

Nexus MIDI for Kraftor user Manual

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Date	Revision	Changes
2024-09-27	1.0	Added : Record text-to-speech in MIDI (via serial)
2024-05-09	0.1	initial release

Connect your Kraftor via USB, and it will appear as “Kraftor” in your MIDI device’s list.

You can also connect your Kraftor via the MIDI TRS connection

Note that while “MIDI Note ON” events are supported, “MIDI Note OFF” events will have no effect.

Whenever a MIDI note is received, the NOTE LED turns on. Whenever speech starts, the BUSY LED turns on.

The MIDI channel is used to set Nexus into three different modes directly from your DAW (there is no need to use Kraftor’s channel switch-the channel switch is not used in this code)

Mode

Mode: Phonetic (MIDI channel 1)

In this mode, phonemes are queued as they are received via MIDI notes. The speech sequence begins when the device receives the designated “Speak” note. Prosody marker notes are also functional in this mode, allowing for enhanced control over speech characteristics like pitch, speed, and volume.

Mode: Alphabet (MIDI channel 2)

In this mode, each MIDI note corresponds to a specific letter: A=C1, B=C2...Z=C#3.

The speech is triggered when the device receives the designated “Speak” note. Special notes are also assigned to adjust Speed, Pitch, and Volume.

Similar to SD TTS mode, if a sentence ends with a period, the pitch drops at the end of the sentence; a question mark will cause the pitch to rise.

Mode: Phoneme (MIDI channel 3)

In this mode, the phoneme corresponding to the MIDI note is immediately triggered when a “Note On” event occurs. Prosody marker notes are ignored.

The phoneme's volume can be adjusted through velocity, mapped across ten distinct levels.

Mode: Numbers (MIDI channel 4)

The notes are mapped to numbers : C-2 will be uttered as "zero", c#-2- as "one", D-2 as "two", ...

Mode: Nato alphabet (MIDI channel 5)

The notes are mapped to the Nato alphabet : C-2 will be uttered as "Alpha", c#-2- as "Bravo", D-2 as "Charlie", ...

Mode: US Police Ten code (MIDI channel 6)

The note are mapped to the ten codes, starting at C-2

10 0	Use Caution
10 1	Unable Copy - Change Location
10 2	Signal Good
10 3	Stop Transmitting
10 4	Acknowledgment
10 5	Relay
10 6	Busy - Unless Urgent
10 7	Out of Service
10 8	In Service
10 9	Repeat
10 10	Fight In Progress
10 11	Dog Case
10 12	Stand By (Stop)
10 13	Weather-Road Report
10 14	Prowler Report
10 15	Civil Disturbance
10 16	Domestic Problem

10 0	Use Caution
10 17	Meet Complainant
10 18	Quickly
10 19	Return to
10 20	Location
10 21	Call by Phone
10 22	Disregard
10 23	Arrived at Scene
10 24	Assignment Completed
10 25	Report in Person
10 26	Detaining Subject, Expedite
10 27	Driver License Information
10 28	Vehicle Registration Information
10 29	Check for Wanted
10 30	Unnecessary Use of Radio
10 31	Crime in Progress
10 32	Man with Gun
10 33	Emergency
10 34	Riot
10 35	Major Crime Alert
10 36	Correct Time
10 37	(Investigate) Suspicious Vehicle
10 38	Stopping Suspicious Vehicle
10 39	Urgent - Use Light, Siren
10 40	Silent Run - No Light, Siren
10 41	Beginning Tour of Duty
10 42	Ending Tour of Duty
10 43	Information
10 44	Permission to Leave

