Table 1

Patch Parameters with NRPN Values			*NOTE: This does not include global / system parameters, which also have NRPN values*
Name	**CC**	**NRPN**	**Range and NRPN Display Instructions** **IMPORTANT NOTE 1.** If a line is blank, look for the first numbered version of that parameter. For example, lfo5step14 is blank: instead you should see lfo1step1. **IMPORTANT NOTE 2.** Often this column refers to a table written in ALL_CAPS_WITH_UNDERSCORES: for example osc1type below (row 10) refers to OSC_WAVES. You can find these tables in Edisyn's ASMHydrasynth.java file.
osc1mode		0x3F 0x18	MSB = Osc [0,2] LSB = [0,1]
osc2mode		0x3F 0x18	
osc3mode		0x3F 0x18	
osc1semi		0x3F 0x11	MSB = Osc [0,2] LSB = [-36,+36] 1-byte 2's Complement. Thus the LSB goes 0=0, 1=1, 2=2, ..., 36=36, then 92=-36, 93=-35, ..., 127=-1
osc2semi		0x3F 0x11	
osc3semi		0x3F 0x11	
osc1type		0x3F 0x19	[0-218] OSC_WAVES
osc1cent	0x6F	0x41 0x01	[-50,+50] 2-byte 2's Complement. Thus it goes 0=0, 1=1, 2=2, ..., 50=50, then 8141 = -50, 8142 =-49, ..., 8191 = -1
osc1keytrack		0x3F 0x54	[0,200] Display as "x%"
osc1wavscan	0x18	0x41 0x2A	[0,8192] seemingly only output in increments of 8, and displayed as [1.0,8.0] in increments of 0.1. To display: if 8192, display 8.0. Else divide by 117.03 or so (cutting into 70 even pieces). Then ROUND to nearest integer 0...70. Then add 10 (10...80), then divide by 10. The Hydrasynth seems to round 0.5 towards even.
osc1wavescanwave1		0x3F 0x60	[0-218] OSC_WAVES
osc1wavescanwave2		0x3F 0x61	[0-220] "Off", "Silence", THEN OSC_WAVES
osc1wavescanwave3		0x3F 0x62	[0-220] "Off", "Silence", THEN OSC_WAVES
osc1wavescanwave4		0x3F 0x63	[0-220] "Off", "Silence", THEN OSC_WAVES
osc1wavescanwave5		0x3F 0x64	[0-220] "Off", "Silence", THEN OSC_WAVES
osc1wavescanwave6		0x3F 0x65	[0-220] "Off", "Silence", THEN OSC_WAVES
osc1wavescanwave7		0x3F 0x66	[0-220] "Off", "Silence", THEN OSC_WAVES
osc1wavescanwave8		0x3F 0x67	[0-220] "Off", "Silence", THEN OSC_WAVES
osc2type		0x3F 0x1A	
osc2cent	0x70	0x41 0x02	
osc2keytrack		0x3F 0x55	
osc2wavscan	0x1A	0x41 0x2B	
osc2wavescanwave1		0x3F 0x68	
osc2wavescanwave2		0x3F 0x69	
osc2wavescanwave3		0x3F 0x6A	
osc2wavescanwave4		0x3F 0x6B	
osc2wavescanwave5		0x3F 0x6C	
osc2wavescanwave6		0x3F 0x6D	
osc2wavescanwave7		0x3F 0x6E	
osc2wavescanwave8		0x3F 0x6F	
osc3type		0x3F 0x0D	
osc3cent	0x71	0x41 0x03	
osc3keytrack		0x3F 0x56	
mutator1mode		0x3F 0x21	MSB = 0x0 LSB = [0, 7] "FM-Linear", "WavStack", "Osc Sync", "PW-Orig", "PW-Sqeez", "PW-ASM", "Harmonic", "PhazDiff"
mutator2mode		0x3F 0x21	

mutator3mode		0x3F 0x21	
mutator4mode		0x3F 0x21	
mutator1sourcefmlin		0x3F 0x24	MSB = 0x0 LSB = [0, 12] Sine Triangle Osc1 Osc2 Osc3 RingMod Noise Mutant1 Mutant2 Mutant2 Mutant4 ModIn1 ModIn2
mutator2sourcefmlin		0x3F 0x24	
mutator3sourcefmlin		0x3F 0x24	
mutator4sourcefmlin		0x3F 0x24	
mutator1sourceoscsync		0x3F 0x22	MSB = 0x0 LSB = [0,2] Osc1 Osc2 Osc3
mutator2sourceoscsync		0x3F 0x22	
mutator3sourceoscsync		0x3F 0x22	
mutator4sourceoscsync		0x3F 0x22	
mutator1ratio	0x1D	0x41 0x2C	[0,8192] seemingly only output in increments of 8, for a total of 1025 vals (0...1025). Displayed as: 65 32-64 by 0.5 64 16-32 by 0.25 64 8-16 by 0.125 128 4-8 by 0.03125 192 1-4 by 0.015625 64 0.8-1.0 by 0.00625 64 0.75-0.8 by 0.0007812500 64 0.666-0.75 by 0.0013020843 64 0.6-0.666 by 0.0010416656 (0.066666 / 64) 128 0.6-0.75 by 0.0011718750 (0.15 / 128) 128 0.4-0.6 by 0.0015625000 (0.2 / 128) 64 0.333-0.4 by 0.0010421875 (0.06666 / 64) 64 0.250-0.333 by 0.0013015625 (.0833333 / 64) TOTAL: 1025 VALS Show as xx.xxxx I think the values are ROUNDED, and the Hydrasynth rounds 0.5 towards even. Even so some values are very slightly off. It's not entirely clear what the Hydrasynth is doing. But this is close.
mutator1depth	0x1E	0x40 0x1F	[0,8192] seemingly only output in increments of 8, and displayed as [0.0,128.0] in increments of 0.1. To display: if 8192, display 128.0. Else divide by 6.4 (cutting into 1280 even pieces). Then ROUND to nearest integer 0...1280. Then divide by 10. The Hydrasynth seems to round 0.5 towards even.
mutator1wet	0x1F	0x40 0x22	[0,8192] seemingly only output in increments of 8, and displayed as [0%,100%] in increments of 1. To display: if 8192, display 100. Else divide by 81.92 (cutting into 100 even pieces). Then FLOOR to nearest integer 0...100.
mutator1feedback		0x40 0x25	[0,8192] seemingly only output in increments of 8, and displayed as [0%,150%] in increments of 1. To display: if 8192, display 150. Else divide by 54.613333 (cutting into 150 even pieces). Then FLOOR to nearest integer 0...150.
mutator1window		0x40 0x1C	[0,8192] seemingly only output in increments of 8, and displayed as [0.0,128.0] in increments of 0.1. To display: if 8192, display 128.0. Else divide by 6.4 (cutting into 1280 even pieces). Then ROUND to nearest integer 0...1280. Then divide by 10. The Hydrasynth seems to round 0.5 towards even.
mutator1warp1		0x40 0x60	[0,8192] seemingly only output in increments of 8, and displayed as [0.0,128.0] in increments of 0.1. To display: if 8192, display 128.0. Else divide by 6.4 (cutting into 1280 even pieces). Then ROUND to nearest integer 0...1280. Then divide by 10. The Hydrasynth seems to round 0.5 towards even.
mutator1warp2		0x40 0x61	
mutator1warp3		0x40 0x62	
mutator1warp4		0x40 0x63	
mutator1warp5		0x40 0x64	
mutator1warp6		0x40 0x65	
mutator1warp7		0x40 0x66	
mutator1warp8		0x40 0x67	
mutator2ratio	0x21	0x41 0x2D	
mutator2depth	0x22	0x40 0x20	
mutator2wet	0x23	0x40 0x23	

mutator2feedback		0x40 0x26	
mutator2window		0x40 0x1D	
mutator2warp1		0x40 0x68	
mutator2warp2		0x40 0x69	
mutator2warp3		0x40 0x6A	
mutator2warp4		0x40 0x6B	
mutator2warp5		0x40 0x6C	
mutator2warp6		0x40 0x6D	
mutator2warp7		0x40 0x6E	
mutator2warp8		0x40 0x6F	
mutator3ratio	0x24	0x41 0x2E	
mutator3depth	0x25	0x40 0x21	
mutator3wet	0x27	0x40 0x24	
mutator3feedback		0x40 0x27	
mutator3window		0x40 0x1E	
mutator3warp1		0x40 0x70	
mutator3warp2		0x40 0x71	
mutator3warp3		0x40 0x72	
mutator3warp4		0x40 0x73	
mutator3warp5		0x40 0x74	
mutator3warp6		0x40 0x75	
mutator3warp7		0x40 0x76	
mutator3warp8		0x40 0x77	
mutator4ratio	0x28	0x41 0x2F	
mutator4depth	0x29	0x40 0x16	
mutator4wet	0x2A	0x40 0x17	
mutator4feedback		0x40 0x1B	
mutator4window		0x40 0x1A	
mutator4warp1		0x40 0x78	
mutator4warp2		0x40 0x79	
mutator4warp3		0x40 0x7A	
mutator4warp4		0x40 0x7B	
mutator4warp5		0x40 0x7C	
mutator4warp6		0x40 0x7D	
mutator4warp7		0x40 0x7E	
mutator4warp8		0x40 0x7F	
noisetype		0x3F 0x27	[0,6] White Pink Brown Red Blue Violet Grey
ringmoddepth	0x2B	0x40 0x03	[0,8192] seemingly only output in increments of 8, and displayed as [0.0,128.0] in increments of 0.1. To display: if 8192, display 128.0. Else divide by 6.4 (cutting into 1280 even pieces). Then ROUND to nearest integer 0...1280. Then divide by 10. The Hydrasynth seems to round 0.5 towards even.
ringmodsource1		0x3F 0x26	MSB = Source Num [0, 1] LSB = [0,9] RING_MOD_SOURCES
ringmodsource2		0x3F 0x26	
mixerosc1vol	0x2C	0x40 0x07	[0,8192] seemingly only output in increments of 8, and displayed as [0.0,128.0] in increments of 0.1. To display: if 8192, display 128.0. Else divide by 6.4 (cutting into 1280 even pieces). Then ROUND to nearest integer 0...1280. Then divide by 10. The Hydrasynth seems to round 0.5 towards even.

mixerosc1pan	0x2D	0x40 0x08	[0,8192] seemingly only output in increments of 8, and displayed as [-64.0,64.0] in increments of 0.1. To display: if 8192, display 64.0. Else divide by 6.4 (cutting into 1280 even pieces). Then subtract 640. Then ROUND to nearest integer -640...640. Then divide by 10. The Hydrasynth seems to round 0.5 towards even.
mixerosc1filterratio	0x76	0x40 0x31	[0,8192] seemingly only output in increments of 8, and displayed as [0:100, 100:0] in increments of 1. To display: if 8192, display 128.0. Else divide by 81.92 (cutting into 100 even pieces). Then FLOOR to nearest integer 0. Only the very highest value will be 100:0.
mixerosc2vol	0x2E	0x40 0x09	
mixerosc2pan	0x2F	0x40 0x0A	
mixerosc2filterratio	0x77	0x40 0x32	
mixerosc3vol	0x30	0x40 0x0B	
mixerosc3pan	0x31	0x40 0x0C	
mixerosc3filterratio	0x72	0x40 0x33	
mixernoisevol	0x03	0x40 0x0D	
mixernoisepan	0x08	0x40 0x0E	
mixernoisefilterratio	0x73	0x40 0x34	
mixerringmodvol	0x09	0x40 0x01	
mixerringmodpan	0x0A	0x40 0x04	
mixerringmodfilterratio	0x74	0x40 0x35	
mixerfilterrouting		0x3F 0x2C	[0,1] "Series", "Parallel"
filter1positionofdrive		0x3F 0x29	[0,1] "Pre", "Post"
filter1cutoff	0x4A	0x40 0x28	[0,8192] seemingly only output in increments of 8, and displayed as [0.0,128.0] in increments of 0.1. To display: if 8192, display 128.0. Else divide by 6.4 (cutting into 1280 even pieces). Then ROUND to nearest integer 0...1280. Then divide by 10. The Hydrasynth seems to round 0.5 towards even.
filter1drive	0x32	0x40 0x2B	[0,8192] seemingly only output in increments of 8, and displayed as [0.0,128.0] in increments of 0.1. To display: if 8192, display 128.0. Else divide by 6.4 (cutting into 1280 even pieces). Then ROUND to nearest integer 0...1280. Then divide by 10. The Hydrasynth seems to round 0.5 towards even.
filter1resonance	0x47	0x40 0x29	[0,8192] seemingly only output in increments of 8, and displayed as [0.0,128.0] in increments of 0.1. To display: if 8192, display 128.0. Else divide by 6.4 (cutting into 1280 even pieces). Then ROUND to nearest integer 0...1280. Then divide by 10. The Hydrasynth seems to round 0.5 towards even.
filter1special		0x40 0x2A	[0,8192] seemingly only output in increments of 8, and displayed as [0.0,128.0] in increments of 0.1. To display: if 8192, display 128.0. Else divide by 6.4 (cutting into 1280 even pieces). Then ROUND to nearest integer 0...1280. Then divide by 10. The Hydrasynth seems to round 0.5 towards even. **This is Vowel Formant Control, labelled "Control" on the synth.**
filter1keytrack	0x33	0x41 0x66	[0,8192] seemingly only output in increments of 8, and displayed as [-200%,200%] in increments of 1. To display: if 8192, display 200%. Else divide by 20.48 (cutting into 400 even pieces). Then FLOOR to integer 0...400. Then subtract 200.
filter1lfo1amount	0x34	0x41 0x60	[0,8192] seemingly only output in increments of 8, and displayed as [-64.0,64.0] in increments of 0.1. To display: if 8192, display 64.0. Else divide by 6.4 (cutting into 1280 even pieces). Then ROUND to nearest integer 0...1280. Then divide by 10. Then subtract 64. The Hydrasynth seems to round 0.5 towards even.
filter1vowelorder		0x3F 0x2E	[0,7] "AEIOU", "AIUEO", "AUIOE", "AOUIE", "IOUAE", "UEAOI", "IOEAU", "UIEAO" **BUG: This NRPN is emitted by the Hydrasynth but not read by it**
filter1type		0x3F 0x28	[0-15] FILTER_1_TYPES **Note that "vowel" is in the wrong place.** It is in the middle of the range at position 10, but appears last in the Hydrasynth's menu. This is likely because in an earlier incarnation, there were only 11 filter types (see ASM's NRPN comments), and then 4 more filter types were added afterwards.
filter1velenv	0x35	0x41 0x69	[0,8192] seemingly only output in increments of 8, and displayed as [-64.0,64.0] in increments of 0.1. To display: if 8192, display 64.0. Else divide by 6.4 (cutting into 1280 even pieces). Then ROUND to nearest integer 0...1280. Then divide by 10. Then subtract 64. The Hydrasynth seems to round 0.5 towards even.
filter1env1amount	0x36	0x41 0x61	[0,8192] seemingly only output in increments of 8, and displayed as [-64.0,64.0] in increments of 0.1. To display: if 8192, display 64.0. Else divide by 6.4 (cutting into 1280 even pieces). Then ROUND to nearest integer 0...1280. Then divide by 10. Then subtract 64. The Hydrasynth seems to round 0.5 towards even.

