TC Electronic
NOVA SYSTEM SYSEX
Firmware 1.2 beta (rev 664)

12/04/2011
(revision #5)

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Use at your own risk!

The author assumes no responsibility for damage to your Nova System or loss of data as the result of using the information contained herein.

Inquiry Messages (Who are you)

REQUEST (Who are you Mr @?)

F0	Begin SysEx
7E	Non RealTime Message
@	Device ID
06	MessageType: Inquiry
01	Identity Request
F7	End SysEx

= 6 bytes

NB: don't forget to activate Midi Channel 1-16 (Menu / Midi SetUp)

REPLY (Mr @ says: I am a Nova System)

F0	Begin SysEx
7E	Non RealTime Message
@	Device ID
06	MessageType: Inquiry
02	Identity Reply
00 20 1F	Manufacturer ID: TC Electronic
63	Product ID LSB: x63 (NovaSystem)
00	Product ID MSB
00 00 00 00	(void)
01	Major Version: 1
0D	Minor Version: 13
F7	End SysEx

= 17 bytes

Control/Program Change via MIDI

PROGRAM CHANGE (IN/OUT)

C*n*	Prg Change + Channel (*n*)
##	Program Number

= 2 bytes

Variable	Values
Channel *n*	1..16 (0 to F)
##	F0-1 to F9-3 (x00 to x1D)
	00-1 to 19-3 (x1E to x59)

NB: don't forget to activate Prog.Chg.In / Out (Menu / Midi SetUp)

CONTROL CHANGE (IN only)

B*n*	Control Change + Channel (*n*)
##	Parameter Code
xx	Parameter Value

= 3 bytes

Variable	Values
Channel *n*	1..16 (0 to F)
##	0..127 (x00 to x7F) see MIDI CC
xx	Switches : Off (0), On (x7F)
	Exp.Pedal: 0% (0), 100% (x7F)

Presets and Variations

REQUEST

F0	Begin SysEx
00 20 1F	Manufacturer ID: TC Electronic
@	Device ID
63	Product ID : Nova System
45	MessageType: Request
01	DataType: Preset
##	#Program (see below)
00	(void)
F7	End SysEx

= 11 bytes

#Program <==> Preset / Variation	
00	Current setting
01 – 1E	Factory Presets (F0-1 to F9-3)
1F – 5A	User Presets (00-1 to 19-3)
5A – 5D	Comp Variations 1-4
5E – 61	Drive/Boost Variations 1-4
62 – 65	Modulation Variations 1-4
66 – 69	Delay Variations 1-4
6A – 6D	Reverb Variations 1-4
6E – 71	EQ/Gate Variations 1-4
72 – 75	Pitch Variations 1-4

REPLY (DUMP)

F0	Begin SysEx
00 20 1F	Manufacturer ID: TC Electronic
@	Device ID
63	Product ID : Nova System
20	MessageType: Dump
01	DataType: Preset
##	#Program
00	(void)
NN	Program Name (24 bytes)
...	Data (484 bytes)
xx	Checksum over data (%128)
F7	End SysEx

=520 bytes

<= NB : Comp Var 1 and Preset 19-3 are both saved at the same memory address (x5A = #90)

System Parameters

REQUEST

F0	Begin SysEx
00 20 1F	Manufacturer ID: TC Electronic
@	Device ID
63	Product ID : Nova System
45	MessageType: Request
02	DataType: System
00	(void)
00	(void)
F7	End SysEx

= 11 bytes

REPLY (DUMP)

F0	Begin SysEx
00 20 1F	Manufacturer ID: TC Electronic
@	Device ID
63	Product ID : Nova System
20	MessageType: Dump
02	DataType: System
...	Data (496 bytes)
xx	Checksum over data (%128)
F7	End SysEx

