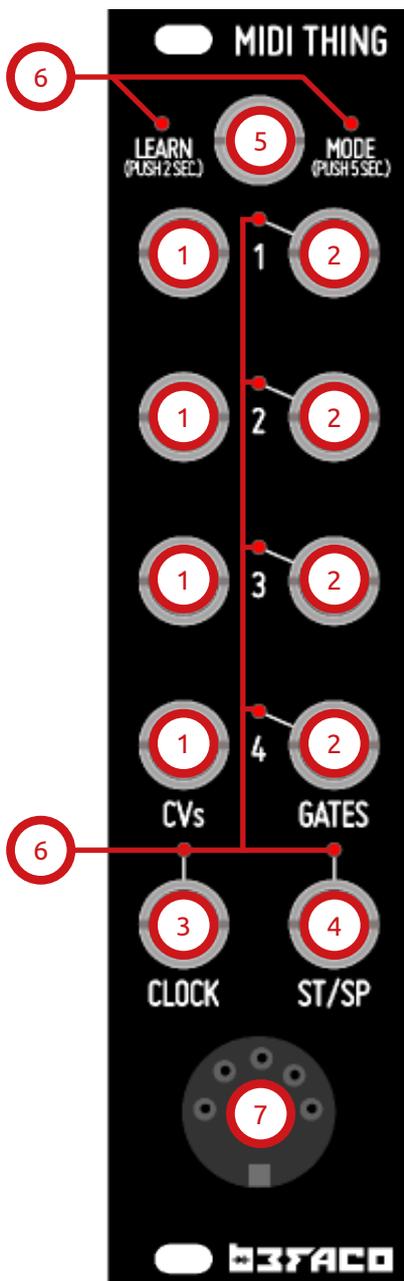
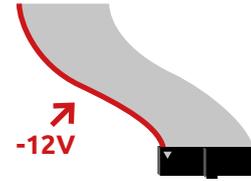




MIDI THING USER MANUAL

Thanks for your Befaco purchase! Before you plug this module in...

1. **Disconnect your cabinet from mains.**
2. **Triple check the power cord polarity.** The colored line on the cable (pin number one) is the -12V rail.
3. If you plug the module backwards you might burn it and, unfortunately this is not covered by the warranty.
4. If you have any questions about this product please send them to: befacosynth@gmail.com



Introduction

MIDI Thing is a four channel MIDI to CV interface. It will translate MIDI messages into CV/Gate signals. Featuring several functional modes that includes multiple channels and drum trigger mode.

It's quite easy to change between modes, learn channels and enter calibration mode just pressing one button.

In/Out reference

1. CV OUTPUTS (1-4)

Might change function depending on selected mode.

2. GATE OUTPUTS (1-4)

Might be in use or not depending on selected mode.

3. CLOCK

Clock output.

4. START/STOP

Start/Stop output.

5. MODE SWITCH

Used to enter learn or menu mode. Also performs an all notes off.

6. LED

Provides information about MIDI notes received or mode selected.

7. MIDI IN

Midi input.

Functioning modes (1/2)

ONE CHANNEL MODE

Will read notes from one midi channel (channel 1 by default)

TWO CHANNELS MODE

Will read notes from two midi channels (channel 1 and 2 by default)

FOUR CHANNELS MODE

Will read notes from four midi channels (channel 1,2 3 and 4 by default). This is the default mode.

DRUM MODE

Will read notes from midi channel 10 providing triggers when the following notes are received:

LEARN MODE

To enter learn mode press mode button for a second or so. You'll see led blinking when released.

Midi interface will be waiting for a note for each channel active. So if four channels mode is active will expect four notes, two for duophonic mode and one for mono phonic and drum mode.

It will learn MIDI channel and will set received notes as the first note of the channel.

It is possible to learn two or more notes form same MIDI channel. This will be really usefull to divide a keyboard in several segments to output each of them from a differnet CV out.

In order to do this, learn proces need to be done from the highest note to the lowest, dividing the segmnents from right to left.

