

# Kraftor SP0 vox MIDI

## Media

## User Manual

### Version 1.0

Kraftor SP0vox MIDI is a phoneme-level speech synthesis firmware for Kraftor hardware. It drives a **SP0256-AL2** allophone chip and accepts control over USB MIDI or the hardware serial MIDI input.

Each MIDI Note On triggers one SP0256-AL2 phoneme directly, so any DAW or MIDI controller can sequence speech phoneme by phoneme.

## Version History

- **v1.0** : SP0256-AL2 phoneme playback via USB/serial MIDI, per-phoneme volume from velocity, LTC6903 clock control via pitch bend, channel volume via CC7, and OLED status display support.
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## MIDI Channel Configuration

The firmware responds to a single active channel. The default active channel is **channel 1**. Messages on all other channels are ignored.

MIDI Input	Function	Channel
<b>USB MIDI</b>	Trigger SP0256-AL2 phonemes and control volume / pitch	Active channel (default 1)
<b>Serial MIDI</b>	Trigger SP0256-AL2 phonemes and control volume / pitch	Active channel (default 1)

## MIDI Messages

### Note On – Phoneme Triggering

Each MIDI Note On message triggers one SP0256-AL2 allophone. The phoneme index is **note - 36**, giving access to all 64 phonemes of the SP0256-AL2 ROM.

- **Notes 36–99:** trigger phoneme 0 (note 36) through phoneme 63 (note 99).
- **Notes outside 36–99:** ignored.
- **Velocity:** sets the output volume for that phoneme (velocity × 2, range 0–254).
- **Note Off:** silences the SP0256-AL2 immediately.

MIDI Note	Phoneme Index	SP0256-AL2 Token
36	0	PA1 (pause / silence)
37	1	PA2
38	2	PA3

...	...	...
99	63	last SP0256-AL2 allophone

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## Pitch Bend – Clock Control

Pitch Bend controls the programmable oscillator that clocks the SP0256-AL2, changing the speech rate and perceived pitch simultaneously. The full 14-bit MIDI pitch bend range is mapped to clock control values

**1023–0**, so lower MIDI bend values produce higher clock control values (faster clock, higher pitch).

Pitch bend updates take effect immediately on the clock and can be sent **while a phoneme is still playing** (Note On held), allowing **real-time pitch** or speed sweeps within a single phoneme.

Pitch Bend Value	LTC6903 Clock Control	Effect
+8191	0	Lowest clock
0	about 512	Center
-8192	1023	Highest clock

Default clock control value on startup is **651**.

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## CC7 and Aftertouch – Volume

Both **CC7** (Channel Volume) and **Channel Aftertouch** set the output level via the onboard op amp using the same mapping: value × 2, range **0–254**.

Both messages take effect immediately and can be sent **while a**

**phoneme is still playing** (Note On held), allowing real-time amplitude shaping.

Velocity only sets the level at the instant the Note On fires.

Value	Output Level
0	0 (silent)
127	254 (maximum)

Default startup level is **200**.

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## Ignored MIDI Messages

- Notes outside the range 36–99
  - Control Change messages other than CC7
  - All other MIDI messages
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## Quick Reference Table

Message	Function	Range
Note On	Trigger SP0256-AL2 phoneme; velocity sets volume	Notes 36–99, phonemes 0–63
Note Off	Silence SP0256-AL2	Any note on active channel
Pitch Bend	Clock control (pitch / speed) – continuous, effective while Note On is held	-8192 to +8191, mapped to clock 1023–0

CC7 / Aftertouch	Volume – continuous, effective while Note On is held	0–127 mapped to level 0–254
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## Connections

The Kraftor SP0vox MIDI firmware accepts control from:

- **USB MIDI** for notes, pitch bend, and control changes
- **Serial MIDI** on the hardware serial MIDI input

## OLED Display

If an OLED display is detected at I2C address **0x3C**, it shows:

- **SP0 vox MIDI** and the firmware version on startup
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## Tools

The best way to compose phoneme sequences for Kraftor SP0vox MIDI is the companion SP0vox translator tool:

[https://deladriere.github.io/Spo\\_vox\\_translator/](https://deladriere.github.io/Spo_vox_translator/)

SP0vox translator runs in the browser and converts English text to SP0256-AL2 allophone sequences. It sends the sequence over Web MIDI (Note On per phoneme, pitch bend before each note) or exports a **SP0vox.mid**

Standard MIDI File for your DAW. Use a Chromium-based browser for Web MIDI support.

# Firmware

Do not use this firmware for Emy, Emy Terminal, or Kraftor SAM.

[How to install the firmware on Kraftor](#)



## [SPO Vox MIDI for Kraftor](#)

1 file(s) 52.50 KB

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