= 526 bytes

Decimal	Hexa	length	slot	value (Hex)	Field Description	Range, Value Description
0	000	1		F0	Begin Sysex	
1	001	3		00 20 1F	Manufacturer ID: TC Electronic	
4	004	1		00 – 7F	Sysex Device ID	0-126, All
5	005	1		63	Model ID: Nova System	
6	006	1		20	Message ID (20=Dump)	
7	007	1		01	Data Type	01 = Preset (02 is System Dump)
8	008	1		01 – 5A	Preset Number	01-30 (Factory), 31-90 (User)
9	009	1				
10	00A	24		ASCII	Preset Name (24 char.)	
34	022	4	#0			
38	026	4	#1	64 – 38 17	Tap Tempo	100 to 3000 ms, by 1ms (knob uses bpm)
42	02A	4	#2	00 – 02	Routing	Serial (0), Semi-Par (1), Parallel (2)
46	02E	4	#3	1C 7F 7F 07 – 00	Level Out L	-100 to 0dB, by 1dB
50	032	4	#4	1C 7F 7F 07 – 00	Level Out R	-100 to 0dB, by 1dB
54	036	4	#5	7F 7F 7F 0F – 0F	Map Parameter (Expression Pedal)	see Table MapParam
58	03A	4	#6	00 – 64	Map Min	0-100%, by 1%
62	03E	4	#7	00 – 64	Map Mid	0-100%, by 1%
66	042	4	#8	00 – 64	Map Max	0-100%, by 1%
70	046	4	#9	00-02	COMP Type	perc, sustain, advanced
74	04A	4	#10	58 7F 7F 0F – 00	Threshold (adv)	-40 to 0dB, by 1dB
78	04E	4	#11	00 – 0F	Ratio (adv)	Off, 1.12:1 to Infinite:1 (see Comp Ratio table)
82	052	4	#12	00 – 10	Attack (adv)	0.3 to 140 (see Table Attack)
86	056	4	#13	0D – 17	Release (adv)	50 to 2000 ms (see COMP Time Table)
90	05A	4	#14	01 – 0A	Response (perc/sustain)	1 to 10
94	05E	4	#15	01 – 14	Drive (perc/sustain)	1 to 20
98	062	4	#16	1D 7F 7F 0F – 0C	Level	-99 to 12 dB, by 1dB
102	066	4	#17			
106	06A	4	#18			
110	06E	4	#19			
114	072	4	#20			
118	076	4	#21			
122	07A	4	#22			
126	07E	4	#23			
130	082	4	#24	00-01	COMP ON/OFF	On (0), Off (1)
134	086	4	#25	00-01	DRIVE Type	overdrive, distorsion
138	08A	4	#26		Gain	0 to 30
142	08E	4	#27	00 – 64	Tone	0-100%
146	092	4	#28			
150	096	4	#29			
154	09A	4	#30			
158	09E	4	#31			
162	0A2	4	#32			
166	0A6	4	#33			
170	0AA	4	#34			
174	0AE	4	#35			
178	0B2	4	#36			
182	0B6	4	#37	00 – 0A	BOOST Level	0-10 dB, by 1dB (limited to BoostMax, see System)
186	0BA	4	#38	00 – 01	BOOST On/Off	On-Off

190	0BE	4	#39	1D 7F 7F 0F – 0F	DRIVE Level	-99 to +15
194	0C2	4	#40	00 – 01	DRIVE On/Off	On (0), Off (1)
198	0C6	4	#41	00 – 05	MOD Type	chorus, flanger, vibrato, phaser, tremolo, panner
202	0CA	4	#42	00 – 50 01	Speed	0.050Hz to 20 Hz (see table Speed)
206	0CE	4	#43	00 – 64	Depth	0-100%
210	0D2	4	#44	00 – 10	Tempo	Disabled, 1 to 1/32T, (see table Tempo)
214	0D6	4	#45	00 – 3C	Hi Cut (cho, fla, vib, trem)	20Hz to 17.8kHz + Off (see table HiCut)
218	0DA	4	#46	1C 7F 7F 07 – 64	Feedback (fla, pha)	-100 to 100%
222	0DE	4	#47	58 7F 7F 0F – 00	Feedback Hi Cut (fla)	20Hz to 17.8kHz + Off (see table HiCut)
226	0E2	4	#48	00 – 74 03	Delay (chorus, flanger)	0.1 to 50ms, by 0.1ms
230	0E6	4	#49			
234	0EA	4	#50			
238	0EE	4	#51	00 – 64	Width (tremolo)	0-100%
242	0F2	4	#52	00 – 01	Type (tremolo)	Soft (0), Hard (1)
246	0F6	4	#53	00 – 01	Range (phaser)	High (0), Low (1)
250	0FA	4	#54	00 – 64	Mix (cho, fla, pha)	0-100%
254	0FE	4	#55			
258	102	4	#56	00 – 01	MOD On/Off	On (0), Off (1)
262	106	4	#57	00 – 05	DELAY TYPE	clean, analog, tape, dynamic, dual, ping-pong
266	10A	4	#58	00 – 08 0E	Delay time	0 to 1800 ms
270	10E	4	#59	00 – 08 0E	Delay 2 (dual)	0 to 1800 ms
274	112	4	#60	00 – 10	Tempo	Ignore, 2 to 1/32T, (see table Tempo)
278	116	4	#61	00 – 10	Tempo 2 (dual),	Ignore, 2 to 1/32T, (see table Tempo)
				00 – 64	Width (p.pong)	0 to 100%
282	11A	4	#62	00 – 78	Feedback	0 to 100%
286	11E	4	#63	00 – 12	Clip (analog, tape),	0 to 18dB
				00 – 64	Feedback 2 (dual)	0 to 100%
290	122	4	#64	28 – 3C	Hi Cut	2kHz to 17.8kHz, Off (see table HiCut)
294	126	4	#65	00 – 28	Lo Cut	Off, 22.4Hz to 2.00kHz (see Table LoCut)
298	12A	4	#66	00 – 48 01	Offset (dynamic),	0 to 200ms
				4E 7F 7F 07 – 32	Pan 1 (dual)	50L (-50) to 50R (+50)
302	12E	4	#67	4E 7F 7F 07 – 00	Sense (dynamic),	-50 to 0dB
				4E 7F 7F 07 – 32	Pan 2 (dual)	50L (-50) to 50R (+50)
306	132	4	#68	00 – 64	Damp (dynamic)	0 to 100 dB
310	136	4	#69	0B – 15	Release (dynamic)	20 to 1000 ms (see table Release)
314	13A	4	#70	00 – 64	Mix	0-100%
318	13E	4	#71			
322	142	4	#72	00 – 01	DELAY On/Off	On (0), Off (1)
326	146	4	#73	00 – 03	REVERB TYPE	spring, hall, room, plate
330	14A	4	#74	01 – 48 01	Decay	0.1 to 20ms, by 0.1ms
334	14E	4	#75	00 – 64	Pre Delay	0 to 100 ms, by 1ms
338	152	4	#76	00 – 02	Shape	Round, Curved, Square
342	156	4	#77	00 – 07	Size	Box, Tiny, Small, Medium, Large, XL, Grand, Huge
346	15A	4	#78	00 – 06	Hi Color	Wool, Warm, Real, Clear, Bright, Crisp, Glass
350	15E	4	#79	67 7F 7F 07 – 19	Hi Level (HiFac)	-25 to 25dB
354	162	4	#80	00 – 06	Lo Color	Thick, Round, Real, Light, Tight, Thin, NoBass
358	166	4	#81	67 7F 7F 07 – 19	Lo Level (LoFac)	-25 to 25dB
362	16A	4	#82	1C 7F 7F 07 – 00	Room Level	-99 .. 0dB, by 1dB
366	16E	4	#83	1C 7F 7F 07 – 00	Reverb Level	-99 .. 0dB, by 1dB