filter2positionofdrive		0x3F 0x2B	[0,1]? **THIS PARAMETER DOES NOT EXIST**. Perhaps was removed?
filter2cutoff	0x37	0x40 0x2C	
filter2resonance	0x38	0x40 0x2D	
filter2morph	0x39	0x40 0x2E	[0,8192] seemingly only output in increments of 8, and displayed as [0.0,128.0] in increments of 0.1. To display: if 8192, display 128.0. Else divide by 6.4 (cutting into 1280 even pieces). Then ROUND to nearest integer 0...1280. Then divide by 10. The Hydrasynth seems to round 0.5 towards even.
filter2keytrack	0x3A	0x41 0x67	
filter2lfo1amount	0x3B	0x41 0x62	
filter2velenv	0x3C	0x41 0x6A	
filter2env1amount	0x3D	0x41 0x63	
filter2type		0x3F 0x23	[0,1] "LP-BP-HP", "LP-Notch-HP"
amplevel		0x40 0x02	[0,8192] seemingly only output in increments of 8, and displayed as [0.0,128.0] in increments of 0.1. To display: if 8192, display 128.0. Else divide by 6.4 (cutting into 1280 even pieces). Then ROUND to nearest integer 0...1280. Then divide by 10. The Hydrasynth seems to round 0.5 towards even.
ampvelenv		0x41 0x6B	[0,8192] seemingly only output in increments of 8, and displayed as [-64.0,64.0] in increments of 0.1. To display: if 8192, display 64.0. Else divide by 6.4 (cutting into 1280 even pieces). Then ROUND to nearest integer 0...1280. Then divide by 10. Then subtract 64. The Hydrasynth seems to round 0.5 towards even.
amplfo2amount	0x3E	0x41 0x64	[0,8192] seemingly only output in increments of 8, and displayed as [-64.0,64.0] in increments of 0.1. To display: if 8192, display 64.0. Else divide by 6.4 (cutting into 1280 even pieces). Then ROUND to nearest integer 0...1280. Then divide by 10. Then subtract 64. The Hydrasynth seems to round 0.5 towards even.
prefxtype		0x3B 0x7F	[0,9] output as 0, 8, 16, 24, ... representing "Bypass", "Chorus", "Flanger", "Rotary", "Phaser", "Lo-Fi", "Tremolo", "EQ", "Compressor", "Distortion"
prefxpreset		0x3B 0x00	**See "FX Types and Custom Parameters" below depending on prefxtype**
prefxwet	0x5D	0x41 0x6E	[0,8192] seemingly only output in increments of 8, and displayed as [0.0%,100.0%] in various increments. To display: if 8192, display 100.0. Else divide by 8.192 (cutting into 1000 even pieces). Then FLOOR to nearest integer 0...100. Then divide by 10.
prefxparam1	0x0C	0x41 0x6F	**See "FX Types and Custom Parameters" below depending on prefxtype**
prefxparam2	0x0D	0x41 0x70	
prefxparam3		0x3B 0x30	
prefxparam4		0x3B 0x40	
prefxparam5		0x3B 0x50	
prefxsidechain		0x3B 0x73	**See "FX Types and Custom Parameters" below depending on prefxtype**
delaybpmsync		0x3B 0x70	[0,1] in steps of 8 (0, 8)
delaywet	0x5C	0x41 0x78	[0,8192] seemingly only output in increments of 8, and displayed as [0.0%,100.0%] in various increments. To display: if 8192, display 100.0. Else divide by 8.192 (cutting into 1000 even pieces). Then FLOOR to nearest integer 0...100. Then divide by 10.
delayfeedback	0x0E	0x41 0x75	[0,8192] seemingly only output in increments of 8, and displayed as [0.0,128.0] in increments of 0.1. To display: if 8192, display 128.0. Else divide by 6.4 (cutting into 1280 even pieces). Then ROUND to nearest integer 0...1280. Then divide by 10. The Hydrasynth seems to round 0.5 towards even.
delayfeedtone		0x41 0x76	[0,8192] seemingly only output in increments of 8, and displayed as [0.0,128.0] in increments of 0.1. To display: if 8192, display 128.0. Else divide by 6.4 (cutting into 1280 even pieces). Then ROUND to nearest integer 0...1280. Then divide by 10. The Hydrasynth seems to round 0.5 towards even.

delaytimesyncoff	0x0F	0x41 0x74	[0,8192] seemingly only output in increments of 8, representing the values [0,1024] using the following convoluted arrangement: 0-72 1.0ms...10ms in 0.125 increments, displayed as x.x, ROUNDED. In this case, rounding 0.5 is towards zero, NOT towards even as done elsewhere on the Hydrasynth. Next come multiples of the following values. For example 10ms at 72 means 72, 73, ... 83 all display 10ms. 72 10ms 84 11 92 12 98 13 100 15 103 16 106 17 108 18 111 19 114 20 119 21 122 22 124 23 127 25 130 26 132 27 135 28 138 29 140 30 146 31 148 32 151 33 154 35 156 36 159 37 162 38 164 39 167 40 171 41 172 42 174 43 176 45 177 46 179 47 180 48 182 49 Next come certain patterns. 184-344 50-150 in the following pattern every multiple of 10: x0 x0 x0 x1 x1 x2 x2 x3 x3 x5 x6 x6 x7 x7 x8 x8 x9 x9 (for example, 50 50 50 51 51 52 52 53 53 55 56 56 57 57 58 58 59 59) 344-544 150-400 in the following pattern every multiple of 10: x0 x0 x2 x3 x5 x6 x8 x9 (for example, 150 150 152 153 155 156 158 159) 544-664 400-700 in the following pattern every multiple of 10: x0 x2 x5 x8 (for example, 400 402 405 408) 664-744 700-1000 (1.00 sec) in the following pattern every multiple of 30: x0 x3 x8 (x+1)0 (x+1)5 (x+1)9 (x+2)2 (x+2)6 (for example 700 703 708 710 715 719 722 726) 744-1024 SOME_MORE_DELAY_TIMES **BUG: When the Hydrasynth goes to sleep, if you wake it up, its delaytime screen is not in sync with values being sent in NRPN: it's offset. You have to push down to zero in order to reset it.**
delaytimesyncon		0x43 0x74	[0,20] FX_DELAYS_SYNC_ON **BUG: This is not in ASM's documentation**
delaytype		0x3B 0x71	[0,4] in steps of 8 (0, 8, 16, 24, 32) "Basic Mono", "Basic Stereo", "Pan Delay", "LRC Delay", "Reverse"
delaywettone	0x3F	0x41 0x77	[0,8192] seemingly only output in increments of 8, and displayed as [-64.0,64.0] in increments of 0.1. To display: if 8192, display 64.0. Else divide by 6.4 (cutting into 1280 even pieces). Then ROUND to nearest integer 0...1280. Then divide by 10. Then subtract 64. The Hydrasynth seems to round 0.5 towards even.

reverbwet	0x5B	0x41 0x7E	[0,8192] seemingly only output in increments of 8, and displayed as [0.0%,100.0%] in various increments. To display: if 8192, display 100.0. Else divide by 8.192 (cutting into 1000 even pieces). Then FLOOR to nearest integer 0...100. Then divide by 10.
reverbhidamp		0x41 0x7B	[0,8192] seemingly only output in increments of 8, and displayed as [0.0,128.0] in increments of 0.1. To display: if 8192, display 128.0. Else divide by 6.4 (cutting into 1280 even pieces). Then ROUND to nearest integer 0...1280. Then divide by 10. The Hydrasynth seems to round 0.5 towards even.
reverblodamp		0x41 0x7C	[0,8192] seemingly only output in increments of 8, and displayed as [0.0,128.0] in increments of 0.1. To display: if 8192, display 128.0. Else divide by 6.4 (cutting into 1280 even pieces). Then ROUND to nearest integer 0...1280. Then divide by 10. The Hydrasynth seems to round 0.5 towards even.
reverbpredelay		0x41 0x7D	[0,8192] seemingly only output in increments of 8, representing the values [0,1024] and displayed as follows. Take that value, multiply by 10, divide by 4.1042084168 (cutting into 2495 even pieces), ROUND to the nearest integer, then divide by 10, and add 0.5. This should get you to the range [0.5,250.0], which is displayed as ms.
reverbtime	0x41	0x41 0x79	[0,8192] seemingly only output in increments of 8, representing the values [0,1024], in intervals of 8 itself. Take that value, divide by 8, FLOOR it, and look up in [0,128] REVERB_TIMES.
reverbtone	0x43	0x41 0x7A	[0,8192] seemingly only output in increments of 8, and displayed as [-64.0,64.0] in increments of 0.1. To display: if 8192, display 64.0. Else divide by 6.4 (cutting into 1280 even pieces). Then ROUND to nearest integer 0...1280. Then divide by 10. Then subtract 64. The Hydrasynth seems to round 0.5 towards even.
reverbtype		0x3C 0x72	[0,4] in steps of 8 (0, 8, 16, 24, 32) "Hall", "Room", "Plate", "Cloud"
postfxtype		0x3C 0x7F	[0,9] output as 0, 8, 16, 24, ... representing "Bypass", "Chorus", "Flanger", "Rotary", "Phaser", "Lo-Fi", "Tremolo", "EQ", "Compressor", "Distortion"
postfxpreset		0x3C 0x00	**See "FX Types and Custom Parameters" below depending on postfxtype**
postfxwet	0x5E	0x41 0x71	[0,8192] seemingly only output in increments of 8, and displayed as [0.0%,100.0%] in various increments. To display: if 8192, display 100.0. Else divide by 8.192 (cutting into 1000 even pieces). Then FLOOR to nearest integer 0...100. Then divide by 10.
postfxparam1	0x44	0x41 0x72	**See "FX Types and Custom Parameters" below depending on postfxtype**
postfxparam2	0x45	0x41 0x73	
postfxparam3		0x3C 0x30	
postfxparam4		0x3C 0x40	
postfxparam5		0x3C 0x50	
postfxsidechain		0x3C 0x73	**See "FX Types and Custom Parameters" below depending on postfxtype**
lfo1level	0x46	0x41 0x0B	[0,8192] seemingly only output in increments of 8, and displayed as [0.0,128.0] in increments of 0.1. To display: if 8192, display 128.0. Else divide by 6.4 (cutting into 1280 even pieces). Then ROUND to nearest integer 0...1280. Then divide by 10. The Hydrasynth seems to round 0.5 towards even. Note that every 5 away from 0 (center) is one semitone.
lfo1wave		0x3F 0x04	MSB = 0x00 LSB = [0,10] LFO_WAVES
lfo1bpmsync		0x3F 0x04	MSB = 0x01 LSB = [0,1]
lfo1trigsync		0x3F 0x04	MSB = 0x03 LSB = [0, 2] "Poly", "Single", "Off"
lfo1smooth		0x3F 0x04	MSB = 0x06 LSB = [0,1]
lfo1steps		0x3F 0x04	MSB = 0x07 LSB = [2, 64] **Note: this parameter is ignored if lfo1wave is not set to "Step" (10). Note that this is NOT the case for the individual steps: they can be set regardless of the setting of lfo1wave.**
lfo1delaysyncoff		0x3F 0x04	MSB = 0x11 LSB = [0, 127] divided into the following chunks: 20 0-20ms by 1 10 20-40ms by 2 10 40-80ms by 4 10 80-160ms by 8 10 160-320ms by 16 10 320ms-640ms by 32 10 640ms-1280ms by 64 (>1 sec display as x.xx floored) 10 1280 - 2560 by 128 (display as x.xx floored) 10 2560 - 5120 by 256 (display as x.xx floored) 10 5120 - 9728 by 512 (display as x.xx floored) 12 10 - 22 sec by 1 (display as xx.0) 6 22 - 32 sec by 2 (display as xx.0) TOTAL: 128 VALS

