NiftyDrum

Official Documentation

Ronna Technologies

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1. About NiftyDrum

NiftyDrum
by Ronna Technologies

1.1 Description

NiftyDrum is a trigger-to-MIDI conversion module that transforms piezo and FSR sensor inputs into MIDI messages. Connect up to 9 piezo sensors and 1 FSR (Force Sensing Resistor) to the dedicated terminal blocks, then receive MIDI data via USB-C connection.

1.2 How It Works

NiftyDrum delivers high-level MIDI performance in 4 easy steps:

- Connect sensors: Attach up to 9 piezo sensors and 1 FSR to the terminal blocks
- Plug in: Connect to your DAW, Raspberry Pi, or drum module via USB
- Configure: Use the web-based GUI to adjust trigger parameters, MIDI mapping, and velocity curves
- Play: Notes are transmitted instantly with imperceptible latency

1.3 Specifications

1.3.1 Hardware

- Piezo inputs: 9 channels
- FSR input: 1 channel (hi-hat controller)
- Connector type: Terminal blocks
- USB interface: Type-C
- Dimensions: 65 × 56.5 mm

1.3.2 Performance

- Latency: <2.5 ms
- Sample rate: >10 kHz
- Velocity resolution: 127 levels (full MIDI range)

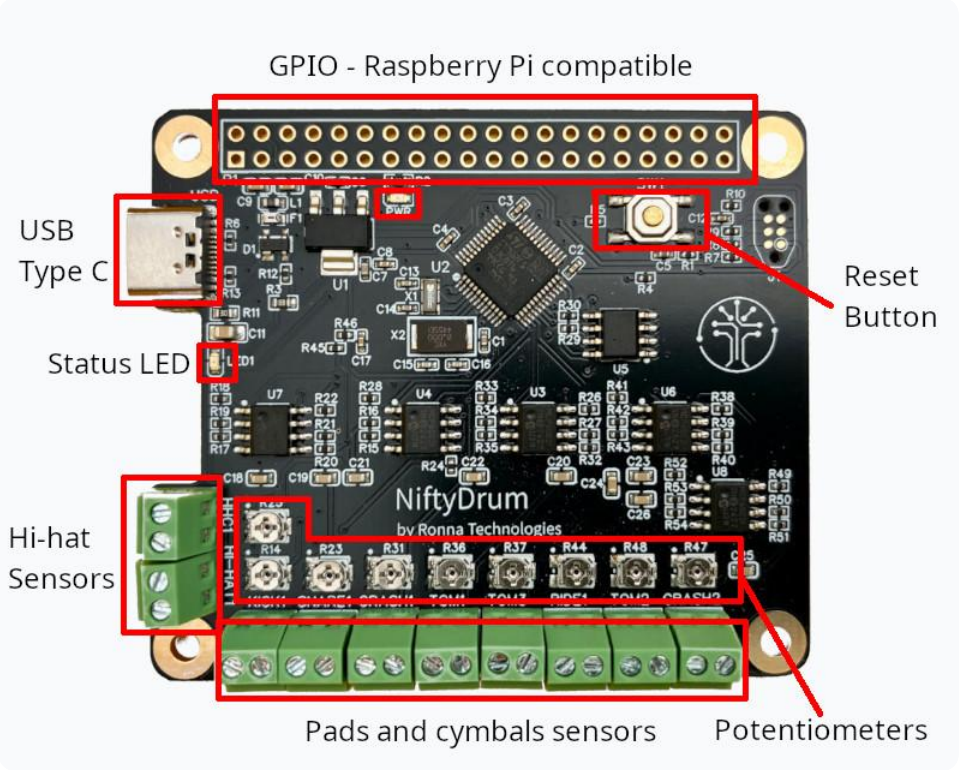
1.3.3 Software

- Platform support: Windows, macOS, Linux
- User interface: Web-based application
- Firmware updates: Via USB
- MIDI output: Note messages and Control Changes (CC)

2. The Board

2.1 Description

The NiftyDrum board is shown in the following image.



This board features the following interfaces:

- Terminal blocks for sensor inputs
- USB Type-C port for laptop or PC connectivity
- 9 potentiometers for sensitivity adjustment
- 2 LEDs
- Reset button
- Raspberry Pi-compatible GPIO header
- 4 mounting holes

2.2 Connecting Sensors

The board provides 9 piezo inputs, supporting up to 9 single-zone pads, as well as 1 FSR input.