370	172	4	#84	67 7F 7F 07 – 19	Diffuse	-25 to 25dB
374	176	4	#85	00 – 64	Mix	0-100%
378	17A	4	#86			
382	17E	4	#87			
386	182	4	#88	00 – 01	REVERB On/Off	On (0), Off (1)
390	186	4	#89	00 – 01	GATE Type	Soft (0), Hard (1)
394	18A	4	#90	44 7F 7F 0F – 00	GATE Threshold	-60 to 0dB
398	18E	4	#91	00 – 5A	GATE Damp	0 to 90dB
402	192	4	#92	03 – 48 01	GATE Speed	3 to 200dB/s, by 1dB/s
406	196	4	#93	00 – 01	EQ On/Off	Off (0), On (1) ******
410	19A	4	#94	19 – 71 01	EQ Freq1	41Hz to 20kHz, Off see table EQ Freq
414	19E	4	#95	74 7F 7F 0F – 0C	EQ Gain1	-12 to 12dB, by 1dB
418	1A2	4	#96	05 – 0C	EQ Width1	0.3 to 1.6 octaves, see Table EQ Width
422	1A6	4	#97	19 – 71 01	EQ Freq2	41Hz to 20kHz, Off see table EQ Freq
426	1AA	4	#98	74 7F 7F 0F – 0C	EQ Gain2	-12 to 12dB, by 1dB
430	1AE	4	#99	05 – 0C	EQ Width2	0.3 to 1.6 octaves, see Table EQ Width
434	1B2	4	#100	19 – 71 01	EQ Freq3	41Hz to 20kHz, Off see table EQ Freq
438	1B6	4	#101	74 7F 7F 0F – 0C	EQ Gain3	-12 to 12dB, by 1dB
442	1BA	4	#102	05 – 0C	EQ Width3	0.3 to 1.6 octaves, see Table EQ Width
446	1BE	4	#103			
450	1C2	4	#104	00 – 01	GATE On/Off	Off (0), On (1) ******
454	1C6	4	#105		PITCH TYPE	shifter, octaver, whammy, detune, intelligent
458	1CA	4	#106	20 6D 7F 07 – 60 12	Voice 1 (shift, detune, intell)	-2400 to 2400 cents (shift)
				1C 7F 7F 07 – 64		-100 to 100 cents (detune)
				74 7F 7F 07 – 0C		-13 to 13 degrees (intell). See Table Degrees
462	1CE	4	#107	20 6D 7F 07 – 60 12	Voice 2 (shift, detune, intell)	-2400 to 2400 cents (shift)
				1C 7F 7F 07 – 64		-100 to 100 cents (detune)
				74 7F 7F 07 – 0C		-13 to 13 degrees (intell). See Table Degrees
466	1D2	4	#108	4E 7F 7F 07 – 32	Pan 1 (shift, intell)	50L (-50) to 50R (+50)
470	1D6	4	#109	4E 7F 7F 07 – 32	Pan 2 (shift, intell)	50L (-50) to 50R (+50)
474	1DA	4	#110	00 – 32 / 5E 02	Delay 1 (shift, detune, intell)	0 to 50 (detune), 350ms (shift/intell) by 1ms
478	1DE	4	#111	00 – 32 / 5E 02	Delay 2 (shift, detune, intell)	0 to 50 (detune), 350ms (shift/intell) by 1ms
482	1E2	4	#112	00 – 64	Feedback 1 (shift),	0 to 100% (Fb1 + fb2 < 100%)
				00 – 0C	Key (intell)	C, C#, D, D#, E, F, F#, G, G#, A, A#, B
486	1E6	4	#113	00 – 64	Feedback 2 (shift),	0 to 100%
				00 – 0D	Scale (intell)	Ionian, Dorian, etc. (see Table Scale)
490	1EA	4	#114	1C 7F 7F 07 – 00	Level 1 (shift, intell),	Off, -99 to 0dB, by 1dB
				00 – 64	Pitch % (whammy)	0 to 100%
494	1EE	4	#115	1C 7F 7F 07 – 00	Level 2 (shift, intell),	Off, -99 to 0dB, by 1dB
				00 – 01	Direction (octaver, whammy)	Down, Up
498	1F2	4	#116	01 – 02	Range (octaver, whammy)	1-oct, 2-oct
502	1F6	4	#117	00 – 64	Mix (shift, oct, detune, intell)	0 to 100%
506	1FA	4	#118			
510	1FE	4	#119			
514	202	4	#120	00 – 01	PITCH On/Off	On (0), Off (1)
518	206	1		00 – 7F	Checksum : 7 least significant bits of sum of data bytes	sum from 34 (x022) to 517 (x205)
519	207	1		F7	End Sysex	