lfo1fadeinsyncoff		0x3F 0x04	MSB = 0x12 LSB = [0,127] LFO_FADE_INS_SYNC_ON
lfo1delaysyncon		0x3F 0x04	MSB = 0x21 LSB = [0,28] ENV_LFO_RATES_SYNC_ON
lfo1fadeinsyncon		0x3F 0x04	MSB = 0x13 LSB = [0,28] ENV_LFO_RATES_SYNC_ON
lfo1oneshot		0x3F 0x04	MSB = 0x14 (1.5.5) LSB = [0,1] (2.0.0) LSB=[0,2] Off, On, Step
lfo1phase		0x3F 0x30	[0,360] displayed as degrees
lfo1ratesyncoff	0x48	0x41 0x05	[0,8192] seemingly only output in increments of 8, and displayed as [0.02 Hz ...150.00 Hz]. To display: if 8192, display 150.00Hz. Else divide by 6.4 (cutting into 1280 even pieces). Now we need to map to an exponential function to get the Hz value. It seems the following function is a pretty close fit: 2^(1 + 0.012571 * v) / 100 I would then display as x.xx, perhaps rounded down. Would be nice to know what their exact function is.
lfo1ratesyncon		0x43 0x05	[0,26] LFO_RATES_SYNC_ON
lfo1step1		0x3A 0x10	[0,8192] seemingly only output in increments of 8, and displayed as [-64.0,64.0] in increments of 0.1. To display: if 8192, display 64.0. Else divide by 6.4 (cutting into 1280 even pieces). Then ROUND to nearest integer 0...1280. Then divide by 10. Then subtract 64. The Hydrasynth seems to round 0.5 towards even. Note that every 5 away from 0 (center) is one semitone. **Note: you can set this and other LFO step parameters even if lfo1wave isn't currently set to "Steps" (10). However, you CANNOT set lfo1steps unless lfo1wave is currently set to "Steps".**
lfo1step2		0x3A 0x11	
lfo1step3		0x3A 0x12	
lfo1step4		0x3A 0x13	
lfo1step5		0x3A 0x14	
lfo1step6		0x3A 0x15	
lfo1step7		0x3A 0x16	
lfo1step8		0x3A 0x17	
lfo1step9		0x4A 0x00	
lfo1step10		0x4A 0x01	
lfo1step11		0x4A 0x02	
lfo1step12		0x4A 0x03	
lfo1step13		0x4A 0x04	
lfo1step14		0x4A 0x05	
lfo1step15		0x4A 0x06	
lfo1step16		0x4A 0x07	
lfo1step17		0x4A 0x08	
lfo1step18		0x4A 0x09	
lfo1step19		0x4A 0x0A	
lfo1step20		0x4A 0x0B	
lfo1step21		0x4A 0x0C	
lfo1step22		0x4A 0x0D	
lfo1step23		0x4A 0x0E	
lfo1step24		0x4A 0x0F	
lfo1step25		0x4A 0x10	
lfo1step26		0x4A 0x11	
lfo1step27		0x4A 0x12	
lfo1step28		0x4A 0x13	
lfo1step29		0x4A 0x14	
lfo1step30		0x4A 0x15	

lfo1step31		0x4A 0x16	
lfo1step32		0x4A 0x17	
lfo1step33		0x4A 0x18	
lfo1step34		0x4A 0x19	
lfo1step35		0x4A 0x1A	
lfo1step36		0x4A 0x1B	
lfo1step37		0x4A 0x1C	
lfo1step38		0x4A 0x1D	
lfo1step39		0x4A 0x1E	
lfo1step40		0x4A 0x1F	
lfo1step41		0x4A 0x20	
lfo1step42		0x4A 0x21	
lfo1step43		0x4A 0x22	
lfo1step44		0x4A 0x23	
lfo1step45		0x4A 0x24	
lfo1step46		0x4A 0x25	
lfo1step47		0x4A 0x26	
lfo1step48		0x4A 0x27	
lfo1step49		0x4A 0x28	
lfo1step50		0x4A 0x29	
lfo1step51		0x4A 0x2A	
lfo1step52		0x4A 0x2B	
lfo1step53		0x4A 0x2C	
lfo1step54		0x4A 0x2D	
lfo1step55		0x4A 0x2E	
lfo1step56		0x4A 0x2F	
lfo1step57		0x4A 0x30	
lfo1step58		0x4A 0x31	
lfo1step59		0x4A 0x32	
lfo1step60		0x4A 0x33	
lfo1step61		0x4A 0x34	
lfo1step62		0x4A 0x35	
lfo1step63		0x4A 0x36	
lfo1step64		0x4A 0x37	
lfo2level	0x1C	0x41 0x0C	
lfo2wave		0x3F 0x05	
lfo2bpmsync		0x3F 0x05	
lfo2trigsync		0x3F 0x05	
lfo2smooth		0x3F 0x05	
lfo2steps		0x3F 0x05	
lfo2delaysyncoff		0x3F 0x05	
lfo2fadeinsyncoff		0x3F 0x05	
lfo2delaysyncon		0x3F 0x05	
lfo2fadeinsyncon		0x3F 0x05	
lfo2oneshot		0x3F 0x05	
lfo2phase		0x3F 0x31	

lfo2ratesyncoff	0x49	0x41 0x06	
lfo2ratesyncon		0x43 0x06	
lfo2step1		0x3A 0x18	
lfo2step2		0x3A 0x19	
lfo2step3		0x3A 0x1A	
lfo2step4		0x3A 0x1B	
lfo2step5		0x3A 0x1C	
lfo2step6		0x3A 0x1D	
lfo2step7		0x3A 0x1E	
lfo2step8		0x3A 0x1F	
lfo2step9		0x4A 0x40	
lfo2step10		0x4A 0x41	
lfo2step11		0x4A 0x42	
lfo2step12		0x4A 0x43	
lfo2step13		0x4A 0x44	
lfo2step14		0x4A 0x45	
lfo2step15		0x4A 0x46	
lfo2step16		0x4A 0x47	
lfo2step17		0x4A 0x48	
lfo2step18		0x4A 0x49	
lfo2step19		0x4A 0x4A	
lfo2step20		0x4A 0x4B	
lfo2step21		0x4A 0x4C	
lfo2step22		0x4A 0x4D	
lfo2step23		0x4A 0x4E	
lfo2step24		0x4A 0x4F	
lfo2step25		0x4A 0x50	
lfo2step26		0x4A 0x51	
lfo2step27		0x4A 0x52	
lfo2step28		0x4A 0x53	
lfo2step29		0x4A 0x54	
lfo2step30		0x4A 0x55	
lfo2step31		0x4A 0x56	
lfo2step32		0x4A 0x57	
lfo2step33		0x4A 0x58	
lfo2step34		0x4A 0x59	
lfo2step35		0x4A 0x5A	
lfo2step36		0x4A 0x5B	
lfo2step37		0x4A 0x5C	
lfo2step38		0x4A 0x5D	
lfo2step39		0x4A 0x5E	
lfo2step40		0x4A 0x5F	
lfo2step41		0x4A 0x60	
lfo2step42		0x4A 0x61	
lfo2step43		0x4A 0x62	
lfo2step44		0x4A 0x63	

lfo2step45		0x4A 0x64	
lfo2step46		0x4A 0x65	
lfo2step47		0x4A 0x66	
lfo2step48		0x4A 0x67	
lfo2step49		0x4A 0x68	
lfo2step50		0x4A 0x69	
lfo2step51		0x4A 0x6A	
lfo2step52		0x4A 0x6B	
lfo2step53		0x4A 0x6C	
lfo2step54		0x4A 0x6D	
lfo2step55		0x4A 0x6E	
lfo2step56		0x4A 0x6F	
lfo2step57		0x4A 0x70	
lfo2step58		0x4A 0x71	
lfo2step59		0x4A 0x72	
lfo2step60		0x4A 0x73	
lfo2step61		0x4A 0x74	
lfo2step62		0x4A 0x75	
lfo2step63		0x4A 0x76	
lfo2step64		0x4A 0x77	
lfo3level	0x4B	0x41 0x0D	
lfo3wave		0x3F 0x06	
lfo3bpmsync		0x3F 0x06	
lfo3trigsync		0x3F 0x06	
lfo3smooth		0x3F 0x06	
lfo3steps		0x3F 0x06	
lfo3delaysyncoff		0x3F 0x06	
lfo3fadeinsyncoff		0x3F 0x06	
lfo3delaysyncon		0x3F 0x06	
lfo3fadeinsyncon		0x3F 0x06	
lfo3oneshot		0x3F 0x06	
lfo3phase		0x3F 0x32	
lfo3ratesyncoff	0x4C	0x41 0x07	
lfo3ratesyncon		0x43 0x07	
lfo3step1		0x3A 0x20	
lfo3step2		0x3A 0x21	
lfo3step3		0x3A 0x22	
lfo3step4		0x3A 0x23	
lfo3step5		0x3A 0x24	
lfo3step6		0x3A 0x25	
lfo3step7		0x3A 0x26	
lfo3step8		0x3A 0x27	
lfo3step9		0x4B 0x00	
lfo3step10		0x4B 0x01	
lfo3step11		0x4B 0x02	
lfo3step12		0x4B 0x03	

lfo3step13		0x4B 0x04	
lfo3step14		0x4B 0x05	
lfo3step15		0x4B 0x06	
lfo3step16		0x4B 0x07	
lfo3step17		0x4B 0x08	
lfo3step18		0x4B 0x09	
lfo3step19		0x4B 0x0A	
lfo3step20		0x4B 0x0B	
lfo3step21		0x4B 0x0C	
lfo3step22		0x4B 0x0D	
lfo3step23		0x4B 0x0E	
lfo3step24		0x4B 0x0F	
lfo3step25		0x4B 0x10	
lfo3step26		0x4B 0x11	
lfo3step27		0x4B 0x12	
lfo3step28		0x4B 0x13	
lfo3step29		0x4B 0x14	
lfo3step30		0x4B 0x15	
lfo3step31		0x4B 0x16	
lfo3step32		0x4B 0x17	
lfo3step33		0x4B 0x18	
lfo3step34		0x4B 0x19	
lfo3step35		0x4B 0x1A	
lfo3step36		0x4B 0x1B	
lfo3step37		0x4B 0x1C	
lfo3step38		0x4B 0x1D	
lfo3step39		0x4B 0x1E	
lfo3step40		0x4B 0x1F	
lfo3step41		0x4B 0x20	
lfo3step42		0x4B 0x21	
lfo3step43		0x4B 0x22	
lfo3step44		0x4B 0x23	
lfo3step45		0x4B 0x24	
lfo3step46		0x4B 0x25	
lfo3step47		0x4B 0x26	
lfo3step48		0x4B 0x27	
lfo3step49		0x4B 0x28	
lfo3step50		0x4B 0x29	
lfo3step51		0x4B 0x2A	
lfo3step52		0x4B 0x2B	
lfo3step53		0x4B 0x2C	
lfo3step54		0x4B 0x2D	
lfo3step55		0x4B 0x2E	
lfo3step56		0x4B 0x2F	
lfo3step57		0x4B 0x30	
lfo3step58		0x4B 0x31	

lfo3step59		0x4B 0x32	
lfo3step60		0x4B 0x33	
lfo3step61		0x4B 0x34	
lfo3step62		0x4B 0x35	
lfo3step63		0x4B 0x36	
lfo3step64		0x4B 0x37	
lfo4level	0x4D	0x41 0x0E	
lfo4wave		0x3F 0x07	
lfo4bpmsync		0x3F 0x07	
lfo4trigsync		0x3F 0x07	
lfo4smooth		0x3F 0x07	
lfo4steps		0x3F 0x07	
lfo4delaysyncoff		0x3F 0x07	
lfo4fadeinsyncoff		0x3F 0x07	
lfo4delaysyncon		0x3F 0x07	
lfo4fadeinsyncon		0x3F 0x07	
lfo4oneshot		0x3F 0x07	
lfo4phase		0x3F 0x33	
lfo4ratesyncoff	0x4E	0x41 0x08	
lfo4ratesyncon		0x43 0x08	
lfo3step1		0x3A 0x28	
lfo3step2		0x3A 0x29	
lfo3step3		0x3A 0x2A	
lfo3step4		0x3A 0x2B	
lfo3step5		0x3A 0x2C	
lfo3step6		0x3A 0x2D	
lfo3step7		0x3A 0x2E	
lfo3step8		0x3A 0x2F	
lfo4step9		0x4B 0x40	
lfo4step10		0x4B 0x41	
lfo4step11		0x4B 0x42	
lfo4step12		0x4B 0x43	
lfo4step13		0x4B 0x44	
lfo4step14		0x4B 0x45	
lfo4step15		0x4B 0x46	
lfo4step16		0x4B 0x47	
lfo4step17		0x4B 0x48	
lfo4step18		0x4B 0x49	
lfo4step19		0x4B 0x4A	
lfo4step20		0x4B 0x4B	
lfo4step21		0x4B 0x4C	
lfo4step22		0x4B 0x4D	
lfo4step23		0x4B 0x4E	
lfo4step24		0x4B 0x4F	
lfo4step25		0x4B 0x50	
lfo4step26		0x4B 0x51	

