

Arithmophone Korale x3 MIDI - quickstart guide

INTRODUCTION

The Arithmophone Korale x3 is a browser-based MIDI keyboard/control surface. It offers a wide selection of diatonic and pentatonic scales in just intonation, and direct access to many sound-shaping parameters. Read on below for a description of all the functions of the Arithmophone EDO 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

The layout of the keys on the Arithmophone Korale is inspired by the Kora, a West-African harp. The Kora has 21 strings, 11 on the left hand side and 10 on the right. The strings are tuned to a diatonic scale (a scale with 7 notes per octave, like the familiar "Do Re Mi Fa Sol La Ti Do").

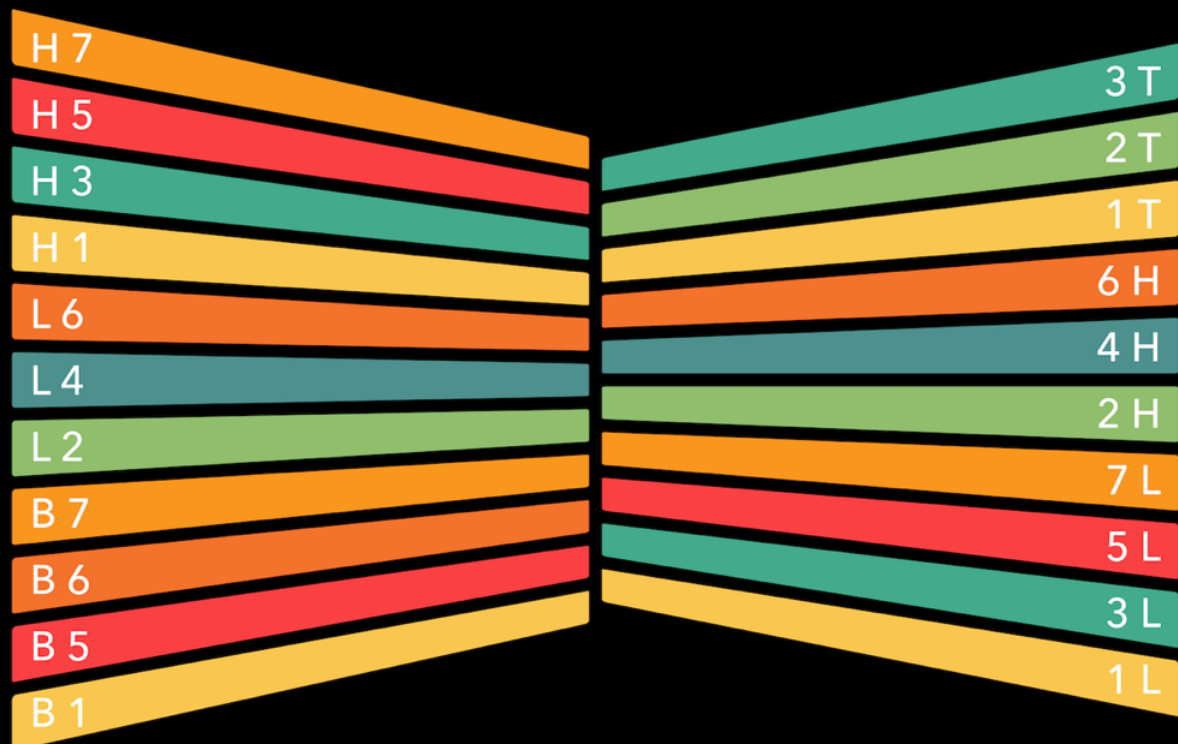
The Arithmophone Korale closely follows the note pattern of the Kora, with the notes arranged in such a way that scales and melodies are easily playable by alternating the left and right hand. The notes cover a range of two complete octaves in the middle, with incomplete octaves above and below.

