Nemesis MIDI Implementation

Parameter	CC#	Range	Value	Description
Factory Delay Engine	1	0-23	Selects and loads delay effect engine (with all parameters)	
			0	Digital
			1	Diffuse
			2	Analog
			3	Tape
			4	Noise Tape
			5	Degrade
			6	Shifter
			7	Helix
			8	Reverse
			9	Sweeper
			10	Rhythmic
			11	Slapback
			12	Resonant Analog
			13	Tremolo
			14	Sequenced Filters
			15	Dub
			16	Chorus
			17	Flanger
			18	Double Helix
			19	Complex Rhythmic
			20	Lo-Fi Retro
			21	Warped Record
			22	Compound Shifter
			23	Oil Can
Delay Time	2	0-127	Sets delay time as a ratio of maximum delay time	
			0	Minimum delay time
			…	(Mapping is non-linear between the min and max values)
			127	Maximum delay time
Maximum Delay Time	3	0-127	Sets maximum delay time available on time knob	
			0	Minimum delay time allowed by the engine (~10 ms)
			63	Approximately 1.3 seconds
			127	2.6 seconds
Reserved	4	N/A	N/A	
Feedback	5	0-127	Controls amount of feedback (number of repeats)	
			0	Zero feedback
			127	Maximum feedback (set by Feedback Max parameter)
Wet/Dry Mix	6	0-127	Sets effect (wet) level relative to dry level	
			0	100% dry
			63	50% dry / 50% wet
			127	100% wet
			Note	Obeys alternate mix knob behaviour if that global option is set
Modulation Depth	7	0-127	Controls amount of modulation (not the same as wow & flutter)	
			0	No modulation
			127	Max modulation (set by engine)

Parameter	CC#	Range	Value	Description
Modulation Rate	8	0-127	Controls modulation speed or tape wow and flutter rate	
			0	Tape-Style Engines: Slowest Tape Speed
			127	Tape-Style Engines: Fastest Tape Speed
			0	Other Effect Engines: 0.1 Hz
			127	Other Effect Engines: 10 Hz
Intensity (Assignable)	9	0-127	Controls multiple parameters (different for each effect engine)	
			0	Minimum position on intensity knob (see manual)
			127	Maximum position on intensity knob (see manual)
Output Level	10	0-127	Sets the master output volume for wet and dry signals	
			0	-∞dB (Output is silent)
			52	0 dB
			127	+8 dB
Diffusion	11	0-127	Controls the amount of diffusion or smearing	
			0	No diffusion
			1	Min diffusion
			127	Max diffusion
			Note	Turning on or off will briefly mute delay line
Distortion	12	0-127	Sets the intensity of the distortion (character based on engine)	
			0	No distortion
			127	Max distoriton
High Pass Filter	13	0-127	Sets cutoff frequency (Hz) of high pass filter	
			0	No filtering
			16	120 Hz
			32	170 Hz
			48	250 Hz
			64	360 Hz
			80	515 Hz
			96	740 Hz
			112	1070 Hz
			127	1500 Hz
Low Pass Filter	14	0-127	Sets cutoff frequency (Hz) of low pass filter	
			0	No filtering
			16	11000 Hz
			32	7500 Hz
			48	5100 Hz
			64	3500 Hz
			80	2400 Hz
			96	1650 Hz
			112	900 Hz
			127	400 Hz
Sample Rate Reduction	15	0-127	Reduces the sample rate (Hz), creating aliasing artifacts	
			0	No sample rate reduction
			1	12000 Hz
			16	8000 Hz
			32	6000 Hz
			48	4400 Hz
			64	3200 Hz
			80	2300 Hz

