Desert Moon Audio

DINO-ROAR

D R - 0 9

Limiter / Harmonic Detonator

Contents

In 1965 Shure built a limiter for public-address racks whose only job was to stop a preacher blowing up a loudspeaker. It held everything to one level, hard, and it distorted while it did it. Recording engineers discovered that what was a fault on a lectern is a sound on a drum bus — everything slammed forward, dense, furry, alive. Dino-Roar is that circuit taken seriously: the JFET limiter, the Class-A crunch stages, and a few things the hardware never had room for.

> **A NOTE ON THE MODEL**
>
> Dino-Roar is an original design informed by how the vintage JFET PA limiters physically work — feedback detection, a shunt JFET gain element, discrete Class-A make-up stages. It is not a sample-matched copy of any particular unit, and Desert Moon Audio is not affiliated with or endorsed by Shure, Standard Audio, or Safari Pedals.

1.1 What Gets Installed

FORMAT	LOCATION
Audio Unit	`~/Library/Audio/Plug-Ins/Components/Dino-Roar.component`
VST3	`~/Library/Audio/Plug-Ins/VST3/Dino-Roar.vst3`
AAX	`/Library/Application Support/Avid/Audio/Plug-Ins/Dino-Roar.aaxplugin`

After installing, restart your DAW or rescan its plug-in list. Dino-Roar appears under **Desert Moon Audio**. Mono and stereo tracks are both supported; on stereo tracks the two channels are processed by matched independent engines.

2.1 Five Minutes In

Put Dino-Roar on a drum bus. Load the factory preset **Parallel Jump**. Play the loudest section of the song.

That is the trick this box exists for: the limiter slammed hard — 20 dB or more of gain reduction — blended *under* the dry signal by the MIX control. The transients stay yours; the density, sustain and grit come from the crushed copy. Now raise **INPUT** until the lamp between the big knobs burns steadily, and pull **MIX** up and down until the drums sit where you want them.

For the opposite discipline, switch **MODE** to CRUNCH: no limiting at all, just three Class-A stages driven into asymmetric clipping. And for no discipline whatsoever, STACK runs the limiter *into* the stages.

2.2 Resizing and the Panel Latch

Drag the window's corner. The panel keeps its shape and every control scales together; the size is remembered per session. The mustard key beside INPUT folds the switch decks away entirely — the knobs stay out, the zigzag becomes the plate's bottom edge, and the window takes half the screen space. Press it again to bring the switches back.

> **DEFAULTS**
>
> Double-click any knob to return it to its resting position. The host's own bypass control and the BYP button on the panel drive the same parameter, so neither fights the other.

3 The Panel at a Glance

1 Preset bar — step, pick, save, revert, A/B, undo, redo

2 INPUT — drive into the circuit

3 TONE — low-pass, dark to open

4 Mood lamp — green limiting, red distortion

5 BYP — true bypass, click-free

6 Gain-reduction ladder, marked in dB

7 MIX — parallel blend, phase-aligned

8 OUTPUT — level, unity at 7

9 MODE — LEVEL / CRUNCH / STACK

10 VOICE — MK1 / MK2

11 SPEED — limiter release

12 SC FILTER — detector high-pass

13 TONE POS — tone before or after the circuit

14 Input and output meters with peak hold and clip lights

15 SAFE — output guard rail at –0.3 dBFS

16 LINK — stereo-linked detection

17 STOMP — transient re-injection

18 SC SRC — internal or external detector

19 M/S — chew the stereo, the mid, or the side

20 Panel latch — folds the switch decks away

3.1 How the Signal Runs

INPUT drives the signal into a threshold that never moves. MODE picks what it hits: the JFET limiter (LEVEL), the Class-A stages (CRUNCH), or both in series (STACK). TONE sits before or after that block (TONE POS); MK1 voicing caps the bandwidth; OUTPUT sets the level; MIX blends against a delay-aligned dry path. The second row modifies the machine: STOMP re-injects shaved transients, LINK ties the channels' detection, SC SRC keys the detector externally, M/S aims the circuit at mid or side, SAFE guards the output. Everything nonlinear runs 4× oversampled.

4 The Circuit

4.1 LEVEL — the JFET Limiter

The limiter is a shunt JFET in a feedback loop: the detector listens to the *output* and pulls the JFET into conduction until the output stops moving. Three consequences are the entire sound:

The ratio is effectively infinite. The loop pins everything to one level. Twenty or thirty dB of gain reduction is normal operation — the INPUT knob decides how far above the floor you start, and everything above it comes forward.

Gain reduction and distortion are one thing. A JFET's channel resistance varies with the signal across it, so the harder the limiter works, the more second-harmonic grit it folds into the audio. You cannot have the slam without the fur. That is the point.

The release is program-dependent. A lone transient recovers at the SPEED you chose; sustained level holds the gain down and lets go up to four times slower. Drums pump musically instead of fluttering.