On the Korale, the colours of the keys show the scale note they produce, like this:

COLOURS ON THE ARITHMOPHONE KORALE

	First note of the diatonic scale (Do / Sa)
	Second note of the diatonic scale (Re)
	Third note of the diatonic scale (Mi / Ga)
	Fourth note of the diatonic scale (Fa / Ma)
	Fifth note of the diatonic scale (Sol / Pa)
	Sixth note of the diatonic scale (La / Dha)
	Seventh note of the diatonic scale (Ti / Ni)

The precise note pattern goes like this (with the letters standing for the octave the note is in, from lowest to highest - Bass, Low, High, Treble):



To get started, try playing a scale starting on '1 L' with your right hand, then 'L 2' with your left hand, then '3 L' with your right hand again et cetera, continuing to alternate between left and right. Once you get familiar with this pattern up and down the scales for the 'L' and 'H' octaves, start adding in the 'B' and 'T' notes to explore the complete range of the keyboard.

The Korale also has a Pentatonic mode. Instead of 7 notes per octave, you only get 5 and instead of 21 keys you only get 17. Although you won't be able to play as many different melodies in Pentatonic mode, these scales have their own specific character. And because the pentatonic keyboard layout has fewer and larger keys, this mode is especially suitable for smaller screens and for beginning musicians.

CONTROLS & OPTIONS

When you open the Arithmophone Korale in your browser, you will see the keyboard as well as a number of buttons and sliders. A good first step would be to switch to full screen mode with the button labeled **F** in the top left, this will maximize the available playing surface.

With the button labeled **O** on 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 and adjust some other options.

The first option is for selecting the MIDI tuning. By default, The Arithmophone Korale is set to **custom** tuning. This gives you access to many different Just Intonation (JI) scales, but it does require an instrument that is capable of microtuning and a special tuning file.

You can also switch the tuning to **standard**. In this mode, the Arithmophone Korale is tuned to standard MIDI tuning: 12 tone equal temperament (12tET). This will allow you to control any MIDI compatible instrument without the need for a special tuning file. However, it also means you will lose the subtle advantages of JI tuning. In standard tuning, many different JI scales 'collapse' down to a single 12tET scale. For example, instead of "Ionian Type A" and "Ionian Type B", two JI scales containing the same notes in slightly different tunings, you now just have a single scale called "Ionian" (just like on a regular piano keyboard).

The second option is for switching between 12 tone equal temperament and Just Intonation. When you select standard MIDI tuning, **12tET** is automatically used. When you select Custom tuning, the default is **JI**, but you can still select 12tET instead. This can be useful when you have everything configured for JI, but want to switch to standard tuning on the fly (for example, to play together with other instruments in standard tuning).

The last option is 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.

After adjusting these settings to your liking and closing the options screen by pressing the **O** button once more, you should 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 red slider in the bottom 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 six sliders send out Continuous Control (CC) messages on the same channels as the keyboard. They are assigned to CC 1 through 6 by default.

Directly below the sliders are three more buttons. The button on the left labeled **S**, will toggle between the sliders and scale selection view. More information on the available scales and modes can be found in the **SCALES** section below.

The middle button labeled **M** toggles the Master slider view. This displays an additional set of 7 CC sliders that output to a separate MIDI channel (channel 4 by default). These master sliders are coloured red and blue to distinguish them from the channel sliders. They can be useful for controlling global parameters like track levels, master volume, tempo et cetera.

The button on the right labeled **K** for 'Keyboard mode' lets you switch between pentatonic and diatonic modes.

At the bottom of the screen there are 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. Pressing the 'release' button will reset all notes on the selected channel.

SCALES

The Arithmophone Korale features 40 different scales (21 diatonic scales and 19 pentatonic scales). Depending on your musical background, some of these scales will sound very familiar, others will sound more exotic.

There are 21 scale selector buttons, each of these will activate a different pair of scales (1 diatonic, 1 pentatonic). In a few cases, different diatonic scales have the same pentatonic scale associated with them, hence only 19 different pentatonic scales.

The notes in each pentatonic scale are always a subset of the notes in the corresponding diatonic scale. Which 5 out of the 7 notes are used is different per scale. The colours of the pentatonic keys are automatically adjusted to reflect the note selection as you switch between scales.

