



MIDI Joystick – User Manual v.1.0

Overview

This device is a MIDI controller based on an analog joystick and a single button. It communicates through a **classic 5-pin MIDI DIN output** and supports MIDI IN → MIDI OUT (thru) forwarding.

Features:

- Pitch Bend on X-axis
- Split CC control (CC1 + CC2) on Y-axis
- MIDI channel selection
- Axis swapping (X ↔ Y)
- Full calibration system
- EEPROM storage
- MIDI Thru
- LED status indication



Joystick Functions

X-Axis → Pitch Bend

- Left = -8192
- Center = 0
- Right = +8191
- Includes a small deadzone to prevent jitter.

Y-Axis → Split CC Control (CC1 / CC2)

The Y-axis is divided into two functional halves:

Position	MIDI CC	Value Range
Below center (0–63)	CC1	63 → 0
Above center (65–127)	CC2	0 → 63

The center point (64) sends no data to avoid unwanted triggering.



Button Functions

The button performs different actions depending on short presses, long presses, and sequences.

1 Select MIDI Channel (1–16)

Enter MIDI Channel Setup

Hold the button for **more than 3 seconds**.

The LED blinks **3 times** — channel setup mode is active.

Select the channel

Press the button **N times**:

- 1 press → Channel 1
- 2 presses → Channel 2
- ...
- 16 presses → Channel 16

Each press is confirmed by **one LED blink**.

Confirm the channel

Hold the button for **more than 5 seconds**.

LED will blink **N times** — the selected channel.

The device returns to normal mode.

2 Swap Axes (X ↔ Y)

Perform **5 short presses** in a row.

LED blinks **2 times**.

Useful if the joystick is mounted sideways or rotated.

3 Joystick Calibration Mode

Enter Calibration

Perform **10 short presses** in a row.

LED blinks **5 times**.

Calibrating

Move the joystick to all edges and corners.

The device automatically captures:

- Xmin / Xmax
- Ymin / Ymax

Exit Calibration and Save

Hold the button for **more than 5 seconds**.
LED blinks **3 times** — calibration saved.



EEPROM Storage

The following parameters are stored permanently:

- Joystick calibration
- MIDI channel
- Axis swap setting

These values remain stored even after powering off.



MIDI IN → MIDI OUT (Thru)

All incoming MIDI DIN messages are automatically forwarded to MIDI OUT:

- Note On / Off
- Control Change
- Pitch Bend
- Channel messages

This allows chaining the joystick controller with other MIDI devices.



LED Indicator Codes

Event	LED Blinks
Enter MIDI channel setup	3
Short press in MIDI setup	1
Confirm MIDI channel	N
Axis swap	2
Enter calibration	5
Exit calibration	3



Quick Control Summary

- **Hold > 3 sec** → MIDI channel setup
- **N short presses** → Select channel
- **Hold > 5 sec** → Confirm channel

- **5 short presses** → Swap X/Y axes
- **10 short presses** → Calibration mode
- **Hold > 5 sec (in calibration)** → Save calibration