default 100. Portion of each high step spent high.
Hit % / Rate	Probability each high step fires; Rate is one step's duration. With Trigger reset, Hit % also controls accepted resets.

A rhythmic level tool Set Wet Gain Absolute From 20 / To 55 normalized, Steps 8, Hits 3, Rate 1/8, Low 0 High 100 and Pulse 70. The target is gain, so the existing audio rhythm is shaped rather than replaced.

Phrase Ramp

A source that follows the current selected Phrase Length rather than an independent oscillator.

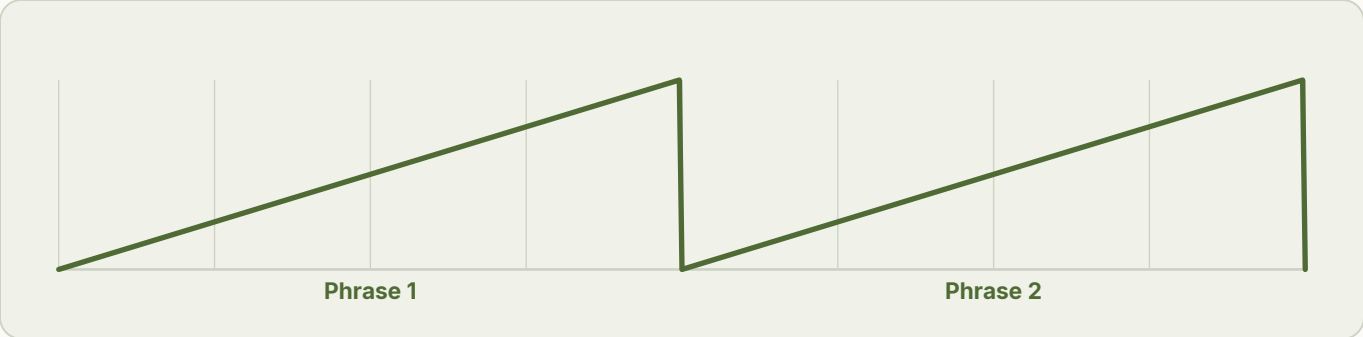


FIG 42.1. Conceptual ramp across successive musical phrases. Changing Phrase Length changes the ramp period; the curve restarts at phrase boundary.



FIG 42.2. Phrase Ramp inspector. No independent rate or chance controls are needed; mapping, Jitter and Slew remain relevant.

When to use it

Use Phrase Ramp for a gradual build, a reset at a phrase boundary, or a predictable movement across a long Freeze capture. At 120 BPM in 4/4 and Phrase Length 4 bars, one ramp spans 8 seconds. At 8 bars, the ramp follows the full 8-bar musical phrase even if the rhythm map shows two pages.

Absolute 20-80 creates a rising movement; reversing From/To makes a falling equivalent. Relative maps the rising source around your existing control, subject to polarity and depth. Use Slew to soften abrupt resets. Jitter adds seeded variation if desired.

> **Musical example** Phrase Ramp -> Variation Spread 15-85 over 4 bars can progressively increase reach. For a smoother audible effect without plan requests, route Phrase Ramp to Wet Gain or Wet Width.

Source-specific control matrix

Controls appear only when meaningful for the selected assigned lane. A missing control may be intentional.

Source	Clock / Reset / Phase	Special controls and Chance
LFO	Yes	Wave, Shape*, Steps, Hold, Pulse*, Random LFO*, Retrig*; Cycle % or Trig %.
Sample & Hold	Yes	Distribution; Upd % or Trig %.
Smooth Random	Yes	Distribution; Step % or Trig %.
Random Walk	Yes	Distribution; Step % or Trig %; Jitter sets step distance.
Loop Random	Yes	Loop length, Distribution; Step % or Trig %.
Input Envelope	No	Follower Gain/Rise/Fall/Delay, Sens., Min gap, input monitor; Gate %.
Triggered Random	No	Levels, Repeat, Classic, Sens., Min gap and monitor; Trig %.
Attack Envelope	No	Rise/Fall, Sens., Min gap and monitor; Trig %.
Euclidean Gate	Yes	Steps, Hits, Rotate, Low, High, Pulse; Hit %.
Phrase Ramp	Phrase-driven	No independent Rate / Reset, no Chance. Period from Phrase Length.

*** Conditional:** Shape for eligible periodic waveforms; Pulse % for Pulse; Random LFO interpolation for Random Hold; Retrig when the LFO uses Hz. Scale 10x appears in Free Hz mode of clocked sources. Distribution can also appear for Jitter.

All assigned source routes offer mapping selection, source Jitter and Slew. Relative exposes Depth / Offset / Polarity; Absolute exposes From / To. The shared detector controls appear for input-driven sources or clocked sources set to Trigger reset.

> **Compatibility** Legacy LFO and legacy loop/sequence values may be recalled from older projects. They are not separate modern source choices in the curated Source menu.

Destination reference: plan controls

Eight rhythm-plan targets reshape the published event plan. Their changes can be discrete and may require a transition before appearing on the map.

Target	Destination / interactions
Syncopation	0-100. Movement strength; grid availability and Move mode constrain distinct patterns.
Event Density	0-100. How many detected events play. Does not change detection sensitivity.
Variation Spread	0-100. Seeded variation reach; also Radical travel distance.
Groove Accents	0-100. Metrical level contrast; high values can silence weaker events.
Swing Amount	0-100. Displaces selected weak subdivision. Swing Size sets its level.
Chunk Min	0-200% physical length. Ordered with effective Max; changing it alters the available gate range.
Chunk Max	0-200% physical length. Above 100 may overlap subsequent events and reduce gap fill.
Onset Threshold	0-100. Modulation changes onset sensitivity in Follow; reports FOLLOW ONLY in Freeze.

How to use the list

Each target corresponds to a control on the main surface, so its base value remains visible and stored. Markers may reflect requested and applied modulation. A moving LFO does not necessarily produce continuous new note placements: the plan is quantized by available cells and published with transition handling.

