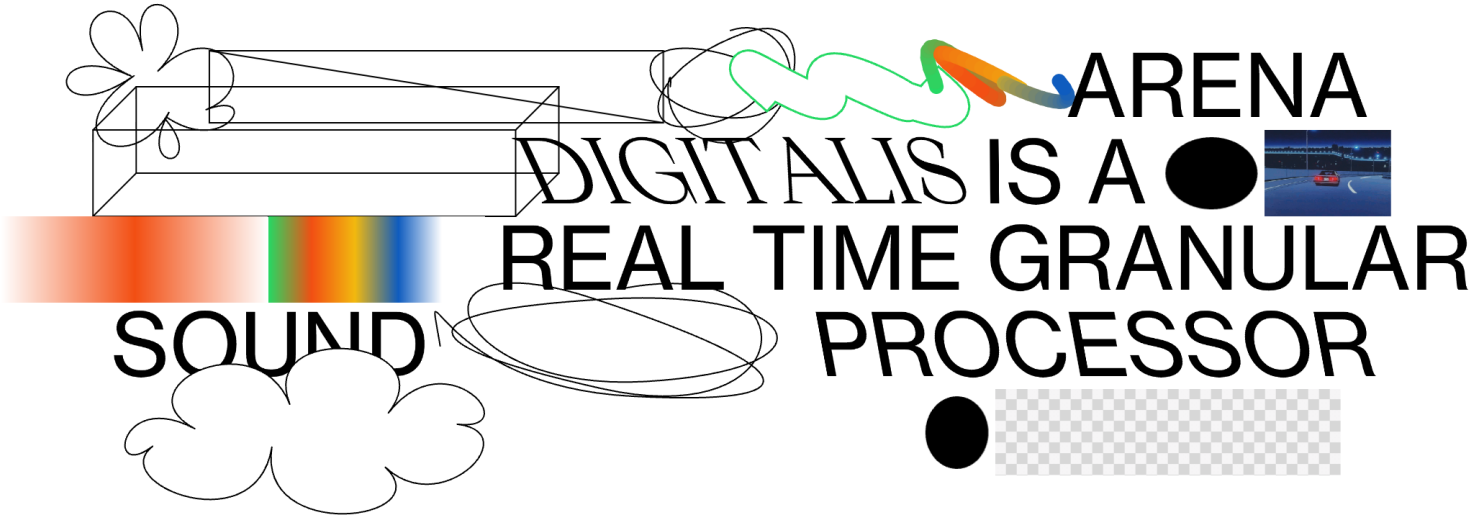
ARENA
DIGITALIS IS A
REAL TIME GRANULAR
SOUND
PROCESSOR

# ARENA DIGITALIS

## Introduction

Arena Digitalis is a high-performance, real-time granular audio processor built on the Arduino Nano R4’s 32-bit architecture. Unlike standard digital delays, this device treats incoming audio as a "physical matter," slicing your input signal into tiny fragments (grains) and reassembling them to create everything from lush ambient washes to jagged, bit-crushed glitches.

## Features

- **12-bit audio input and output**
- **Anti Click Widowing**
- **Dual State DSP**
- **Intelligent Buffer Monitoring**
- **Freeze and Random controls**
- **Grain, Speed, Dry/Wet Mix, Filter controls**
- **Shift Controls**
- **Input Safety Monitoring**
- **Powered By USB-C**
- **Hackable / Open Source**

# Controls

## Knobs

| | | |
|---|---|---|
| **SIZE** | Grain Size | Sets length (20 to 1500 samples). |
| **SPEED** | Speed/Pitch | 0 to 2x playback speed. |
| **MIX** | Dry/Wet | Dry - Wet balance. |
| **TONE** | LP Filter/Crush | **Top Half:** Smooth Low-Pass Filter. **Bottom Half:** Bit-Crushing and Downsampling (Gritty). |

## Buttons

| | |
|---|---|
| **RANDOM** | Toggles "Spray." When the **RANDOM LED** is on, grains jump around the buffer. |
| **FREEZE** | Toggles recording. When the **FREEZE LED** is on, you are looping the internal memory. |

## Combo (buttons + pots)

| | | |
|---|---|---|
| Hold **RANDOM** + Turn **SIZE** | Envelope | Changes grain shape from "Clicky" to „Smooth.“ |
| Hold **RANDOM** + Turn **SPEED** | Quantized Pitch | Jumps between 0.5x, 0.75x, 1x, 1.25x, 1.5x, and 2x. |
| Hold **FREEZE** + Turn **TONE** | LFO Rate | Adds a "tremolo" or pulsing movement to the filter. |
| Hold **FREEZE** + Press **RANDOM** | Play Direction | Changes playback direction. The Random LED will blink to confirm. |
| Hold **BOTH** Buttons | Global Reset | If the sound gets too chaotic, hold both buttons. All LEDs will flash, and the device will reset to factory settings. |

**CLIP LED** This is a "Safety" indicator. If your input audio is too loud and the digital gain is distorting, this LED will flash.

For more information visit the GitHub page:
https://github.com/SidRockett/Arena_Digitalis