Kraftor-SpeakJet-MIDI

Media

User Manual

Version 1.0

The Kraftor SpeakJet MIDI is a MIDI-controlled interface for the SpeakJet speech synthesizer. It lets you trigger the SpeakJet’s allophones and built-in sound effects from MIDI notes, and control volume, pitch, and bend/speed parameters from MIDI messages.

Version History

- **v1.0** (2026-04-17) : Initial SpeakJet MIDI firmware

MIDI Channel Configuration

The firmware listens in **MIDI omni mode** so it can receive both the phoneme channel and the sound effect channel. It then checks the incoming MIDI channel and routes notes to the correct SpeakJet code bank.

No DIP switch channel setup is required for this firmware version.

MIDI Channel	Function	Note Range	SpeakJet Codes

Channel 1	Allophones	36-107	128-199
Channel 2	Sound effects	36-90	200-254

MIDI Messages

Note On — SpeakJet Phoneme and Sound Triggering

MIDI notes trigger SpeakJet codes. On channel 1, note 36 is code 128, **IY**. On channel 2, note 36 is code 200, **ROBOT_0**.

- **Channel 1**: notes 36-107 trigger SpeakJet allophone codes 128-199.
- **Channel 2**: notes 36-90 trigger SpeakJet codes 200-254.
- **Notes below 36**: ignored
- **Notes above each bank range**: ignored

MIDI Note	SpeakJet Code	Label
36	128	IY
37	129	IH
38	130	EY
39	131	EH
40	132	AY
41	133	AX
42	134	UX
43	135	OH

44	136	AW
45	137	OW
46	138	UH
47	139	UW
48	140	MM
49	141	NE
50	142	NO
51	143	NGE
52	144	NGO
53	145	LE
54	146	LO
55	147	WW
56	148	RR
57	149	IYRR
58	150	EYRR
59	151	AXRR
60	152	AWRR
61	153	OWRR
62	154	EYIY
63	155	OHIY
64	156	OWIY
65	157	OHIH

66	158	IYEH
67	159	EHLL
68	160	IYUW
69	161	AXUW
70	162	IHWW
71	163	AYWW
72	164	OWWW
73	165	JH
74	166	VV
75	167	ZZ
76	168	ZH
77	169	DH
78	170	BE
79	171	BO
80	172	EB
81	173	OB
82	174	DE
83	175	DO
84	176	ED
85	177	OD
86	178	GE
87	179	GO

88	180	EG
89	181	OG
90	182	CH
91	183	HE
92	184	HO
93	185	WH
94	186	FF
95	187	SE
96	188	SO
97	189	SH
98	190	TH
99	191	TT
100	192	TU
101	193	TS
102	194	KE
103	195	KO
104	196	EK
105	197	OK
106	198	PE
107	199	PO

Channel 2 Sound Effect Bank

On MIDI channel 2, sound effects start again at note 36:

- Note 36 = code 200, **ROBOT_0**
- Note 45 = code 209, **ROBOT_9**
- Note 46 = code 210, **ALARM_0**
- Note 55 = code 219, **ALARM_9**
- Note 56 = code 220, **BEEP_0**
- Note 65 = code 229, **BEEP_9**
- Note 66 = code 230, **BIO_0**
- Note 75 = code 239, **BIO_9**
- Note 76 = code 240, **DTMF_0**
- Note 87 = code 251, **DTMF_R**
- Note 88 = code 252, **SONAR_PING**
- Note 89 = code 253, **PISTOLSHOT**
- Note 90 = code 254, **WOW**

- **Note On**: Sets volume from velocity, then sends the selected SpeakJet code.
- **Note Off**: No action. SpeakJet sounds play to completion.

Velocity – Volume

Sets the master volume level. Range **0-127**; default **96**.

Note On velocity sets volume per phoneme or sound effect.

Velocity	Effect
0	Silent or minimum volume
1-127	Increasing SpeakJet volume

Pitch Bend – Pitch Control

Sets vocalization pitch, making the voice sound higher or lower. For singing, the SpeakJet datasheet cites about three

octaves, approximately **32 Hz-240 Hz**. Pitch only affects **voiced** sounds. Range
0-255; default **88**. **0** means 0 Hz and will not really vocalize; values
under about 30 tend to sound clicky rather than voice-like.

MIDI pitch bend controls pitch. The 14-bit pitch bend range is mapped to
20-255.

Pitch Bend Value	SpeakJet Pitch Value	Effect
-8192	20	Lowest mapped pitch
0	about 137	Center pitch
+8191	255	Highest mapped pitch

The minimum mapped pitch is 20 to avoid glitches at the bottom of the SpeakJet pitch range.

CC1 — Mod Wheel / Bend

Sets frequency bend: adjusts oscillator output frequencies so voicing shifts from a **deep, hollow**
character toward a **high, metallic** one. Range **0-15**; default **5**.

MIDI CC1 controls bend. MIDI values **0-127** are mapped linearly to
bend values **0-15**.

CC1 Value	SpeakJet Bend Value
0	0
127	15

CC5 — Speed

Sets play speed. Range **0-127**; default **114**.

MIDI CC5 controls speed per phoneme or sound effect.

CC5 Value	Effect
0	Slowest mapped speed
127	Fastest mapped speed

Ignored MIDI Messages

- Other Control Change messages not listed above
- Note Off messages

Quick Reference Table

MIDI Message	Function	Range
Note On Ch 1	Trigger SpeakJet allophones	Notes 36-107, codes 128-199
Note On Ch 2	Trigger SpeakJet sound effects	Notes 36-90, codes 200-254
Velocity	Volume	0-127
Pitch Bend	Pitch	-8192 to +8191, mapped to 20-255

CC1	Bend	0-127, mapped to 0-15
CC5	Speed	0-127

Connections

The SpeakJet MIDI firmware accepts MIDI from:

- **USB MIDI**
- **Serial MIDI** on the hardware serial MIDI input

Both MIDI inputs are active simultaneously and use the same MIDI handlers.

SpeakJet Module Connection

The SpeakJet chip is controlled through the SpeakJet UART at 9600 baud. The firmware resets the SpeakJet on startup, then sets the initial volume to maximum.

OLED Display

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

- **SPEAKJET MIDI** on startup
- The firmware version
- The last triggered SpeakJet label

After inactivity, the display switches to a simple blinking eyes screensaver. Sending a new MIDI note wakes the display and shows the triggered label again.

Tools

You can use the following tool to convert text into a sequence of MIDI phonemes

SpeakJet Translator
Converts English text into approximate IPA, maps IPA to SpeakJet phoneme tokens, and sends the sequence over Web MIDI or exports a single-track Standard MIDI File.

Firmware

Do not use this firmware for Emy or Emy Terminal.

How to install the firmware on Kraftor

SpeakJet MIDI for Kraftor

0 file(s) 0.00 KB
Login is required to access this page
Login