2.2.1 Hi-Hat Sensors

On the left side of the board, two dedicated terminal blocks are reserved for hi-hat sensors:

- Top terminal block: Connects to an FSR (Force Sensing Resistor) sensor for hi-hat controller input
- Bottom terminal block: Connects to a piezo sensor for hi-hat cymbal trigger

2.2.2 Standard Pads and Cymbals

The remaining eight terminal blocks, located at the bottom of the board, accommodate regular pads and cymbals.

2.2.3 Important Notes

- For all terminal blocks, the ground pin is positioned on the left-hand side
- Nine onboard potentiometers enable hardware-level sensitivity adjustments for maximum flexibility
- If unsure about sensitivity settings, leave potentiometers at their midpoint for balanced performance

2.3 MIDI Outputs

The board offers two methods for transmitting MIDI notes and Control Changes:

- USB-C port: Outputs USB MIDI messages
- GPIO UART pins: Raspberry Pi GPIO-compatible interface

2.4 USB-C Port

Using NiftyDrum as a USB device is the recommended method for receiving MIDI messages. This configuration enables:

- Integration with DAW software for high-quality sound output from your laptop
- Control and configuration via the official app

2.5 Raspberry-Pi hat form factor

The board is designed with a Raspberry Pi 4 HAT form factor, ensuring seamless integration.

2.5.1 App Features

The official app provides comprehensive control over your NiftyDrum board:

- Customize MIDI note assignments for each trigger
- Design custom velocity curves per trigger
- Adjust advanced parameters including gain, threshold, scan time, mask time, and decay
- Update board firmware to the latest version