Starting Byte Decimal	Hexa	length	Slot #	value (Hex)	Field Description	Range, Value Description
0	000	1		F0	Begin Sysex	
1	001	3		00 20 1F	Manufacturer ID: TC Electronic	
4	004	1		00 – 7F	Sysex Device ID	0-126, All
5	005	1		63	Model ID: Nova System	
6	006	1		20	Message ID (20=Dump)	
7	007	1		02	Data Type	02 = System (01 is Preset)
8	008	4	#0	01	Current Setting Signature – hidden (unused)	
12	00C	4	#1	00, 01, 02	Routing Type	Serial, SemiPar, Parallel
16	010	4	#2	00, 01	ByPass – hidden	Off, On
20	014	4	#3	00 to 64	Volume Pedal Min (%)	0 to 100
24	018	4	#4	00 to 64	Volume Pedal Mid (%)	0 to 100
28	01C	4	#5	00 to 64	Volume Pedal Max (%)	0 to 100
32	020	4	#6	00, 01, 02	Pedal Type	Expression, G-Switch, Exp.GlbVol
36	024	4	#7	00, 01	Pedal Master	Preset, Pedal
40	028	4	#8	00 – 80	MIDI CC Tap Tempo	0 (Off), 1 (0), 2 (1), … 128 (127)
44	02C	4	#9	00 – 80	MIDI CC CMP	0 (Off), 1 (0), 2 (1), … 128 (127)
48	030	4	#10	00 – 80	MIDI CC DRV	0 (Off), 1 (0), 2 (1), … 128 (127)
52	034	4	#11	00 – 80	MIDI CC MOD	0 (Off), 1 (0), 2 (1), … 128 (127)
56	038	4	#12	00 – 80	MIDI CC DLY	0 (Off), 1 (0), 2 (1), … 128 (127)
60	03C	4	#13	00 – 80	MIDI CC REV	0 (Off), 1 (0), 2 (1), … 128 (127)
64	040	4	#14	00 – 80	MIDI CC NG	0 (Off), 1 (0), 2 (1), … 128 (127)
68	044	4	#15	00 – 80	MIDI CC PIT	0 (Off), 1 (0), 2 (1), … 128 (127)
72	048	4	#16	00 – 80	MIDI CC EQ	0 (Off), 1 (0), 2 (1), … 128 (127)
76	04C	4	#17	00 – 80	MIDI CC Boost	0 (Off), 1 (0), 2 (1), … 128 (127)
80	050	4	#18	00 – 80	MIDI CC Exp. Pedal	0 (Off), 1 (0), 2 (1), … 128 (127)
84	054	4	#19	00 – 11	MIDI Channel	0 (Off), 1 (1) .. 16 (16), Omni
88	058	4	#20	00, 01	MIDI Prg Change In	0 (Off), 1 (On)
92	05C	4	#21	00, 01	MIDI Prg Change Out	0 (Off), 1 (On)
96	060	4	#22		MIDI Clock – hidden (unused)	
100	064	4	#23	00 – 7F	MIDI SysEx ID	0 .. 126, All
104	068	4	#24	00, 01	MIDI Sync	0 (Off), 1 (On)
108	06C	4	#25		(debug)	
112	070	4	#26		(debug)	
116	074	4	#27		(debug)	
120	078	4	#28	00, 01	Tap Master	0 (Preset), 1 (Tap)
124	07C	4	#29	00, 01	Boost Lock	0 (Off), 1 (On)
128	080	4	#30	00, 01	EQ Lock	0 (Off), 1 (On)
132	084	4	#31	00, 01	Routing Lock	0 (Off), 1 (On)
136	088	4	#32	00, 01	Factory Lock	0 (Off), 1 (On)
140	08C	4	#33	00, 01	Speaker Sim	0 (Off), 1 (On)
144	090	4	#34	00 – 64	Angle View	0 to 100
148	094	4	#35	00, 01	Footswitch	0 (Pedal), 1 (Preset)
152	098	4	#36	00, 01, 02	Input Src	0 (Line), 1 (Drive), 2 (Digital)
156	09C	4	#37	00, 01, 02	Digital Clock	0 (44.1kHz), 1 (48kHz), 2 (Digital)
160	0A0	4	#38		(reserved)	
164	0A4	4	#39	00, 01	FX Mute	0 (Soft), 1 (Hard)