Behind the scenes, the Korale web app works with one large scale containing 21 different notes. From these notes, 5 or 7 are selected for each available scale. This is done in such a way that the notes of the playable scale are always related to each other in a musically meaningful way.

A note for Kora players: I tried to work out which scales are the best possible match for traditional Kora tunings. Although I don't play the kora myself and the information I found online was a bit contradictory at times, this little list should provide a useful starting point:

- Sauta: 01 (Lydian Type A)
- Hardino: 02 (Ionian Type A)
- Sila ba (Tomora ba): 09 (Ionian type B)
- Tomora Mesengo: 20 (Septimal down II)

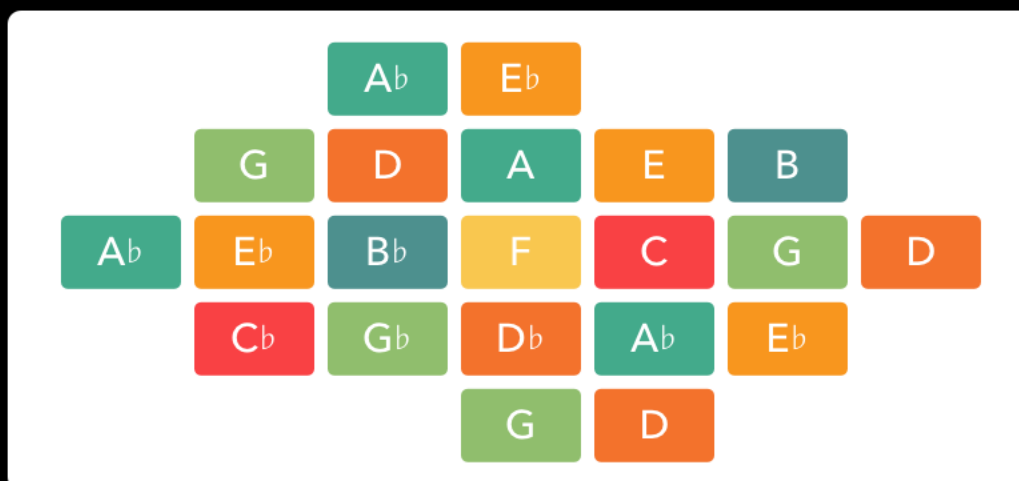
The full set of ratios that are used in the Korale scales, looks like this:

Korale - available ratios



In the key of F (the default tuning of the Arithmophone Korale, and also the most common key for tuning the original Kora), this produces the following notes:

Korale - available notes



Using this diagram as a starting point, all the scales available on the Arithmophone Korale are listed on the following pages.

For a more detailed explanation of just intonation tuning, the way it is implemented on the Arithmophone Korale and the names given to all the different scale types, please visit: chielzwinkels.net/arithmophone/background

Arithmophone Korale

diatonic scale notes

01 - Lydian Type A



08 - Harmonic Major



15 - Melodic Major



02 - Ionian Type A



09 - Ionian Type B



16 - Septimal Up II



03 - Mixolydian Type B



10 - Mixolydian Type D



17 - Septimal Up I



04 - Dorian Type E



11 - Pythagorean



18 - Dorian Type F



05 - Aeolian Type A



12 - Aeolian Type C



19 - Septimal Down I



06 - Phrygian Type B



13 - Phrygian Type A



20 - Septimal Down II



07 - Locrian Type B



14 - Freygish



21 - Double Harmonic



Arithmophone Korale

pentatonic scale notes

01 - Sun Occident O



08 - Sun Orient O



15 - Symmetry C



02 - Sun Occident U



09 - Sun Mirror O



16 - Septimal Up B



03 - Sun Orient U



10 - Sun Mirror U



17 - Septimal Up A



04 - Symmetry A



11 - Symmetry B



18 - Symmetry A



05 - Moon Orient O



12 - Moon Mirror O



19 - Septimal Down A



06 - Moon Occident O



13 - Moon Mirror U



20 - Septimal Down B



07 - Moon Occident U



14 - Moon Orient U



21 - Symmetry C

