Arithmophone ToneHive x3 MIDI – quickstart guide

INTRODUCTION

The Arithmophone ToneHive x3 is a browser-based MIDI keyboard/control surface. It features a keyboard with a 41-note just intonation scale and a three octave range, and direct access to many sound-shaping parameters. Read on below for a description of all the functions of the Arithmophone ToneHive x3.
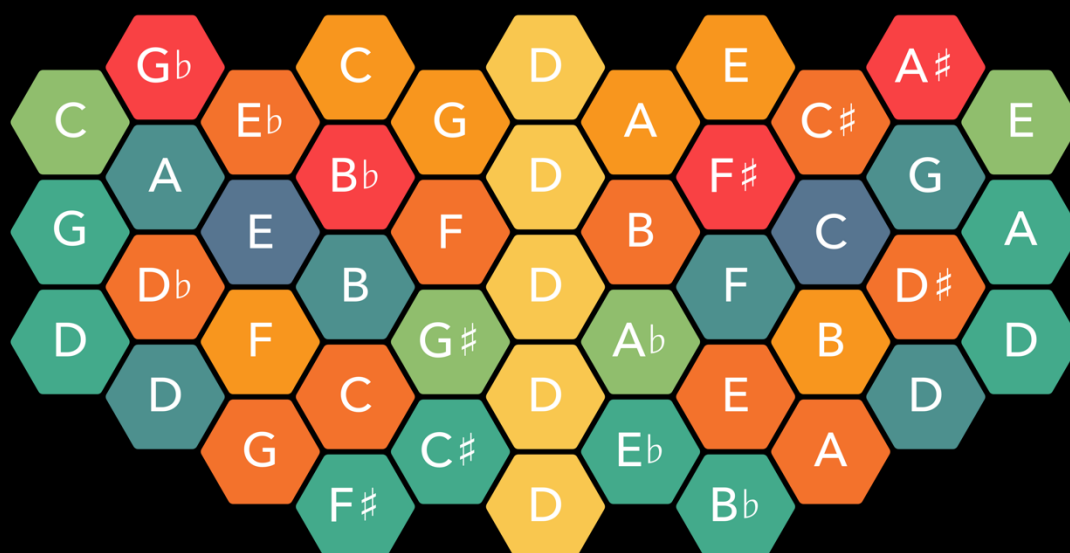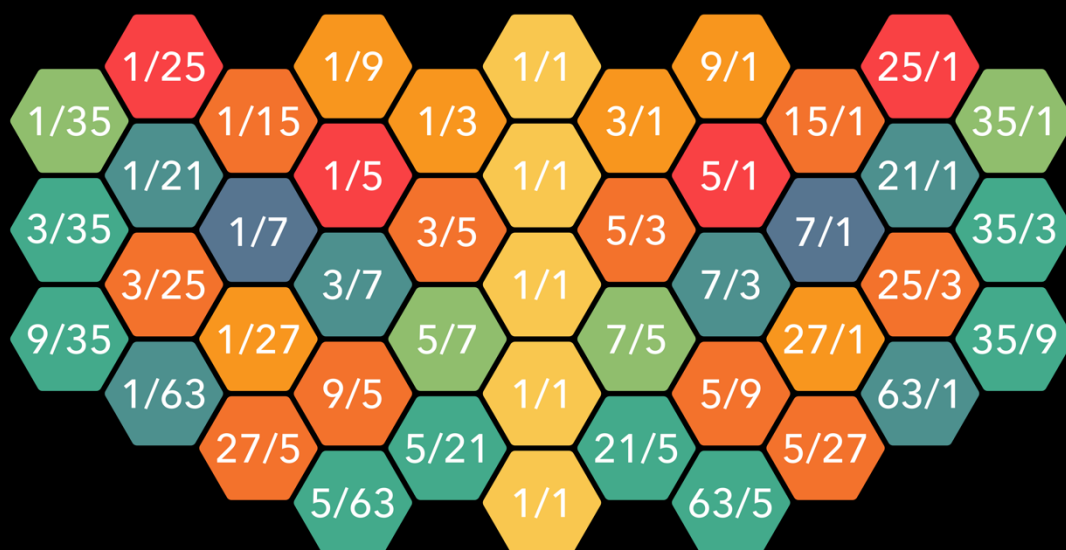
Please note: this quickstart guide assumes you have already taken the preliminary steps necessary to get your browser-based MIDI interface working. These steps are detailed on this page: chielzwinkels.net/arithmophone/midi/