Parameter	CC#	Range	Value	Description
			96	1500 Hz
			112	800 Hz
			127	200 Hz
Sweep Filter Frequency	16	0-127	Sets the center frequency (Hz) of the sweep filter	
			0	55 Hz
			16	100 Hz
			32	170 Hz
			48	300 Hz
			64	500 Hz
			80	900 Hz
			96	1600 Hz
			112	2800 Hz
			127	4700 Hz
Sweep Filter Q	17	0-127	Sets the Q (resonance) of the sweep filter	
			0	No resonance
			127	Max resonance
Sweep Filter Depth	18	0-127	Sets the frequency range of the sweep filter	
			0	No sweep - fixed frequency
			42	From 1/2 to 2 times the center frequency
			63	From 1/3 to 3 times the center frequency
			85	From 1/4 to 4 times the center frequency
			127	From 1/8 to 8 times the center frequency
Sweep Filter Mix (Only applies to Tap 1)	19	0-127	Sets the mix (from 0 to 100%) of the sweep filter	
			0	Sweep filter disabled
			63	50/50 mix
			127	100% mix
Wow and Flutter Depth	20	0-127	Sets the depth of wow and flutter (not the same as modulation)	
			0	No wow or flutter
			127	Maximum wow and flutter
Wow and Flutter Rate	21	0-127	Sets rate of wow and flutter	
			0	Very slow (lowest tape speed)
			63	"Vintage" tape speed (based on Echoplex)
			127	Fast tape speed
Wow Modulation Noise	22	0-127	Tape gets "older" as this parameter is turned up	
			0	"New" tape
			20	"Old" tape
			40	"Warped" tape - extremely old tape
			>50	Turns into noise and distortion
Tremolo Depth (Stereo)	23	0-127	Sets amount of tremolo (amplitude modulation)	
			0	No tremolo
			63	Max tremolo (sine LFO)
			127	Doubled tremolo (twice the speed, rectified sine LFO)
Pitch Shift Control	24	0-125	Only valid for Shifter, Reverse, Helix, and Double Helix Engines	
				(Refer to Pitch Shift Table at end of this document)
Tap 1 Level	25	0-127	Output level of tap 1 (usually on Output 1)	
			0	Silent
			16	-12 dB
			31	-6 dB

Parameter	CC#	Range	Value	Description
			45	-3 dB
			63	0 dB
			127	+6 dB
Tap 1 Pan	26	0-127	Stereo pan of tap 1	
			0	100% Left (Output 1)
			63	Centered (Both Outputs)
			127	100% Right (Output 2)
Tap 2 Level	27	0-127	Output level of tap 2 (usually on Output 2)	
			0	Silent
			16	-12 dB
			31	-6 dB
			45	-3 dB
			63	0 dB
			127	+6 dB
Tap 2 Pan	28	0-127	Stereo pan of tap 2	
			0	100% Left (Output 1)
			63	Centered (Both Outputs)
			127	100% Right (Output 2)
Tap 2 Delay Time	29	0-127	Tap 2 time as a percentage of the main delay time	
			0	Min delay (useful for unison/detune/doubling of input)
			31-32	1/4 of delay time (16th note)
			42-43	1/3 of delay time (triplet)
			63-64	1/2 of delay time (8th note)
			85	2/3 of delay time (swung 8th note)
			95-96	3/4 of delay time (dotted 8th note)
			127	Same delay time as tap 1
Input Low Pass Filter	30	0-127	Input low pass filter applied to both wet and dry signals	
			0	No filtering
			16	15000 Hz
			32	10000 Hz
			48	7500 Hz
			64	5500 Hz (characteristic of vintage Memory Man)
			80	4000 Hz
			96	3000 Hz
			112	2000 Hz
			127	1500 Hz
Feedback Maximum	31	0-3	Multiplier to scale maximum feedback amount	
			0	1.00x (No self-oscillation even at max Feedback)
			1	1.25x (Self-oscillation may occur)
			2	1.50x (Self-oscillation may occur)
			3	2.00x (Self-oscillation may occur)
LFO Lock to Delay Time	32	0-1	Syncronizes LFO (mod, filter, tremolo) to delay time	
			0	LFO will run at its own rate
			1	LFO locks to delay time with optional engine subdivision
Invert Left Wet Phase	33	0-1	Inverts phase of wet (delayed) signal on Output 1	
			0	Output 1 wet in-phase with dry signal
			1	Output 1 wet out-of-phase with dry signal
Invert Right Wet Phase	34	0-1	Inverts phase of wet (delayed) signal on Output 2	

