

Krisis

Inductor-style resonators with distortion in the loop.

Three saturating, inductor-style band-pass voices per channel, with the distortion inside the resonance loop, plus XYZ chaos modulation (Thomas or Chua) and a wah or autowah. Set simply it passes for an inductor wah; pushed, it is a bank of coupled, self-oscillating resonators. Zero latency, no lookahead.

Each voice is a zero-delay-feedback state-variable filter taken at the band-pass tap. The device runs oversampled (2x, 4x or 8x) inside one gen~ codebox.

SIGNAL FLOW

```
in (pair 1, optional pairs B / C) -> M/S encode?
-> voice inputs -> [oversampled: source clippers -> own fb / ring / matrix
-> Bias Leak HP -> x Sustain gate -> SVF A -> SVF B -> SVF C]
-> sum x calibration -> decimation LPF -> adaptive trim -> DC block
-> M/S decode -> dry/wet -> Output -> limiter -> ceiling (-0.3 dBFS)

chaos (Thomas / Chua) -> X / Y / Z rows -> Freq, Q, Drive, Feedback ...
treadle source -> mass-spring -> wah sweep
```

QUICK START

- 1 Load on an audio track. With Wah Off, **Freq** sets the centre, **Q** the resonance and **Drive** the saturation.
- 2 Raise **Feedback**: it rings past about 50 % and oscillates near 100 % (at Q 4). **Sustain** decides whether it rings out or drones.
- 3 Use **Spread** with a Spread Mode to place voices A, B and C around the master Freq.
- 4 Set Wah to **Stack** and drive the **Treadle** from a source (Pedal, Env, Chaos, LFO, Trigger). Map Treadle to an expression pedal or CC.
- 5 Open a Chaos target row (X, Y or Z on the Mod page) and give it a Depth to let the attractor move Freq, Q, Drive or Feedback.

CONTROLS

MASTER

CONTROL	RANGE	WHAT IT DOES
Freq	20-20000 Hz	Master centre frequency. Default 800. Replaced by Treadle when Wah is on.
Q	0.5-40	Resonance. Default 4.
Spread	0-100 %	How far voices A, B and C move from the master. Default 50.
Drive	-12 to +36 dB	Where the loop clipper saturates. Default 6.

CONTROL	RANGE	WHAT IT DOES
Feedback	0-100 %	Loop gain. Small-signal loop gain is Feedback x sqrt(Q). Default 30.
Core	0-100 %	Level-dependent pitch: louder resonance pushes the peak up, up to +1.3 octaves at 100 %. Default 30.
Spread Mode	Ratio / Linear / Harmonic / Formant / Scatter	Ratio spreads up to +/-3 oct. Linear +/-3000 Hz x Spread^2. Harmonic uses 1:2:3, 1:3:5 or golden. Formant morphs a-e-i-o-u. Scatter uses a stored seed.
LOOP		
Clip	Inject / State / Both	Where the distortion sits. Inject re-injects through the clipper. State saturates the integrator state and turns Feedback into a resonance boost. Both locks into a self-sustaining tone at Sustain 100 %.
Curve	Tanh / Diode / Fold / Hard	Diode is asymmetric (even harmonics and DC). Fold is a sine fold.
Sustain	0-100 %	Gates the injection with the input envelope. 0 rings out, the middle gives seconds of tail, 100 % is a free-running drone. Default 40.
Bias Leak	0.5-40 Hz	High-pass in the injection path. Default 5.
Topology	Parallel / Series / Ring / Matrix	Parallel sums the voices (-4.8 dB). Series chains A into B into C. Ring injects A > B > C > A. Matrix has a 3x3 amount grid on its page.
Cross	0-150 %	Ring and Matrix amount. Default 30.
STEREO AND INPUTS		
Stereo	Dual / Offset / M/S	Dual filters both channels alike. Offset shifts R voices by Width. M/S gives Mid and Side their own A/B/C.
Width	+/-24 st	Offset amount. Default 3.
S Drive	-24 to +36 dB	Side drive offset in M/S, default +12 dB because Side usually sits lower.
Multi Input	Single / Per Voice / X-Env / X-Excite	Uses extra stereo inputs B (in 3-4) and C (in 5-6), routed with the two menus under it. Per Voice feeds A from pair 1, B from B, C from C. X-Env uses them for envelope and chaos forcing. X-Excite rings the resonators with them.
CHAOS		
Attractor	Thomas / Chua	Two RK4 instances. Entropy sets Thomas' b (52 % is chaotic, low is order, 100 % a random walk). Alpha (2-30) and Beta (5-50) set Chua.
Rate	0.01-50 Hz	Integration speed. Audio switches to every-sample stepping at Rate x 40, FM-like. Default 0.5.
Forcing	0-100 %	Adds the input envelope to the attractor.
Freeze / Reset / Seed	-	Hold the state, or recall the initial conditions.
Mod page: X / Y / Z	target + depth	Targets: Freq, Freq A/B/C, Q, Drive, Feedback, Cross, Spread, Treadle. Depths are bipolar (Freq +/-2 oct, Drive +/-24 dB, Feedback +/-0.5).
Chaos Stereo	Auto / Same / Rotate / Diverge / Side	Rotate reads y, z, x on R. Diverge starts a second instance a hair away (Divergence 10^-6 to 10^-1) and it drifts off within seconds.

WAH

Wah	Off / Stack / Solo	Stack puts all three voices on the treadle at zero spread (Tune offsets still detune them). Solo uses voice A only.
Range	Cry / Vox / Custom	Cry is about 350 Hz-2.2 kHz, Vox about 450 Hz-1.6 kHz (approximate, not measured). Custom uses Min and Max.
Treadle source	Pedal / Env / Chaos / LFO / Trigger	Env, LFO and Trigger have settings on the Pedal page. Link off gives R its own envelope or trigger and a quarter-cycle LFO offset.
Taper / Body	0-100 %	Taper blends a linear-Hz sweep into exponential. Body adds the low-pass tap.
Mass / Damping	0-100 %	Mass-spring behaviour of the treadle: low damping overshoots and settles like a foot.

OUTPUT

Quality	2x / 4x / 8x	Oversampling. Default 4x. Switching is instant and may click.
Tap	Raw / Norm	Norm is unity-peak; Raw has peak gain Q.
Match / Limit	toggles	Match enables the calibrated gain and adaptive trim. Limit enables the soft limiter; the ceiling always applies.
Trim	0.3-10 s	Adaptive trim speed. Default 2.
Dry/Wet, Output	0-100 %, -36 to +12 dB	Equal-power mix. At 0 % wet the path is bit-transparent.

NOTES

Pages and banks

Detail pages: **Voices** (Link row, then A, B, C each with Tune, Q, Drive, Level and an on button), **Matrix**, **Mod**, **Pedal**. Link blends each voice toward the master value. Push banks: Master, Loop, Chaos, Wah.

Gain staging

A static calibration table measured offline ([scripts/calibrate.cjs](#), about 5 minutes) is baked into the device. An adaptive trim then nudges the wet RMS toward the input RMS (within +/-6 dB, wider in Series), and freezes below -50 dBFS so tails and drones are left alone.

STATUS

Not loaded in Live yet. Still to check: gen~ compile, CPU (six voices at 8x with Matrix is the heavy case), the Live API routing menus for inputs B and C, and whether Live's delay compensation covers those routes. The Cry and Vox ranges are from memory, not measurements.