> **Start predictable** Use modest depth and slower rates on rhythm targets. If you change both Density and Syncopation heavily, it can be harder to identify why events disappeared. Test a single lane first.

Destination reference: output controls

These five destinations shape the currently rendered audio branches and stereo output without needing to rebuild the event pattern.

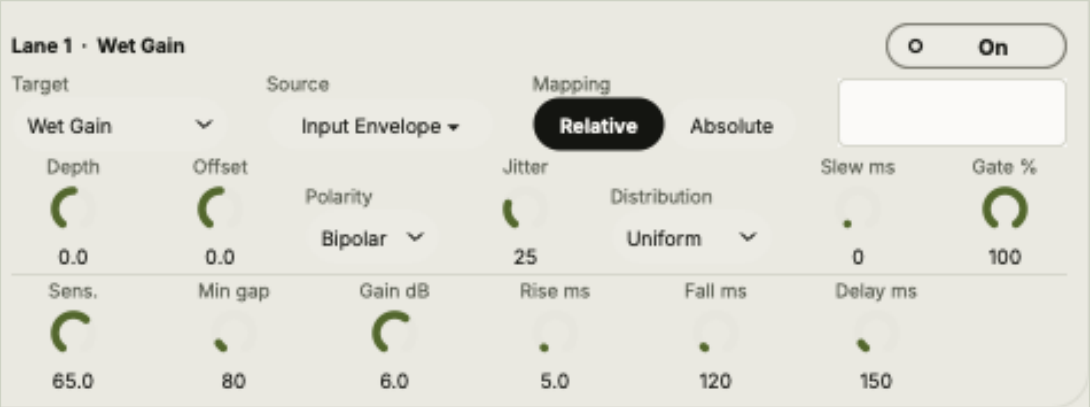


FIG 45.1. Wet Gain target example in the modulation inspector.

Target	Effect / units
Wet Mix	0-100% modulation domain corresponds to base mix 0.00-1.00. Blends original captured phrase and reconstructed wet phrase.
Output Pan	0 left, 50 centre, 100 right in the mapped target domain. Changes overall output pan. Requires stereo.
Wet Gain	0-200% physical gain; 100% unity, 0 mute, 200% double amplitude. Relative centred at unity; absolute normalized 50% gives unity.
Dry Gain	Same physical range on dry captured branch. Especially useful with intermediate Wet Mix.
Wet Width	0-200% stereo difference of the wet branch; 100 original, 0 mono-like width, above 100 expands. Requires stereo.

Avoid accidental silence and overload

If Wet Mix = 1.00, only the wet branch is heard; Dry Gain can appear ineffective. Wet Gain 0 silences an all-wet output. Width cannot create stereo differences from identical mono channels. Level/width targets are smoothed separately from plan updates; use DAW meters to manage peaks.

> **Normalized endpoints** For trim targets with physical 0-200% range, Absolute From 40 / To 60 corresponds approximately to physical 80-120%. Confirm OUT rather than assuming the endpoint label describes dB.

Destination reference: phrase decisions and actions

Discrete choices update at phrase boundaries. Action routes use a separate rearming threshold.

Target	Mapped choice
Variation Seed	Mapped 0-100% selects a seed from 1-9999 at a phrase boundary. Does not overwrite the base Seed knob or source generator's seed.
Swing Grid	Mapped normalized value chooses one of five Swing Size levels at a phrase boundary. Swing Amount must be above 0 for a timing effect.
Chunk Hold	Target level at or above 50% enables Hold; below disables it. Sampled at phrase boundary. The main Hold switch remains stored.

Variation Seed, Swing Grid and Chunk Hold sample at phrase boundaries; a fast source can be sampled at the same phase each time. Base values remain intact.

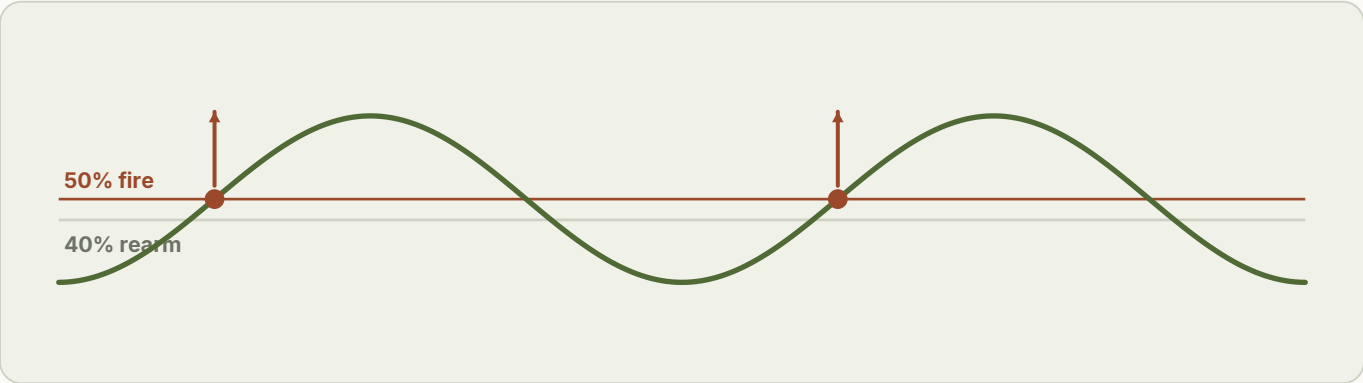


FIG 46.1. Illustrative action hysteresis: crossing the upper 50% threshold fires once; returning to 40% or lower rearms the action. Staying high does not fire repeatedly.

Target	What the action does
Random Seed	Rolls a new effective pattern seed, used at the next phrase boundary. The saved base seed is untouched.
Capture Next Bar	Freeze-only. Crossing 50% queues a new capture; wait for the next eligible full window before the held plan changes.

