

Circuit MIDI Parameters

Synths 1 & 2

(Send messages on MIDI Channel 1 for Synth 1 and Channel 2 for Synth 2)

Section	Parameter	CC / NRPN	Control No.	Range	Default Value	Notes
Voice						
	Polyphony Mode	CC	3	0 – 2	2	0=Mono, 1=Mono AG, 2=Poly
	Portamento Rate	CC	5	0 – 127	0	
	Pre-Glide	CC	9	52 – 76 (-12 – 12)	64 (0)	
	Keyboard Octave	CC	13	58 – 69 (-6 – 5)	64 (0)	60=-4 Octaves, 64=0 Octaves, 68=+4 Octaves
Oscillator						
	osc 1 wave	CC	19	0 – 29	2	See Osc Waveform Table
	osc 1 wave interpolate	CC	20	0 – 127	0	
	osc 1 pulse width index	CC	21	0 – 127 (-64 – 63)	127 (63)	
	osc 1 virtual sync depth	CC	22	0 – 127	0	
	osc 1 density	CC	24	0 – 127	0	
	osc 1 density detune	CC	25	0 – 127	0	
	osc 1 semitones	CC	26	0 – 127 (-64 – 63)	64 (0)	
	osc 1 cents	CC	27	0 – 127 (-64 – 63)	64 (0)	
	osc 1 pitchbend	CC	28	52 – 76 (-12 – 12)	76 (12)	
	osc 2 wave	CC	29	0 – 29	2	See Osc Waveform Table
	osc 2 wave interpolate	CC	30	0 – 127	0	
	osc 2 pulse width index	CC	31	0 – 127 (-64 – 63)	127 (63)	
	osc 2 virtual sync depth	CC	33	0 – 127	0	
	osc 2 density	CC	35	0 – 127	0	
	osc 2 density detune	CC	36	0 – 127	0	
	osc 2 semitones	CC	37	0 – 127 (-64 – 63)	64 (0)	
	osc 2 cents	CC	39	0 – 127 (-64 – 63)	64 (0)	
	osc 2 pitchbend	CC	40	52 – 76 (-12 – 12)	76 (12)	
Mixer						
	osc 1 level	CC	51	0 – 127	127	
	osc 2 level	CC	52	0 – 127	0	
	ring mod level	CC	54	0 – 127	0	
	noise level	CC	56	0 – 127	0	
	pre FX level	CC	58	52 – 82 (-12 – 18)	64 (0)	-12 to +18 dB
	post FX level	CC	59	52 – 82 (-12 – 18)	64 (0)	-12 to +18 dB
Filter						
	routing	CC	60	0 – 2	0	0=Normal 1=Osc 1 bypasses the filter 2=Osc 1 + Osc 2 bypasses the filter
	drive	CC	63	0 – 127	0	
	drive type	CC	65	0 – 6	0	See Filter Table
	type	CC	68	0 – 5	1	
	frequency	CC	74	0 – 127	127	
	tracking	CC	69	0 – 127	127	
	resonance	CC	71	0 – 127	0	
	Q normalize	CC	78	0 – 127	64	
	env 2 to frequency	CC	79	0 – 127 (-64 – 63)	64 (0)	
Envelope						
	env 1 velocity	CC	108	0 – 127 (-63 – 64)	64 (0)	
	env 1 attack	CC	73	0 – 127	2	
	env 1 decay	CC	75	0 – 127	90	
	env 1 sustain	CC	70	0 – 127	127	
	env 1 release	CC	72	0 – 127	40	
	env 2 velocity	NRPN	0:0	0 – 127 (-63 – 64)	64 (0)	
	env 2 attack	NRPN	0:1	0 – 127	2	
	env 2 decay	NRPN	0:2	0 – 127	75	
	env 2 sustain	NRPN	0:3	0 – 127	35	
	env 2 release	NRPN	0:4	0 – 127	45	
	env 3 delay	NRPN	0:14	0 – 127	0	
	env 3 attack	NRPN	0:15	0 – 127	10	
	env 3 decay	NRPN	0:16	0 – 127	70	
	env 3 sustain	NRPN	0:17	0 – 127	64	
	env 3 release	NRPN	0:18	0 – 127	40	
LFO						
	lfo 1 waveform	NRPN	0:70	0 – 37	0	See LFO waveform table
	lfo 1 phase offset	NRPN	0:71	0 – 119	0	(0° - 357°) in steps of 3°
	lfo 1 slew rate	NRPN	0:72	0 – 127	0	
	lfo 1 delay	NRPN	0:74	0 – 127	0	
	lfo 1 delay sync	NRPN	0:75	0 – 35	0	
	lfo 1 rate	NRPN	0:76	0 – 127	68	
	lfo 1 rate sync	NRPN	0:77	0 – 35	0	

