

MANUAL FOR

Microraptor - Granular Predator



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“Microraptor tears incoming sound into chaotic granular fragments.”

マイクロ ラプター

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Microraptor – Granular Predator
A Chaotic Granular Effect Inspired by a
Predatory Dinosaur

MICRORAPTOR

Microraptor was a small carnivorous dinosaur that lived in what is now China approximately 120 million years ago during the Early Cretaceous period. Measuring about 70 cm in length, it is famous as the “four-winged dinosaur.”

Unlike modern birds, which possess wings only on their forelimbs, Microraptor had wing-like feathers on both its forelimbs and hindlimbs. Because of this unique anatomy, it is believed to have glided from tree to tree and represents an early stage in the evolution of flight. Its feathers are also thought to have been black with an iridescent sheen similar to that of a crow.



The name Microraptor is derived from micro- (Greek: small) and raptor (Latin: thief, plunderer, predator), meaning “small predator.”

Overview

Microraptor is a granular effect that captures sound, tears it apart into grains, and reconstructs those grains under chaotic fluctuations.

Four primary knobs provide intuitive control over grain Density, Size, Texture, and Pitch. The functions of these knobs can be reassigned through combinations of the Alt button and FREEZE switch, allowing access to a wide range of granular parameters.

Microraptor also generates chaotic CV and gate signals based on the Lorenz attractor. These signals can be routed internally or patched externally to modulate various parameters, producing unpredictable yet organic sonic transformations.

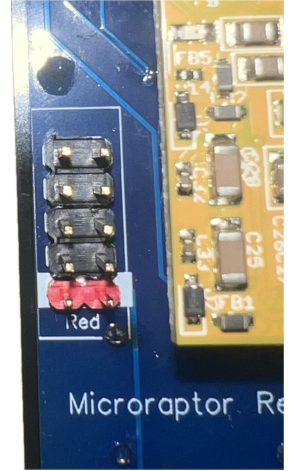
The instrument takes its name from the Microraptor dinosaur—a small predator that captures and manipulates tiny particles. Like fragments of sound gliding through space, grains are continuously reshaped into evolving sonic textures.

Installation

Microraptor is designed for Eurorack synthesizer systems and occupies 10 HP of rack space.

The module requires a standard ± 12 V Eurorack power supply via a 2x5-pin power connector. Current consumption is 90 mA from the +12 V rail and 5 mA from the -12 V rail.

When connecting the ribbon cable, make sure that the red stripe (-12 V) is aligned with the side marked “Red” on the PCB. Incorrect power connections may damage the module.



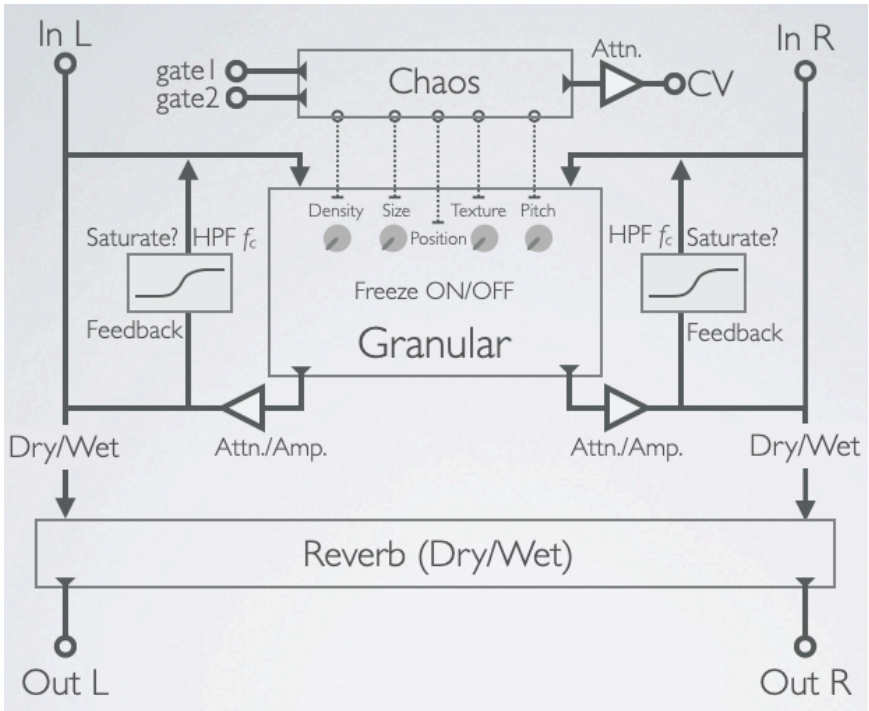
Quick Start

Let's make some sound!

