

LATERAL PHONICS

ENTROPY PEDAL

The **Entropy Pedal** is a truly experimental combo-effect that combines fuzz, octofuzz, and overdrive, enhanced with a tunable oscillator, noise generator, and a modulator with bit crusher.

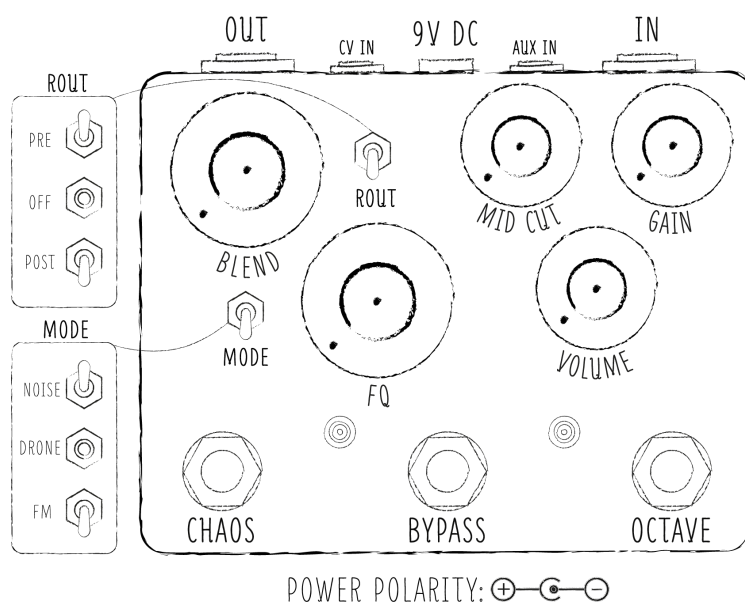
It blends classic tones and chaos with noise, operating in *two primary states*:

◇ **Idle** — focused on clean and predictable modes such as crystal-clear clean, overdrive, fuzz, or smooth octodrive.

◇ **Chaotic** — unleashing aggressive sonic chaos, transforming the signal into a powerful octofuzz, FM modulator, bit crusher, drone, or a full-on wall of noise.

Thus, Entropy Pedal is built both for radical noise experiments and for more restrained, musical applications. It allows for a seamless blend between both states, giving the musician full control over the transition from order to anarchy.

The pedal is based on our fully analog custom-designed circuit with deep chaos parameter tuning. It's an original creation — not a replica or clone of any existing effects.



“AUX IN” REPLACED BY “EXP IN”!

Structure & Controls

The pedal is visually and functionally divided into two sections: Drive and Chaos/Noise.

◆ Drive Section

Three knobs for shaping the core tone and gain:

- *Volume* – controls the overall output level.
- *Gain* – boosts the input signal, adding saturation and overdrive.
- *Mid Cut (MC)* – smoothly boosts lows and highs, creating a pronounced dip around 1 kHz for a more aggressive or transparent sound.

◆ Chaos/Noise Section

This is where modulation and chaos controls are concentrated:

Knobs:

- *Frequency (FQ)* – sets the base modulation frequency.
- *Blend* – mixes the modulated signal with the dry signal.

Toggle switches:

Mode – selects one of three modulator modes:

- FM (lower position) – frequency modulation based on the input signal (for metallic and synthetic harmonics);
- Drone (middle position) – continuous synthesized tone;
- Noise (upper position) – chaotic noise dependent on the base frequency (ranging from white noise to crushed signal);

Routing – determines where the processed signal is injected:

- Pre (upper position) – at the beginning of the chain (before the drive);
- Off (middle position) – signal is not sent to the noise section;
- Post (lower position) – at the end of the circuit (after all effects);

◆ Footswitches

- *Bypass* – toggles all processing on or off.
- *Octave* – activates the analog octave, transforming the drive into a thick octave fuzz.
- *Chaos* – adds the modulated signal (depending on the selected mode) to the main output.

◆ Additional Inputs (optional/test modes)

For integration with external devices:

- *EXP* – expression pedal input (modulation frequency control).
REPLACED AUX IN!
- *CV In* – control voltage input for modulator parameters.