	lfo 1 one shot	NRPN	0:122	12 – 13	12 (OFF)	12=OFF, 13=ON
	lfo 1 key sync	NRPN	0:122	14 – 15	14 (OFF)	14=OFF, 15=ON
	lfo 1 common sync	NRPN	0:122	16 – 17	16 (OFF)	16=OFF, 17=ON
	lfo 1 delay trigger	NRPN	0:122	18 – 19	18 (OFF)	18=OFF, 19=ON
	lfo 1 fade mode	NRPN	0:123	0 – 3	0	0=Fade In, 1=Fade Out, 2=Gate In, 3=Gate Out
	lfo 2 waveform	NRPN	0:79	0 – 37	0	See LFO Waveform Table
	lfo 2 phase offset	NRPN	0:80	0 – 119	0	(0° - 357°) in steps of 3°
	lfo 2 slew rate	NRPN	0:81	0 – 127	0	
	lfo 2 delay	NRPN	0:83	0 – 127	0	
	lfo 2 delay sync	NRPN	0:84	0 – 35	0	
	lfo 2 rate	NRPN	0:85	0 – 127	68	
	lfo 2 rate sync	NRPN	0:86	0 – 35	0	
	lfo 2 one shot	NRPN	0:122	22 – 23	22 (OFF)	22=OFF, 23=ON
	lfo 2 key sync	NRPN	0:122	24 – 25	24 (OFF)	24=OFF, 25=ON
	lfo 2 common sync	NRPN	0:122	26 – 27	26 (OFF)	26=OFF, 27=ON
	lfo 2 delay trigger	NRPN	0:122	28 – 29	28 (OFF)	28=OFF, 29=ON
	lfo 2 fade mode	NRPN	0:123	4 – 7	4	4=Fade In, 5=Fade Out, 6=Gate In, 7=Gate Out
Effects and EQ						
	distortion level	CC	91	0 – 127	0	
	chorus level	CC	93	0 – 127	0	
	EQ bass frequency	NRPN	0:104	0 – 127	64	
	EQ bass level	NRPN	0:105	0 – 127 (-63 – 64)	64 (0)	
	EQ mid frequency	NRPN	0:106	0 – 127	64	
	EQ mid level	NRPN	0:107	0 – 127 (-63 – 64)	64 (0)	
	EQ treble frequency	NRPN	0:108	0 – 127	125	
	EQ treble level	NRPN	0:109	0 – 127 (-63 – 64)	64 (0)	
	distortion type	NRPN	1:0	0 – 6	0	See Distortion Table
	distortion compensation	NRPN	1:1	0 – 127	100	
	chorus type	NRPN	1:24	0 – 1	1	0=Phaser, 1=Chorus
	chorus rate	NRPN	1:25	0 – 127	84 (20)	
	chorus rate sync	NRPN	1:26	0 – 35	0	
	chorus feedback	NRPN	1:27	0 – 127 (-63 – 64)	74 (10)	
	chorus mod depth	NRPN	1:28	0 – 127	64	
	chorus delay	NRPN	1:29	0 – 127	64	
Mod Matrix						
	mod matrix 1 source 1	NRPN	1:83	0 – 12	0	See Mod Matrix Table
	mod matrix 1 source 2	NRPN	1:84	0 – 12	0	See Mod Matrix Table
	mod matrix 1 depth	NRPN	1:86	0 – 127 (-63 – 64)	64 (0)	
	mod matrix 1 destination	NRPN	1:87	0 – 17	0	See Mod Matrix Table
	mod matrix 2 source 1	NRPN	1:88	0 – 12	0	See Mod Matrix Table
	mod matrix 2 source 2	NRPN	1:89	0 – 12	0	See Mod Matrix Table