Cross 50% once, then return to 40% or lower before firing again. Capture Next Bar modulation is Freeze-only. Try Square or Euclidean Gate, Absolute 0-100, Jitter 0, low Slew; allow a complete capture window. None disconnects the lane.

Recipe 01: pocket drums and dense chunks

Isolate rhythmic movement, then explore a packed pattern.

Starting setup

Group	Settings
Capture	Track / Host / Follow; Phrase Length 1 bar. After capture, Freeze.
Detection	Percussive; Threshold about 35; tune until expected attacks appear.
Core	Classic; Syncopation 55; Event Density 100; Spread 40; Adaptive Fill.
Rhythm	Swing 15-30, 1/8 as available; Groove accents 20-35.
Seed / Output	Choose seed 249 or roll; Chunk Min/Max 85/100; Hold Off; Pan Stereo; Wet Mix 1.00.

Work in stages

1. Freeze a fully captured drum bar. Compare Wet Mix 0.00 to 1.00. Confirm the input dots are musically useful.
2. Raise Syncopation in steps, listen for the pocket you want, then try another seed. If the grid is full and movement is limited, lower Event Density slightly.
3. Set Chunk Min below Max for subtle note-length variation. Switch to Silent for sharp gaps, Tail for softer continuation. Toggle Hold if you want to keep assigned lengths while the same phrase repeats.
4. Once a pattern works, save a named preset and your DAW project. Automate Wet Mix from 0.35 to 1.00 for transitions.

Dense rhythm variation

Lower Threshold to detect a busy loop. With Density 100 and Accents 0, compare Min/Max 25/75 (short gates) and 100/200 (overlaps). Try Silent, Repeat, Tail, then 70–85 Density with Radical/Spread 80. Read the detected/playing counts and Chunks lane; lower Max or Mix if clarity suffers.

Recipe 02: tonal and file textures

Use sustained material and long capture to make rhythmic, evolving fragments.

Group	Starting settings
Input	File, choose a 2-8 second melodic/percussive excerpt. Host at matching tempo or Free while callbacks arrive.
Capture	Phrase Length 2 or 4 bars. Start Follow, then Freeze a complete window.
Detection	Auto or Melodic; Threshold 20-40 depending on source.
Core	Radical; Spread 50-85; Syncopation 40-80; Density 55-85; Tail or Adaptive Fill.
Output	Chunk Min 70 / Max 150; Hold optional; Random+; Wet Mix 0.6-1.00.

Make the timing intentional

A file that does not match the phrase can create a changing relationship between the audio loop and grid. To hear tight repeating structure, trim the region to a whole-cycle duration and capture it. To hear variation, keep phase drift and Follow. Freeze fixes the selected musical snapshot; it does not pitch-correct the material.

Add gentle motion

Route a Phrase Ramp to Wet Width, Absolute From 35 / To 65 normalized; choose Stereo/Random output. Set base Chunk Max 125 and add Smooth Random -> Chunk Max in Relative, Bipolar Depth 50, Offset 0 and a long rate (100-150% effective). Keep both routes subtle so the texture remains legible.

> **Avoid masking** Long overlapping chunks and Tail can create dense energy. Reduce Chunk Max, Wet Gain, density or mix before pushing the output level.

Recipe 03: Euclidean modulation

Construct a second pulse layer without replacing the underlying onset-driven rhythm.

1. Choose a captured phrase in Freeze. Let its event pattern remain stable: seed fixed, Event Density 100, Swing 0.
2. Open Modulation, select lane 1, choose Target Wet Gain and Source Euclidean Gate. Set Absolute mode and turn the lane On.
3. Set Steps 8, Hits 3, Rotate 0, Low 0, High 100, Pulse 50, Hit % 100; Clock Sync at Rate 1/8.
4. Set normalized Absolute From 20, To 60. This gives physical gain about 40-120%, so the low steps remain heard instead of vanishing.
5. Listen and adjust Pulse, Rotate and Slew. Try Relative pan or Wet Width on a separate lane instead of making both lanes Absolute Wet Gain.

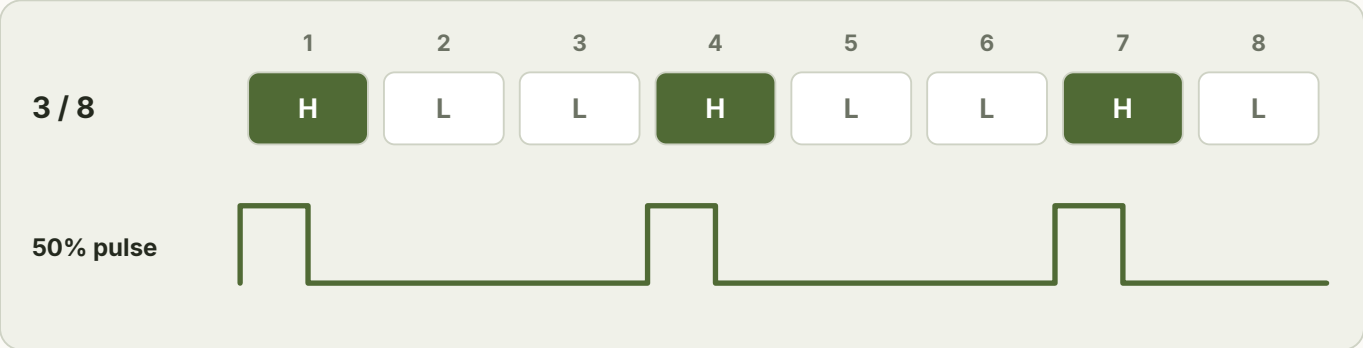


FIG 49.1. Three Euclidean high steps in an eight-step pattern. The modulation signal can change the wet output without moving the underlying events.

Try variation Lower Hit % after the deterministic pattern works. If each selected step sounds too sharp, raise Slew gradually, keeping it shorter than the step duration.

Recipe 04: an onset-reactive groove

Combine input-driven movement with a steady rhythmic plan.