lfo4step27		0x4B 0x52	
lfo4step28		0x4B 0x53	
lfo4step29		0x4B 0x54	
lfo4step30		0x4B 0x55	
lfo4step31		0x4B 0x56	
lfo4step32		0x4B 0x57	
lfo4step33		0x4B 0x58	
lfo4step34		0x4B 0x59	
lfo4step35		0x4B 0x5A	
lfo4step36		0x4B 0x5B	
lfo4step37		0x4B 0x5C	
lfo4step38		0x4B 0x5D	
lfo4step39		0x4B 0x5E	
lfo4step40		0x4B 0x5F	
lfo4step41		0x4B 0x60	
lfo4step42		0x4B 0x61	
lfo4step43		0x4B 0x62	
lfo4step44		0x4B 0x63	
lfo4step45		0x4B 0x64	
lfo4step46		0x4B 0x65	
lfo4step47		0x4B 0x66	
lfo4step48		0x4B 0x67	
lfo4step49		0x4B 0x68	
lfo4step50		0x4B 0x69	
lfo4step51		0x4B 0x6A	
lfo4step52		0x4B 0x6B	
lfo4step53		0x4B 0x6C	
lfo4step54		0x4B 0x6D	
lfo4step55		0x4B 0x6E	
lfo4step56		0x4B 0x6F	
lfo4step57		0x4B 0x70	
lfo4step58		0x4B 0x71	
lfo4step59		0x4B 0x72	
lfo4step60		0x4B 0x73	
lfo4step61		0x4B 0x74	
lfo4step62		0x4B 0x75	
lfo4step63		0x4B 0x76	
lfo4step64		0x4B 0x77	
lfo5level	0x4F	0x41 0x0F	
lfo5wave		0x3F 0x08	
lfo5bpmsync		0x3F 0x08	
lfo5trigsync		0x3F 0x08	
lfo5smooth		0x3F 0x08	
lfo5steps		0x3F 0x08	
lfo5delaysyncoff		0x3F 0x08	
lfo5fadeinsyncoff		0x3F 0x08	

lfo5delaysyncon		0x3F 0x08	
lfo5fadeinsyncon		0x3F 0x08	
lfo5oneshot		0x3F 0x08	
lfo5phase		0x3F 0x34	
lfo5ratesyncoff	0x50	0x41 0x09	
lfo5ratesyncon		0x43 0x09	
lfo5step1		0x3A 0x30	
lfo5step2		0x3A 0x31	
lfo5step3		0x3A 0x32	
lfo5step4		0x3A 0x33	
lfo5step5		0x3A 0x34	
lfo5step6		0x3A 0x35	
lfo5step7		0x3A 0x36	
lfo5step8		0x3A 0x37	
lfo5step9		0x4C 0x00	
lfo5step10		0x4C 0x01	
lfo5step11		0x4C 0x02	
lfo5step12		0x4C 0x03	
lfo5step13		0x4C 0x04	
lfo5step14		0x4C 0x05	
lfo5step15		0x4C 0x06	
lfo5step16		0x4C 0x07	
lfo5step17		0x4C 0x08	
lfo5step18		0x4C 0x09	
lfo5step19		0x4C 0x0A	
lfo5step20		0x4C 0x0B	
lfo5step21		0x4C 0x0C	
lfo5step22		0x4C 0x0D	
lfo5step23		0x4C 0x0E	
lfo5step24		0x4C 0x0F	
lfo5step25		0x4C 0x10	
lfo5step26		0x4C 0x11	
lfo5step27		0x4C 0x12	
lfo5step28		0x4C 0x13	
lfo5step29		0x4C 0x14	
lfo5step30		0x4C 0x15	
lfo5step31		0x4C 0x16	
lfo5step32		0x4C 0x17	
lfo5step33		0x4C 0x18	
lfo5step34		0x4C 0x19	
lfo5step35		0x4C 0x1A	
lfo5step36		0x4C 0x1B	
lfo5step37		0x4C 0x1C	
lfo5step38		0x4C 0x1D	
lfo5step39		0x4C 0x1E	
lfo5step40		0x4C 0x1F	

lfo5step41		0x4C 0x20	
lfo5step42		0x4C 0x21	
lfo5step43		0x4C 0x22	
lfo5step44		0x4C 0x23	
lfo5step45		0x4C 0x24	
lfo5step46		0x4C 0x25	
lfo5step47		0x4C 0x26	
lfo5step48		0x4C 0x27	
lfo5step49		0x4C 0x28	
lfo5step50		0x4C 0x29	
lfo5step51		0x4C 0x2A	
lfo5step52		0x4C 0x2B	
lfo5step53		0x4C 0x2C	
lfo5step54		0x4C 0x2D	
lfo5step55		0x4C 0x2E	
lfo5step56		0x4C 0x2F	
lfo5step57		0x4C 0x30	
lfo5step58		0x4C 0x31	
lfo5step59		0x4C 0x32	
lfo5step60		0x4C 0x33	
lfo5step61		0x4C 0x34	
lfo5step62		0x4C 0x35	
lfo5step63		0x4C 0x36	
lfo5step64		0x4C 0x37	
env1delaysyncoff		0x3F 0x00	MSB = 0x08, LSB = [0, 127] divided into the following chunks and displayed as [0ms,32sec]: 20 0-20ms by 1 10 20-40ms by 2 10 40-80ms by 4 10 80-160ms by 8 10 160-320ms by 16 10 320ms-640ms by 32 10 640ms-1280ms by 64 (>1 sec display as x.xx floored) 10 1280 - 2560 by 128 (display as x.xx floored) 10 2560 - 5120 by 256 (display as x.xx floored) 10 5120 - 9728 by 512 (display as x.xx floored) 12 10 - 22 sec by 1 (display as xx.0) 6 22 - 32 sec by 2 (display as xx.0) TOTAL: 128 VALS
env1attacksyncoff	0x51	0x41 0x11	[0,8192] seemingly only output in increments of 8, and displayed as [0ms,36sec]. To display: if 8192, display (36 sec). Else divide by 64 (cutting into 128 even pieces). Then ROUND to nearest integer 0...128. The Hydrasynth seems to round 0.5 towards even. Then display as: 20 0-20ms by 1 10 20-40ms by 2 10 40-80ms by 4 10 80-160ms by 8 10 160-320ms by 16 10 320ms-640ms by 32 10 640ms-1280ms by 64 (>1 sec display as x.xx floored) 10 1280 - 2560 by 128 (display as x.xx floored) 10 2560 - 5120 by 256 (display as x.xx floored) 10 5120 - 9728 by 512 (display as x.xx floored) 10 10 - 20 sec by 1 (display as xx.0) 9 20 - 36 sec by 2 (display as xx.0) TOTAL: 129 VALS

env1holdsyncoff		0x41 0x16	[0,8192] seemingly only output in increments of 8, and displayed as [0ms,36sec] To display: if 8192, display (36 sec). Else divide by 64 (cutting into 128 even pieces). Then ROUND to nearest integer 0...128. The Hydrasynth seems to round 0.5 towards even. Then display as: 20 0-20ms by 1 10 20-40ms by 2 10 40-80ms by 4 10 80-160ms by 8 10 160-320ms by 16 10 320ms-640ms by 32 10 640ms-1280ms by 64 (>1 sec display as x.xx floored) 10 1280 - 2560 by 128 (display as x.xx floored) 10 2560 - 5120 by 256 (display as x.xx floored) 10 5120 - 9728 by 512 (display as x.xx floored) 10 10 - 20 sec by 1 (display as xx.0) 9 20 - 36 sec by 2 (display as xx.0) TOTAL: 129 VALS
env1decaysyncoff	0x52	0x41 0x1B	[0,8192] seemingly only output in increments of 8, and displayed as [0ms,60sec]. To display: if 8192, display (60 sec). Else divide by 63.02 or so (cutting into 130 even pieces). Then ROUND to nearest integer 0...130. The Hydrasynth seems to round 0.5 towards even. Then display as: 20 0-40ms by 2 10 40-80ms by 4 10 80-160ms by 8 10 160-320ms by 16 10 320-640ms by 32 10 640-1280ms by 64 (>1 sec display as x.xx floored) 10 1280-2560 by 128 (display as x.xx floored) 10 2560-5120 by 256 (display as x.xx floored) 10 5120 - 9728 by 512 (display as x.xx floored) 6 10 - 16 sec by 1 (display as xx.0) 22 16 - 60 sec by 2 (display as xx.0) TOTAL: 128 VALS
env1sustain	0x53	0x41 0x20	[0,8192] seemingly only output in increments of 8, and displayed as [0.0,128.0] in increments of 0.1. To display: if 8192, display 128.0. Else divide by 6.4 (cutting into 1280 even pieces). Then ROUND to nearest integer 0...1280. Then divide by 10. The Hydrasynth seems to round 0.5 towards even.
env1releasesyncoff	0x54	0x41 0x25	[0,8192] seemingly only output in increments of 8, and displayed as [0ms,60sec]. To display: if 8192, display (60 sec). Else divide by 63.02 or so (cutting into 130 even pieces). Then ROUND to nearest integer 0...130. The Hydrasynth seems to round 0.5 towards even. Then display as: 20 0-40ms by 2 10 40-80ms by 4 10 80-160ms by 8 10 160-320ms by 16 10 320-640ms by 32 10 640-1280ms by 64 (>1 sec display as x.xx floored) 10 1280-2560 by 128 (display as x.xx floored) 10 2560-5120 by 256 (display as x.xx floored) 10 5120 - 9728 by 512 (display as x.xx floored) 6 10 - 16 sec by 1 (display as xx.0) 22 16 - 60 sec by 2 (display as xx.0) TOTAL: 128 VALS
env1delaysyncon		0x3F 0x00	MSB = 0x18 LSB = [0,27] ENV_LFO_RATES_SYNC_ON
env1attacksyncon		0x43 0x11	[0,27] ENV_LFO_RATES_SYNC_ON emitted as multiples of 8 (0, 8, 16, 32, ...)
env1decaysyncon		0x43 0x1B	[0,27] ENV_LFO_RATES_SYNC_ON emitted as multiples of 8 (0, 8, 16, 32, ...)
env1holdsyncon		0x43 0x16	[0,27] ENV_LFO_RATES_SYNC_ON emitted as multiples of 8 (0, 8, 16, 32, ...)
env1releasesyncon		0x43 0x25	[0,27] ENV_LFO_RATES_SYNC_ON emitted as multiples of 8 (0, 8, 16, 32, ...)
env1atkcurve		0x3F 0x70	[0...128] displayed as [Exp(-64)...0...Log(64)] Note this is different from Decay Curve, Release Curve, and Voice Glide Curve
env1deccurve		0x3F 0x75	[0...128] displayed as [Log(-64)...0...Exp(64)]
env1loop		0x3F 0x00	MSB = 0x06 LSB=[0...50] displayed as Off, 2, ..., 50, Infinity
env1legato		0x3F 0x00	MSB = 0x07 LSB=[0,1]
env1bpmsync		0x3F 0x00	MSB = 0x0C LSB=[0,1]
env1freerun		0x3F 0x00	MSB = 0x0D LSB=[0,1]
env1reset		0x3F 0x00	MSB = 0x0F LSB=[0,1]

env1relcurve		0x3F 0x7A	[0...128] displayed as [Log(-64)...0...Exp(64)]
env1trigsrc1		0x3A 0x60	[0,11] ENV_TRIG_SOURCES
env1trigsrc2		0x3A 0x61	
env1trigsrc3		0x3A 0x62	
env1trigsrc4		0x3A 0x63	
env2delaysyncoff		0x3F 0x01	
env2attacksyncoff	0x55	0x41 0x12	
env2holdsyncoff		0x41 0x17	
env2decaysyncoff	0x56	0x41 0x1C	
env2sustain	0x57	0x41 0x21	
env2releasesyncoff	0x58	0x41 0x26	
env2delaysyncon		0x3F 0x01	
env2attacksyncon		0x43 0x12	
env2decaysyncon		0x43 0x1C	
env2holdsyncon		0x43 0x17	
env2releasesyncon		0x43 0x26	
env2atkcurve		0x3F 0x71	
env2deccurve		0x3F 0x76	
env2loop		0x3F 0x01	
env2legato		0x3F 0x01	
env2bpmsync		0x3F 0x01	
env2freerun		0x3F 0x01	
env2reset		0x3F 0x01	
env2relcurve		0x3F 0x7B	
env2trigsrc1		0x3A 0x64	**Bug: This doesn't do anything. Env 2 (Amplitude) Trig Src 1 (properly) cannot be modified, see the manual. But there's still an NRPN parameter!**
env2trigsrc2		0x3A 0x65	
env2trigsrc3		0x3A 0x66	
env2trigsrc4		0x3A 0x67	
env3delaysyncoff		0x3F 0x02	
env3attacksyncoff	0x59	0x41 0x13	
env3holdsyncoff		0x41 0x18	
env3decaysyncoff	0x5A	0x41 0x1D	
env3sustain	0x60	0x41 0x22	
env3releasesyncoff	0x61	0x41 0x27	
env3delaysyncon		0x3F 0x02	
env3attacksyncon		0x43 0x13	
env3decaysyncon		0x43 0x1D	
env3holdsyncon		0x43 0x18	
env3releasesyncon		0x43 0x27	
env3atkcurve		0x3F 0x72	
env3deccurve		0x3F 0x77	
env3loop		0x3F 0x02	
env3legato		0x3F 0x02	
env3bpmsync		0x3F 0x02	
env3freerun		0x3F 0x02	