Parameter	CC#	Range	Value	Description
			0	Output 2 wet in-phase with dry signal
			1	Output 2 wet out-of-phase with dry signal
I/O Routing Option	35	0-15	Configures the signal routing of audio inputs and outputs	
			0	Automatically detect based on plug configuration
			1	Mono In - Mono/Stereo Out, Hardware Bypass
			2	Mono In - Mono Out, Output 1 Wet, Output 2 Dry
			3	Mono In - Stereo Out, Soft Bypass
			4	Stereo In - Stereo Out
			5	Feedback Loop Insert (Send Output 2, Return Input 2)
			6	External Loop Pre-Delay (Send Output 2, Return Input 2)
Multi-Feedback Mode	36	0-3	Allows compound (dual) delays using multiple taps	
			0	Use Effect Default
			1	Tap 1 is the only Feedback Source (Feedback = 1.0)
			2	Tap 2 is the only Feedback Source (Feedback = 1.0)
			3	Feedback from Both Tap 1 and Tap 2 (Each = 0.5)
Merge Stereo Outputs	37	0-1	Mix L and R outputs down to Mono	
			0	Normal Stereo
			1	Merged L+R on both Outputs
Bypass	38	0-127	Turns the delay effect on or off	
			<=63	Bypasses the delay effect
			>=64	Enables the delay effect
Intensity Knob Remap	39	0-14	Selects alternate parameter to be controlled by Intensity Knob	
			0	Factory Default
			1	Output Volume
			2	Diffusion
			3	Distortion
			4	Low Cut Filter
			5	High Cut Filter
			6	Sample Rate Reduction
			7	Sweep Filter Frequency
			8	Sweep Filter Q
			9	Sweep Filter Depth
			10	Sweep Filter Mix
			11	Wow and Flutter Noise
			12	Tremolo Depth
			13	Pitch Control
			14	Delay Effect Send Level
Mod Knob Remap	40	0-3	Selects alternate parameter to be controlled by Mod Knob	
			0	Time Modulation
			1	Tape Modulation (Wow and Flutter)
			2	Filter Modulation (Sweeper Filter)
			3	Tremolo Depth
Rate Knob Remap	41	0-1	Selects alternate parameter to be controlled by Rate Knob	
			0	Modulation Rate
			1	Tape Speed (Wow and Flutter Rate)
Tempo Division	42	0-14	Ratio to scale tempo when setting delay time	
			0	4 : Whole Notes
			1	3 : Dotted Half Notes