Lane	Example route
1	Triggered Random -> Event Density, Absolute 55-100; Trig % 75; Levels 5; Repeat 8 hits; Slew 20 ms.
2	Attack Envelope -> Wet Width, Absolute 35-65 normalized; Rise 12 ms; Fall 220 ms; Trig % 100.
3	Input Envelope -> Wet Mix, Absolute reversed From 85 / To 50; follower Rise 5, Fall 150 ms.

1. Keep lane 1 only while tuning the detector. Choose Percussive audio and ensure onset dots appear. Raise Sens. for missed hits and increase Min gap to suppress duplicate input detections.
2. Enable lane 1; watch accepted updates and OUT. Repeat counts accepted onsets, not host subdivisions.
3. Enable lane 2 and confirm the output is not Mono. Adjust Rise/Fall against the drum rhythm.
4. Enable lane 3 last. If the mix sounds static, verify Gate % and follower Gain/Rise/Fall/Delay. Remember these follower settings and detection settings are global, not per lane.

Reset safely Turn the modulation master Off while editing or comparing a preset. Individual switches and configuration are preserved. Re-enable routes one by one.

Working in a DAW

Treat SyncoPirate as an insert audio effect that needs the host to deliver audio buffers and timing.

Ableton Live-style workflow

1. Enable the relevant AU and/or VST3 plug-in format in Preferences/Settings and rescan. Drag SyncoPirate onto an audio track. Use the matching version and format for existing sessions.
2. Place a loop on the track, use Host clock, set Phrase Length and press Play. Start on a phrase boundary. The capture map publishes when a complete window has been collected.
3. To process an imported loop, select File and Load region. You can place the effect on a track whose input is not a microphone; File mode supplies the audio internally.
4. Automate parameters through the DAW's device parameter exposure (Configure/automation or equivalent). Record/resample output on another track or export after sufficient pre-roll.

AU or VST3?

Both formats share the same audio-engine and preset-folder design in this macOS package. They are separate plug-in identities, so a saved AU session does not automatically reopen as VST3. Transfer sound settings with a named preset, then restore/reload/capture audio as needed.

> **No audio input device required** Track mode takes samples from the DAW track; File mode uses a decoded region. For offline comparison, render from a known audio file rather than a microphone.

Exact host menus, plug-in scanning and MIDI/automation exposure vary by host and version. If a host stops calling the effect when transport stops, Free clock cannot force it to resume.

A MIDI controller can remotely change host-exposed parameters, but SyncoPirate itself has no MIDI input, output or Learn. See the following mapping examples.

MIDI implementation and host control

An audio effect with host automation, not a MIDI instrument or a direct MIDI CC processor.

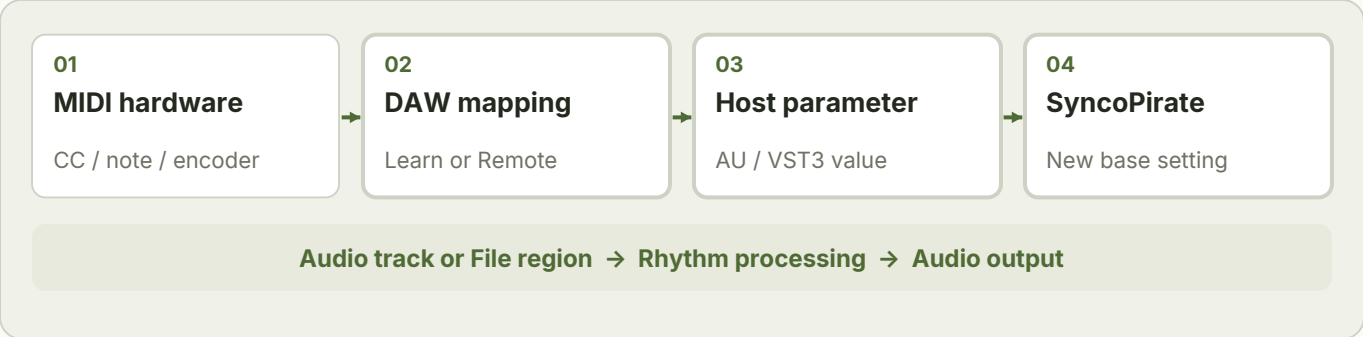


FIG 52.1. Control messages are received by the DAW. The host translates them into parameter values; audio processing is a separate path.

MIDI function	Direct plug-in implementation
Note On / Off, velocity	No — not a note-triggered instrument.
CC, pitch bend, aftertouch, program change	No direct parsing or fixed controller-number assignments.
MIDI Clock, Start/Stop, SysEx	No direct input. Host clock uses the DAW's supplied transport and timing.
MIDI output / Thru	None. The reconstructed result is audio.
Learn / controller assignments	Host-managed only; no internal MIDI Learn, channel selection or CC table.
AU / VST3 parameters	Yes. The DAW can automate and map supported exposed parameters, subject to host features.

What the controller actually drives A DAW mapping writes the same base parameter used by the corresponding automated knob. Internal modulation changes the effective target separately; it does not update your hardware unless the host provides feedback.

Choose what to map

Use continuous controls, stepped switches and one-shot actions appropriately.

Control / group	Suggested hardware and behaviour
Syncopation, Density, Threshold, Spread	Knobs or faders. Density filters detected events; Threshold changes detection.
Chunk Min / Max, Swing, Accents, Wet Mix	Separate knobs. Expose both named endpoints, not just the overall range control.
Analysis, Gap, Style, Pan, Phrase Length	Stepped selectors. Choose discrete values; changes may require a transition or capture.
Follow / Freeze, Track / File, Host / Free, Hold	Switches. File selection via automation does not itself open the file chooser.
Seed; Random Seed; Previous Seed; Capture Next Bar	Seed = integer value; the last three are action-like host parameters.
Modulation Enabled, Lane Enable, source, target, depth/range/rate	Automatable lane controls when exposed; master preserves individual lane choices.
Header Random / ..., Load/Replace Audio, preset management, theme, panel expansion	UI actions, not dedicated exposed host parameters. Random Seed is a different, narrower action.