env3reset		0x3F 0x02	
env3relcurve		0x3F 0x7C	
env3trigsrc1		0x3A 0x68	
env3trigsrc2		0x3A 0x69	
env3trigsrc3		0x3A 0x6A	
env3trigsrc4		0x3A 0x6B	
env4delaysyncoff		0x3F 0x03	
env4attacksyncoff	0x19	0x41 0x14	
env4holdsyncoff		0x41 0x19	
env4decaysyncoff	0x1B	0x41 0x1E	
env4sustain	0x7D	0x41 0x23	
env4releasesyncoff	0x7C	0x41 0x28	
env4delaysyncon		0x3F 0x03	
env4attacksyncon		0x43 0x14	
env4decaysyncon		0x43 0x1E	
env4holdsyncon		0x43 0x19	
env4releasesyncon		0x43 0x28	
env4atkcurve		0x3F 0x73	
env4deccurve		0x3F 0x78	
env4loop		0x3F 0x03	
env4legato		0x3F 0x03	
env4bpmsync		0x3F 0x03	
env4freerun		0x3F 0x03	
env4reset		0x3F 0x03	
env4relcurve		0x3F 0x7D	
env4trigsrc1		0x3A 0x6C	
env4trigsrc2		0x3A 0x6D	
env4trigsrc3		0x3A 0x6E	
env4trigsrc4		0x3A 0x6F	
env5delaysyncoff		0x3F 0x0A	**Note: yes, 0x0A, not 0x04 like you'd expect**
env5attacksyncoff	0x66	0x41 0x15	
env5holdsyncoff		0x41 0x1A	
env5decaysyncoff	0x67	0x41 0x1F	
env5sustain	0x68	0x41 0x24	
env5releasesyncoff	0x69	0x41 0x29	
env5delaysyncon		0x3F 0x0A	**Note: yes, 0x0A, not 0x04 like you'd expect**
env5attacksyncon		0x43 0x15	
env5decaysyncon		0x43 0x1F	
env5holdsyncon		0x43 0x1A	
env5releasesyncon		0x43 0x29	
env5atkcurve		0x3F 0x74	
env5deccurve		0x3F 0x79	
env5loop		0x3F 0x0A	**Note: yes, 0x0A, not 0x04 like you'd expect**
env5legato		0x3F 0x0A	**Note: yes, 0x0A, not 0x04 like you'd expect**
env5bpmsync		0x3F 0x0A	**Note: yes, 0x0A, not 0x04 like you'd expect**
env5freerun		0x3F 0x0A	**Note: yes, 0x0A, not 0x04 like you'd expect**

env5reset		0x3F 0x0A	**Note: yes, 0x0A, not 0x04 like you'd expect**
env5relcurve		0x3F 0x7E	
env5trigsrc1		0x3A 0x70	
env5trigsrc2		0x3A 0x71	
env5trigsrc3		0x3A 0x72	
env5trigsrc4		0x3A 0x73	
arpenable		0x39 0x03	[0,1]
arpdivision	0x6A	0x39 0x03	MSB = 0x01 LSB = [0,11] ARP_DIVISIONS
arpswing		0x39 0x03	MSB = 0x02 LSB = [50,75]
arpgate	0x6B	0x39 0x03	MSB = 0x03 LSB=[5,100]
arpoctmode		0x39 0x03	MSB = 0x04 LSB = [0,4] Up, Down, Up/Down, Alt, Alt 2
arpoctave	0x78	0x39 0x03	MSB = 0x05 LSB = [1,4]
arpmode	0x6C	0x39 0x03	MSB = 0x06 LSB = [0,7] Up, Down, Up/Down, Up & Down, Order, Random, Chord, Phrase
arplength	0x7A	0x39 0x03	
arptaptrig		0x39 0x03	MSB = 0x08, LSB = [0,1] **BUG: Also turns Arp on/off. This does NOT happen if Tap Trig is toggled on the front panel.**
arpphrase		0x39 0x03	MSB = 0x09 LSB = [1,64]
arpratchet	0x6D	0x39 0x03	MSB = 0x0A LSB = [0,127] Manual implies that the only legal ratchets are 1, 2, 4, or 8. This is not correct.
arpchance	0x6E	0x39 0x03	MSB = 0x0B LSB = [0,100]
macro1target1		0x3E 0x30	**BUG: the Hydrasynth's display does not update to reflect changes from NRPN. You have to page away and come back to see the changes displayed.**
macro1target2		0x3E 0x31	
macro1target3		0x3E 0x32	
macro1target4		0x3E 0x33	
macro1target5		0x3E 0x34	
macro1target6		0x3E 0x35	
macro1target7		0x3E 0x36	
macro1target8		0x3E 0x37	
macro1buttonvalue1		0x3D 0x30	[0,8192] seemingly only output in increments of 8, and displayed as [-128.0,128.0] in increments of 0.1. To display: if 8192, display 128.0. Else divide by 3.2 (cutting into 2560 even pieces). Then ROUND to nearest integer 0...1280. Then divide by 10. Then subtract 128. The Hydrasynth seems to round 0.5 towards even. **BUG: the Hydrasynth's display does not update to reflect changes from NRPN. You have to page away and come back to see the changes displayed.**
macro1buttonvalue2		0x3D 0x31	
macro1buttonvalue3		0x3D 0x32	
macro1buttonvalue4		0x3D 0x33	
macro1buttonvalue5		0x3D 0x34	
macro1buttonvalue6		0x3D 0x35	
macro1buttonvalue7		0x3D 0x36	
macro1buttonvalue8		0x3D 0x37	
macro1depth1		0x36 0x30	[0,8192] seemingly only output in increments of 8, and displayed as [-128.0,128.0] in increments of 0.1. To display: if 8192, display 128.0. Else divide by 3.2 (cutting into 2560 even pieces). Then ROUND to nearest integer 0...1280. Then divide by 10. Then subtract 128. The Hydrasynth seems to round 0.5 towards even. **BUG: the Hydrasynth's display does not update to reflect changes from NRPN. You have to page away and come back to see the changes displayed.**
macro1depth2		0x36 0x31	

macro1depth3		0x36 0x32	
macro1depth4		0x36 0x33	
macro1depth5		0x36 0x34	
macro1depth6		0x36 0x35	
macro1depth7		0x36 0x36	
macro1depth8		0x36 0x37	
macro2target1		0x3E 0x38	
macro2target2		0x3E 0x39	
macro2target3		0x3E 0x3A	
macro2target4		0x3E 0x3B	
macro2target5		0x3E 0x3C	
macro2target6		0x3E 0x3D	
macro2target7		0x3E 0x3E	
macro2target8		0x3E 0x3F	
macro2buttonvalue1		0x3D 0x38	
macro2buttonvalue2		0x3D 0x39	
macro2buttonvalue3		0x3D 0x3A	
macro2buttonvalue4		0x3D 0x3B	
macro2buttonvalue5		0x3D 0x3C	
macro2buttonvalue6		0x3D 0x3D	
macro2buttonvalue7		0x3D 0x3E	
macro2buttonvalue8		0x3D 0x3F	
macro2depth1		0x36 0x38	
macro2depth2		0x36 0x39	
macro2depth3		0x36 0x3A	
macro2depth4		0x36 0x3B	
macro2depth5		0x36 0x3C	
macro2depth6		0x36 0x3D	
macro2depth7		0x36 0x3E	
macro2depth8		0x36 0x3F	
macro3target1		0x3E 0x40	
macro3target2		0x3E 0x41	
macro3target3		0x3E 0x42	
macro3target4		0x3E 0x43	
macro3target5		0x3E 0x44	
macro3target6		0x3E 0x45	
macro3target7		0x3E 0x46	
macro3target8		0x3E 0x47	
macro3buttonvalue1		0x3D 0x40	
macro3buttonvalue2		0x3D 0x41	
macro3buttonvalue3		0x3D 0x42	
macro3buttonvalue4		0x3D 0x43	
macro3buttonvalue5		0x3D 0x44	
macro3buttonvalue6		0x3D 0x45	
macro3buttonvalue7		0x3D 0x46	
macro3buttonvalue8		0x3D 0x47	

macro3depth1		0x36 0x40	
macro3depth2		0x36 0x41	
macro3depth3		0x36 0x42	
macro3depth4		0x36 0x43	
macro3depth5		0x36 0x44	
macro3depth6		0x36 0x45	
macro3depth7		0x36 0x46	
macro3depth8		0x36 0x47	
macro4target1		0x3E 0x48	
macro4target2		0x3E 0x49	
macro4target3		0x3E 0x4A	
macro4target4		0x3E 0x4B	
macro4target5		0x3E 0x4C	
macro4target6		0x3E 0x4D	
macro4target7		0x3E 0x4E	
macro4target8		0x3E 0x4F	
macro4buttonvalue1		0x3D 0x48	
macro4buttonvalue2		0x3D 0x49	
macro4buttonvalue3		0x3D 0x4A	
macro4buttonvalue4		0x3D 0x4B	
macro4buttonvalue5		0x3D 0x4C	
macro4buttonvalue6		0x3D 0x4D	
macro4buttonvalue7		0x3D 0x4E	
macro4buttonvalue8		0x3D 0x4F	
macro4depth1		0x36 0x48	
macro4depth2		0x36 0x49	
macro4depth3		0x36 0x4A	
macro4depth4		0x36 0x4B	
macro4depth5		0x36 0x4C	
macro4depth6		0x36 0x4D	
macro4depth7		0x36 0x4E	
macro4depth8		0x36 0x4F	
macro5target1		0x3E 0x50	
macro5target2		0x3E 0x51	
macro5target3		0x3E 0x52	
macro5target4		0x3E 0x53	
macro5target5		0x3E 0x54	
macro5target6		0x3E 0x55	
macro5target7		0x3E 0x56	
macro5target8		0x3E 0x57	
macro5buttonvalue1		0x3D 0x50	
macro5buttonvalue2		0x3D 0x51	
macro5buttonvalue3		0x3D 0x52	
macro5buttonvalue4		0x3D 0x53	
macro5buttonvalue5		0x3D 0x54	
macro5buttonvalue6		0x3D 0x55	

macro5buttonvalue7		0x3D 0x56	
macro5buttonvalue8		0x3D 0x57	
macro5depth1		0x36 0x50	
macro5depth2		0x36 0x51	
macro5depth3		0x36 0x52	
macro5depth4		0x36 0x53	
macro5depth5		0x36 0x54	
macro5depth6		0x36 0x55	
macro5depth7		0x36 0x56	
macro5depth8		0x36 0x57	
macro5target1		0x3E 0x50	
macro5target2		0x3E 0x51	
macro5target3		0x3E 0x52	
macro5target4		0x3E 0x53	
macro5target5		0x3E 0x54	
macro5target6		0x3E 0x55	
macro5target7		0x3E 0x56	
macro5target8		0x3E 0x57	
macro6buttonvalue1		0x3D 0x58	
macro6buttonvalue2		0x3D 0x59	
macro6buttonvalue3		0x3D 0x5A	
macro6buttonvalue4		0x3D 0x5B	
macro6buttonvalue5		0x3D 0x5C	
macro6buttonvalue6		0x3D 0x5D	
macro6buttonvalue7		0x3D 0x5E	
macro6buttonvalue8		0x3D 0x5F	
macro6depth1		0x36 0x58	
macro6depth2		0x36 0x59	
macro6depth3		0x36 0x5A	
macro6depth4		0x36 0x5B	
macro6depth5		0x36 0x5C	
macro6depth6		0x36 0x5D	
macro6depth7		0x36 0x5E	
macro6depth8		0x36 0x5F	
macro7target1		0x3E 0x60	
macro7target2		0x3E 0x61	
macro7target3		0x3E 0x62	
macro7target4		0x3E 0x63	
macro7target5		0x3E 0x64	
macro7target6		0x3E 0x65	
macro7target7		0x3E 0x66	
macro7target8		0x3E 0x67	
macro7buttonvalue1		0x3D 0x60	
macro7buttonvalue2		0x3D 0x61	
macro7buttonvalue3		0x3D 0x62	
macro7buttonvalue4		0x3D 0x63	