	mod matrix 2 depth	NRPN	1:91	0 – 127 (-63 – 64)	64 (0)	
	mod matrix 2 destination	NRPN	1:92	0 – 17	0	See Mod Matrix Table
	mod matrix 3 source 1	NRPN	1:93	0 – 12	0	See Mod Matrix Table
	mod matrix 3 source 2	NRPN	1:94	0 – 12	0	See Mod Matrix Table
	mod matrix 3 depth	NRPN	1:96	0 – 127 (-63 – 64)	64 (0)	
	mod matrix 3 destination	NRPN	1:97	0 – 17	0	See Mod Matrix Table
	mod matrix 4 source 1	NRPN	1:98	0 – 12	0	See Mod Matrix Table
	mod matrix 4 source 2	NRPN	1:99	0 – 12	0	See Mod Matrix Table
	mod matrix 4 depth	NRPN	1:101	0 – 127 (-63 – 64)	64 (0)	
	mod matrix 4 destination	NRPN	1:102	0 – 17	0	See Mod Matrix Table
	mod matrix 5 source 1	NRPN	1:103	0 – 12	0	See Mod Matrix Table
	mod matrix 5 source 2	NRPN	1:104	0 – 12	0	See Mod Matrix Table
	mod matrix 5 depth	NRPN	1:106	0 – 127 (-63 – 64)	64 (0)	
	mod matrix 5 destination	NRPN	1:107	0 – 17	0	See Mod Matrix Table
	mod matrix 6 source 1	NRPN	1:108	0 – 12	0	See Mod Matrix Table
	mod matrix 6 source 2	NRPN	1:109	0 – 12	0	See Mod Matrix Table
	mod matrix 6 depth	NRPN	1:111	0 – 127 (-63 – 64)	64 (0)	
	mod matrix 6 destination	NRPN	1:112	0 – 17	0	See Mod Matrix Table
	mod matrix 7 source 1	NRPN	1:113	0 – 12	0	See Mod Matrix Table
	mod matrix 7 source 2	NRPN	1:114	0 – 12	0	See Mod Matrix Table
	mod matrix 7 depth	NRPN	1:116	0 – 127 (-63 – 64)	64 (0)	
	mod matrix 7 destination	NRPN	1:117	0 – 17	0	See Mod Matrix Table
	mod matrix 8 source 1	NRPN	1:118	0 – 12	0	See Mod Matrix Table
	mod matrix 8 source 2	NRPN	1:119	0 – 12	0	See Mod Matrix Table
	mod matrix 8 depth	NRPN	1:121	0 – 127 (-63 – 64)	64 (0)	
	mod matrix 8 destination	NRPN	1:122	0 – 17	0	See Mod Matrix Table
	mod matrix 9 source 1	NRPN	1:123	0 – 12	0	See Mod Matrix Table
	mod matrix 9 source 2	NRPN	1:124	0 – 12	0	See Mod Matrix Table
	mod matrix 9 depth	NRPN	1:126	0 – 127 (-63 – 64)	64 (0)	
	mod matrix 9 destination	NRPN	1:127	0 – 17	0	See Mod Matrix Table
	mod matrix 10 source 1	NRPN	2:0	0 – 12	0	See Mod Matrix Table
	mod matrix 10 source 2	NRPN	2:1	0 – 12	0	See Mod Matrix Table

