MIDI THING

USER MANUAL

LEARN
(PUSH 2 SEC.)

MODE
(4 SEC.)

1

3

4

CVs

GATES

CLOCK

ST/SP

BEFACO

BEFACO

POWERING THE MODULE | THANKS FOR PURCHASING A MODULE FROM BEFACO! BEFORE YOU PLUG THIS MODULE IN...

1. **Disconnect your cabinet from the mains.**

2. **Triple check the power cord polarity.** The coloured line on the cable (pin number one) is the –12V rail.

3. If you plug the module backwards you might burn it out 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

-12V

INTRODUCTION | MIDI THING IS A FOUR CHANNEL MIDI TO CV INTERFACE.

It allows you to convert MIDI messages into CV/Gate signals and features several functional modes including working with multiple channels and a drum trigger mode.

With the simple press of a button you are able to change between modes, automatically detect MIDI channels and enter calibration mode.

MODULE REFERENCE | AN EXAMINATION AND DESCRIPTION OF THE VARIOUS FUNCTIONS OF THE MODULE

MIDI THING

LEARN (PUSH 2 SEC.)   MODE (PUSH 5 SEC.)

CVs   GATES

CLOCK   ST/SP
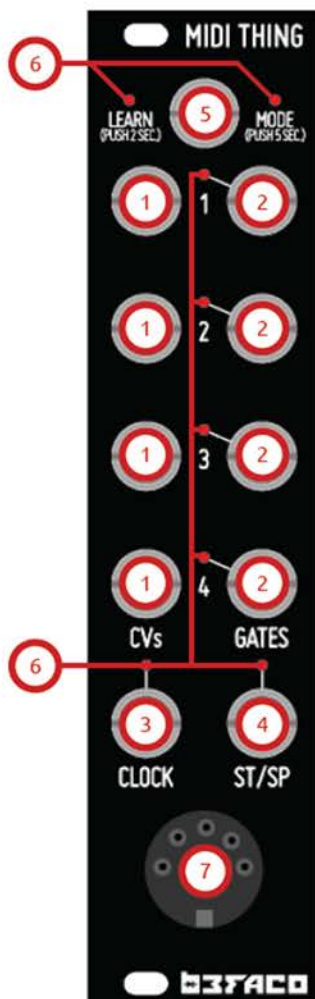
1. CV INPUTS (1-4)
Function varies with selected mode

2. GATE INPUTS (1-4)
Function varies with selected mode

3. CLOCK
Clock output

4. START/STOP
Start/Stop output

5. MODE BUTTON
Used to enter Learn or Menu mode. Can also be used to send an "All Notes Off" MIDI message.

6. LEDS
Indicates when MIDI notes are received or a mode is selected

7. MIDI IN
MIDI input

befaco

| AN EXAMINATION AND DESCRIPTION OF THE VARIOUS FUNCTIONS OF THE MODULE

ONE CHANNEL MODE

Will read notes from a single midi channel (channel 1 by default).

TWO CHANNEL MODE

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

FOUR CHANNEL 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:

	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

LEARN MODE

To enter learn mode press and hold the MODE button for about one second. When released you should see the LEARN LED begin to blink.

The Midi Thing will be anticipating a note for each active channel. Therefore, if "Four Channel" mode is active, it will expect four notes; two for duophonic mode, and one for monophonic and drum modes.

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

It is possible to learn two or more notes from the same MIDI channel. This is really useful if you want to divide a keyboard into several parts, outputting each of them from a different CV output.

To achieve this, the learning process is done from the highest note to the lowest, dividing the segments from right to left.

MENU MODE

To enter Menu mode, press and hold the MODE button for more than 5 seconds. When released you should see the MODE LED begin to blink.

Once in Menu mode, you'll be able to set the appropriate mode by sending MIDI notes with your controller (see "Mode Selection" table below). You can exit Menu mode pressing the MODE button again or it will automatically exit after a few seconds of inactivity.