macro7buttonvalue5		0x3D 0x64	
macro7buttonvalue6		0x3D 0x65	
macro7buttonvalue7		0x3D 0x66	
macro7buttonvalue8		0x3D 0x67	
macro7depth1		0x36 0x60	
macro7depth2		0x36 0x61	
macro7depth3		0x36 0x62	
macro7depth4		0x36 0x63	
macro7depth5		0x36 0x64	
macro7depth6		0x36 0x65	
macro7depth7		0x36 0x66	
macro7depth8		0x36 0x67	
macro8target1		0x3E 0x68	
macro8target2		0x3E 0x69	
macro8target3		0x3E 0x6A	
macro8target4		0x3E 0x6B	
macro8target5		0x3E 0x6C	
macro8target6		0x3E 0x6D	
macro8target7		0x3E 0x6E	
macro8target8		0x3E 0x6F	
macro8buttonvalue1		0x3D 0x68	
macro8buttonvalue2		0x3D 0x69	
macro8buttonvalue3		0x3D 0x6A	
macro8buttonvalue4		0x3D 0x6B	
macro8buttonvalue5		0x3D 0x6C	
macro8buttonvalue6		0x3D 0x6D	
macro8buttonvalue7		0x3D 0x6E	
macro8buttonvalue8		0x3D 0x6F	
macro8depth1		0x36 0x68	
macro8depth2		0x36 0x69	
macro8depth3		0x36 0x6A	
macro8depth4		0x36 0x6B	
macro8depth5		0x36 0x6C	
macro8depth6		0x36 0x6D	
macro8depth7		0x36 0x6E	
macro8depth8		0x36 0x6F	
modmatrix1modsource		0x3E 0x00	**BUG: the Hydrasynth's display does not update to reflect changes from NRPN. You have to page away and come back to see the changes displayed.**
modmatrix2modsource		0x3E 0x01	
modmatrix3modsource		0x3E 0x02	
modmatrix4modsource		0x3E 0x03	
modmatrix5modsource		0x3E 0x04	
modmatrix6modsource		0x3E 0x05	
modmatrix7modsource		0x3E 0x06	
modmatrix8modsource		0x3E 0x07	
modmatrix9modsource		0x3E 0x08	

modmatrix10modsource		0x3E 0x09	
modmatrix11modsource		0x3E 0x0A	
modmatrix12modsource		0x3E 0x0B	
modmatrix13modsource		0x3E 0x0C	
modmatrix14modsource		0x3E 0x0D	
modmatrix15modsource		0x3E 0x0E	
modmatrix16modsource		0x3E 0x0F	
modmatrix17modsource		0x3E 0x10	
modmatrix18modsource		0x3E 0x11	
modmatrix19modsource		0x3E 0x12	
modmatrix20modsource		0x3E 0x13	
modmatrix21modsource		0x3E 0x14	
modmatrix22modsource		0x3E 0x15	
modmatrix23modsource		0x3E 0x16	
modmatrix24modsource		0x3E 0x17	
modmatrix25modsource		0x3E 0x18	
modmatrix26modsource		0x3E 0x19	
modmatrix27modsource		0x3E 0x1A	
modmatrix28modsource		0x3E 0x1B	
modmatrix29modsource		0x3E 0x1C	
modmatrix30modsource		0x3E 0x1D	
modmatrix31modsource		0x3E 0x1E	
modmatrix32modsource		0x3E 0x1F	
modmatrix1modtarget		0x3E 0x00	**BUG: the Hydrasynth's display does not update to reflect changes from NRPN. You have to page away and come back to see the changes displayed.**
modmatrix2modtarget		0x3E 0x01	
modmatrix3modtarget		0x3E 0x02	
modmatrix4modtarget		0x3E 0x03	
modmatrix5modtarget		0x3E 0x04	
modmatrix6modtarget		0x3E 0x05	
modmatrix7modtarget		0x3E 0x06	
modmatrix8modtarget		0x3E 0x07	
modmatrix9modtarget		0x3E 0x08	
modmatrix10modtarget		0x3E 0x09	
modmatrix11modtarget		0x3E 0x0A	
modmatrix12modtarget		0x3E 0x0B	
modmatrix13modtarget		0x3E 0x0C	
modmatrix14modtarget		0x3E 0x0D	
modmatrix15modtarget		0x3E 0x0E	
modmatrix16modtarget		0x3E 0x0F	
modmatrix17modtarget		0x3E 0x10	
modmatrix18modtarget		0x3E 0x11	
modmatrix19modtarget		0x3E 0x12	
modmatrix20modtarget		0x3E 0x13	
modmatrix21modtarget		0x3E 0x14	
modmatrix22modtarget		0x3E 0x15	

modmatrix23modtarget		0x3E 0x16	
modmatrix24modtarget		0x3E 0x17	
modmatrix25modtarget		0x3E 0x18	
modmatrix26modtarget		0x3E 0x19	
modmatrix27modtarget		0x3E 0x1A	
modmatrix28modtarget		0x3E 0x1B	
modmatrix29modtarget		0x3E 0x1C	
modmatrix30modtarget		0x3E 0x1D	
modmatrix31modtarget		0x3E 0x1E	
modmatrix32modtarget		0x3E 0x1F	
modmatrix1depth		0x41 0x40	[0,8192] seemingly only output in increments of 8, and displayed as [-128.0 ... 128.0] in increments of 0.1. To display: if 8192, display 128.0. Else divide by 3.199 (cutting into 2561 even pieces). Then ROUND to nearest integer 0...2560. Then divide by 10. Then subtract 128. The Hydrasynth seems to round 0.5 towards even. **BUG: the Hydrasynth's display does not update to reflect changes from NRPN. You have to page away and come back to see the changes displayed.**
modmatrix2depth		0x41 0x41	
modmatrix3depth		0x41 0x42	
modmatrix4depth		0x41 0x43	
modmatrix5depth		0x41 0x44	
modmatrix6depth		0x41 0x45	
modmatrix7depth		0x41 0x46	
modmatrix8depth		0x41 0x47	
modmatrix9depth		0x41 0x48	
modmatrix10depth		0x41 0x49	
modmatrix11depth		0x41 0x4A	
modmatrix12depth		0x41 0x4B	
modmatrix13depth		0x41 0x4C	
modmatrix14depth		0x41 0x4D	
modmatrix15depth		0x41 0x4E	
modmatrix16depth		0x41 0x4F	
modmatrix17depth		0x41 0x50	
modmatrix18depth		0x41 0x51	
modmatrix19depth		0x41 0x52	
modmatrix20depth		0x41 0x53	
modmatrix21depth		0x41 0x54	
modmatrix22depth		0x41 0x55	
modmatrix23depth		0x41 0x56	
modmatrix24depth		0x41 0x57	
modmatrix25depth		0x41 0x58	
modmatrix26depth		0x41 0x59	
modmatrix27depth		0x41 0x5A	
modmatrix28depth		0x41 0x5B	
modmatrix29depth		0x41 0x5C	
modmatrix30depth		0x41 0x5D	
modmatrix31depth		0x41 0x5E	
modmatrix32depth		0x41 0x5F	

ribbonmode		0x3F 0x3B	MSB=0 LSB=[0,2] Pitch Bend, Theremin, Mod Only
ribbonkeyspan		0x3F 0x3B	MSB=1 LSB=[0,2] 2 Octave, 4 Octave, 6 Octave
ribbonoctave		0x3F 0x3B	MSB=2 LSB=[0,2] 2 Octave, 4 Octave, 6 Octave
ribbonquantize		0x3F 0x3B	MSB=3 LSB=[0,1]
ribbonmodcontrol		0x3F 0x3B	MSB=16 LSB=[0,1]
ribbonglide		0x3F 0x3B	MSB=17 LSB=[0,127]
voicedetune	0x5F	0x3F 0x39	[0,127]
voicestereowidth	0x75	0x3F 0x44	[0,127]
voicevibratoamount		0x3F 0x43	[0,12] in 1.5.5, [0,120] in 2.0.0. In 2.0.0 this is displayed as 0.0 ... 120.0 **Bug in 2.0.0: the Hydrasynth will not emit values less than 13.**
voiceanalogfeel		0x3F 0x46	[0,127]
voicedensity		0x3F 0x3C	[1,8]
voiceglidecurve		0x3F 0x14	[0,128] only displayed if glide=1 displayed as [Log(-64)...0...Exp(64)]
voiceglide	0x42	0x3F 0x12	[0,1]
voiceglidelegto		0x3F 0x1F	[0,1] only displayed if glide=1
voiceglidetime	0x05	0x3F 0x15	[0,127] only displayed if glide=1
voicestereomode		0x3F 0x48	[0,2] Rotate, Alter, Random
voicepolyphony		0x3F 0x13	[0,1]
voicepitchbend		0x3F 0x41	[0,24]
voicevibratoratesyncoff		0x3F 0x42	[0-127] Displayed as the Hz values: 0.3 - 0.6 by 0.01 [0-29] 0.6 - 1.0 by 0.02 [30-49] 1.0 - 1.8 by 0.04 [50-69] 1.8 - 5.0 by 0.1 [70-101] 5.0 - 10.0 by 0.2 [102-127]
voicevibratoratesyncon		0x3F 0x3F	[0,15] VIBRATO_RATES_SYNC_ON
voicerandomphase		0x3F 0x1E	[0,1]
voicewarmmode		0x3F 0x4F	[0,1]
voicevibratobpm		0x3F 0x49	[0,1]
voicesnap		0x3F 0x35	[0,1]

FX Types and Custom Parameters		***NOTE: This Excludes BYPASS which has no parameters, though it does have Dry/Wet***	
Name	CC		Notes
fx1preset ***(Chorus)***		0x3B 0x00	[0,2] in increments of 8 (0, 8, 16), displayed as Chorus 1, Chorus 2, Chorus 3. Presets are: 0. Rate: 0.34Hz Depth 29.0 Offset 0 Feedback 0 Stereo 1. Rate: 0.42Hz Depth 35.0 Offset 0 Feedback 0 Stereo 2. Rate: 1.20Hz Depth 18.0 Offset 0 Feedback 26 Mono **Note: I have not determined the five actual NRPN values for each preset, just their display values.**
fx1param1 (Rate)	0x0C	0x41 0x6F	[0,8192] seemingly only output in increments of 8, and displayed as [0.02,10.00]. All told there are 129 unique display values. To display: if 8192, display 10.00. Else divide by 64 (cutting into 128 even pieces). Then display as follows: # vals Range Increment Value Range 40 0.02 - 0.42 by 0.01 0-40 19 0.42 - 0.80 by 0.02 40-59 24 0.80 - 2.00 by 0.05 59-83 28 2.00 - 4.80 by 0.10 83-111 11 4.80 - 7.00 by 0.20 111-122 7 7.00 - 10.00 by 0.50 122-128 129 TOTAL

fx1param2 (Depth)	0x0D	0x41 0x70	[0,8192] seemingly only output in increments of 8, and displayed as [0.0,128.0] in increments of 0.1. To display: if 8192, display 128.0. Else divide by 6.4 (cutting into 1280 even pieces). Then ROUND to nearest integer 0...1280. Then divide by 10. The Hydrasynth seems to round 0.5 towards even.
fx1param3 (Offset)		0x3B 0x30	[0,360] output in increments of 8 (0, 8, ..., 2880) and displayed as [-180,180]
fx1param4 (Feedback)		0x3B 0x40	[1,127] output as 8, 16, 24, 32, ..., and displayed as [-63,63]
fx1param5 (Mono/Stereo)		0x3B 0x50	[0,1] output as 0 and 8 respectively for "Mono", "Stereo"
fx2preset ***(Flanger)***		0x3B 0x00	[0,2] in increments of 8 (0, 8, 16), displayed as Flanger 1, Flanger 2, Flanger 3. Presets are: 0. Rate: 0.17Hz Depth 109.0 Offset -180 Feedback 45 Stereo 1. Rate: 0.34Hz Depth 130 Offset -180 Feedback 54 Stereo 2. Rate: 0.17Hz Depth 60.0 Offset -180 Feedback -55 Stereo **Note: I have not determined the five actual NRPN values for each preset, just their display values.**
fx2param1 (Rate)	0x0C	0x41 0x6F	[0,8192] seemingly only output in increments of 8, and displayed as [0.02,10.00]. All told there are 129 unique display values. To display: if 8192, display 10.00. Else divide by 64 (cutting into 128 even pieces). Then display as follows: # vals Range Increment Value Range 40 0.02 - 0.42 by 0.01 0-40 19 0.42 - 0.80 by 0.02 40-59 24 0.80 - 2.00 by 0.05 59-83 28 2.00 - 4.80 by 0.10 83-111 11 4.80 - 7.00 by 0.20 111-122 7 7.00 - 10.00 by 0.50 122-128 129 TOTAL
fx2param2 (Depth)	0x0D	0x41 0x70	[0,8192] seemingly only output in increments of 8, and displayed as [0.0,128.0] in increments of 0.1. To display: if 8192, display 128.0. Else divide by 6.4 (cutting into 1280 even pieces). Then ROUND to nearest integer 0...1280. Then divide by 10. The Hydrasynth seems to round 0.5 towards even.
fx2param3 (Offset)		0x3B 0x30	[0,360] output in increments of 8 (0, 8, ..., 2880) and displayed as [-180,180]
fx2param4 (Feedback)		0x3B 0x40	[1,127] output as 8, 16, 24, 32, ..., and displayed as [-63,63]
fx2param5 (Mono/Stereo)		0x3B 0x50	[0,1] output as 0 and 8 respectively for "Mono", "Stereo"
fx3preset ***(Rotary)***		0x3B 0x00	[0,2] in increments of 8 (0, 8, 16), displayed as Rotary 1, Rotary 2, Rotary 3. Presets are: 0. Low-Speed 0.66Hz Hi-Speed 1.35Hz Lo-Depth 26 Hi-Depth 35 Low/High 6 1. Low-Speed 0.26Hz Hi-Speed 0.90Hz Lo-Depth 27 Hi-Depth 29 Low/High 0 2. Low-Speed 0.66Hz Hi-Speed 0.75Hz Lo-Depth 70 Hi-Depth 70 Low/High 4 **Note: I have not determined the five actual NRPN values for each preset, just their display values.**
fx3param1 (Lo-Speed)	0x0C	0x41 0x6F	[0,8192] seemingly only output in increments of 8, and displayed as [0.02,10.00]. All told there are 129 unique display values. To display: if 8192, display 10.00. Else divide by 64 (cutting into 128 even pieces). Then display as follows: # vals Range Increment Value Range 40 0.02 - 0.42 by 0.01 0-40 19 0.42 - 0.80 by 0.02 40-59 24 0.80 - 2.00 by 0.05 59-83 28 2.00 - 4.80 by 0.10 83-111 11 4.80 - 7.00 by 0.20 111-122 7 7.00 - 10.00 by 0.50 122-128 129 TOTAL
fx3param2 (Hi-Speed)	0x0D	0x41 0x70	[0,8192] seemingly only output in increments of 8, and displayed as [0.02,10.00]. All told there are 129 unique display values. To display: if 8192, display 10.00. Else divide by 64 (cutting into 128 even pieces). Then display as follows: # vals Range Increment Value Range 40 0.02 - 0.42 by 0.01 0-40 19 0.42 - 0.80 by 0.02 40-59 24 0.80 - 2.00 by 0.05 59-83 28 2.00 - 4.80 by 0.10 83-111 11 4.80 - 7.00 by 0.20 111-122 7 7.00 - 10.00 by 0.50 122-128 129 TOTAL
fx3param3 (Lo-Depth)		0x3B 0x30	[0,127] output as 0, 8, 16, 24, 32, ...