	mod matrix 10 depth	NRPN	2:3	0 – 127 (-63 – 64)	64 (0)	
	mod matrix 10 destination	NRPN	2:4	0 – 17	0	See Mod Matrix Table
	mod matrix 11 source 1	NRPN	2:5	0 – 12	0	See Mod Matrix Table
	mod matrix 11 source 2	NRPN	2:6	0 – 12	0	See Mod Matrix Table
	mod matrix 11 depth	NRPN	2:8	0 – 127 (-63 – 64)	64 (0)	
	mod matrix 11 destination	NRPN	2:9	0 – 17	0	See Mod Matrix Table
	mod matrix 12 source 1	NRPN	2:10	0 – 12	0	See Mod Matrix Table
	mod matrix 12 source 2	NRPN	2:11	0 – 12	0	See Mod Matrix Table
	mod matrix 12 depth	NRPN	2:13	0 – 127 (-63 – 64)	64 (0)	
	mod matrix 12 destination	NRPN	2:14	0 – 17	0	See Mod Matrix Table
	mod matrix 13 source 1	NRPN	2:15	0 – 12	0	See Mod Matrix Table
	mod matrix 13 source 2	NRPN	2:16	0 – 12	0	See Mod Matrix Table
	mod matrix 13 depth	NRPN	2:18	0 – 127 (-63 – 64)	64 (0)	
	mod matrix 13 destination	NRPN	2:19	0 – 17	0	See Mod Matrix Table
	mod matrix 14 source 1	NRPN	2:20	0 – 12	0	See Mod Matrix Table
	mod matrix 14 source 2	NRPN	2:21	0 – 12	0	See Mod Matrix Table
	mod matrix 14 depth	NRPN	2:23	0 – 127 (-63 – 64)	64 (0)	
	mod matrix 14 destination	NRPN	2:24	0 – 17	0	See Mod Matrix Table
	mod matrix 15 source 1	NRPN	2:25	0 – 12	0	See Mod Matrix Table
	mod matrix 15 source 2	NRPN	2:27	0 – 12	0	See Mod Matrix Table
	mod matrix 15 depth	NRPN	2:28	0 – 127 (-63 – 64)	64 (0)	
	mod matrix 15 destination	NRPN	2:29	0 – 17	0	See Mod Matrix Table
	mod matrix 16 source 1	NRPN	2:30	0 – 12	0	See Mod Matrix Table
	mod matrix 16 source 2	NRPN	2:32	0 – 12	0	See Mod Matrix Table
	mod matrix 16 depth	NRPN	2:33	0 – 127 (-63 – 64)	64 (0)	
	mod matrix 16 destination	NRPN	2:34	0 – 17	0	See Mod Matrix Table
	mod matrix 17 source 1	NRPN	2:35	0 – 12	0	See Mod Matrix Table
	mod matrix 17 source 2	NRPN	2:37	0 – 12	0	See Mod Matrix Table
	mod matrix 17 depth	NRPN	2:38	0 – 127 (-63 – 64)	64 (0)	
	mod matrix 17 destination	NRPN	2:39	0 – 17	0	See Mod Matrix Table
	mod matrix 18 source 1	NRPN	2:40	0 – 12	0	See Mod Matrix Table
	mod matrix 18 source 2	NRPN	2:42	0 – 12	0	See Mod Matrix Table
	mod matrix 18 depth	NRPN	2:43	0 – 127 (-63 – 64)	64 (0)	
	mod matrix 18 destination	NRPN	2:44	0 – 17	0	See Mod Matrix Table
	mod matrix 19 source 1	NRPN	2:45	0 – 12	0	See Mod Matrix Table
	mod matrix 19 source 2	NRPN	2:47	0 – 12	0	See Mod Matrix Table
	mod matrix 19 depth	NRPN	2:48	0 – 127 (-63 – 64)	64 (0)	
	mod matrix 19 destination	NRPN	2:49	0 – 17	0	See Mod Matrix Table
	mod matrix 20 source 1	NRPN	2:50	0 – 12	0	See Mod Matrix Table
	mod matrix 20 source 2	NRPN	2:52	0 – 12	0	See Mod Matrix Table
	mod matrix 20 depth	NRPN	2:53	0 – 127 (-63 – 64)	64 (0)	
	mod matrix 20 destination	NRPN	2:54	0 – 17	0	See Mod Matrix Table
Macro Knob						
	macro knob 1 position	CC	80	0 – 127	0	
	macro knob 1 destination A	NRPN	3:0	0 – 70	0	
	macro knob 1 start position A	NRPN	3:1	0 – 127	0	
	macro knob 1 end position A	NRPN	3:2	0 – 127	127	
	macro knob 1 depth A	NRPN	3:3	0 – 127 (-64 – 63)	64 (0)	
	macro knob 1 destination B	NRPN	3:4	0 – 70	0	
	macro knob 1 start position B	NRPN	3:5	0 – 127	0	
	macro knob 1 end position B	NRPN	3:6	0 – 127	127	
	macro knob 1 depth B	NRPN	3:7	0 – 127 (-64 – 63)	64 (0)	
	macro knob 1 destination C	NRPN	3:8	0 – 70	0	
	macro knob 1 start position C	NRPN	3:9	0 – 127	0	
	macro knob 1 end position C	NRPN	3:10	0 – 127	127	
	macro knob 1 depth C	NRPN	3:11	0 – 127 (-64 – 63)	64 (0)	
	macro knob 1 destination D	NRPN	3:12	0 – 70	0	
	macro knob 1 start position D	NRPN	3:13	0 – 127	0	
	macro knob 1 end position D	NRPN	3:14	0 – 127	127	
	macro knob 1 depth D	NRPN	3:15	0 – 127 (-64 – 63)	64 (0)	
	macro knob 2 position	CC	81	0 – 127	0	
	macro knob 2 destination A	NRPN	3:16	0 – 70	0	
	macro knob 2 start position A	NRPN	3:17	0 – 127	0	
	macro knob 2 end position A	NRPN	3:18	0 – 127	127	
	macro knob 2 depth A	NRPN	3:19	0 – 127 (-64 – 63)	64 (0)	
	macro knob 2 destination B	NRPN	3:20	0 – 70	0	
	macro knob 2 start position B	NRPN	3:21	0 – 127	0	
	macro knob 2 end position B	NRPN	3:22	0 – 127	127	
	macro knob 2 depth B	NRPN	3:23	0 – 127 (-64 – 63)	64 (0)	
	macro knob 2 destination C	NRPN	3:24	0 – 70	0	
	macro knob 2 start position C	NRPN	3:25	0 – 127	0	
	macro knob 2 end position C	NRPN	3:26	0 – 127	127	
	macro knob 2 depth C	NRPN	3:27	0 – 127 (-64 – 63)	64 (0)	

