

SUB PHATTY ALTERNATIVE TUNING SCALES

FIRMWARE v2.0.0

Beginning with firmware v2.0, the Sub Phatty can use custom tuning scales in addition to standard (12-tone equal tempered) tuning.

The custom tunings are in "Scale / Octave" format, which means you can set a tuning for each note of an octave, and this tuning is copied across all octaves of the keyboard. Up to 31 such tunings can be saved as presets in the Sub Phatty's memory, and you can change between tuning presets via MIDI or from the Sub Phatty panel.

For technically-inclined users and app developers, the Sub Phatty supports the MIDI Tuning standard as specified by the MIDI Manufacturer's Association (MMA). This means that any device or software which can send a Scale/Octave Tuning in the same format should be compatible with the Sub Phatty. For more technical info, see Section 2 below.

SECTION 1 // BASIC USE OF TUNING SCALES

The simplest way to get started with tuning scales is to use Moog's own Phatty Tuner app. This is a free download.

OSX: <http://www.moogmusic.com/content/phatty-tuner-alternate-scales-editor-mac>

WIN: <http://www.moogmusic.com/content/phatty-tuner-alternate-scales-editor-pc>

Refer to the documentation included in the Phatty Tuner download for more detailed information about how it works.

For instant gratification, go to the Device menu and select Sub Phatty as your MIDI output device, then go to the Tunings menu and select one of the preset example scales, such as Maqam Hussein or Siamese clem. Click Send button at the bottom of the window. Note that when you send a tuning preset it is made active and it's saved on the Sub. This tuning will remain active until you select a different tuning. To return to standard tuning, select preset 0 - equal temp - from the menu. You can also change tuning presets via MIDI, and from the Sub Phatty control panel in Shift mode.

HOW TO CHANGE TUNING PRESETS

Shift Mode

Enter Shift mode and press/illuminate the Bank 2, Bank 4, Patch 2, and Patch 4 buttons. Now the entire keyboard selects tuning preset number 0 (lowest C key) to 24 (highest C key). Tuning presets 25-31 cannot be selected in this mode, but they can be selected via MIDI.

MIDI

MIDI Registered Parameter Number [RPN] 00 03 is Tuning Preset Select.

Send the following MIDI Controller messages to change tuning program:

MIDI CC	VALUE	DESCRIPTION
100	03	Allow editing of Tuning Preset (<i>must do this first</i>)
38	0 to 31	Select Tuning preset # 0 to 31 (<i>0 is standard tuning</i>) or (<i>after sending CC100 ,value 03</i>)
96	any	Increment - load the next-higher tuning preset
97	any	Decrement - load the next-lower numbered tuning preset

If an uninitialized tuning preset is selected, standard tuning will be used.

SECTION 2 // CONDENSED TECHNICAL INFO

Sub Phatty supports the following provisions of the MIDI Tuning specification-

(documentation can be found at the this link: http://www.midi.org/techspecs/midituning.php#oct_ext)

[SCALE/OCTAVE TUNING DUMP, 1 byte format]	F0 7E 7F 08 05 ...
[SCALE/OCTAVE TUNING DUMP, 2 byte format]	F0 7E 7F 08 06 ..
[SCALE/OCTAVE TUNING 1-BYTE FORM (REAL-TIME)]	F0 7F 7F 08 08
[SCALE/OCTAVE TUNING 2-BYTE FORM (REAL-TIME)]	F0 7F 7F 08 09 ...

The two TUNING DUMP formats (subtype 05, 06) are automatically saved to Sub Phatty's internal memory, at the location specified in the sysex header "tuning preset number" byte, as long as the specified preset number is in the range 1-31. Tuning preset number 0 cannot be written to memory, and selecting tuning preset 0 on the Sub Phatty will always result in 12TET (standard) tuning. Selecting a tuning preset to load that is blank or invalid will also result in 12TET tuning.

The Real-Time scale/octave messages (subtype 08, 09) are not saved on power-down.

ADDITIONAL MIDI TUNING OPTIONS:

Sysex Master Tuning: Sets a master offset for all pitch (like the Fine Tune knob). (details here <http://www.midi.org/techspecs/ca25.pdf>)

F0 7F <device id> 04 03 = Master Fine Tuning (+/- 100 cents)

F0 7F <device id> 04 04 = Master Coarse Tuning (+/- 64 semitones)

Set <device id> to be 7F to affect "all devices", or set equal to the sysex device ID of the target device (if sending sysex to multiple connected devices). Sub Phatty device ID is 1, by default.