fx3param4 (Hi-Depth)		0x3B 0x40	[0,127] output as 0, 8, 16, 24, 32, ...
fx3param5 (Low/High)		0x3B 0x50	[1,127] output as 8, 16, 24, 32, ..., and displayed as [-63,63]
fx4preset ***(Phaser)***		0x3B 0x00	[0,2] in increments of 8 (0, 8, 16), displayed as Phaser 1, Phaser 2, Phaser 3. Presets are: 0. Rate: 0.34Hz Feedback 10.0 Depth 111 Phase 74 Offset 0 1. Rate: 0.34Hz Feedback 44.0 Depth 111 Phase 74 Offset -180 2. Rate: 0.13Hz Feedback 32.0 Depth 96 Phase 64 Offset -180 **Note: I have not determined the five actual NRPN values for each preset, just their display values.**
fx4param1 (Rate)	0x0C	0x41 0x6F	[0,8192] seemingly only output in increments of 8, and displayed as [0.02,10.00]. All told there are 129 unique display values. To display: if 8192, display 10.00. Else divide by 64 (cutting into 128 even pieces). Then display as follows: # vals Range Increment Value Range 40 0.02 - 0.42 by 0.01 0-40 19 0.42 - 0.80 by 0.02 40-59 24 0.80 - 2.00 by 0.05 59-83 28 2.00 - 4.80 by 0.10 83-111 11 4.80 - 7.00 by 0.20 111-122 7 7.00 - 10.00 by 0.50 122-128 129 TOTAL
fx4param2 (Feedback)	0x0D	0x41 0x70	[0,8192] seemingly only output in increments of 8, and displayed as [-64.0, 64.0] in increments of 0.1. To display: if 8192, display 64.0. Else divide by 6.4 (cutting into 1280 even pieces). Then ROUND to nearest integer 0...1280. Then divide by 10. Then subtract 64.0. The Hydrasynth seems to round 0.5 towards even.
fx4param3 (Depth)		0x3B 0x30	[0,127] output as 0, 8, 16, 24, 32, ...
fx4param4 (Phase)		0x3B 0x40	[0,127] output as 0, 8, 16, 24, 32, ...
fx4param5 (Offset)		0x3B 0x50	[0,360] output in increments of 8 (0, 8, ..., 2880) and displayed as [-180,180]
fx5preset ***(Lo-Fi)***		0x3B 0x00	[0,1] in increments of 8 (0, 8), displayed as Lo-Fi 1, Lo-Fi 2. Presets are: 0. Cutoff 1600Hz Resonance 4.0 Tele Output 3dB Sampling 5513Hz 1. Cutoff 2000Hz Resonance 2.8 Clean Output 3dB Sampling 8820Hz **Note: I have not determined the five actual NRPN values for each preset, just their display values.**
fx5param1 (Cutoff)	0x0C	0x41 0x6F	[0,8192] seemingly only output in increments of 8, and displayed as [160Hz,20000Hz]. All told there are 128 unique display values. To display: if 8192, display 20000Hz. Else divide by 64 (cutting into 128 even pieces). Then ROUND to nearest integer 0...130. The Hydrasynth seems to round 0.5 towards even. Then display as follows: # vals Range Increment 10 160 - 260 by 10 5 260 - 360 by 20 1 360 23 400 - 1600 by 50 54 1600 - 7000 by 100 15 7000 - 10000 by 200 20 10000 - 20000 by 500 128 TOTAL
fx5param2 (Resonance)	0x0D	0x41 0x70	[0,8184] seemingly only output in increments of 8, and displayed as [1.0,12.0] in increments of 0.1. To display: if 8184, display 12.0. Else divide by 74.4 (cutting into 110 even pieces). Then ROUND to nearest integer 0...110. Then divide by 10. Then add 1.0. The Hydrasynth seems to round 0.5 towards even.
fx5param3 (Filter Type)		0x3B 0x30	[0,5] output as 0, 8, 16, 24, ... representing "Thru", "PWBass", "Radio", "Tele", "Clean", "Low"
fx5param4 (Output)		0x3B 0x40	[-6, 36] output in multiples of 8 as 464, 472, ..., 792, 800
fx5param5 (Sampling)		0x3B 0x50	[1, 16] output as 8, 16, 24, ... representing "44100", "22050", "14700", "11025", "8820", "7350", "6300", "5513", "4900", "4410", "4009", "3675", "3392", "3150", "2940", "2756". Yes, the values go DOWN.
fx6preset ***(Tremolo)***		0x3B 0x00	[0,2] in increments of 8 (0, 8, 16), displayed as Tremolo 1, Tremolo 2, Tremolo 3. Presets are: 0. Rate: 5.40Hz Depth 49.0 Sine Phase 39 PitchMod 0 1. Rate: 5.40Hz Depth 52.0 Sine Phase 39 PitchMod 3 2. Rate: 3.40Hz Depth 100.0 Sine Phase -90 PitchMod 24 **Note: I have not determined the five actual NRPN values for each preset, just their display values.**

fx6param1 (Rate)	0x0C	0x41 0x6F	[0,8192] seemingly only output in increments of 8, and displayed as [0.02,10.00]. All told there are 129 unique display values. To display: if 8192, display 10.00. Else divide by 64 (cutting into 128 even pieces). Then display as follows: # vals Range Increment Value Range 40 0.02 - 0.42 by 0.01 0-40 19 0.42 - 0.80 by 0.02 40-59 24 0.80 - 2.00 by 0.05 59-83 28 2.00 - 4.80 by 0.10 83-111 11 4.80 - 7.00 by 0.20 111-122 7 7.00 - 10.00 by 0.50 122-128 129 TOTAL
fx6param2 (Depth)	0x0D	0x41 0x70	[0,8192] seemingly only output in increments of 8, and displayed as [0.0,128.0] in increments of 0.1. To display: if 8192, display 128.0. Else divide by 6.4 (cutting into 1280 even pieces). Then ROUND to nearest integer 0...1280. Then divide by 10. The Hydrasynth seems to round 0.5 towards even.
fx6param3 (LFO Shape)		0x3B 0x30	[0,1] output as 0 and 8 respectively for "Sine", "Square"
fx6param4 (Phase)		0x3B 0x40	[0,360] output in increments of 8 (0, 8, ..., 2880) and displayed as [-180,180]
fx6param5 (Pitch Mod)		0x3B 0x50	[0,127] output as 0, 8, 16, 24, 32, ...
fx7preset ***(EQ)***		0x3B 0x00	[0,6] in increments of 8 (0, 8, 16, 24, 32, 40, 48), displayed as Flat, Low Boost, Bass Cut, High Cut, Smile, Lo-Fi, Warm. Presets are: 0. Low Gain 0.0 dB High Gain 0.0 dB Mid Gain 0.0 dB Xover Lo 500 Hz Xover Hi 4000 Hz 1. Low Gain 2.8 dB High Gain -2.5 dB Mid Gain -20 dB Xover Lo 380 Hz Xover Hi 4000 Hz 2. Low Gain -7.5 dB High Gain 0.2 dB Mid Gain 1.0 dB Xover Lo 900 Hz Xover Hi 4000 Hz 3. Low Gain 0.0 dB High Gain -10.0 dB Mid Gain 1.0 dB Xover Lo 500 Hz Xover Hi 5008 Hz 4. Low Gain 3.0 dB High Gain 3.0 dB Mid Gain 0.0 dB Xover Lo 500 5Hz Xover Hi 7760 Hz 5. Low Gain -26.5 dB High Gain -36.0 dB Mid Gain 5.0 dB Xover Lo 920 Hz Xover Hi 4000 Hz 6. Low Gain 1.5 dB High Gain -6.5 dB Mid Gain 1.0 dB Xover Lo 768 Hz Xover Hi 7600 Hz **Note: I have not determined the five actual NRPN values for each preset, just their display values.**
fx7param1 (Low Gain)	0x0C	0x41 0x6F	[0,1020] output in multiples of 8 as 0, 8, 16, ..., 8152, 8160. Displayed as [-36.0,24.0 in increments of 0.1] as follows. If 1020, display 24.0. Else divide by 1.7. Then ROUND to nearest integer. Then subtract 360. Then divide by 10.0. The Hydrasynth seems to round 0.5 towards even.
fx7param2 (High Gain)	0x0D	0x41 0x70	[0,1020] output in multiples of 8 as 0, 8, 16, ..., 8152, 8160. Displayed as [-36.0,24.0] in increments of 0.1 as follows. If 1020, display 24.0. Else divide by 1.7. Then ROUND to nearest integer. Then subtract 360. Then divide by 10.0. The Hydrasynth seems to round 0.5 towards even.
fx7param3 (Mid Gain)		0x3B 0x30	[0, 600] output in multiples of 8 as 0, 8, 16, ..., 4792, 4800. Displayed as [-36.0,24.0] in increments of 0.1 as follows. Subtract 360. Then divide by 10.0. **BUG: While High and Low Gain go 0..1020, Mid Gain goes 0..600 but displays the same values. This reeks of a likely bug.**
fx7param4 (Xover Low)		0x3B 0x40	[16,1000] in increments of 1 output as multiples of 8 as 128, 136, ..., 8000 and displayed as multiples of 2 as 32, 34, ..., 2000.
fx7param5 (Xover High)		0x3B 0x50	[32,1000] in increments of 1 output as multiples of 8 as 256, 264, ..., 8000 and displayed as multiples of 16 as 512, 544, ..., 16000.
fxsidechain ***(Compressor)***		0x3B 0x73	[0,4] in steps of 8 (0, 8, 16, 24, 32) "Off", "BPM Duck", "Tap", "Mod In 1", "Mod In 2"
fx8param1	0x0C	0x41 0x6F	
fx8param2 (Ratio)	0x0D	0x41 0x70	[408,8160] seemingly only output in increments of 8, and displayed as [1.0:1,20.0:1] in increments of 0.1. To display: if 8160, display 20.0:1. Else subtract 408, divide by 40.8 (cutting into 190 even pieces). Then ROUND to nearest integer 0...190. Then divide by 10. Then add 1.0. The Hydrasynth seems to round 0.5 towards even.
fx8param3 (Attack)		0x3B 0x30	[1, 400] ms in steps of 8 (8, 16, 24, ...)
fx8param4 (Release)		0x3B 0x40	[5, 560] ms in steps of 8 (40, 48, 56, ...)
fx8param5 (Output)		0x3B 0x50	[0,512] in steps of 8 (0, 8, 16, 24, ...)