168	0A8	4	#40	00 – 03	Dither	0 (Off), 1 (20), 2 (16), 3 (8)
172	0AC	4	#41	64 – 38 17	Tap Tempo (ms)	100 to 3 000 ms by 1ms
176	0B0	4	#42	1C 7F 7F 07 – 06	Digital InGain (dB)	-100 to +6dB by 1dB
180	0B4	4	#43		Input In Level (dB) – hidden	
184	0B8	4	#44	00, 01	Advanced Mode	0 (Off), 1 (On)
188	0BC	4	#45	00 – 18	Input Gain (dB)	0 to 24dB by 1dB
192	0C0	4	#46		Input Range Instrument (dB) – hidden	
196	0C4	4	#47	00 – 0A	Boost Max (dB)	0 to 10dB by 1dB
200	0C8	4	#48	00 – 03	Output Range (dBu)	0 (2), 1 (8), 2 (14), 3 (20)
204	0CC	4	#49	1C 7F 7F 07 – 00	Volume (dB)	-100 to 0dB
208	0D0	4	#50	00, 01	Volume Position	0 (Pre), 1 (Post)
212	0D4	4	#51	00, 01	KillDry – hidden	0 (Off), 1 (On)
216	0D8	4	#52	00, 01	Tuner Out	0 (Mute), 1 (On)
220	0DC	4	#53	24 03 – 4C 03	Tuner Ref (Hz)	420 to 460, by 1 Hz
224	0E0	4	#54	00, 01	Tuner Mode – hidden	0 (Coarse), 1 (Fine)
228	0E4	4	#55	00, 01, 02	Tuner Range – hidden	0 (Guitar), 1(Bass), 2 (7str. Guitar)
232	0E8	4	#56	00	Send Tuner – hidden	0 (Off)
236	0EC	4	#57	1 – 5A	Current Preset	F0-1.. F9-3 ; 00-1 .. 19-3
240	0F0	4	#58		Test setup – hidden (unused)	
244	0F4	4	#59		Edited – hidden (unused)	
248	0F8	4	#60		Signature – hidden (unused)	
252	0FC	4	#61		Pedal Impedance – hidden	0 (Lo-Z)
256	100	4	#62		Pedal Calibration heel Position – hidden	
260	104	4	#63		Pedal Calibration toe Position – hidden	
264	108	4	#64	specific encoding	MIDI Map In 1 to 3	0 .. 90 (see MIDI Map Encoding Table)
268	10C	4	#65		MIDI Map In 4 to 6	
272	110	4	#66		MIDI Map In 7 to 9	
276	114	4	#67		MIDI Map In 10 to 12	
280	118	4	#68		MIDI Map In 13 to 15	
284	11C	4	#69		MIDI Map In 16 to 18	
288	120	4	#70		MIDI Map In 19 to 21	
292	124	4	#71		MIDI Map In 22 to 24	
296	128	4	#72		MIDI Map In 25 to 27	
300	12C	4	#73		MIDI Map In 28 to 30	
304	130	4	#74		MIDI Map In 31 to 33	
308	134	4	#75		MIDI Map In 34 to 36	
312	138	4	#76		MIDI Map In 37 to 39	
316	13C	4	#77		MIDI Map In 40 to 42	
320	140	4	#78		MIDI Map In 43 to 45	
324	144	4	#79		MIDI Map In 46 to 48	
328	148	4	#80		MIDI Map In 49 to 51	
332	14C	4	#81		MIDI Map In 52 to 54	
336	150	4	#82		MIDI Map In 55 to 57	
340	154	4	#83		MIDI Map In 58 to 60	
344	158	4	#84		MIDI Map In 61 to 63	
348	15C	4	#85		MIDI Map In 64 to 66	
352	160	4	#86		MIDI Map In 67 to 69	
356	164	4	#87		MIDI Map In 70 to 72	
360	168	4	#88		MIDI Map In 73 to 75	

364	16C	4	#89		MIDI Map In 76 to 78	
368	170	4	#90		MIDI Map In 79 to 81	
372	174	4	#91		MIDI Map In 82 to 84	
376	178	4	#92		MIDI Map In 85 to 87	
380	17C	4	#93		MIDI Map In 88 to 90	
384	180	4	#94		MIDI Map In 91 to 93	
388	184	4	#95		MIDI Map In 94 to 96	
392	188	4	#96		MIDI Map In 97 to 99	
396	18C	4	#97		MIDI Map In 100 to 102	
400	190	4	#98		MIDI Map In 103 to 105	
404	194	4	#99		MIDI Map In 106 to 108	
408	198	4	#100		MIDI Map In 109 to 111	
412	19C	4	#101		MIDI Map In 112 to 114	
416	1A0	4	#102		MIDI Map In 115 to 117	
420	1A4	4	#103		MIDI Map In 118 to 120	
424	1A8	4	#104		MIDI Map In 121 to 123	
428	1AC	4	#105		MIDI Map In 124 to 126	
432	1B0	4	#106		MIDI Map In 127	
436	1B4	4	#107	specific encoding	MIDI Map Out Bank 00	1 .. 127 (see MIDI Map Encoding Table)
440	1B8	4	#108		MIDI Map Out Bank 01	
444	1BC	4	#109		MIDI Map Out Bank 02	
448	1C0	4	#110		MIDI Map Out Bank 03	
452	1C4	4	#111		MIDI Map Out Bank 04	
456	1C8	4	#112		MIDI Map Out Bank 05	
460	1CC	4	#113		MIDI Map Out Bank 06	
464	1D0	4	#114		MIDI Map Out Bank 07	
468	1D4	4	#115		MIDI Map Out Bank 08	
472	1D8	4	#116		MIDI Map Out Bank 09	
476	1DC	4	#117		MIDI Map Out Bank 10	
480	1E0	4	#118		MIDI Map Out Bank 11	
484	1E4	4	#119		MIDI Map Out Bank 12	
488	1E8	4	#120		MIDI Map Out Bank 13	
492	1EC	4	#121		MIDI Map Out Bank 14	
496	1F0	4	#122		MIDI Map Out Bank 15	
500	1F4	4	#123		MIDI Map Out Bank 16	
504	1F8	4	#124		MIDI Map Out Bank 17	
508	1FC	4	#125		MIDI Map Out Bank 18	
512	200	4	#126		MIDI Map Out Bank 19	
516	204	4	#127	00 77 02 00	Sample Rate – hidden	
520	208	4	#128		Mono Sense Enabled – hidden	
524	20C	1		00 – 7F	Checksum : 7 least significant bits of sum of data bytes	sum from 8 (x008) to 523 (x20B)
525	20D	1		F7	End Sysex	