	macro knob 2 destination D	NRPN	3:28	0 – 70	0	
	macro knob 2 start position D	NRPN	3:29	0 – 127	0	
	macro knob 2 end position D	NRPN	3:30	0 – 127	127	
	macro knob 2 depth D	NRPN	3:31	0 – 127 (-64 – 63)	64 (0)	
	macro knob 3 position	CC	82	0 – 127	0	
	macro knob 3 destination A	NRPN	3:32	0 – 70	0	
	macro knob 3 start position A	NRPN	3:33	0 – 127	0	
	macro knob 3 end position A	NRPN	3:34	0 – 127	127	
	macro knob 3 depth A	NRPN	3:35	0 – 127 (-64 – 63)	64 (0)	
	macro knob 3 destination B	NRPN	3:36	0 – 70	0	
	macro knob 3 start position B	NRPN	3:37	0 – 127	0	
	macro knob 3 end position B	NRPN	3:38	0 – 127	127	
	macro knob 3 depth B	NRPN	3:39	0 – 127 (-64 – 63)	64 (0)	
	macro knob 3 destination C	NRPN	3:40	0 – 70	0	
	macro knob 3 start position C	NRPN	3:41	0 – 127	0	
	macro knob 3 end position C	NRPN	3:42	0 – 127	127	
	macro knob 3 depth C	NRPN	3:43	0 – 127 (-64 – 63)	64 (0)	
	macro knob 3 destination D	NRPN	3:44	0 – 70	0	
	macro knob 3 start position D	NRPN	3:45	0 – 127	0	
	macro knob 3 end position D	NRPN	3:46	0 – 127	127	
	macro knob 3 depth D	NRPN	3:47	0 – 127 (-64 – 63)	64 (0)	
	macro knob 4 position	CC	83	0 – 127	0	
	macro knob 4 destination A	NRPN	3:48	0 – 70	0	
	macro knob 4 start position A	NRPN	3:49	0 – 127	0	
	macro knob 4 end position A	NRPN	3:50	0 – 127	127	
	macro knob 4 depth A	NRPN	3:51	0 – 127 (-64 – 63)	64 (0)	
	macro knob 4 destination B	NRPN	3:52	0 – 70	0	
	macro knob 4 start position B	NRPN	3:53	0 – 127	0	
	macro knob 4 end position B	NRPN	3:54	0 – 127	127	
	macro knob 4 depth B	NRPN	3:55	0 – 127 (-64 – 63)	64 (0)	
	macro knob 4 destination C	NRPN	3:56	0 – 70	0	
	macro knob 4 start position C	NRPN	3:57	0 – 127	0	
	macro knob 4 end position C	NRPN	3:58	0 – 127	127	
	macro knob 4 depth C	NRPN	3:59	0 – 127 (-64 – 63)	64 (0)	
	macro knob 4 destination D	NRPN	3:60	0 – 70	0	
	macro knob 4 start position D	NRPN	3:61	0 – 127	0	
	macro knob 4 end position D	NRPN	3:62	0 – 127	127	
	macro knob 4 depth D	NRPN	3:63	0 – 127 (-64 – 63)	64 (0)	
	macro knob 5 position	CC	84	0 – 127	0	
	macro knob 5 destination A	NRPN	3:64	0 – 70	0	
	macro knob 5 start position A	NRPN	3:65	0 – 127	0	
	macro knob 5 end position A	NRPN	3:66	0 – 127	127	
	macro knob 5 depth A	NRPN	3:67	0 – 127 (-64 – 63)	64 (0)	
	macro knob 5 destination B	NRPN	3:68	0 – 70	0	
	macro knob 5 start position B	NRPN	3:69	0 – 127	0	
	macro knob 5 end position B	NRPN	3:70	0 – 127	127	
	macro knob 5 depth B	NRPN	3:71	0 – 127 (-64 – 63)	64 (0)	
	macro knob 5 destination C	NRPN	3:72	0 – 70	0	
	macro knob 5 start position C	NRPN	3:73	0 – 127	0	
	macro knob 5 end position C	NRPN	3:74	0 – 127	127	
	macro knob 5 depth C	NRPN	3:75	0 – 127 (-64 – 63)	64 (0)	
	macro knob 5 destination D	NRPN	3:76	0 – 70	0	
	macro knob 5 start position D	NRPN	3:77	0 – 127	0	
	macro knob 5 end position D	NRPN	3:78	0 – 127	127	
	macro knob 5 depth D	NRPN	3:79	0 – 127 (-64 – 63)	64 (0)	
	macro knob 6 position	CC	85	0 – 127	0	
	macro knob 6 destination A	NRPN	3:80	0 – 70	0	
	macro knob 6 start position A	NRPN	3:81	0 – 127	0	
	macro knob 6 end position A	NRPN	3:82	0 – 127	127	
	macro knob 6 depth A	NRPN	3:83	0 – 127 (-64 – 63)	64 (0)	
	macro knob 6 destination B	NRPN	3:84	0 – 70	0	
	macro knob 6 start position B	NRPN	3:85	0 – 127	0	
	macro knob 6 end position B	NRPN	3:86	0 – 127	127	
	macro knob 6 depth B	NRPN	3:87	0 – 127 (-64 – 63)	64 (0)	
	macro knob 6 destination C	NRPN	3:88	0 – 70	0	
	macro knob 6 start position C	NRPN	3:89	0 – 127	0	
	macro knob 6 end position C	NRPN	3:90	0 – 127	127	
	macro knob 6 depth C	NRPN	3:91	0 – 127 (-64 – 63)	64 (0)	
	macro knob 6 destination D	NRPN	3:92	0 – 70	0	
	macro knob 6 start position D	NRPN	3:93	0 – 127	0	
	macro knob 6 end position D	NRPN	3:94	0 – 127	127	
	macro knob 6 depth D	NRPN	3:95	0 – 127 (-64 – 63)	64 (0)	
	macro knob 7 position	CC	86	0 – 127	0	