10 0	Use Caution
10 45	Animal Carcass
10 46	Assist Motorist
10 47	Emergency Road Repair
10 48	Traffic Standard Repair
10 49	Traffic Light Out at
10 50	Accident (F-Fire, PI-Personal Injury, PD-Property Damage)
10 51	Wrecker Needed
10 52	Ambulance Needed
10 53	Road Blocked at
10 54	Livestock on Highway
10 55	Intoxicated Driver
10 56	Intoxicated Pedestrian
10 57	Hit and Run (F-Fire, PI-Personal Injury, PD-Property Damage)
10 58	Direct Traffic
10 59	Convoy or Escort
10 60	Squad in Vicinity
10 61	Personnel in Area
10 62	Reply to Message
10 63	Prepare Make Written Copy
10 64	Message for Local Delivery
10 65	Net Message Assignment
10 66	Message Cancellation
10 67	Clear for Net Message
10 68	Dispatch Information
10 69	Message Received
10 70	Fire Alarm

10 0	Use Caution
10 71	Advise Nature of Fire
10 72	Report Progress on Fire
10 73	Smoke Report
10 74	Negative
10 75	In Contact with
10 76	En Route
10 77	ETA (Estimated Time of Arrival)
10 78	Need Assistance
10 79	Notify Coroner
10 80	Chase in Progress
10 81	Breatherlizer Report
10 82	Reserve Lodging
10 83	Work School Crossing at
10 84	If Meeting Advise ETA (Estimated Time of Arrival)
10 85	Delay due to
10 86	Officer / Operator on Duty
10 87	Pickup / Distribute Checks
10 88	Present Telephone
10 89	Bomb Threat
10 90	Bank Alarm
10 91	Pick Up Prisoner / Subject
10 92	Improperly Parked Vehicle
10 93	Blockade
10 94	Drag Racing
10 95	Prisoner / Subject in Custody
10 96	Mental Subject
10 97	Check (Test) Signal
10 98	Prison / Jail Break

10 0	Use Caution
10 99	Wanted / Stolen Indicated
10 101	What is Status? (Are you secure?)

Mode: Eno's Oblique strategies (MIDI channel 7)

Any note will trigger a random strategy

Recording Text-to-Speech as MIDI sequence

Kraftor allows you to generate speech on the fly from text input via a serial terminal, helping you refine the speech in real-time.

It also sends the speech back as MIDI notes on channel 2 (Alphabet mode), allowing you to record and save the text sequences in your DAW.

These two functionalities help you create, fine-tune, and store text-to-speech sequences in your DAW with great precision.

Here's how to set it up:

Connect Kraftor via USB:

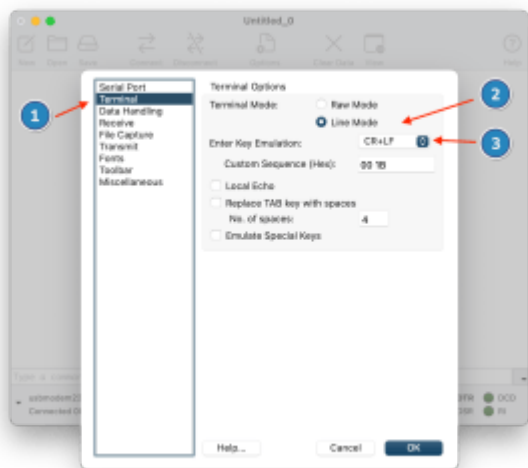
- Attach the serial port to your terminal software (we recommend [CoolTerm](<http://freeware.the-meiers.org/>) by Roger Meirs, available for macOS, Windows, and Linux).

Setting Up CoolTerm:

- Start CoolTerm.
- Open the Serial Port Options (under Connection > Options).
- Select Kraftor's USB port and set the baud rate to 115200.

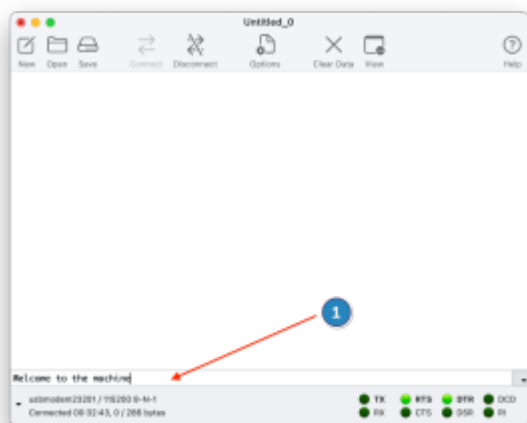


- In the Terminal section, set the mode to “Line Mode”.
- Make sure the Enter Key Emulation is set to “CR” or “CR + LF”



Generating Speech:

- Type your text into the terminal and press Enter. This will trigger Kraftor to start speaking.