1. Connect an audio source to **In L**.
(Make sure that the **FREEZE** switch is set to **OFF**.)
 2. Connect **Out L** or **Out R** to your mixer, audio interface, or monitoring system.
 3. Adjust the four primary controls:
 - **Density** • **Size**
 - **Texture** • **Pitch**
 4. Hold the **Alt** button while turning the knobs (**Gliding Mode**):
 - Use **Dry/Wet** and **Reverb** to shape the sound.
 - Turn the **Chaos** knob to introduce evolving variations.
- ※ For detailed descriptions of all controls, see pages 7–12.

Signal Flow

The signal flow inside Microraptor is illustrated below.



In the **Granular** section, up to 5 seconds of incoming audio are continuously recorded into a circular buffer. As new audio enters the buffer, older audio is gradually replaced.

The **Chaos** section generates chaotic signals based on the Lorenz attractor. The x and y components of the Lorenz equations are routed to the external outputs (**Chaos CV** and **Chaotic Gate**), while the z component is used internally to drive chaotic fluctuations in the granular parameters.

Front Panel

The functions of the **buttons**, **switches**, **input/output jacks**, and **knobs** are described below.



■ Controls

- **a**: Alt Button Assigns alternate functions to the knobs.
- **b**: FREEZE Switch When the switch is set to **↑(FREEZE ON)**, recording of incoming audio is stopped and the current buffer contents are locked. When set to **↓(FREEZE OFF)**, recording resumes.

■ Inputs /Outputs

- **1 & 2: Stereo Inputs** If no signal is connected to In R, the signal from In L is internally routed to In R.
- **3 & 4: Stereo Outputs**
- **5: Density (HUNT) CV** Controls grain density via external CV.
- **6: Size (BITE) CV** Controls grain size via external CV.
- **7: Texture (FEATHER) CV** Controls grain texture via external CV.
- **8: Pitch (SCREECH) CV** Controls grain pitch via external CV.
- **9: Full Feedback** A gate input that forces the feedback amount in the Granular section to its maximum value.
- **10: Saturate** A gate input that engages maximum saturation of the feedback signal's soft-clipping stage.
- **11 & 12: Chaotic Gate** Outputs chaotic gate signals generated from the Lorenz attractor.
- **13: Chaos CV** Outputs a unipolar chaotic CV signal generated from the Lorenz attractor. The output level can be adjusted using the **Chaos CV Volume** parameter in **Instinct Mode**.

■ Knobs

- **A, B, C & D:** The functions of the knobs change according to the combination of the **Alt** button and **FREEZE** switch, providing access to **Predation Mode**, **Gliding Mode**, and **Instinct Mode**.

Modes

Three operating modes are available through combinations of the **Alt** button and **FREEZE** switch:

- Predation Mode : ↓
- Gliding Mode : ↓
- Instinct Mode : ↑

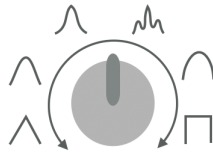
(Alt : OFF / ON FREEZE : ↓ OFF / ↑ ON)

Predation Mode

【Knob Functions in Predation Mode (Alt ○ / FREEZE ↓)】

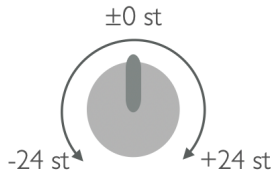
- **A: Density (HUNT)**
Controls the density of grains in the granular engine.
- **B: Size (BITE)**
Controls grain size from **60 ms** to **1000 ms**.
- **C: Texture (FEATHER)**
Controls the texture of grain playback.
The grain window continuously morphs between different shapes according to the knob position.

Texture



- **D: Pitch (SCREECH)**
Controls grain pitch from **-24** to **+24 st (semitones)**.
The center position corresponds to **0 st**.