	macro knob 7 destination A	NRPN	3:96	0 – 70	0	
	macro knob 7 start position A	NRPN	3:97	0 – 127	0	
	macro knob 7 end position A	NRPN	3:98	0 – 127	127	
	macro knob 7 depth A	NRPN	3:99	0 – 127 (-64 – 63)	64 (0)	
	macro knob 7 destination B	NRPN	3:100	0 – 70	0	
	macro knob 7 start position B	NRPN	3:101	0 – 127	0	
	macro knob 7 end position B	NRPN	3:102	0 – 127	127	
	macro knob 7 depth B	NRPN	3:103	0 – 127 (-64 – 63)	64 (0)	
	macro knob 7 destination C	NRPN	3:104	0 – 70	0	
	macro knob 7 start position C	NRPN	3:105	0 – 127	0	
	macro knob 7 end position C	NRPN	3:106	0 – 127	127	
	macro knob 7 depth C	NRPN	3:107	0 – 127 (-64 – 63)	64 (0)	
	macro knob 7 destination D	NRPN	3:108	0 – 70	0	
	macro knob 7 start position D	NRPN	3:109	0 – 127	0	
	macro knob 7 end position D	NRPN	3:110	0 – 127	127	
	macro knob 7 depth D	NRPN	3:111	0 – 127 (-64 – 63)	64 (0)	
	macro knob 8 position	CC	87	0 – 127	0	
	macro knob 8 destination A	NRPN	3:112	0 – 70	0	
	macro knob 8 start position A	NRPN	3:113	0 – 127	0	
	macro knob 8 end position A	NRPN	3:114	0 – 127	127	
	macro knob 8 depth A	NRPN	3:115	0 – 127 (-64 – 63)	64 (0)	
	macro knob 8 destination B	NRPN	3:116	0 – 70	0	
	macro knob 8 start position B	NRPN	3:117	0 – 127	0	
	macro knob 8 end position B	NRPN	3:118	0 – 127	127	
	macro knob 8 depth B	NRPN	3:119	0 – 127 (-64 – 63)	64 (0)	
	macro knob 8 destination C	NRPN	3:120	0 – 70	0	
	macro knob 8 start position C	NRPN	3:121	0 – 127	0	
	macro knob 8 end position C	NRPN	3:122	0 – 127	127	
	macro knob 8 depth C	NRPN	3:123	0 – 127 (-64 – 63)	64 (0)	
	macro knob 8 destination D	NRPN	3:124	0 – 70	0	
	macro knob 8 start position D	NRPN	3:125	0 – 127	0	
	macro knob 8 end position D	NRPN	3:126	0 – 127	127	
	macro knob 8 depth D	NRPN	3:127	0 – 127 (-64 – 63)	64 (0)	