	ROUTING	MAP PARAM	ATTACK	SHAPE	SIZE	HICOL	LOCOL	DEGREES	KEY	SCALE
slots	#1	#4	#11	#75	#76	#77	#79	#105/106	#111	#112
min	0 (Serial)	-1 (Off)	0 (0.3)	0 (Round)	0 (19.95)	0 (Wool)	0 (Round)	-12 (-13)	0 (C)	0 (Ionian)
max	2 (Parallel)	15 (PIT Mix)	16 (140)	2 (Square)	60 (Off)	6 (Glass)	6 (NoBass)	12 (13)	11 (B)	12 (HrmMin)
n	3	17	17	3	61	7	7	25	12	13
DEC	**HEX**									
-12	74 7F 7F 07							-13		
-11	75 7F 7F 07							-12		
-10	76 7F 7F 07							-11		
-9	77 7F 7F 07							-10		
-8	78 7F 7F 07							-9		
-7	79 7F 7F 07							-oct		
-6	7A 7F 7F 07							-7		
-5	7B 7F 7F 07							-6		
-4	7C 7F 7F 07							-5		
-3	7D 7F 7F 07							-4		
-2	7E 7F 7F 07							-3		
-1	7F 7F 7F 07		Off					-2		
0	0	Serial	DRV Gain	0,3	Round	Box	Wool	Thick	Uniss	C	Ionian
1	1	SemiPar	DRV Level	0,5	Curved	Tiny	Warm	Round	2	C#	Dorian
2	2	Parallel	FLA Speed	0,7	Square	Small	Real	Real	3	D	Phrygian
3	3		FLA Depth	1,0		Medium	Clear	Light	4	D#	Lydian
4	4		FLA FeedB	1,4		Large	Bright	Tight	5	E	Mixolyd
5	5		DLY Delay	2,0		XL	Crisp	Thin	6	F	Aeolian
6	6		DLY FeedB	3		Grand	Glass	NoBass	7	F#	Locrian
7	7		DLY HiCut	5		Huge			1oct	G	PntMin
8	8		DLY Mix	7					9	G#	PntMaj
9	9		REV Decay	10					10	A	Blues
10	0A		REV PreDly	14					11	A#	DimWhl
11	0B		REV Color	20					12	B	Whole
12	0C		REV Mix	30					13		HrmMin
13	0D		PIT Voic1	50							
14	0E		PIT Voic2	70							
15	0F		PIT Mix	100							
16	10			140							

	Tap Tempo	Ratio	Release (ms)	Speed (kHz)	EQ Freq (Hz)	EQ Width (oct)	HiCut (kHz)	LoCut (kHz)
slots	#43, 59, 60	#10	#12, 68	#41	#93, 96, 99	#95, 98, 101	#44, 46, 63	#64
min	0 (Ignored)	0 (Off)	3 (1.0)	0 (0.050)	25 (40.97)	3 (0.2)	0 (19.95)	0 (Off)
max	16 (1/32T)	15 (Inf:1)	23 (2.0s)	208 (19.95)	241 (Off)	16 (4.0)	60 (Off)	40 (2.00k)
n	17	16	21	209	217	14	61	41

DEC	HEX								
0	0000	Disabled	Off		.050			19.95	Off
1	0001	1	1.1:1		.052			22.39	22.39
2	0002	1/2D	1.3:1		.053			25.12	25.12
3	0003	1/2	1.4:1	1.0	.055		0.3	28.18	28.18
4	0004	1/2T	1.6:1	1.4	.056		0.4	31.62	31.62
5	0005	1/4D	1.8:1	2.0	.058		0.5	35.48	35.48
6	0006	1/4	2.0:1	3.0	.060		0.6	39.81	39.81
7	0007	1/4T	2.5:1	5.0	.061		0.7	44.67	44.67
8	0008	1/8D	3.2:1	7.0	.063		0.8	50.12	50.12
9	0009	1/8	4.0:1	10	.065		0.9	56.23	56.23
10	000A	1/8T	5.6:1	14	.067		1.0	63.10	63.10
11	000B	1/16D	8.0:1	20	.069		1.1	70.79	70.79
12	000C	1/16	16:1	30	.071		1.2	79.43	79.43
13	000D	1/16T	32:1	50	.073		1.3	89.13	89.13
14	000E	1/32D	64:1	70	.075		1.4	100.0	100.0
15	000F	1/32	Inf:1	100	.077		1.5	112.2	112.2
16	0010	1/32T		140	.079		1.6	125.9	125.9
17	0011			200	.082			141.3	141.3
18	0012			300	.084			158.5	158.5
19	0013			500	.087			177.8	177.8
20	0014			700	.089			199.5	199.5
21	0015			1.0s	.092			223.9	223.9
22	0016			1.4s	.094			251.2	251.2
23	0017			2.0s	.097			281.8	281.8
24	0018				.100			316.2	316.2
25	0019				.103	40.1		354.8	354.8
26	001A				.106	42.2		398.1	398.1
27	001B				.109	43.4		446.7	446.7
28	001C				.112	44.7		501.2	501.2
29	001D				.115	46.0		562.3	562.3
30	001E				.119	47.3		631.0	631.0
31	001F				.122	48.7		707.9	707.9
32	0020				.126	50.1		794.3	794.3
33	0021				.130	51.6		891.3	891.3
34	0022				.133	53.1		1.00k	1.00k
35	0023				.137	54.6		1.12k	1.12k
36	0024				.141	56.2		1.26k	1.26k
37	0025				.145	57.9		1.41k	1.41k
38	0026				.150	59.6		1.58k	1.58k
39	0027				.154	61.3		1.78k	1.78k
40	0028				.158	63.1		2.00k	2.00k
41	0029				.163	64.9		2.24k	
42	002A				.168	66.8		2.51k	