	ONE CHANNEL	TWO CHANNELS	FOUR CHANNELS	DRUM MODE
CV1	Note	Channel 1 Note	Channel 1 Note	36
CV2	Velocity	Channel 1 Velocity	Channel 2 Note	38
CV3	Modulation wheel	Channel 2 Note	Channel 3 Note	42
CV4	Pitch bend	Channel 2 Velocity	Channel 4 Note	45
Gate1	Gate	Channel 1 Gate	Channel 1 Gate	46
Gate2	Not used	Not used	Channel 2 Gate	47
Gate3	Not used	Channel 2 Gate	Channel 3 Gate	48
Gate4	Not used	Not used	Channel 4 Gate	49
Clock and Start/stop	Yes	Yes	Yes	Yes

Functioning modes (2/2)

MENU MODE

To enter menu mode press Mode button for more than 5 seconds. Mode LED will blink when released. Once in menu mode, you'll be able to set up the interface, sending MIDI notes with your controller. You can exit this mode pressing the button again or after a few seconds inactive. All settings will be saved to memory and kept even if turned off.

MODE SELECTION

To change between modes send notes in MIDI channel 5. These are the options available:

Note 0: One channel mode
 Note 2: Two channels mode
 Note 4: Four channel mode
 Note 5: Drum trigger mode.

CALIBRATION

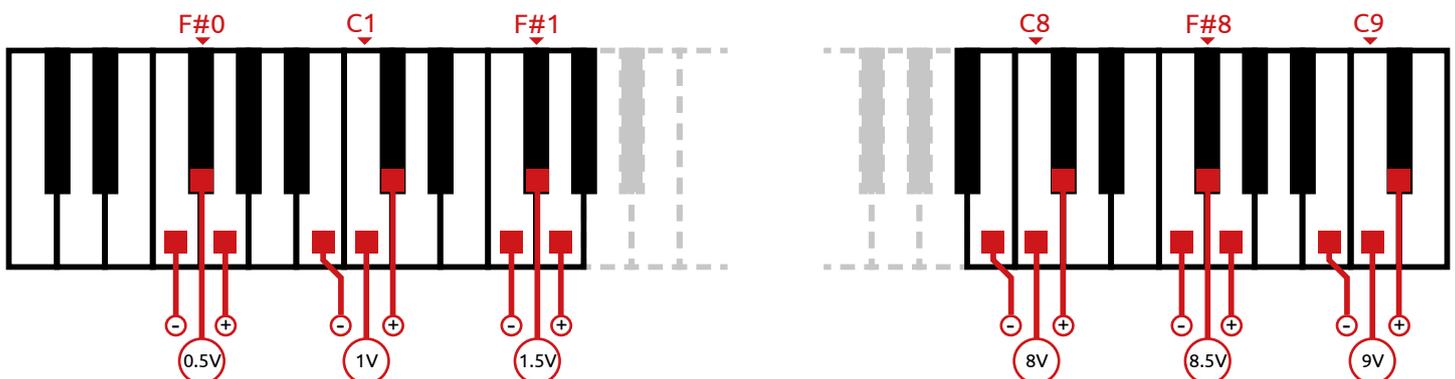
You can calibrate CV channels 1 to 4, sending notes in MIDI channels 1 to 4. Calibration will make sure that CV outputs are sending the values they should.

This procedure can be done either with a precision multimer (three decimal recommended) or connecting CV out to a VCO Volt/octave input and measuring the note with a tuner.

Firmware is set up to calibrate 20 points. First and middle note of each octave (C and F#), then it will interpolate values between them.

Each calibration point must rise 0.500 volts (0.5 for F#0, 1 for C1, 1.5 for F#1, 2 for C2, and so on...) in order to keep a linear rise and track volt/octave accurately.

You can change each note CV value with previous and next notes to rise or lower its value. Press these keys until you get the right value or note. You will need to press C or F# note after adjusting to doublecheck current value.



PANIC!

A short press of the button will send an all notes off message. Quite useful if MIDI instrument malfunctioned and did not send a note off or other undesired behaviour.

LOADING FIRMWARE

This module is based in Arduino, featuring an Atmega328 microcontroller. An ICSP header is available in the board to program it. If you are not familiar with these concepts and try to load a new firmware, you might make a mess out of your module!

Please read carefully about arduino programming via ICSP before trying.

You can find updated firmware in github:
<https://github.com/Befaco/midithing>

CREDITS

MIDI Thing firmware was coded by Sergio Retamero:
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Performance boost, bug fixing and extras awesomeness by Jeremy Bernstein:

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Github keeping and tidiness master David Runge:
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Calibration method inspired on Mutable instruments CVpal