Action buttons: important Random Seed, Previous Seed and Capture Next Bar react to either change of their host boolean value. A momentary 127 press / 0 release can fire twice. Prefer a latching controller or host toggle that alternates one value per press; test once. A static high value never repeats. Capture Next Bar queues replacement in Track mode; it is not File import.

Legacy host labels may differ: Capture Live = Follow; Input Live = Track; From To Mode = Absolute; Modulation Rhythm Update = Rhythm response. The separate internal modulation action routes use a 50% fire / 40% rearm rule, not those boolean edges.

MIDI mapping: Ableton Live

Map the host device parameter, not a hidden MIDI input on the audio plug-in.

1. Connect the controller. In Live Settings, Link/Tempo/MIDI, enable **Remote** for the controller input port. Track is for MIDI track routing; Remote is what Live needs for custom mappings.
2. Add SyncoPirate AU or VST3 to an audio track. Unfold the device parameter panel in Live and click **Configure**.
3. Move the desired control in the plug-in to expose it in Live's device parameter panel. For Chunk Max, move the right endpoint specifically. Avoid triggering capture or random actions unintentionally, especially during playback. Exit Configure.
4. Press Cmd+M. Click the newly exposed parameter in Live's device panel, move the physical knob or button, then press Cmd+M again.
5. In the Mapping Browser, set an appropriate minimum/maximum and pickup/takeover behavior in Live's MIDI preferences if needed. Test each control with a captured loop. Use a toggle for one-shot host actions.
6. Save the Live Set or template. Save as Default Configuration retains the exposed parameter layout for that plug-in, not your set's individual MIDI assignments. For a performance rack, map parameters to Macro controls, then map the Macros to hardware.

Official host guide: Making custom MIDI mappings.

Official host guide: Saving plug-in parameter configurations.

> **Quick check** If MIDI indicators respond but no sound changes, ensure Remote is enabled, the specific parameter is configured and mapping mode is exited. Verify captured audio and modulation state.

MIDI mapping: Logic Pro and REAPER

Use AU in Logic Pro; REAPER supports AU or VST3. Both map the exposed effect parameters at host level.

Logic Pro (AU)

1. Insert SyncoPirate as an Audio FX on the track. Connect a supported MIDI controller and choose the parameter to control.
2. Use Logic Pro > Control Surfaces > Learn Assignment (Cmd+L); select or move the desired plug-in parameter and move the hardware control as prompted. End Learn mode.
3. If direct assignment is inconvenient, map a Logic Smart Control to an exposed SyncoPirate parameter, then assign the hardware to the Smart Control. Confirm the parameter follows hardware.

Official host guide: Controller assignments in Easy view.

REAPER (AU / VST3)

1. In Preferences > Audio > MIDI Devices enable the physical MIDI input for control messages. Insert the FX on an audio track.
2. Open its FX window, move a parameter, then use Param > Learn (last touched parameter). Alternatively choose the named effect parameter from the Param / FX parameter list.
3. Move the hardware and confirm the assignment. Match absolute/relative CC mode to the encoder; test soft takeover when applicable. Save the project or host mapping setup.

Official host guide: REAPER User Guide (FX parameter learn).

> **Host persistence** Logic controller assignments and REAPER mappings belong to their host configuration or project. They are not embedded in .syncrtpreset files. Menus may vary by host version.

MIDI mapping: Bitwig Studio and Cubase

VST3 parameter mapping and host remote controls make hardware integration possible without an internal Learn button.

Bitwig Studio (VST3)

1. Add and configure the controller in Bitwig's controller settings. Insert the VST3 on an audio track.
2. Display the plug-in's exposed parameters or map them to device Remote Controls. Open the Mapping Panel using the hand icon; click the highlighted mappable control, then operate the MIDI hardware.
3. Exit mapping mode, set a suitable range and test. Remote Control pages can also follow the selected device using a supported controller integration.

Official host guide: How to map a MIDI controller.

Cubase (VST3)

1. Set up the physical controller in MIDI Remote. Insert SyncoPirate into an audio track; open the track's Quick Controls and assign the desired named effect parameters to slots using the host's parameter list or Learn function.
2. In MIDI Remote Mapping Assistant map hardware controls to the corresponding Track Quick Controls. Alternatively use Focus Quick Controls when the plug-in is focused, with its assigned VST Quick Control slots.
3. Test the mapping with the device/track focused as appropriate. Save the project and MIDI Remote configuration.

Official host guide: Setting up Focus Quick Controls.

> **Verification scope** These workflows follow the host vendors' published documentation and the plug-in's exposed parameter model. Exact menus/controller modes vary; physical mapping has not been independently rehearsed in every listed host.

Performance mapping and troubleshooting

A small, safe hardware layout beats mapping hundreds of parameter slots.

Hardware	Example assignment
Knob 1 / 2	Syncopation / Event Density
Knob 3 / 4	Chunk Min / Chunk Max
Knob 5 / 6	Swing / Wet Mix
Switch 1	Modulation Enabled
Switch 2	Random Seed (latching)
Switch 3	Capture Next Bar (latching, Track)
Switch 4	Follow / Freeze

1. Capture a complete bar, select Freeze, pick a fixed seed and save a baseline preset plus your DAW project.
2. Limit ranges for musical use; e.g. Mix 0.35–1.00. Use soft takeover for hardware that can jump from a different physical value. Check Min never exceeds Max.
3. If two rolls occur per button press, change from momentary press/release to a host or hardware toggle; confirm one state transition per press.
4. If a destination seems unresponsive, turn master Off to compare base values; Absolute modulation can own the destination independently of the knob. Check input, timing, capture and licensing.

Not MIDI output To record the generated rhythm, resample or export the audio. The output is not a MIDI clip, drum note sequence or MIDI clock.