fx9preset ***(Distortion)***		0x3B 0x00	[0,2] in increments of 8 (0, 8, 16), displayed as Drive 1, Drive 2, Drive 3. Note, not called "Distortion 1...3". Presets are: 0. Drive 58.0 Tone -26.5 Asym 0 Curve 128 Output -7.7dB 1. Drive 63.0 Tone 38.8 Asym 24 Curve 13 Output -4.6dB 2. Drive 49.4 Tone 17.2 Asym 0 Curve 0 Output -10.6dB **Note: I have not determined the five actual NRPN values for each preset, just their display values.**
fx9param1 (Drive)	0x0C	0x41 0x6F	[0,8192] seemingly only output in increments of 8, and displayed as [0.0,128.0] in increments of 0.1. To display: if 8192, display 128.0. Else divide by 6.4 (cutting into 1280 even pieces). Then ROUND to nearest integer 0...1280. Then divide by 10. The Hydrasynth seems to round 0.5 towards even.
fx9param2 (Tone)	0x0D	0x41 0x70	[0,8192] seemingly only output in increments of 8, and displayed as [-64.0, 64.0] in increments of 0.1. To display: if 8192, display 64.0. Else divide by 6.4 (cutting into 1280 even pieces). Then ROUND to nearest integer 0...1280. Then divide by 10. Then subtract 64.0. The Hydrasynth seems to round 0.5 towards even.
fx9param3 (Asym)		0x3B 0x30	[0,128] in steps of 8 (0, 8, 16, 24, ...)
fx9param4		0x3B 0x40	[0,128] in steps of 8 (0, 8, 16, 24, ...)
fx9param5 (Output)		0x3B 0x50	[-36.0,24.0] dB in increments of 0.1 output as in multiples of 8 as 0, 8, 16, ..., 4800
Patch Parameters without NRPN/CC Values			
Name			**Description**
name			16 ASCII bytes
category			[0,18] CATEGORIES
color			[0,31] COLORS
macro1name			8 ASCII bytes
macro2name			
macro3name			
macro4name			
macro5name			
macro6name			
macro7name			
macro8name			
voicescale			Instead of sending one message, Voice Scale sends many NRPN messages. It starts with 0x3F 0x45 -> 1 (which is now voice sustain?). It then sends 0x3F 0x52 -> MSB=[0...11] LSB=[0...12] where LSB = MSB + 1 is the standard for "C", and for C#/Db it's LSB = MSB + 2 Mod 12, then D is LSB = MSB + 3 Mod 12 and so on -- it appears to be mapping out a scale. If the LSB is 0, then I believe this indicates that the key is not used.
voicekeylock			Voice Key Lock seems to send out the same stuff as Voice Scale
New 2.0.0 Parameters			***Note: there are some existing parameters with new 2.0.0 features, as noted earlier***
Name	**CC**	**Range**	**Notes**
voicesustain		0x71 0x00	[0, 2] emitted as [0, 8, 16] representing Sustain, Sostenuto, and Mod Only **BUG: The Hydrasynth emits in multiples of 8, but expects inputs in multiples of 1**
osc1bitreduction		0x3F 0x40	[0,11] emitted as MSB=0 LSB=val, representing OFF, 16, 12, 10, 9, 8, 7, 6, 5, 4, 3, 2
osc2bitreduction		0x3F 0x40	[0,11] emitted as MSB=1 LSB=val, representing OFF, 16, 12, 10, 9, 8, 7, 6, 5, 4, 3, 2
osc3bitreduction		0x3F 0x40	[0,11] emitted as MSB=2 LSB=val, representing OFF, 16, 12, 10, 9, 8, 7, 6, 5, 4, 3, 2
voice1modulation		0x71 0x01	[0,256] emitted in multiples of 8 as 0, 8, 16, ..., 2048, representing -128 ... + 128 **BUG: The Hydrasynth emits in multiples of 8, but expects inputs in multiples of 1**
voice2modulation		0x71 0x02	[0,256] emitted in multiples of 8 as 0, 8, 16, ..., 2048, representing -128 ... + 128

voice3modulation		0x71 0x03	[0,256] emitted in multiples of 8 as 0, 8, 16, ..., 2048, representing -128 ... + 128
voice4modulation		0x71 0x04	[0,256] emitted in multiples of 8 as 0, 8, 16, ..., 2048, representing -128 ... + 128
voice5modulation		0x71 0x05	[0,256] emitted in multiples of 8 as 0, 8, 16, ..., 2048, representing -128 ... + 128
voice6modulation		0x71 0x06	[0,256] emitted in multiples of 8 as 0, 8, 16, ..., 2048, representing -128 ... + 128
voice7modulation		0x71 0x07	[0,256] emitted in multiples of 8 as 0, 8, 16, ..., 2048, representing -128 ... + 128
voice8modulation		0x71 0x08	[0,256] emitted in multiples of 8 as 0, 8, 16, ..., 2048, representing -128 ... + 128
env1quantize		0x71 0x11	[0,8] emitted in multiples of 8 as 0, 1, 16, ..., 64, representing Off, 257, 129, 65, 33, 17, 9, 5, 3 **BUG: The Hydrasynth emits in multiples of 8, but expects inputs in multiples of 1**
env2quantize		0x71 0x12	[0,8] emitted in multiples of 8 as 0, 1, 16, ..., 64, representing Off, 257, 129, 65, 33, 17, 9, 5, 3
env3quantize		0x71 0x13	[0,8] emitted in multiples of 8 as 0, 1, 16, ..., 64, representing Off, 257, 129, 65, 33, 17, 9, 5, 3
env4quantize		0x71 0x14	[0,8] emitted in multiples of 8 as 0, 1, 16, ..., 64, representing Off, 257, 129, 65, 33, 17, 9, 5, 3
env5quantize		0x71 0x15	[0,8] emitted in multiples of 8 as 0, 1, 16, ..., 64, representing Off, 257, 129, 65, 33, 17, 9, 5, 3
lfo1quantize		0x71 0x16	[0,8] emitted in multiples of 8 as 0, 1, 16, ..., 64, representing Off, 257, 129, 65, 33, 17, 9, 5, 3 **BUG: The Hydrasynth emits in multiples of 8, but expects inputs in multiples of 1**
lfo2quantize		0x71 0x17	[0,8] emitted in multiples of 8 as 0, 1, 16, ..., 64, representing Off, 257, 129, 65, 33, 17, 9, 5, 3
lfo3quantize		0x71 0x18	[0,8] emitted in multiples of 8 as 0, 1, 16, ..., 64, representing Off, 257, 129, 65, 33, 17, 9, 5, 3
lfo4quantize		0x71 0x19	[0,8] emitted in multiples of 8 as 0, 1, 16, ..., 64, representing Off, 257, 129, 65, 33, 17, 9, 5, 3
lfo5quantize		0x71 0x1A	[0,8] emitted in multiples of 8 as 0, 1, 16, ..., 64, representing Off, 257, 129, 65, 33, 17, 9, 5, 3

Parameters with CC Values			
Name	**CC**	**Range**	**Notes**
osc1cent	0x6F	14-114	-50 ... +50
osc1wavscan	0x18	0-127	
osc2cent	0x70		
osc2wavscan	0x1A		
osc3cent	0x71		
mutator1ratio	0x1D	0-127	
mutator1depth	0x1E	0-127	
mutator1wet	0x1F	0-127	
mutator2ratio	0x21		
mutator2depth	0x22		
mutator2wet	0x23		
mutator3ratio	0x24		
mutator3depth	0x25		
mutator3wet	0x27		
mutator4ratio	0x28		
mutator4depth	0x29		
mutator4wet	0x2A		
ringmoddepth	0x2B		
mixerosc1vol	0x2C	0-127	It seems that 128.0 is CC 127, and <128.0 is 126. Maybe rounded up?
mixerosc1pan	0x2D	0-127	-64 ... + 64 0 -> 64
mixerosc1filterratio	0x76	0-127	100:0 to 0:100 50:50 -> 64
mixerosc2vol	0x2E		

mixerosc2pan	0x2F		
mixerosc2filterratio	0x77		
mixerosc3vol	0x30		
mixerosc3pan	0x31		
mixerosc3filterratio	0x72		
mixernoisevol	0x03		
mixernoisepan	0x08		
mixernoisefilterratio	0x73		
mixerringmodvol	0x09		
mixerringmodpan	0x0A		
mixerringmodfilterratio	0x74		
filter1cutoff	0x4A	0-127	
filter1drive	0x32	0-127	
filter1resonance	0x47	0-127	
filter1keytrack	0x33	0-127	100% -> 96 0% -> 64
filter1lfo1amount	0x34	0-127	-64 ... + 64 0 -> 64
filter1velenv	0x35	0-127	-64 ... + 64 0 -> 64
filter1env1amount	0x36	0-127	-64 ... + 64 0 -> 64
filter2cutoff	0x37		
filter2resonance	0x38		
filter2morph	0x39	0-127	
filter2keytrack	0x3A		
filter2lfo1amount	0x3B		
filter2velenv	0x3C		
filter2env1amount	0x3D		
amplfo2amount	0x3E	0-127	-64 ... + 64 0 -> 64
prefxwet	0x5D	0-127	0-100% 50% -> 64
prefxparam1	0x0C	0-127	
prefxparam2	0x0D		
delaywet	0x5C	0-127	0-100% 50% -> 64
delayfeedback	0x0E	0-127	
delaytimesyncoff	0x0F	0-127	
delaywettone	0x3F	0-127	-64 ... + 64 0 -> 64
reverbwet	0x5B	0-127	0-100% 50% -> 64
reverbtime	0x41	0-127	Freeze -> 127
reverbtone	0x43	0-127	-64 ... + 64 0 -> 64
postfxwet	0x5E	0-127	0-100% 50% -> 64
postfxparam1	0x44	0-127	
postfxparam2	0x45		
lfo1level	0x46	0-127	
lfo1ratesyncoff	0x48	0-127	
lfo2level	0x1C		
lfo2ratesyncoff	0x49		
lfo3level	0x4B		
lfo3ratesyncoff	0x4C		
lfo4level	0x4D		

lfo4ratesyncoff	0x4E		
lfo5level	0x4F		
lfo5ratesyncoff	0x50		
env1attacksyncoff	0x51	0-127	
env1decaysyncoff	0x52	0-127	
env1sustain	0x53	0-127	
env1releasesyncoff	0x54	0-127	
env2attacksyncoff	0x55		
env2decaysyncoff	0x56		
env2sustain	0x57		
env2releasesyncoff	0x58		
env3attacksyncoff	0x59		
env3decaysyncoff	0x5A		
env3sustain	0x60		
env3releasesyncoff	0x61		
env4attacksyncoff	0x19		
env4decaysyncoff	0x1B		
env4sustain	0x7D		
env4releasesyncoff	0x7C		
env5attacksyncoff	0x66		
env5decaysyncoff	0x67		
env5sustain	0x68		
env5releasesyncoff	0x69		
arpdivision	0x6A	0-11	
arpgate	0x6B	5-100	5%...100%
arpoctave	0x78	1-4	
arpmode	0x6C	0-7	
arplength	0x7A	0-32	0 = Default
arpratchet	0x6D	0-127	
arpchance	0x6E	0-100	0% ... 100%
macro1panelvalue	0x10	0-127	[0,8192] seemingly only output in increments of 8, and displayed as [0, 128.0] in increments of 0.1. To display: if 8192, display 128.0. Else divide by 6.4 (cutting into 1280 even pieces). Then ROUND to nearest integer 0...1280. Then divide by 10. The Hydrasynth seems to round 0.5 towards even.
macro2panelvalue	0x11		
macro3panelvalue	0x12		
macro4panelvalue	0x13		
macro5panelvalue	0x14		
macro6panelvalue	0x15		
macro7panelvalue	0x16		
macro8panelvalue	0x17		
voicedetune	0x5F	0-127	
voicestereowidth	0x75	0-127	
voiceglide	0x42	0-1	Off, On
voiceglidetime	0x05	0-127	

Some Undocumented NRPN Messages			
Name		**NRPN**	**Notes**
Arpeggiator Tempo		0x3F 0x38	[300, 2400], displayed as 30.0...240.0. Emitted irregularly, though probably any value is permitted. **Bug: this is only emitted. The Hydrasynth ignores incoming values.**
Chord Button Pressed		0x3F 0x16	MSB = 0x00 LSB = 0x00
Occasionally when patch select dial is turned. Unknown Purpose.		0x3F 0x38	MSB = 0x09 LSB = various
Emitted when Tap Trig turned On on panel		0x3F 0x57	MSB = 0x00 LSB = 0x00
Emitted when ribbon strip used as pitch bend. Unknown purpose.		0x57 0x00	Multiple message values sent in a sequence, such as [0x3 0x81], [0x4 0x55], and [0x4 0x38] **Bug: this seriously screws with downstream synths and so NRPN must be turned off in order to use the Hydrasynth as a controller**

Non-Patch NRPN Messages			
Name		**NRPN**	**Notes**
allosccent		0x41 0x04	[-50,+50] 2-byte 2's Complement. Thus it goes 0=0, 1=1, 2=2, ..., 50=50, then 8142 = -50, 8143 =-49, ..., 8191 = -1
osc1solowavescan1		0x3F 0x1b	MSB = Wavescan [0,7] LSB = [0,1] **NOTE: In fact it's not clear what these do if anything.**
osc1solowavescan2		0x3F 0x1b	
osc1solowavescan3		0x3F 0x1b	
osc1solowavescan4		0x3F 0x1b	
osc1solowavescan5		0x3F 0x1b	
osc1solowavescan6		0x3F 0x1b	
osc1solowavescan7		0x3F 0x1b	
osc1solowavescan8		0x3F 0x1b	
osc2solowavescan1		0x3F 0x1c	
osc2solowavescan2		0x3F 0x1c	
osc2solowavescan3		0x3F 0x1c	
osc2solowavescan4		0x3F 0x1c	
osc2solowavescan5		0x3F 0x1c	
osc2solowavescan6		0x3F 0x1c	
osc2solowavescan7		0x3F 0x1c	
osc2solowavescan8		0x3F 0x1c	
mixersolo		0x3F 0x25	[0, 1]
macro1panelvalue	0x10	0x3F 0x58	[Range and display not determined]
macro2panelvalue	0x11	0x3F 0x59	
macro3panelvalue	0x12	0x3F 0x5A	
macro4panelvalue	0x13	0x3F 0x5B	
macro5panelvalue	0x14	0x3F 0x5C	
macro6panelvalue	0x15	0x3F 0x5D	
macro7panelvalue	0x16	0x3F 0x5E	
macro8panelvalue	0x17	0x3F 0x5F	