KEYBOARD

On the ToneHive, the colours of the keys reflect their ratios with respect to the central note (1/1 ratio), like this:

COLOURS ON THE ARITHMOPHONE TONEHIVE

Ratios of 1 and 2

Ratios of 3 and 2

Ratios combining 5, 3 and 2

Ratios of 5 and 2

Ratios combining 7, 5 and 2

Ratios combining 7, 5, 3 and 2

Ratios combining 7, 3 and 2

Ratios of 7 and 2

The notes on the Arithmophone ToneHive are arranged as follows:

Please note: in this illustration, all ratios are shown in their 'pure' form, without octave reduction. In actuality these ratios may be multiplied or divided by two any number of times, depending on the octave they are in.

With note names instead of ratios, taking a D as the center, the map looks like this:

Except for the 5 central notes, each note is split up into three keys, offering the same note in three different octaves. The large keys in the middle offer the central note across 5 octaves (1/4, 1/2, 1/1, 2/1, 4/1). This gives the ToneHive a full range of 3 octaves with an extra 'pedal' note one octave below.

For more detailed information about just intonation tuning, the layout of the ToneHive keyboard and the rationale behind this design, please visit these pages: chielzwinkels.net/arithmophone/background/

CONTROLS & OPTIONS

When you open the Arithmophone ToneHive in your browser, you will see the keyboard and some additional controls. A good first step would be to switch to full screen mode with the button labeled **F** at the top left. This will maximize the available playing surface.

With the button labeled **O** at the top right you can open the options screen. Here you can see the available MIDI inputs and select the one you'd like to use (if necessary; by default the first available output is selected). Here you can also customize the MIDI channels and Continuous Controllers.

After closing the options screen by pressing the **O** button once more, you should now be able to play some notes on the keyboard and have these send MIDI messages to your DAW/instrument.

You can control three separate instruments (or three instances of the same instrument if you prefer) from within the Arithmophone. You can switch between them with the buttons labeled **A**, **B** and **C** at the top of the keyboard. By default, these control MIDI channels 1, 2 and 3, but this can be adjusted in the options screen.

Each channel not only has its own keyboard but also its own sliders that you can use to control sound parameters. The slider at the bottom left is assigned to pitch bend, in 3 discrete steps (minimum, center, maximum). This allows precise and instant switching between the center position and the (all the way) up and down positions. Try setting the pitch bend range of your instrument to 7, so you can jump up or down a perfect fifth from the center pitch, or to 12 so you can switch octaves.

The other three sliders send out Continuous Control (CC) messages on the same channel as the keyboard. They are assigned to CC 1, 2 and 3 by default.

There is another button at the top labeled **M**, pressing this will open the Master slider window, providing 8 additional CC sliders that output to a separate MIDI channel (channel 4 by default). This can be useful for controlling global parameters like track levels, master volume, tempo et cetera.

Below the keyboard you will find two more buttons labeled **H** and **R**. These are for holding and releasing the keys of the keyboard. When you press a key on the Arithmophone keyboard, a 'note on' MIDI message is sent. When you lift your finger again, a 'note off' message follows. When the 'hold' key is pressed while you lift your finger from the keyboard, the 'note off' message is not sent and the key remains pressed. Only when you touch the same note again is it stopped. This way you can add and remove individual notes to the selection of held notes. Once a note is held, it will stay on indefinitely. This is great for arpeggiators and other "self-playing" sounds. You can hold a selection of notes on one channel and then switch to a different channel to layer sounds. The held notes for each channel will always be shown as darker keys to help you keep track of what's playing. Presssing the 'release' button will reset all notes on the selected channel.

There is one more function available in the options menu, called **focus**. When Focus mode is activated, all options and sliders are hidden. This can be helpful if you don't need any additional controls and just want to concentrate on playing the keyboard.

Finally, a note on tuning and octave ranges: the Arithmophone ToneHive works with a 41 notes per octave scale. This differs from the default 12 notes per octave of standard MIDI tuning, and because of that, some functions on some instruments may behave differently from what you might expect. If you are getting unexpected notes/pitches, here are some things to try and check:
- Make sure you have the correct tuning file loaded and activated
- Set any 'transpose' value to zero
- When using an arpeggiator, set the range to 1 octave

Depending on the way microtuning is implemented in the plugin/instrument you are using, you may or may not be able to use transpose functions and multi-octave arpeggiators with the Arithmophone ToneHive, but with the above settings, you should be good in any case.