Recording MIDI Notes:

- The spoken text is also sent back to your computer as MIDI notes on channel 2.
- When satisfied with the speech, press the down arrow on the right in CoolTerm to cycle through previously sent lines. Select the one you want, press Enter, and then immediately press Record in your DAW to capture the MIDI sequence.
- To play it back, simply play the MIDI notes in your DAW, and Kraftor will interpret them as letters, generating speech through its Nexus engine.

Midi Controllers

Midi controller can also be **applied in real-time**, once the speech is started, both in Phonetic and Alphabet mode (see the following table)

Nexus	Range	Controller
Speed	0-13	Modulation wheel CC1
Voice	0-10	Breath controller CC2
Reverb	0-9	Controller CC3
Formant	0-99	Foot pedal CC4

Nexus	Range	Controller
Pitch	0-99	Portamento CC5
Expression	0-9	Data Entry CC6
Volume	0-9	Volume CC7

MIDI to Phonemes mapping

Number	Phoneme	MIDI Note	Example
0	A	C1	das (Spanish)
1	AA	C#1	cot
2	AE	D1	cat
3	AH	D#1	cut
4	AW	E1	cow
5	AX	F1	bottom
6	AY	F#1	bite
7	B	G1	bib
8	CH	G#1	church
9	D	A1	did
10	DH	A#1	either
11	DX	B1	city
12	E	C2	ser (Spanish)
13	EH	C#2	bet
14	EI	D2	mesa (Spanish)
15	ER	D#2	bird
16	EW	E2	acteur (French)
17	EY	F2	bake
18	F	F#2	fee
19	G	G2	gag
20	H	G#2	he

Number	Phoneme	MIDI Note	Example
21	I	A2	libro (Spanish)
22	IH	A#2	bit
23	IX	B2	rabbit
24	IY	C3	beet
25	J	C#3	age
26	K	D3	cute
27	KX	D#3	ski
28	L	E3	long
29	M	F3	me
30	N	F#3	new
31	NG	G3	rung
32	NY	G#3	Niño (Spanish)
33	O	A3	no (Spanish)
34	OW	A#3	boat
35	OY	B3	boy
36	P	C4	pop
37	PX	C#4	spot
38	R	D4	ring
39	RR	D#4	tres (Spanish)
40	S	E4	sell
41	SH	F4	shell
42	T	F#4	tin
43	TH	G4	thin
44	TX	G#4	stick
45	U	A4	uno (Spanish)
46	UH	A#4	book
47	UW	B4	boot
48	V	C5	valve

Number	Phoneme	MIDI Note	Example
49	W	C#5	we
50	WH	D5	when
51	Y	D#5	mayo (Spanish)
52	YY	E5	you
53	Z	F5	zoo
54	ZH	F#5	vision
55	SPACE	G5	variable pause
56	?	G#5	Question
57	COMMA	A5	medium pause
58	PERIOD	A#5	long pause
59	Speak	B5	Start speech in phonetic mode
60	+ Pitch	C6	Increase pitch
61	- Pitch	C#6	Decrease pitch
62	+ Speed	D6	Increase speed
63	- Speed	D#6	Decrease speed
64	+ Volume	E6	Increase volume
65	- Volume	F6	Decrease volume

Nexus voices

The text-to-speech synthesizer has 11 standard voices, and several individual voice parameter controls that can be used to vary the voice characteristics independently. The Voice command alters numerous internal voice parameters (articulation, pitch, expression, tone, etc.) and should precede any individual voice parameter control commands.

N	Voice Name
0	Perfect Paul (default)
1	Vader
2	Big Bob

N	Voice Name
3	Precise Pete
4	Ricochet Randy
5	Biff
6	Skip
7	Robo Robert
8	Goliath
9	Alvin
10	Gretchen



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