

# NiftyDrum

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## Official Documentation

*Ronna Technologies*

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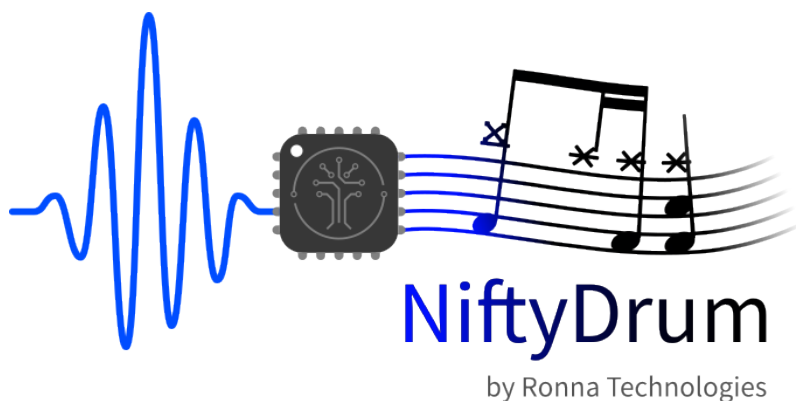
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# 1. About NiftyDrum

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## 1.1 Description

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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

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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

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### 1.3.1 Hardware

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- **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

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

### 1.3.3 Software

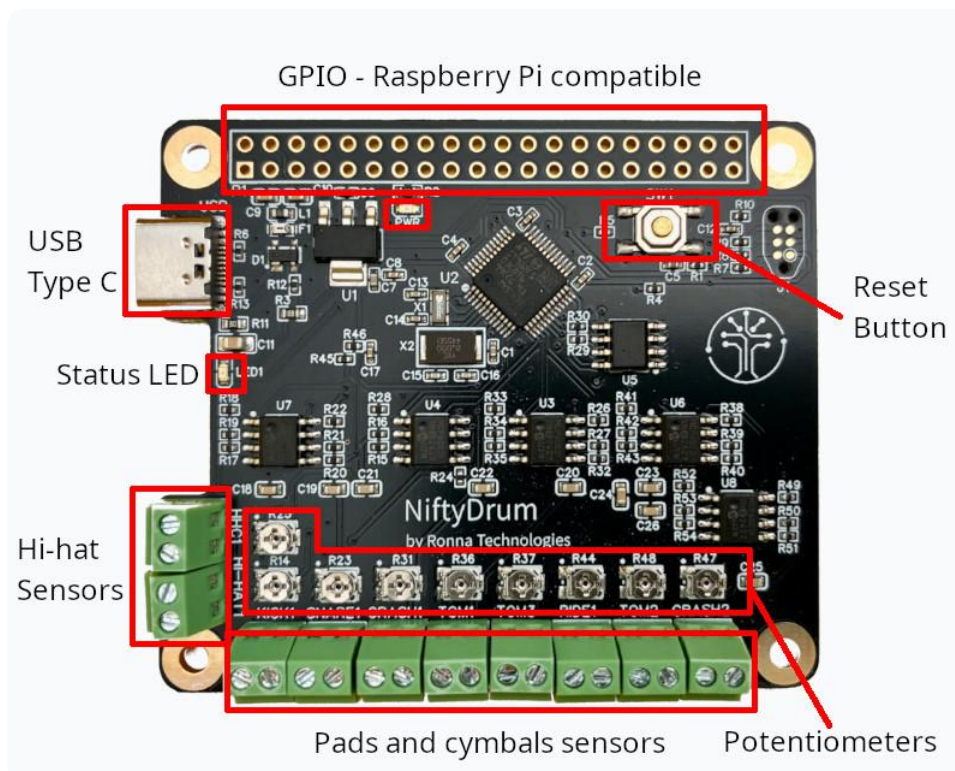
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- **Platform support:** Windows, macOS, Linux
- **User interface:** Web-based application
- **Firmware updates:** Via USB
- **MIDI output:** Note messages and Control Changes (CC)

## 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

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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

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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

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

### 2.2.3 Important Notes

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- 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

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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

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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

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

### 2.5.1 App Features

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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

NiftyDrum

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Ride

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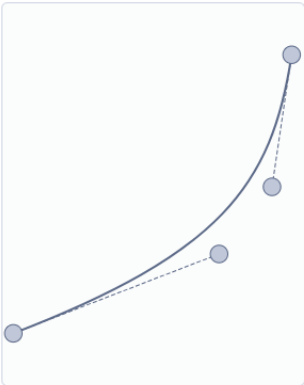
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Note

51

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Velocity curve



Gain

5

1

0.1

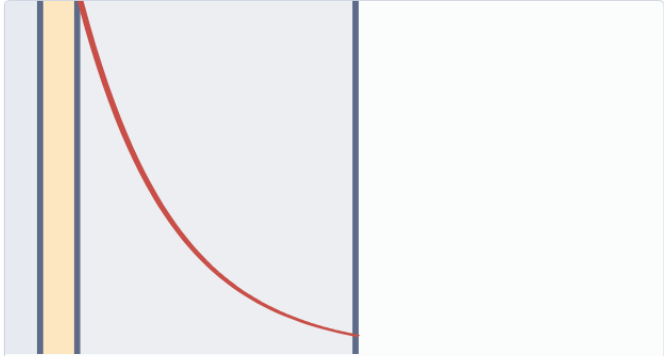
Threshold

100

13

1

Parameters



Scan [ms]

3.1

▼

Mask [ms]

12

▼

Decay [ms]

90

▼

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Hi-hat Controller

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Interval (μs)

25000

9000

5000

Noise threshold

100

30

10

Offset

127

105

1

Trig

2000

400


200

- 9/10 -


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Advanced settings



Firmware

Choose File

NiftyDrum.bin

upload