43	002B	.173	68.8	2.82k
44	002C	.178	70.8	3.16k
45	002D	.183	72.9	3.55k
46	002E	.188	75.0	3.98k
47	002F	.194	77.2	4.47k
48	0030	.200	79.4	5.01k
49	0031	.205	81.8	5.62k
50	0032	.211	84.1	6.31k
51	0033	.218	86.6	7.08k
52	0034	.224	89.1	7.94k
53	0035	.230	91.7	8.91k
54	0036	.237	94.4	10.0k
55	0037	.244	97.2	11.2k
56	0038	.251	100	12.6k
57	0039	.259	103	14.1k
58	003A	.266	106	15.8k
59	003B	.274	109	17.8k
60	003C	.282	112	Off
61	003D	.290	115	
62	003E	.299	119	
63	003F	.307	122	
64	0040	.316	126	
65	0041	.325	130	
66	0042	.335	133	
67	0043	.345	137	
68	0044	.355	141	
69	0045	.365	145	
70	0046	.376	150	
71	0047	.387	154	
72	0048	.398	158	
73	0049	.410	163	
74	004A	.422	168	
75	004B	.434	173	
76	004C	.447	178	
77	004D	.460	183	
78	004E	.473	188	
79	004F	.487	194	
80	0050	.501	200	
81	0051	.516	205	
82	0052	.531	211	
83	0053	.546	218	
84	0054	.562	224	
85	0055	.579	230	
86	0056	.596	237	
87	0057	.613	244	
88	0058	.631	251	
89	0059	.649	259	
90	005A	.668	266	
91	005B	.688	274	

92	005C	.708	282
93	005D	.729	290
94	005E	.750	299
95	005F	.772	307
96	0060	.794	316
97	0061	.818	325
98	0062	.841	335
99	0063	.866	345
100	0064	.891	355
101	0065	.917	365
102	0066	.944	376
103	0067	.972	387
104	0068	1.00	398
105	0069	1.03	410
106	006A	1.06	422
107	006B	1.09	434
108	006C	1.12	447
109	006D	1.15	460
110	006E	1.19	473
111	006F	1.22	487
112	0070	1.26	501
113	0071	1.30	516
114	0072	1.33	531
115	0073	1.37	546
116	0074	1.41	562
117	0075	1.45	579
118	0076	1.50	596
119	0077	1.54	613
120	0078	1.58	631
121	0079	1.63	649
122	007A	1.68	668
123	007B	1.73	688
124	007C	1.78	708
125	007D	1.83	729
126	007E	1.88	750
127	007F	1.94	772
128	0080	2.00	794
129	0081	2.05	818
130	0082	2.11	841
131	0083	2.18	866
132	0084	2.24	891
133	0085	2.30	917
134	0086	2.37	944
135	0087	2.44	972
136	0088	2.51	1.00k
137	0089	2.59	1.03k
138	008A	2.66	1.06k
139	008B	2.74	1.09k
140	008C	2.82	1.12k

141	008D	2.90	1.15k
142	008E	2.99	1.19k
143	008F	3.07	1.22k
144	0090	3.16	1.26k
145	0091	3.25	1.30k
146	0092	3.35	1.33k
147	0093	3.45	1.37k
148	0094	3.55	1.41k
149	0095	3.65	1.45k
150	0096	3.76	1.50k
151	0097	3.87	1.54k
152	0098	3.98	1.58k
153	0099	4.10	1.63k
154	009A	4.22	1.68k
155	009B	4.34	1.73k
156	009C	4.47	1.78k
157	009D	4.60	1.83k
158	009E	4.73	1.88k
159	009F	4.87	1.94k
160	00A0	5.01	2.00k
161	00A1	5.16	2.05k
162	00A2	5.31	2.11k
163	00A3	5.46	2.18k
164	00A4	5.62	2.24k
165	00A5	5.79	2.30k
166	00A6	5.96	2.37k
167	00A7	6.13	2.44k
168	00A8	6.31	2.51k
169	00A9	6.49	2.59k
170	00AA	6.68	2.66k
171	00AB	6.88	2.74k
172	00AC	7.08	2.82k
173	00AD	7.29	2.90k
174	00AE	7.50	2.99k
175	00AF	7.72	3.07k
176	00B0	7.94	3.16k
177	00B1	8.18	3.25k
178	00B2	8.41	3.35k
179	00B3	8.66	3.45k
180	00B4	8.91	3.55k
181	00B5	9.17	3.65k
182	00B6	9.44	3.76k
183	00B7	9.72	3.87k
184	00B8	10.00	3.98k
185	00B9	10.29	4.10k
186	00BA	10.59	4.22k
187	00BB	10.90	4.34k
188	00BC	11.22	4.47k
189	00BD	11.55	4.60k