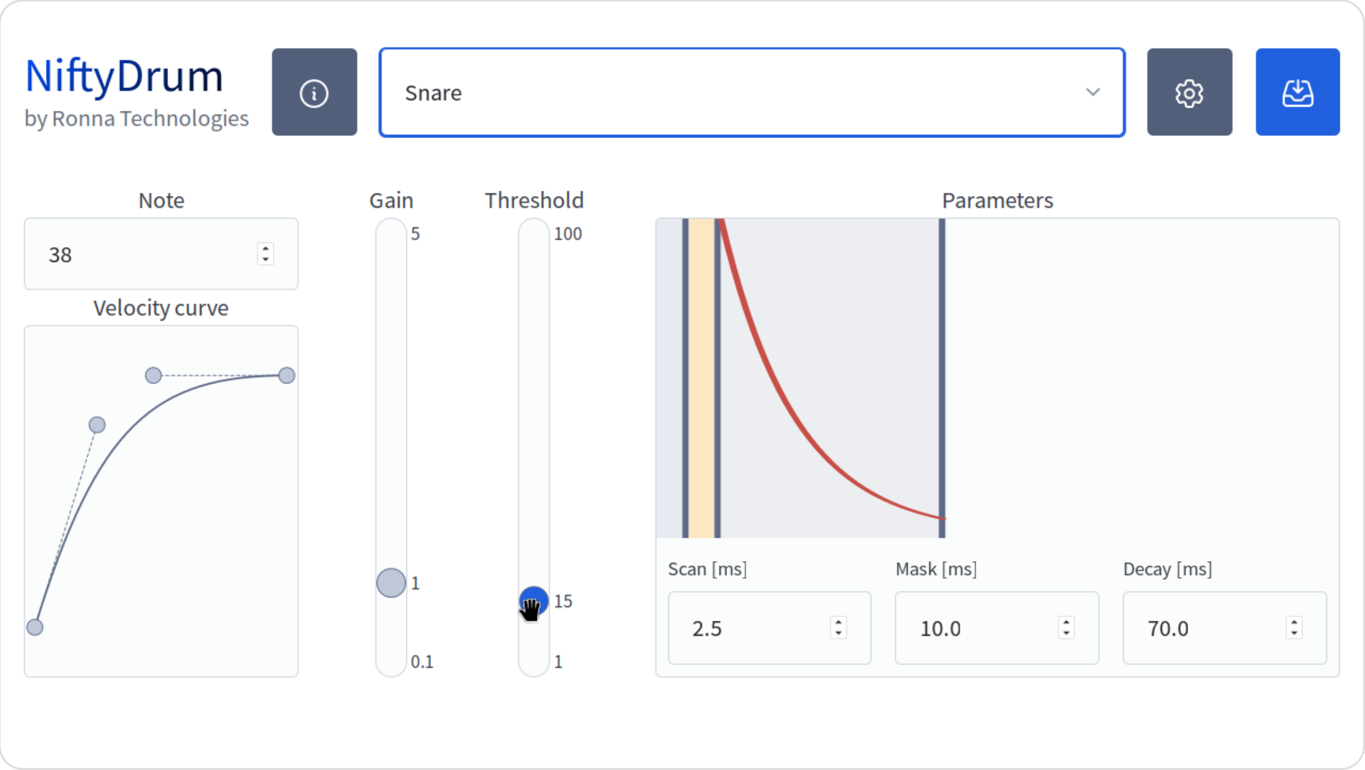
3. The App

3.1 Configure NiftyDrum

NiftyDrum is highly configurable.

3.2 How to install the app

NiftyDrum.com



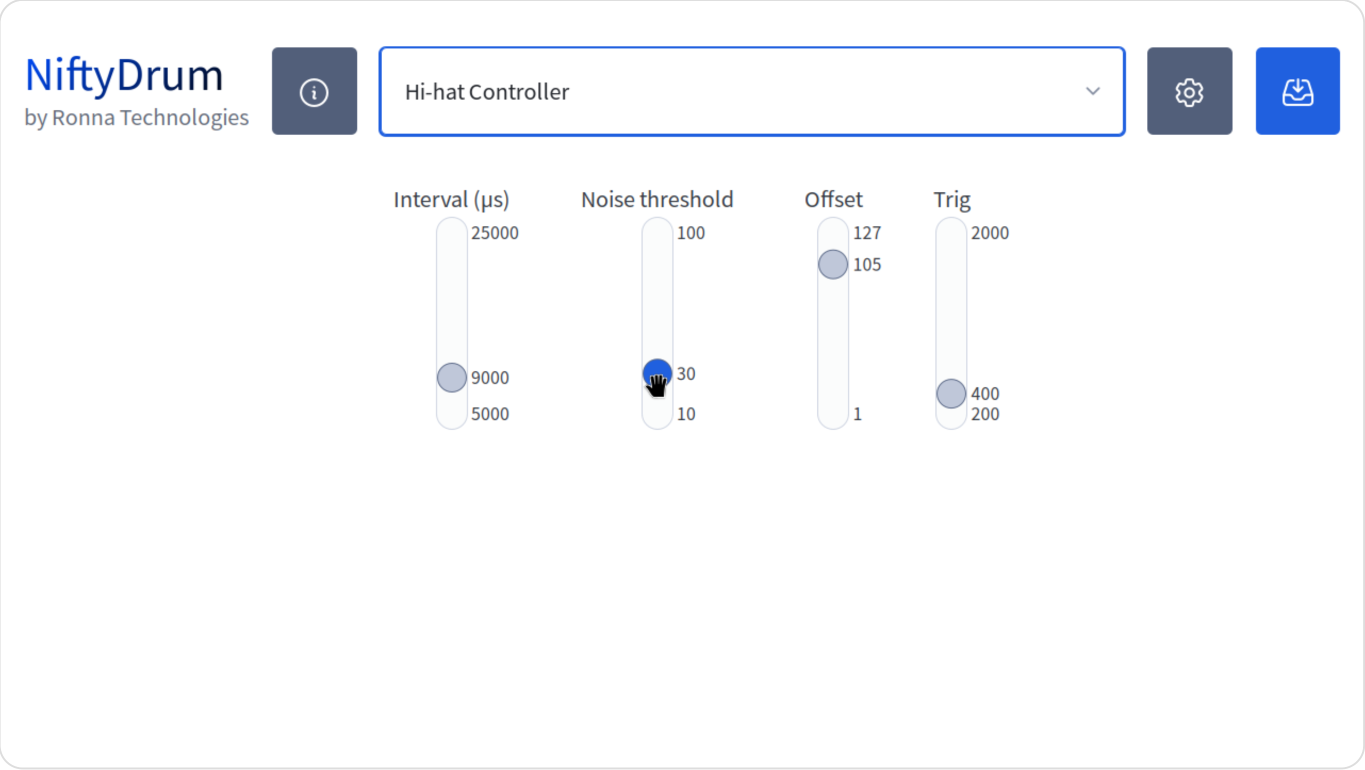
Note: 38

Velocity curve

Scan [ms]: 2.5

Mask [ms]: 10.0

Decay [ms]: 70.0



4. Serial Protocol

5. Arduino