Pitch



Gliding Mode

【Knob Functions in Gliding Mode (Alt ● / FREEZE ↓)】

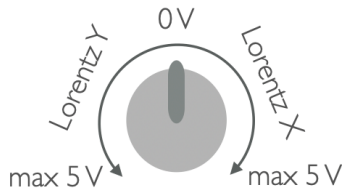
- **A: Dry/Wet (BLEND)**
Controls the balance between the dry input signal and the processed granular signal.
- **B: Reverb (SKY)**
Controls the amount of reverb applied to the output.
- **C: Feedback (NEST)**
Controls the amount of feedback returned from the granular output back into the recording buffer.
- **D: Chaos (GLIDE)**
Controls the influence of Lorenz-attractor-based chaotic signals.
These signals internally drive chaotic fluctuations in the **HUNT**, **BITE**, and **SCREECH** parameters.

Instinct Mode

【Knob Functions in Instinct Mode (Alt ● / FREEZE ↑)】

- **A: Grain Volume**
Adjusts grain volume from **-20 dB** to **+12 dB**.
Use this control to reduce clipping artifacts and excessive high-frequency noise.
- **B: Grain Position**
Controls the relative grain position within the recording buffer (**0-5000 ms**).
- **C: Feedback Cutoff**
Controls the cutoff frequency (**10 Hz – 2 kHz**) of the feedback signal's high-pass filter (HPF)
- **D: Chaos CV Volume**
Adjusts the output level of the Lorenz-attractor-based **Chaos CV** signal.

Chaos CV Volume



Quick Reference

Predation Mode
 a Gliding Mode
 a + b Instinct Mode

Density
 a Dry/Wet
 a + b Grain Volume

Size
 a Reverb
 a + b Grain Position

Texture
 a Feedback Volume
 a + b Feedback Cutoff

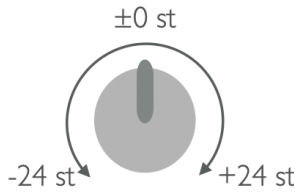
Pitch
 a Chaos
 a + b Chaos CV Volume



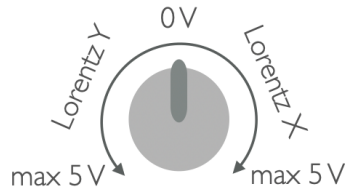
Texture



Pitch



Chaos CV Volume



Tips & Tricks

■ Troubleshooting

- **No sound is heard at the output**
Is FREEZE enabled?
Set the FREEZE switch to OFF to resume recording into the memory buffer.
- **High-frequency noise is present at the output**
The granular signal may be clipping.
In **Instinct Mode**, reduce the **Grain Volume** (Knob A) until the clipping artifacts disappear.
- **The Chaos CV output voltage is too high**
In **Instinct Mode**, adjust **Chaos CV Volume** (Knob D) to the desired level.

■ Getting Started

1. Connect an audio signal to the input jacks (**1 & 2**).
Make sure that the **FREEZE** switch is set to **↓ OFF**.
2. Adjust **Dry/Wet** and **Reverb** in **Gliding Mode** to shape the overall sound, then set an appropriate level using **Grain Volume** in **Instinct Mode**.
3. In **Predation Mode** (Alt ○ / FREEZE ↓), explore the core granular controls:
 - Density •Size •Texture •Pitch
4. Turn the **Chaos** knob in **Gliding Mode**, or patch the **Chaos CV** output (**Jack 13**) into one of the predation CV inputs (**Jacks 5–8**) to introduce chaotic variations.
da
5. Use **Feedback** in **Gliding Mode** and **Feedback Cutoff** in **Instinct Mode** to create more complex grain structures.
If the output becomes excessively loud, increase the **Feedback Cutoff** frequency or decrease the **Feedback**.

6. Try patching the **Chaotic Gate** outputs (**Jacks 11 & 12**) into **Full Feedback (Jack 9)** or **Saturate (Jack 10)** and explore the results.

Specifications

Size

Format: Eurorack

Width: 10HP (50.8 mm)

Height: 3U (128.5 mm)

Depth: 30 mm

Power Consumption

90 mA (+12 V), 5mA (-12 V), 0 mA (+5 V)

Warranty

Microraptor is covered by a **one-year limited warranty** from the date of purchase.

Any defects or failures occurring under normal operating conditions during the warranty period will be repaired or replaced free of charge.

This warranty does not cover damage resulting from:

- * Intentional modifications
- * Physical damage caused by dropping or mishandling
- * Incorrect power connections, including reverse polarity of the power ribbon cable

Contact

If you have any questions, comments, or need support, please feel free to get in touch.

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Happy patching!

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