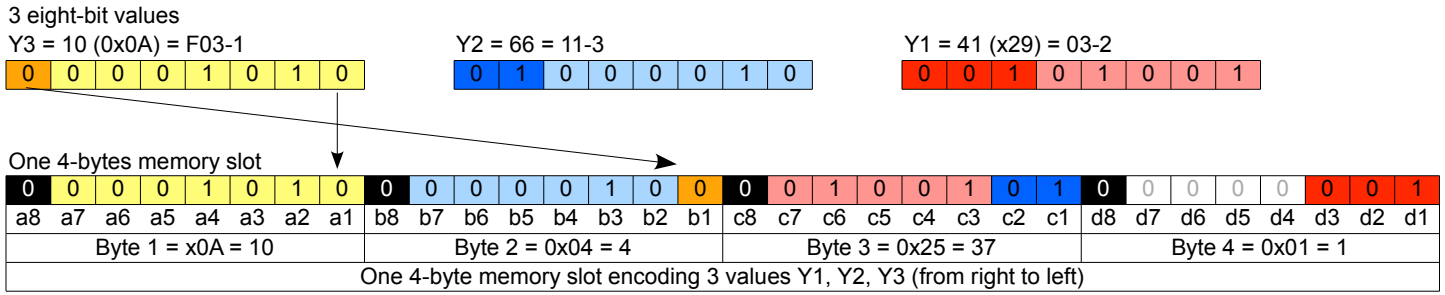
190	00BE	11.89	4.73k
191	00BF	12.23	4.87k
192	00C0	12.59	5.01k
193	00C1	12.96	5.16k
194	00C2	13.34	5.31k
195	00C3	13.72	5.46k
196	00C4	14.13	5.62k
197	00C5	14.54	5.79k
198	00C6	14.96	5.96k
199	00C7	15.40	6.13k
200	00C8	15.85	6.31k
201	00C9	16.31	6.49k
202	00CA	16.79	6.68k
203	00CB	17.28	6.88k
204	00CC	17.78	7.08k
205	00CD	18.30	7.29k
206	00CE	18.84	7.50k
207	00CF	19.39	7.72k
208	00D0	19.95	7.94k
209	00D1		8.18k
210	00D2		8.41k
211	00D3		8.66k
212	00D4		8.91k
213	00D5		9.17k
214	00D6		9.44k
215	00D7		9.72k
216	00D8		10.0k
217	00D9		10.3k
218	00DA		10.6k
219	00DB		10.9k
220	00DC		11.2k
221	00DD		11.5k
222	00DE		11.9k
223	00DF		12.2k
224	00E0		12.6k
225	00E1		13.0k
226	00E2		13.3k
227	00E3		13.7k
228	00E4		14.1k
229	00E5		14.5k
230	00E6		15.0k
231	00E7		15.4k
232	00E8		15.8k
233	00E9		16.3k
234	00EA		16.8k
235	00EB		17.3k
236	00EC		17.8k
237	00ED		18.3k
238	00EE		18.8k

239	00EF	19.4k
240	00F0	20.0k
241	00F1	Off

MIDI Map In Encoding

When NOVA gets a program change instruction with value X, NOVA switches to some program Y.
Input values for X : 1 to 127.
Targetted program Y : 0 (none=don't switch), 1..30 (factory presets), 31..90 (user presets)

NOVA encodes Y on eight bytes, whereas MIDI encoding prevents to use the most significant bit (always set to 0).
Therefore, the most significant bits that can't fit in are translated to the lowest significant bit of the next byte (see figure)
NOVA encodes 3 values of Y on 4 bytes that have to be decoded together.



MIDI Map In Memory is therefore divided in 43 4-bytes slots. The first one encodes Y1, Y2, Y3 ; the second Y4, Y5, Y6 and so forth.
The last slot (#43) encodes Y127, which is the value of the preset to activate when the NOVA gets the input value 127.
Let's assume NOVA gets a Program Change event with value 2. Nova should then switch to the preset encoded in Y2.
If the first slot is encoded as above, this will activate the User Preset 11-3

MIDI Map Out Encoding

When NOVA switches to some program X, NOVA sends a MIDI Program Change message with parameter Y.
Output values for Y: 1 to 127
Even if those values would fit on 7-bit slots, they are still encoded on 8 bits and dispatched like above.
The difference is only that Y encodes a value to be sent to MIDI Out instead of the value of a Bank Preset.
By this way, each 4-byte slot encodes the Midi out behavior of a preset bank.

The MIDI Map Out memory of NOVA is divided in 20 slots, each of these encodes the 3 values corresponding to the bank presets.
Assume the first slot is encoded as above.
As the first slot of the MIDI Map Out memory, this slot holds the values for bank 00.
When the NOVA switches to preset 00-2, it will send a MIDI Program Change with value Y2 = 66.