4.2 CRUNCH — the Class-A Stages

Three discrete single-ended stages in a row. Each one clips asymmetrically — the top of the swing saturates before the bottom cuts off, so even harmonics arrive first and the full buzz follows. Hit a stage hard and its operating point walks away from rest, so the *shape* of the clipping changes with your playing. This is the breathing a static waveshaper never has. INPUT sets the drive; loudness is compensated so the knob changes texture, not just volume.

4.3 STACK — Both, in Series

The limiter runs into the stages. The hardware and the official plug-in both make you choose one circuit; STACK is ours alone. The limiter hands the stages a flattened, already-furry signal and the stages fold their own harmonics on top. The stages' drive is tamed in STACK so the two circuits stay expressive instead of pinning each other.

> **POP-FREE SWITCHING**
>
> MODE, VOICE and TONE POS reroute the circuit. The wet path fades out over ten milliseconds, the swap happens in the silence, and it fades back — flip anything mid-mix.

5 Knobs and Switches

INPUT

0 – 10 · 0 to +40 dB drive

Drive into the circuit. The threshold never moves; this is the only amount control, exactly like the hardware. In LEVEL, more INPUT is more gain reduction and more grit together. In CRUNCH, it is how hard the stages fold.

TONE + TONE POS

0 – 10 · 3.2 kHz – open

A passive-style two-pole low-pass, dark to open, out of the circuit at 10. PRE shapes what hits the circuit — roll it down and the limiter stops chasing cymbals. POST shapes what leaves — the classic dark-crunch move.

STOMP

0 – 10

The knob the name promised. A limiter eats attacks — that is what limiting is — so STOMP hands them back: an onset detector on the delay-aligned dry signal opens a gate at each hit and mixes the original transient back over the crushed body. At 10, the attack instant is your untouched hit riding on 25 dB of fur. Nothing else on the panel changes; the slam stays slammed. No Level-Or, hardware or software, can do this.

MIX

0 – 100%

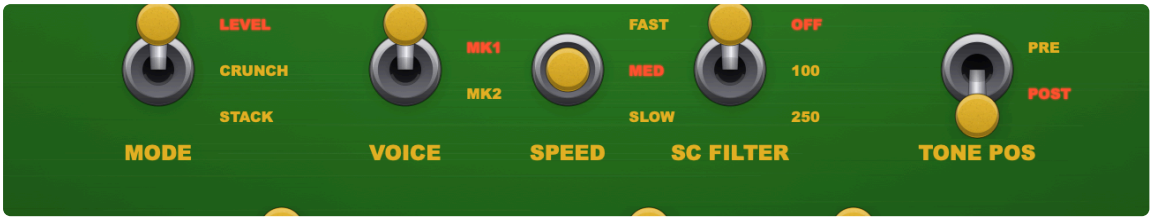
Parallel blend. The dry path is delayed to exactly match the processed path, so any blend is phase-clean — no comb filtering at 50%, ever.

OUTPUT

0 – 10 · unity at 7

Level, after everything. A passive pot's taper: usable trim either side of unity at 7, off at 0.

5 The Switches



VOICE

MK1 / MK2

MK1 is the original: bandwidth capped top and bottom, heavier JFET asymmetry, stages that sag further. Narrow, nasty, forward. **MK2** opens the bandwidth and stiffens the stages — the modern revision, for when you want the behaviour without the telephone.

SPEED

FAST / MED / SLOW / AUTO

Limiter release: roughly 80, 250 and 700 ms, each program-dependent. FAST pumps audibly on dense material; SLOW rides level like a hand on a fader. AUTO glides between them on its own, following how long the limiter has been held down — the switch position picks itself.

SC FILTER

OFF / 100 / 250 Hz

A high-pass on the detector only — the audio path never passes through it. OFF, the kick detonates the limiter and the whole kit ducks with it: the vintage behaviour. At 100 or 250, the low end stops driving the detector, kick and bass ride *on top of* tight limiting, and the mix stops breathing in time with the four-on-the-floor. No Level-Or has this switch; it is the difference between a pump you chose and one you didn't.

The second row is everything a 500-series module never had room for — where this unit stops being a recreation.

SAFE · LINK · SC SRC · M/S

second row

SAFE is a zero-latency ceiling at −0.3 dBFS on the processed path — instant grab, 50 ms release, envelope shared across channels. A guard rail, not a mastering limiter: be reckless, the master survives. **LINK** ties the two limiters to the larger of their control voltages so a one-sided hit cannot lurch the image; OFF is the dual-mono vintage behaviour. **SC SRC** switches the detector from the unit's own output (INT, the feedback loop that defines the sound) to the external sidechain input (EXT) — the gain rides the key, the character still comes from the JFET, and bass ducks off the kick through a box with an opinion. **M/S** points the whole circuit at the stereo signal, only the mid, or only the side; the untouched half rides through delay-aligned.

One more, in the preset menu: **MK1 Self-Noise** adds the discrete stages' own filtered hiss floor, around −76 dB. Vibe, switchable, off by default.