Save settings versus save audio

A named sound preset and a DAW project state are intentionally different.

Persisted item	Named preset	DAW project
Main sound parameters	Yes	Yes
Six lanes, targets and settings	Yes	Yes
Completed captured Freeze audio	No	Can be embedded
Loaded File region audio	No	Can be embedded
Random parameter selection mask	Local preference; not part of preset	Local preference; not part of project
Activation	Device licence, separate	Device licence, separate

1. Save a preset from the header. For a complete reproducible sound, also save the host project after the capture is finished.
2. To transfer a preset to another instance/format, load the named preset. Load the file or capture new audio in that instance.
3. To rename or delete a preset, select it in the selector. Rename preserves contents; Delete removes the file, not current parameter state. Confirm operations as requested.
4. Back up personal .syncrtpreset files from the shared macOS preset folder if needed. Use the DAW project file as the primary container for embedded audio.

The shared preset location on macOS retains a legacy folder name for compatibility: ~/Library/Application Support/FM Audio Lab/Syncopation RT/Presets.

Preset names use 1-64 characters, with no leading/trailing spaces or dots, repeated '..', slashes, backslashes, colons or control characters. Use clear descriptive names and keep a backup before replacing a preset.

> **Loading an old preset** Presets are validated and migrated where supported. A malformed, unsupported or incomplete preset is rejected rather than partially applied. If load fails, the current settings stay intact.

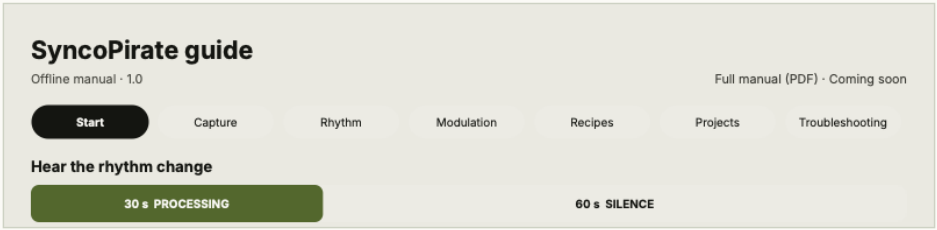


FIG 58.1. Built-in 1.0 guide: Start tab and demo cycle.

The offline ? guide includes Start, Capture, Rhythm, Modulation, Recipes, Projects and Troubleshooting. About contains Overview/Copy build info, Research and Licences (including JUCE, VST3 SDK and font notices). Research includes Cocharro, Sioros, Caetano and Davies, Real-time Manipulation of Syncopation in Audio Loops, ICMC/SMC 2014.

Advanced source shaping and compatibility

For users working with host-exposed automation or migrated presets; these settings are not dedicated buttons on the current compact inspector.

Additional lane parameter	Function
Fold	Converts negative portions into positive magnitude (unipolar source is folded around its midpoint).
Invert	Reverses bipolar sign or inverts the unipolar level.
Source Curve	Changes curvature of source magnitude; positive emphasises intermediate magnitudes, negative reduces them. Endpoints are retained.
Source Bias	Adds bias before output-limit clamping; can shift how often mapped values reach an extreme.
Limit	Caps output magnitude after other shaping. 100% leaves full range; 0 clamps the signal.
Seed Linked / Local Seed	Linked uses main Variation Seed for lane randomness; unlinked uses that lane's saved local seed.

Processing order includes fold, invert, curve, bias and limit after generated source, polarity/Jitter and applicable LFO step quantization, before Slew and mapping. A muted lane source is not made full-scale simply by inversion. Changing seed linkage can restart random context.

Legacy host state

The parameter list preserves older Branch, Freeze Size, Grid Divisions, Update Mode, Chunk Pan, Output Mode, Event Grouping and the historical step-sequencer slots for migration/compatibility. Old Source indices can map to the legacy LFO or Loop Random. The current GUI does not present a manual 16-step sequencer; changing those reserved compatibility values is not a substitute for a current source.

> **Portable sound** If an old project behaves differently from a new instance with identical visible controls, compare hidden host automation and recalled preset/state before assuming a DSP error.

Host-only active lane defaults/ranges: Source Curve and Bias –100..100 (0); Limit 0..100 (100); Invert/Fold Off; Local Seed 1..9999 (249); Seed Linked On.

Troubleshoot audio and capture

Start with signal flow, then wait for a valid musical window. Status messages are often more useful than changing many knobs at once.

Symptom / status	What to check
Dry audio, no wet transformation	Check Wet Mix, DAW bypass, input audio/file, Host play state, first complete phrase. Disable modulation for diagnosis.
Rhythmic silence / red Demo notice	The unactivated demo plays 30 s of full processing then 60 s of silence. Activate to remove the interruptions.
Waiting for host / playback	Start transport, confirm timing. In Free mode verify the host actually sends audio blocks.
Capturing first phrase / buffering Freeze	Allow one complete aligned window at selected length. Use shorter phrase if you need immediate testing.
No onsets / lower threshold	Ensure source signal exists; select suitable analysis, lower Threshold, use a percussive test loop.
Grid full / no free move	Lower Event Density, or try Radical and broader Spread to find movement.
Holding plan / no new onsets	Follow is reusing the valid rhythm on the current audio. Check source/transients rather than forcing multiple captures.
Tempo changed / previous pattern	The old plan can continue while a new capture settles. Wait through the new window.
Freeze state could not be restored	Reopen original project/version if possible; re-capture a complete phrase or reload File; save new project copy.
File audio restore failed / using Track	Load the intended file again. Imported excerpts are capped at 32 seconds.
Phrase too long	Shorten Phrase Length or increase BPM: capture pages are capped at 36 seconds.

One controlled baseline

Start Track / Host / Follow, 1 bar, Percussive, Threshold 35, Density 100, Classic, Syncopation 60, chunks 100/100, mix 1.00, modulation master Off. Test with a short known drum file playing on the track rather than a live input device.