Filter Table

	Value	Type
Drive Type		
	0	diode
	1	valve
	2	clipper
	3	cross-over
	4	rectifier
	5	bit reducer
	6	rate reducer
Type		
	0	low pass 12dB
	1	low pass 24dB
	2	band pass 6/6 dB
	3	band pass 12/12 dB
	4	high pass 12dB
	5	high pass 24dB

Distortion Table

Value	Type
0	diode
1	valve
2	clipper
3	cross-over
4	rectify
5	bit reducer
6	rate reducer

Mod Matrix Table

	Value	Type
Source		
	0	direct
	1	modulation wheel
	2	after touch
	3	expression
	4	velocity
	5	keyboard
	6	LFO 1 +
	7	LFO 1 +/-
	8	LFO 2 +
	9	LFO 2 +/-
	10	env amp
	11	env filter
	12	env 3
Destination		
	0	osc 1 pitch
	1	osc 1 pitch
	2	osc 2 pitch
	3	osc 1 v-sync
	4	osc 2 v-sync
	5	osc 1 pulse width
	6	osc 2 pulse width
	7	osc 1 level
	8	osc 2 level
	9	noise level
	10	ring modulation 1*2 level
	11	drive amount
	12	frequency
	13	resonance
	14	LFO 1 rate
	15	LFO 2 rate
	16	amp envelope decay
	17	mod envelope decay

OSC Waveform Table

	Value	Type
Waveforms		
	0	sine
	1	triangle
	2	sawtooth
	3	saw 9:1 PW
	4	saw 8:2 PW
	5	saw 7:3 PW
	6	saw 6:4 PW
	7	saw 5:5 PW
	8	saw 4:6 PW
	9	saw 3:7 PW
	10	saw 2:8 PW
	11	saw 1:9 PW
	12	pulse width
	13	square
Wavetables		
	14	sine table
	15	analogue pulse
	16	analogue sync
	17	triangle-saw blend
	18	digital nasty 1
	19	digital nasty 2
	20	digital saw-square
	21	digital vocal 1
	22	digital vocal 2
	23	digital vocal 3
	24	digital vocal 4
	25	digital vocal 5
	26	digital vocal 6
	27	random collection 1
	28	random collection 2
	29	random collection 3

Patch and Session Select

MIDI Channel	Parameter	Value	Notes
1	PGM*	0 – 63	select synth 1 patch
2	PGM	0 – 63	select synth 2 patch
16	PGM	0 – 31	select session (instant)
16	PGM	64 – 95	select session (queued)

*PGM = Program Change

Note, for drum patch selection see Drum Control table

LFO Waveform Table

Value	Type
0	sine
1	triangle
2	sawtooth
3	square
4	random S/H
5	time S/H
6	piano envelope
7	sequence 1
8	sequence 2
9	sequence 3
10	sequence 4
11	sequence 5
12	sequence 6
13	sequence 7
14	alternative 1
15	alternative 2
16	alternative 3
17	alternative 4
18	alternative 5
19	alternative 6
20	alternative 7
21	alternative 8
22	chromatic
23	chromatic 16
24	major
25	major 7
26	minor 7
27	min arp 1
28	min arp 2
29	diminished
30	dec minor
31	minor 3rd
32	pedal
33	4ths
34	4ths x12
35	1625 maj
36	1625 Min
37	2511

