CVOCD Configuration MIDI Messages

CVOCD can be configured using both MIDI System Exclusive (SYSEX) and Non-registered Parameter (NRPN) messages. A common convention is used for the parameters for either configuration method.

SYSEX Format

The layout of a SYSEX file containing CVOCD configuration is as follows:

```
F0 00 7F 15
```

These four bytes are "start of sysex" marker followed by three bytes that identify this as a CVOCD configuration file.

This is followed by blocks of exactly four bytes

- Parameter MSB
- Parameter LSB
- Value MSB
- Value LSB

The file is terminated by "end of sysex" marker

```
F7
```

Following a SYSEX block, the configuration is automatically written to EEPROM, overwriting the previous config.

NRPN Format

NRPN messages follow the MIDI standard of

- Parameter MSB delivered using MIDI Continuous Controller Message with controller number 99
- Parameter LSB delivered using MIDI Continuous Controller Message with controller number 98
- Data MSB delivered using MIDI Continuous Controller Message with controller number 6
- Data LSB delivered using MIDI Continuous Controller Message with controller number 38

The data value is written to the selected parameter when Data LSB is written to. The "context" of most recent Parameter and Data NSB is retained for the next write.

Changes made by NRPN are not automatically committed to EEPROM and will be lost at power off unless a write is made to the "Save" global parameter, which triggers a save to EEPROM

Ordering Of Parameters

Writing certain parameters (such as changing "Source" of a CV or Gate output) will result in default information being set for the remaining config of that output, so more specific config must be sent afterwards. In general send parameters in order they appear in the CVOCD config page and observe when a parameter is not relevant to a source setting (i.e. field in config page is disabled). Sending a not-relevant parameter might set an internal setting to an invalid value resulting in unwanted behaviour (validation is minimal due to lack of program memory)

Note Input

NRPN MSB	NRPN LSB	VALUE MSB	VALUE LSB
11(0B) = Note Input #1 12(0C)= Note Input #2 13(0D)= Note Input #3 14(0E) = Note Input #4	1 = Enable	0 = OFF 1 = ON	X
	3 = Minimum Note	0	Note (0-127)
	4 = Maximum Note	0	0 = as min note Note (1-127)
	5 = Minimum Velocity	0	Velocity (0-127)
	7 = Pitch Bend Range	0	Range (0-127)
	8 = Note priority	0	0 = Most recent Note 1 = Lowest Note 3 = Highest Note 6 = 2 Note Cycle 7 = 3 Note Cycle 8 = 4 Note Cycle 9 = 2 Note Chord 10(0A) = 3 Note Chord 11(0B) = 4 Note Chord

CV Output

NRPN MSB	NRPN LSB	VALUE MSB	VALUE LSB
21(15) – CV Port A 22(16) – CV Port B 23(17) – CV Port C 24(18) – CV Port D	1 - Source	0 – None	X
		2 - MIDI CC	CC Number (0-127)
		4 - Pitch Bend	X
		5 - Channel Pressure	X
		11(0B) - Note Input #1 12(0C) - Note Input #2 13(0D) - Note Input #3 14(0E) - Note Input #4	1 – Note 1 pitch 2 – Note 2 pitch 3 – Note 3 pitch 4 – Note 4 pitch 20(14) -Last note velocity
		20(14) – Scaled BPM	X
		127(7F) - Test Voltage	X
	2 = Chan	0 = Specific Channel	Channel (1-16)
		1 = Any/Omni	X
		2 = Global Channel	X
	14(0E) = Transpose	0	Transpose (0-127) mapped to -63 to +63 semitones
	15(0F) = Volts	0	Volts (0-8)
	16(10) = Pitch scheme	0	0 – 1V/Oct 1 – Hz/V 2 – 1.2V/Oct
	98(62) = Scale Correction	0	Correction (0-127) mapped to -63 to +63 DAC units (2mV) over full 8 octave range
	99(63) = Offset Correction	0	Correction (0-127) mapped to -63 to +63 DAC units (2mV)

Gate Output

NRPN MSB	NRPN LSB	VALUE MSB	VALUE LSB
31(1F) = Gate 1 32(20) = Gate 2 33(21) = Gate 3 34(22) = Gate 4 35(23) = Gate 5 36(24) = Gate 6 37(25) = Gate 7 38(26) = Gate 8 39(27) = Gate 9 40(28) = Gate 10 41(29) = Gate 11 42(2A) = Gate 12	1 - Source	0 = Disable	X
		1 = MIDI Note	Note (0-127)
		2 = MIDI CC > threshold 3 = MIDI CC < threshold	CC (0-127)
		11(0B) = Note input #1 12(0C) = Note input #2 13(0D) = Note input #3 14(0E) = Note input #4	0 = All notes off 1 = first note on 2 = second note on 3 = third note on 4 = fourth note on 5 = any note on
		20(14) = Clock Tick 22(15) = Clock Run 23(16) = Clock Start 25(17) = Clock Stop 26(18) = Clock Start/Stop	Divider (1-127)
	2 = Chan	0 = Specific Channel	Channel (1-16)
		1 = Any/Omni	X
		2 = Global Channel	X
	3 = Minimum Note	0	Note (0-127)
	4 = Maximum Note	0	0 = as min note Note (1-127)
	5 = Minimum Velocity	0	Velocity (0-127)
	11(0B) = Tick offset	0	Lag (0-127 Ticks)
	12(0C) = Gate Duration	0 = Gate	X
		1 = Trigger	Duration (1-127)
		2 = Trigger w/ Global Duration	X
		3 = Retrigger	X
	13(0D) = CC Threshold	0	Threshold (0-127)

GLOBAL CONFIG

NRPN MSB	NRPN LSB	VALUE MSB	VALUE LSB
1	2 = Chan	0 = Specific Channel	Channel (1-16)
	12(0C) = Gate Duration	0	Duration (1-127)
	100(64) = Save	0	0