> **Status is descriptive** A low event count can be intentional (density, accents, zero-length fragments). Confirm detected vs playing counts and the plan before changing the detector.

Troubleshoot modulation

When a lane seems stuck, isolate its source and destination, then inspect scope and OUT.

Readout or symptom	Diagnostic action
No OUT / no target	Select assigned destination, turn lane On and master On. Selection alone is not enable.
DEPTH 0 / FLAT RANGE	Set nonzero Depth or Offset in Relative; separate From/To in Absolute. Equal endpoints intentionally set constant.
RANGE CONFLICT	Earlier enabled Absolute lane owns same destination. Move target, disable other lane or use Relative.
WAIT AUDIO / WAIT TRIGGER	Capture audio; verify pre-effect input, detector monitor, Sens. and Min gap; set Trig % 100 for a test.
GATE CLOSED / CYCLE SKIPPED	Check Gate %, Cycle %, Reset and source-specific Chance. A skipped cycle or rejected trigger is intentional at lower percent.
HELD	LFO Hold freezes phase; clear it or Retrig in Free Hz mode.
FOLLOW ONLY / FREEZE ONLY	Onset Threshold modulation needs Follow. Capture Next Bar action needs Freeze.
MONO	Output Pan or Wet Width cannot provide stereo change in Mono mode.
Shape moves; plan looks static	Target may be clamped, source may produce equivalent grid placements, plan transition pending. Check OUT and compare continuous Wet Gain.

Simple test route Choose LFO Sine, Absolute 20-80, Rate 1 bar, Jitter 0, Slew 0, Cycle % 100, Hold Off, one active lane and an output target with suitable mix. If OUT moves, the source and mapping work.

Troubleshoot sound quality and repeatability

Clicks, gaps, level variation and different exports have different causes. Diagnose with a repeatable captured source.

Observation	Adjustment / reason
Choppy tails / abrupt gaps	Increase Chunk Min/Max, use Adaptive Fill or Tail, or lower Syncopation. Very short gates intentionally cut material.
Build-up or rough overlaps	Reduce Max toward or below 100%, lower wet level/density and use DAW peak monitoring. Overlapping voices can add energy.
Unexpected missing attacks	Compare source dots and output count. Raise density, lower accents, verify chunks are not near zero, and disable modulation.
Modulation changes too rapidly	Reduce LFO/free rate or use more Slew; choose slower source rate for plan targets. Rhythm response affects queueing, not LFO speed.
Stereo seems narrower	Check Mono/Stereo/Random modes and Wet Width/Wet Mix. Avoid comparing panned stereo to mono folded output as identical.
Different repeated exports	Keep source/capture, seed, mode, phrase, tempo/meter, host start, parameter values, automation, sample rate and modulation initialization identical.

Controlled file render / null comparison

1. Capture a known file or track loop and save a completed Freeze project. For comparison between formats, use the same audio material, settings and start state.
2. Turn master modulation Off for the baseline, use one fixed seed and identical DAW render settings. Render both to uncompressed PCM at the same sample rate and with identical timeline start and pre-roll.
3. Align the resulting files by musical start and compare level/PCM samples, or invert polarity of one and sum. Inspect any residual at start and phrase boundaries. A residual is a difference, not evidence of an audible fault by itself.

Compare fairly Format/host lifecycle, state restoration and transport history can change the starting context. Do not compare different captures and expect a meaningful null. Listen separately only through a real monitoring path.

Troubleshoot files, installation and activation

Resolve errors from the least disruptive check to the more specific fix.

Problem	What to do
Cannot load audio file	Check mono/stereo, nonempty 8-192 kHz file, readable permissions. Decode support differs; convert to standard WAV/AIFF if an MP3/AAC/other file cannot open.
Preview not heard	Host must supply audio callbacks; start transport or use a track that remains processed. Confirm region selection, monitoring and the demo notice.
Region too long / too short	Choose 0.05-32 s. Use Zoom/overview for long files. The loaded region keeps its own duration.
Phase drift	Match period to Phrase Length / BPM/meter, trim or pre-render the desired loop. Keep drift if wanted.
DAW cannot find plug-in	Check arm64/macOS 26+, correct format, install in current user's plug-in folder, rescan and reopen. Do not replace a different build in an active project.
macOS blocks package	Use the supplied trusted package, verify installer check-only and contact support for validation guidance. Do not disable protections globally.
Red licence notice / code missing	Check purchase email and spam, network and current key, follow service status. Stop Host transport / reinstantiate Free after successful activation.
Preset load fails	Do not reuse corrupted file as a valid preset. Check exact format/version, permissions and backup; current sound is preserved if validation rejects it.

For repeatable issues, use About -> Copy build info and report the precise DAW version, plug-in format, macOS version, tempo/meter, phrase, input and capture mode. Do not include private keys or codes.

Technical specifications

Supported interface, capture boundaries and parameter architecture for SyncoPirate 1.0.

Category	Specification
Product	Audio effect; onset-aware rhythm reconstruction. No MIDI input/output or embedded MIDI Learn; host-level parameter mapping where supported.
Platform / formats	Apple silicon arm64, macOS 26.0+; AU and VST3.
Audio buses	Matched mono-in/mono-out or stereo-in/stereo-out.
Imported audio	Mono / stereo; decoder sample rate 8-192 kHz; selected region 0.05-32 seconds; original speed/pitch preserved with sample-rate conversion as required.
Musical windows	1/2, 1, 2, 4, 8 bars; meters 3/4, 4/4, 5/4, 7/8, 9/8, 11/8, 13/8; up to 104 cells and 36 seconds per capture page; 208 cells in an eight-bar 13/8 phrase.
Modulation	6 independently enabled lanes, 10 modern sources, 18 assigned targets plus None; Relative / Absolute, rhythm/continuous/discrete/action destinations.
Host parameters	400 established slots; includes compatibility/legacy parameters. Modern editor intentionally displays only relevant controls.
Presets / state	Named setting presets; validated schema; host state can embed complete Freeze capture and File audio. Older builds with a 32 s capture-page limit cannot restore longer pages.
GUI	Light/dark, 85-125% proportionate scale; collapsible modulation section. Native logical 1120 x 772 / 1002 (normal / expanded).
Audio alignment	Reported host latency 0 samples; musical capture/plan still needs a complete phrase. This is not a claim of zero musical lookback or instantaneous first capture.
Level handling	Wet branch compensation bounded (up to +6 dB) and soft peak handling. Not a LUFS or true-peak mastering limiter.