Idle State & Drive Section

By using only the Drive section, with no additional modes activated, the pedal is in IDLE state, indicated by the right LED glowing green. In this mode, the device operates as a high-grade discrete amplifier capable of reaching deep saturation. The range of tones here varies from a slightly compressed clean tone and smooth overdrive to powerful distortion and rich fuzz. The entire circuit of this section is built on a combination of JFET and BJT stages. The JFET handles the initial gain and final signal clipping. It progressively amplifies and enriches the sound, delivering characteristic tube-like compression, pleasant soft saturation, and outstanding dynamic response. The BJT acts as an intermediate mid booster and additional saturator. It compensates for filter influence and contributes extra harmonic distortion.

In addition to all this, the pedal effectively emulates the sound of powerful tube heads, creating the effect of a large concert rig with intense sound pressure in the form of compression.

In the middle of this section, there is also a frequency booster that simultaneously enhances both lows and highs. This results in a powerful low-end "roar" combined with a pronounced high-end presence due to the emphasized high frequencies and creating a scooped-mid effect. The highly responsive Mid Cut control allows for smooth and gradual tonal adjustments, fitting perfectly within the overall concept.

Analog Octave-Up

When the **Octave Button** is engaged, the pedal switches to analog octave mode, and the right status indicator lights up red. At this point, the internal circuit automatically reconfigures itself — activating additional stages, adjusting certain components, and fine-tuning the gain — all optimized for flawless upper octave performance.

The resulting effect is cutting and sparkling; the additional octave section of Entropy literally slices through the signal and lifts it an octave higher. This becomes especially pronounced when playing above the 10th fret. If you switch to the neck pickup and roll off the tone on your guitar, the octave effect becomes even more prominent.

The gain in this mode is highly flexible: at minimum settings, it produces an almost clean, slightly modulated octave; at moderate levels, it delivers a dense, saturated, yet controlled tone; at maximum, it transforms into an aggressive fuzz with a distinct “splitting” character.

Despite the intensity, the pedal maintains excellent clarity — with no background noise thanks to an integrated noise gate — and the tone is finely tuned to reflect the nature of classic analog octavers. This makes it equally suitable for precise melodic lines and heavy, overdriven riffs.

Chaotic Mode & Noise Section

Activating the **Chaos Button** engages the pedal's noise section, turning on the left red indicator and unlocking true sonic chaos. A dedicated modulator is introduced into the circuit, capable of generating sounds, modulating them, and even creating frequency modulation — all designed to add controlled disorder into your signal chain.

There are *three operational modes*, switchable via the **MODE** toggle:

- **Drone Mode** generates a steady tone at a base frequency, adjustable via the *FQ (Frequency) control* — allowing for both a stable background hum and resonant tonal surges when the frequency is manually shifted.
- **Noise Mode** adds modulated white noise to the base frequency, forming dense and massive textured soundscapes that can be further twisted and warped using the same frequency control.
- **FM Mode (Frequency Modulation)** processes the input signal through complex oscillator transformations, generating radical synthetic timbres that still depend on the set base frequency.

In FM Mode, an interesting phenomenon occurs: when there's no input signal or the amplitude is low, the system begins self-oscillating at the base frequency. This results in a unique simulation of acoustic feedback, reminiscent of cranked guitar amps.

What makes this process special is the smooth, modulated transition between external signal processing and internal self-oscillation. As the input fades or disappears, the modulator doesn't just switch to oscillator mode — it organically transforms the sound, adding additional modulation layers to the transition phase. This enables the creation of:

- Natural-sounding feedback whines and screeches
- Smooth sound morphing
- Complex transitional timbres, and more.

Additionally, the **ROUTING** toggle lets you choose where the processed noise signal is injected into the effect chain:

- **Either at the beginning (Pre)**, for full reprocessing through the drive circuit
- **Or at the end (Post)**, to overlay it on top of the already shaped tone.

The **BLEND** control provides precise balancing between the clean Drive Section and the processed signal from the Noise Section. This allows you to subtly introduce noise components or completely override the original sound with generated textures.

Frequency Adjustment Range

Using the FQ control, you can adjust the frequency from low values (BPM) to high ones (over 1 kHz).

DRONE/NOISE Mode:

1) At low frequency (Low BPM): You can create rhythmic patterns that imitate percussion, as well as modulate the main signal to achieve effects like tremolo, vibrato, or to create a vibe effect. With a small range and low frequency, the effect is applied instantly, without attack/release time. Frequency changes also occur without delay.