Parameter	CC#	Range	Value	Description
			2	2 : Half Notes
			3	1.618 : Golden Ratio (Φ)
			4	3/2 : Dotted Quarters
			5	4/3 : Swing Quarters
			6	1 : Quarter Notes
			7	3/4 : Dotted 8ths
			8	2/3 : Swing 8ths
			9	0.618 : Inverse Golden Ratio (1/Φ)
			10	1/2 : Straight 8ths
			11	1/3 : Triplets
			12	1/4 : 16th Notes
			13	1/6 : Sextuplets
			14	1/8 : 32nd Notes
Octave Shift Control	50	0-125	Only for Shifter, Reverse, Helix, and Double Helix Engines	
			0	Octave Down
			63	Unison
			127	Octave Up
Delay Send Control	51	0-127	Controls the amount of input signal going to the delay effect	
			0	No input sent to the delay
			127	Full input sent to the delay (normal operation)
Preset Down	80	0-127	Selects previous preset (limited to presets 1-4 or *extended 1-8)	
			Any	Decrements preset (wraps around)
Preset Up	82	0-127	Selects next preset (limited to presets 1-4 or *extended 1-8)	
			Any	Increments preset (wraps around)
Remote Tap	93	0-127	Acts as a virtual tap input, just like pressing the tap footswitch	
			Any	Tap input
Infinite Hold	97	0-127	Activates hold mode, just like holding the tap footswitch	
			<=63	Deactivates hold mode
			>=64	Activates hold mode
Bypass	101	0-127	Turns the delay effect on or off	
			<=63	Bypasses the delay effect
			>=64	Enables the delay effect
Remote Bypass	102	0-127	Toggle between bypassed and engaged state	
			Any	Toggles every time, regardless of value
Recall Preset Bypassed	103	0-127	Recall any preset in its bypassed state	
			Any	Value dictates preset number
Recall Preset Engaged	104	0-127	Recall any preset in its engaged state	
			Any	Value dictates preset number
Pitch Shift Table	24	0-125	Sets the musical interval for the shift, with optional reverse	
			0	31 semitones (+2 octaves +perfect 5th)
			1	30 semitones (+2 octaves +diminished 5th)
			2	29 semitones (+2 octaves +perfect 4th)
			3	28 semitones (+2 octaves +major 3rd)
			4	27 semitones (+2 octaves +minor 3rd)
			5	26 semitones (+2 octaves +major 2nd)
			6	25 semitones (+2 octaves +minor 2nd)
			7	24 semitones (+2 octaves)
			8	23 semitones (+octave +major 7th)

Parameter	CC#	Range	Value	Description
			9	22 semitones (+octave +minor 7th)
			10	21 semitones (+octave +major 6th)
			11	20 semitones (+octave +augmented 5th)
			12	19 semitones (+octave +perfect 5th)
			13	18 semitones (+octave +diminished 5th)
			14	17 semitones (+octave +perfect 4th)
			15	16 semitones (+octave +major 3rd)
			16	15 semitones (+octave +minor 3rd)
			17	14 semitones (+octave +major 2nd)
			18	13 semitones (+octave +minor 2nd)
			19	12 semitones (+octave)
			20	11 semitones (+major 7th)
			21	10 semitones (+minor 7th)
			22	9 semitones (+major 6th)
			23	8 semitones (+augmented 5th)
			24	7 semitones (+perfect 5th)
			25	6 semitones (+diminished 5th)
			26	5 semitones (+perfect 4th)
			27	4 semitones (+major 3rd)
			28	3 semitones (minor 3rd)
			29	2 semitones (+major 2nd)
			30	1 semitones (+minor 2nd)
			31	0 semitones (unison)
			32	-1 semitones (-minor 2nd)
			33	-2 semitones (-major 2nd)
			34	-3 semitones (-minor 3rd)
			35	-4 semitones (-major 3rd)
			36	-5 semitones (-perfect 4th)
			37	-6 semitones (-diminished 5th)
			38	-7 semitones (-perfect 5th)
			39	-8 semitones (-augmented 5th)
			40	-9 semitones (-major 6th)
			41	-10 semitones (-minor 7th)
			42	-11 semitones (-major 7th)
			43	-12 semitones (-octave)
			44	-13 semitones (-octave -minor 2nd)
			45	-14 semitones (-octave -major 2nd)
			46	-15 semitones (-octave -minor 3rd)
			47	-16 semitones (-octave -major 3rd)
			48	-17 semitones (-octave -perfect 4th)
			49	-18 semitones (-octave -diminished 5th)
			50	-19 semitones (-octave -perfect 5th)
			51	-20 semitones (-octave -augmented 5th)
			52	-21 semitones (-octave -major 6th)
			53	-22 semitones (-octave -minor 7th)
			54	-23 semitones (-octave -major 7th)
			55	-24 semitones (-2 octaves)
			56	-25 semitones (-2 octaves -minor 2nd)