Compatibility notes Actual audio performance, host callback scheduling and device scanning depend on the system. A held capture can repeat indefinitely despite the effect reporting zero tail seconds to the host.

Main controls: quick reference

Visible default values for a fresh instance. Loaded presets, host state and automation may override them.

Control	Range / choices	Default
Input	Track / File	Track
Clock	Host / Free	Host
Capture	Follow / Freeze	Follow
Phrase Length	1/2, 1, 2, 4, 8 bars	1 bar
Analysis	Auto, Percussive, Melodic	Auto
Threshold	0-100%	35
Syncopation	0-100%	100
Event Density	0-100%	100
Variation Spread	0-100%	75
Move Mode	Classic / Radical	Classic
Gap Reconstruction	Silent, Adaptive Fill, Repeat, Following, Tail	Adaptive Fill
Swing / size	0-100%; 5 metrical levels	0 / 1 level slower
Groove Accents	0-100%	30
Variation Seed	1-9999	249
Chunk Min / Max	0-200%, ordered	100 / 100
Chunk Hold	On / Off	Off
Pan	Mono, Stereo, Random, Random+	Random
Wet Mix	0.00-1.00	1.00

Global Random selection defaults use ten checked controls; see Random selection reference. A default parameter value is not a recommendation for every sound. For diagnostic comparison, use restrained values and clear transients.

Modulation controls: quick reference

Core lane and shared settings. Controls are shown conditionally by source/mapping. Defaults refer to fresh processor state.

Control	Range / choices	Default
Master / lane	On, Off	On / lane Off
Target	18 destinations or None	Lane 1 Sync; rest None
Source	10 modern generators	LFO
Mapping	Relative / Absolute	Absolute
From / To	0-100%; physical percentage points for chunks, normalized for trims	0 / 100
Depth / Offset	-100..100%	0 / 0
Polarity	Bipolar / Unipolar	Bipolar
Rate / Hz	21 musical divisions / Free; 0.01-20 Hz	1 bar / 1 Hz
Scale 10x	On / Off (free clock)	Off
Phase / Reset	0-360 deg; Free, Start, Bar, Trigger	0 / Free
Slew	0-2000 ms	0
Jitter / Distribution	0-100; Uniform, Center, Edge	0 / Uniform
Chance	0-100% (source meaning varies)	100
Wave / Shape	8 waveforms; 0-100%	Sine / 0
LFO Steps / Hold	Off or 2-32 levels; On / Off	Off / Off
Pulse % (LFO)	2-98%	50
Rhythm response	1/16, 1/8, 1/4, 1/2, 1 bar	1/16 note

Clocks are independent Rate default is one bar in a fresh instance, not the 1/16 default Rhythm response. A stored preset can choose a different rate, phase and mapping.

Modulation details: range reference

Source-specific and global parameters. UI conditionally replaces control rows when the source changes.

Control	Range / choices	Default
Random LFO interpolation	Hold, Linear, Smooth	Hold
Loop length	1, 2, 4, 8, 16, 32 cycles	8
Triggered Random Levels	Off; 2-32 levels	Off
Triggered Random Repeat	Off; 1,2,4,8,16,32 accepted hits	Off
Triggered Random Classic	On / Off	Off
Euclidean Steps / Hits	1-32 / 0-32	8 / 3
Rotate	0-31	0
Gate Low / High	0-100%	0 / 100
Gate Pulse	1-100%	100
Attack Rise / Fall	1-250 ms / 5-2000 ms	12 / 220
Sens. (global)	0-100	65
Min gap (global)	5-1000 ms	80
Follower Gain (global)	-24..+24 dB	0
Follower Rise / Fall (global)	0.1-500 / 1-5000 ms	5 / 120
Follower Delay (global)	0-2000 ms	0

When switching between sources the inspector shows only relevant ranges; settings for hidden controls can remain stored for later source changes. The host's parameter list is a compatibility surface, not a menu of every active editor control.

Glossary and support checklist

Use the same vocabulary when asking for help, exchanging presets and comparing renders.

Term	Meaning
Onset / attack	Detected beginning or significant change of an audio event.
Capture	A complete source audio window aligned to musical boundaries.
Plan / grid	Chosen arrangement of playing events and their nominal timing/length.
Chunk	Audio fragment associated with an event; may overlap other fragments.
Gap	Space not filled by a main event; reconstruction can add a short source snippet.
Dry / wet	Untransformed captured phrase / reconstructed phrase.
Seed	Deterministic identity used by random-looking musical decisions.
Source / target	Modulation generator / mapped destination.
Scope / OUT	Shaped lane source trace / actual applied destination.
AB / null test	Compare two renderings; subtract aligned PCM samples to find differences.

When sending a support request

- Copy build info from About and include macOS, host name/version, AU or VST3, BPM and meter.
- List Track/File, Host/Free, Follow/Freeze, Phrase Length, the exact settings, and whether activation is valid. Mention what status or diagnostic appeared.
- Provide steps to reproduce, a short non-sensitive audio excerpt if allowed, and screenshots of the map and modulation if relevant. A rendered file, sample rate and exact start point help investigate sound differences.

Keep creating Explore with a fixed capture and seed first; then introduce Random or a few thoughtful modulation routes. Save the settings you like and the musical source that made them special. Enjoy SyncoPirate.