6 Lamps and Meters

6.1 The Mood Lamp

The jewel lamp between the big knobs is the hardware's multicolour LED: it burns **green** with limiting and **red** with distortion, and mixes the two when both circuits are working. Dark means the circuit is coasting — turn INPUT up.

6.2 The Gain-Reduction Ladder

Beside the wordmark, six lamps marked 3 to 30 dB, running left to right. The hardware tells you *that* it is limiting; the ladder tells you *how hard*. The green rungs are working range, amber is deep, and the red 30 dB rung means the loop has essentially decided the level itself. All of these are legitimate places to live.

6.3 IN / OUT Meters

Peak bars down each side of the plate, –48 to +3 dBFS, with a slow-falling peak-hold marker. The clip lamps at the top **latch** — a clip is a thing that happened, not a thing that is happening. Click a meter to clear its lamp.

6.4 BYP

True bypass, ramped over 30 ms so it never clicks, and time-aligned so the signal does not jump. It is linked to the host's own bypass parameter and left out of presets deliberately: loading a preset must never switch the unit off.

The lamp, the bypass key and the STOMP knob under drive.

7 Presets, A/B and Undo

The bar across the top carries the whole preset system. Arrows step through the list; the glowing readout names what is loaded, with a dot when you have edited it; click the readout for the full menu. The keys on the right: **A/B** flips between two scratch settings — tweak one, flip, and hear them against each other; they start as twins and diverge as you edit, and neither is saved anywhere. **Undo** and **redo** walk the edit history — a knob drag is a few steps, not hundreds, and a preset load is one. The disk saves under a name; the ring puts back the loaded preset, discarding edits; the stacked bars open the menu.

Your saved presets live in `~/Library/Application Support/Desert Moon Audio/Dino-Roar/Presets` as `.drpreset` files — plain XML, safe to share, visible from every session and every host.

7.1 The Factory Bank

Front Panel

Everything at rest: moderate MK1 limiting, full wet.

LEVEL · MK1 · MED · IN 5 · MIX 100

Parallel Jump

The trick this box exists for. Drums slammed under the dry signal, kick kept tight.

LEVEL · MK1 · FAST · SC 100 · MIX 35 · STOMP 5

Drum Detonator

All the way in: fast, wide open, full wet. Room mics love it.

LEVEL · MK1 · FAST · IN 9 · STOMP 4 · SAFE ON

Vocal Attitude

MK2 keeps fidelity while the loop flattens the performance.

LEVEL · MK2 · AUTO · SC 250 · MIX 100

Sneaky Glue

Bus glue with the character under the surface.

LEVEL · MK2 · SLOW · IN 3 · MIX 40 · STOMP 2

Crunch Guitar

The stages as a fuzz box for guitars and keys.

CRUNCH · MK1 · IN 6 · TONE 5

Lo-Fi Break

Darker, sagging MK1 stages: breaks and pitched-down samples.

CRUNCH · MK1 · IN 8 · TONE 3.5 · NOISE ON

Total Destruction

Limiter into the stages, everything up. Nothing survives.

STACK · MK1 · FAST · IN 10 · STOMP 3 · SAFE ON

Bass Grind

STACK as a bass amp: tight detection, tone rolled to the woofer.

STACK · MK2 · SLOW · SC 250 · MIX 60

8.1 Parallel Drums, Properly

LEVEL, FAST, SC at 100. Push INPUT until the ladder reads 15–20 dB on hits. MIX down to 0, then bring it up until the kit thickens without losing its front edge — usually 25–40%. Because the dry path is delay-aligned, you can automate MIX like a "more" knob for choruses.

8.2 Vocals That Sit Still

LEVEL, MK2, MED, SC 250, full wet. INPUT to taste — around 15 dB of reduction is where a vocal stops needing rides. The grit that comes with it reads as presence, not distortion, once it is in a mix.

8.3 The Room-Mic Crush

Drum Detonator, then SPEED to taste: FAST breathes with the kit, SLOW turns the room into a wall. TONE down to 6 if the cymbals spit.

8.4 Telephone, But Expensive

CRUNCH, MK1, TONE around 4, POST. The MK1 bandwidth cap does the telephone; the stage asymmetry does the expensive.

9 Specifications

ITEM	DETAIL
Formats	AU, VST3, AAX — macOS 10.15+, universal binary (Apple silicon + Intel)
Channels	Mono or stereo; matched independent engines per channel
Oversampling	4× polyphase IIR around every nonlinearity
Latency	The oversampler's few samples, reported to the host; dry path aligned
Limiter	Feedback shunt-JFET model; ~0.3 ms attack; program-dependent release; stereo-linkable; AUTO release
Sidechain	External key input (mono or stereo), oversampled in parallel with the programme
STOMP	Onset-gated transient re-injection from the delay-aligned dry path
SAFE	Zero-latency –0.3 dBFS ceiling, channel-linked, defeatable
Automation	Every control; pop-free topology switching; sample-accurate smoothing

Desert Moon Audio

Dino-Roar DR-09

Limiter / Harmonic Detonator · User Manual, version 1.0