Parameter	CC#	Range	Value	Description
			57	-26 semitones (-2 octaves -major 2nd)
			58	-27 semitones (-2 octaves -minor 3rd)
			59	-28 semitones (-2 octaves -major 3rd)
			60	-29 semitones (-2 octaves -perfect 4th)
			61	-30 semitones (-2 octaves -diminished 5th)
			62	-31 semitones (-2 octaves -perfect 5th)
			63	-31 semitones (Reverse -2 octaves -perfect 5th)
			64	-30 semitones (Reverse -2 octaves -diminished 5th)
			65	-29 semitones (Reverse -2 octaves -perfect 4th)
			66	-28 semitones (Reverse -2 octaves -major 3rd)
			67	-27 semitones (Reverse -2 octaves -minor 3rd)
			68	-26 semitones (Reverse -2 octaves -major 2nd)
			69	-25 semitones (Reverse -2 octaves -minor 2nd)
			70	-24 semitones (Reverse -2 octaves)
			71	-23 semitones (Reverse -octave -major 7th)
			72	-22 semitones (Reverse -octave -minor 7th)
			73	-21 semitones (Reverse -octave -major 6th)
			74	-20 semitones (Reverse -octave -augmented 5th)
			75	-19 semitones (Reverse -octave -perfect 5th)
			76	-18 semitones (Reverse -octave -diminished 5th)
			77	-17 semitones (Reverse -octave -perfect 4th)
			78	-16 semitones (Reverse -octave -major 3rd)
			79	-15 semitones (Reverse -octave -minor 3rd)
			80	-14 semitones (Reverse -octave -major 2nd)
			81	-13 semitones (Reverse -octave -minor 2nd)
			82	-12 semitones (Reverse -octave)
			83	-11 semitones (Reverse -major 7th)
			84	-10 semitones (Reverse -minor 7th)
			85	-9 semitones (Reverse -major 6th)
			86	-8 semitones (Reverse -augmented 5th)
			87	-7 semitones (Reverse -perfect 5th)
			88	-6 semitones (Reverse -diminished 5th)
			89	-5 semitones (Reverse -perfect 4th)
			90	-4 semitones (Reverse -major 3rd)
			91	-3 semitones (Reverse -minor 3rd)
			92	-2 semitones (Reverse -major 2nd)
			93	-1 semitones (Reverse -minor 2nd)
			94	0 semitones (Reverse unison)
			95	1 semitones (Reverse +minor 2nd)
			96	2 semitones (Reverse +major 2nd)
			97	3 semitones (Reverse +minor 3rd)
			98	4 semitones (Reverse +major 3rd)
			99	5 semitones (Reverse +perfect 4th)
			100	6 semitones (Reverse +diminished 5th)
			101	7 semitones (Reverse +perfect 5th)
			102	8 semitones (Reverse +augmented 5th)
			103	9 semitones (Reverse +major 6th)
			104	10 semitones (Reverse +minor 7th)

Parameter	CC#	Range	Value	Description
			105	11 semitones (Reverse +major 7th)
			106	12 semitones (Reverse +octave)
			107	13 semitones (Reverse +octave +minor 2nd)
			108	14 semitones (Reverse +octave +major 2nd)
			109	15 semitones (Reverse +octave +minor 3rd)
			110	16 semitones (Reverse +octave +major 3rd)
			111	17 semitones (Reverse +octave +perfect 4th)
			112	18 semitones (Reverse +octave +diminished 5th)
			113	19 semitones (Reverse +octave +perfect 5th)
			114	20 semitones (Reverse +octave +augmented 5th)
			115	21 semitones (Reverse +octave +major 6th)
			116	22 semitones (Reverse +octave +minor 7th)
			117	23 semitones (Reverse +octave +major 7th)
			118	24 semitones (Reverse +2 octaves)
			119	25 semitones (Reverse +2 octaves +minor 2nd)
			120	26 semitones (Reverse +2 octaves +major 2nd)
			121	27 semitones (Reverse +2 octaves +minor 3rd)
			122	28 semitones (Reverse +2 octaves +major 3rd)
			123	29 semitones (Reverse +2 octaves +perfect 4th)
			124	30 semitones (Reverse +2 octaves +diminished 5th)
			125	31 semitones (Reverse +2 octaves +perfect 5th)
			126	Reserved
			127	Reserved