Your current settings will be saved to memory and retained, even after the module has been switched off.

MODE SELECTION

To change between modes send the following MIDI notes via MIDI channel 5:

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

CALIBRATION

It is possible to calibrate the output voltages from CV channels 1 to 4 by sending certain MIDI notes within MIDI channels 1 to 4 as described below.

This process must be completed with either a precision multimeter (three decimal recommended) or by connecting CV out to a VCO Volt/Oct input and measuring the frequency/note value with a tuner.

The firmware calibrates between the first and middle note of each octave (C and F#), and interpolates values between them. There is a fine-tune resolution between these notes of 20 steps. Between each calibration point there should be an increase of 0.500 volts (e.g., 0.500v for F#0, 1.000v for C1, 1.500v for F#1, 2.000v for C2, etc...) in order to keep a linear rise and to track Volt/Oct accurately.

With your multimeter or tuner ready to measure you can change each calibration point's CV value by pressing the semitone above or below it on your MIDI instrument (see diagram below). Keep adjusting until you get the correct voltage reading or frequency. You will need to reactivate the C or F# note after adjusting to double-check the current value.
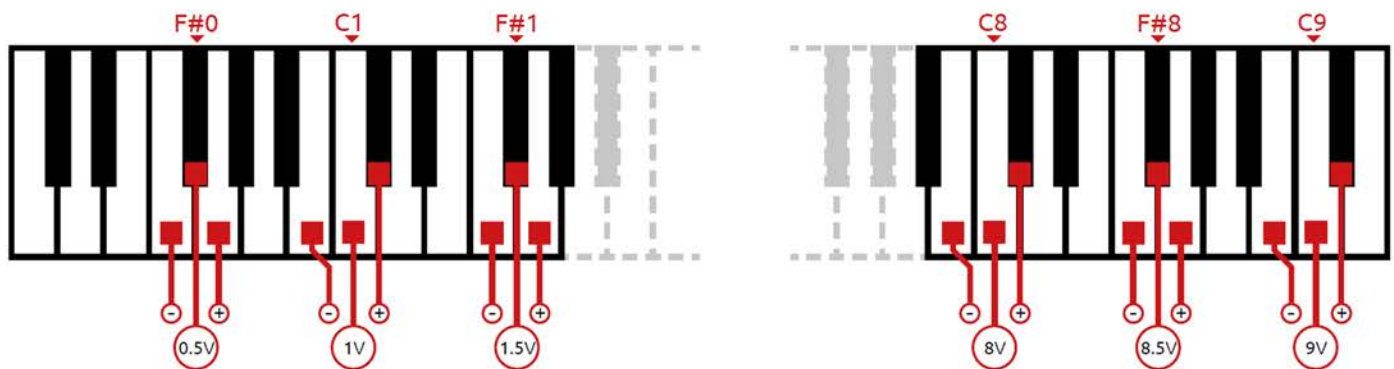
PANIC!

A short press of the MODE button will send an "All Notes Off" MIDI message. This is quite useful if your MIDI instrument has misbehaved and not sent a "Note-Off" message for some reason, or has exhibited other undesirable or anti-social behavior.

CREDITS

MIDI Thing firmware was coded by Sergio Retamero:
sergio.retamero@gmail.com

Performance boost, bug fixing and extra awesomeness by Jeremy Bernstein:
jeremy.d.bernstein@googlemail.com

Github keeping and tidiness master David Runge:
dave@sleepmap.de

Calibration method inspired on Mutable instruments CVpal.

LOADING FIRMWARE

This module is based on the Arduino platform and features an Atmega328 microcontroller.

An ICSP header is available on the board to reprogram it. Please beware that if you are not familiar with these concepts and you try to load a new firmware you risk disabling your module!

Please read carefully about Arduino programming via ICSP before attempting to reprogram the Midi Thing.

You can find the latest firmware on Github:
https://github.com/Befaco/midithing