2) At medium/high frequency: You can generate a tonal signal of a specific musical pitch. It can be smoothed out or driven using the DRIVE section and filter. This allows you to tune it to the unison, fifth, third, or any other interval of your chosen key. Starting from mid-high frequencies, the signal is applied instantly, but frequency changes occur with a slight release time.

FM (Frequency Modulation) Mode:

1) At low frequency (Low BPM): The modulating signal has a low frequency. When you stop playing, it lingers longer, creating clear pauses between sound and silence.

2) At medium/high frequency: The modulation takes on a synthesizer-like character, producing random oscillations and generations. When playing stops, the modulation appears almost immediately, creating a feedback effect and reacting to the input signal. In this mode, there will be no clear pauses between playing and silence.

Important: This description is provided only as an example of the main use cases. The real possibilities for experimentation and creativity are much broader.

Unconventional Control & Experiments

The Entropy Pedal stands out for its exceptional responsiveness to playing dynamics and input signal level. In the drive section, this allows you to: control the amount of gain just by how hard you hit the strings — from subtle saturation to aggressive distortion; smoothly reduce the distortion to a clean tone simply by rolling back the guitar's volume knob; Create natural transitions from transparent overdrive to dense fuzz using only dynamic playing.

The noise section also features unique sensitivity to the input signal, opening up vast sonic experimentation possibilities. In FM Mode (Frequency Modulation), the input amplitude becomes a full-fledged control element. Lowering the volume on your guitar, or using a volume pedal placed before Entropy, leads to:

- The gradual strengthening of autonomous oscillations
- Non-linear frequency modulation distortions
- Chaotic timbre transformations, and more.

This approach turns a standard volume adjustment into a powerful sound-sculpting tool, where smooth sweeps of a volume pedal can generate complex transitions between a clean signal and radical synthetic textures.

It's also especially worth mentioning the interaction between any chaotic mode with the send switch set to Pre and the Octave mode engaged. In this combination, along with amplitude control of the input signal (via the guitar's volume knob or a volume pedal), any interaction with the chaotic mode — whether it's a drone or FM modulation — will result in a bitcrusher-like effect or an intense modulation-type distortion. This effect occurs due to the monophonic nature of the analog octave-up circuit, which creates harsh interferences and artifacts when processing complex signals. Thus, by changing and blending different levels of chaos, you can emphasize the expressiveness and uniqueness of your playing, creating accents through various gradually evolving processes.

An additional layer of control can be achieved by placing a tremolo pedal before Entropy. In this case:

- Rhythmic volume fluctuations create cyclical modulation behavior
- Automatic pulsations are transformed into complex but structured sound patterns
- Manual tweaking remains available through tremolo depth and speed settings

This functionality greatly expands the creative range of the pedal — from building immersive drones to generating rhythmic synthetic sequences — all while remaining intuitive and musical to use.

Additional Technical Features

It's also worth highlighting that *all noise modes are fully shut off when disabled* — not just signal routing, but actual power to the corresponding circuits is physically cut. This approach guarantees the complete absence of any unwanted interference, noise, or generator residue — whether the entire pedal is bypassed or just a specific mode is turned off.

The switching system in Entropy is built on a programmable microcontroller, allowing for *special momentary activation modes* via long presses. To enable momentary operation, simply hold any of the buttons for more than 10 seconds — the pedal will enter a special momentary mode, which is particularly useful for experimental effects and real-time manipulation.

To revert to standard operation, perform the following combination: two short presses followed by a long hold, then release the button while the indicator light is blinking. This system prevents accidental switching while still providing quick access to advanced features for live performance scenarios.

Our Entropy pedal offers unique possibilities for integration with external devices via dedicated connectors. The **CV Input** allows you to control the base frequency of the modulator using an external control voltage — enabling you to create rhythmic patterns by connecting a sequencer or synthesizer, and achieve complex, automated sonic changes.

An Additional Audio Input accepts signals from any external sources — synthesizers, drum machines, or other instruments — processing them through the modulator and blending them with the main signal. A particularly exciting feature is the optional expression pedal input, turning Entropy into a fully interactive instrument.

The Expression Pedal can be either the expression pedal itself with a stereo output or a PASSIVE(!) volume pedal.

Please note: CV INPUT AND EXP have been added as experimental features and are intended for exploratory use. They are not intended to be fully functional.