Supported Realtime Messages

Message
start
stop
continue
timing clock

Supported System Common Messages

Message
song position pointer
song select

Drum Control

(messages on MIDI Channel 10)

Parameter	CC / NRPN	Control No.	Range	Default Value	Notes
drum 1 patch select	CC	8	0 – 63	0	
drum 1 level	CC	12	0 – 127	0	
drum 1 pitch	CC	14	0 – 127 (-63 – 64)	64 (0)	
drum 1 decay	CC	15	0 – 127	0	
drum 1 distortion	CC	16	0 – 127	0	
drum 1 EQ	CC	17	0 – 127 (-63 – 64)	64 (0)	
drum 2 patch select	CC	18	0 – 63	0	
drum 2 level	CC	23	0 – 127	0	
drum 2 pitch	CC	34	0 – 127 (-63 – 64)	64 (0)	
drum 2 decay	CC	40	0 – 127	0	
drum 2 distortion	CC	42	0 – 127	0	
drum 2 EQ	CC	43	0 – 127 (-63 – 64)	64 (0)	
drum 3 patch select	CC	44	0 – 63	0	
drum 3 level	CC	45	0 – 127	0	
drum 3 pitch	CC	46	0 – 127 (-63 – 64)	64 (0)	
drum 3 decay	CC	47	0 – 127	0	
drum 3 distortion	CC	48	0 – 127	0	
drum 3 EQ	CC	49	0 – 127 (-63 – 64)	64 (0)	
drum 4 patch select	CC	50	0 – 63	0	
drum 4 level	CC	53	0 – 127	0	
drum 4 pitch	CC	55	0 – 127 (-63 – 64)	64 (0)	
drum 4 decay	CC	57	0 – 127	0	
drum 4 distortion	CC	61	0 – 127	0	
drum 4 EQ	CC	76	0 – 127 (-63 – 64)	64 (0)	

Session Control

(Send messages on MIDI Channel 16)

Section	Parameter	CC / NRPN	Control No.	Range	Default Value	Notes
Reverb						
	synth 1 send level	CC	88	0 – 127	0	
	synth 2 send level	CC	89	0 – 127	0	
	drum 1 send level	CC	90	0 – 127	0	
	drum 2 send level	CC	106	0 – 127	0	
	drum 3 send level	CC	109	0 – 127	0	
	drum 4 send level	CC	110	0 – 127	0	
	type	NRPN	1:18	0 – 5	2	0=Chamber, 1=Small Room, 2=Large Room 3=Small Hall, 4=Large Hall, 5=Great Hall
	decay	NRPN	1:19	0 – 127	64	
	damping	NRPN	1:20	0 – 127	64	
Delay						
	synth 1 send level	CC	111	0 – 127	0	
	synth 2 send level	CC	112	0 – 127	0	
	drum 1 send level	CC	113	0 – 127	0	
	drum 2 send level	CC	114	0 – 127	0	
	drum 3 send level	CC	115	0 – 127	0	
	drum 4 send level	CC	116	0 – 127	0	
	time	NRPN	1:6	0 – 127	64	
	time sync	NRPN	1:7	0 – 35	20	
	feedback	NRPN	1:8	0 – 127	64	
	width	NRPN	1:9	0 – 127	127	
	left-right ratio	NRPN	1:10	0 – 12	4	0=1:1, 1=4:3, 2=3:4, 3=3:2, 4=2:3, 5=2:1, 6=1:2 7=3:1, 8=1:3, 9=4:1, 10=1:4, 11=1:OFF, 12=OFF:1
	slew rate	NRPN	1:11	0 – 127	5	
Master Filter						
	frequency	CC	74	0 – 127 (-63 – 64)	64 (0)	0=63=Low Pass, 64=OFF, 65-127=High Pass
	resonance	CC	71	0 – 127	30	
Sidechain						
	synth 1 source	NRPN	2:55	0 – 4	0	0=Drum 1, 1=Drum 2, 2=Drum 3, 3=Drum 4, 4=OFF
	synth 1 attack	NRPN	2:56	0 – 127	0	
	synth 1 hold	NRPN	2:57	0 – 127	50	
	synth 1 decay	NRPN	2:58	0 – 127	70	
	synth 1 depth	NRPN	2:59	0 – 127	0	
	synth 2 source	NRPN	2:65	0 – 4	0	0=Drum 1, 1=Drum 2, 2=Drum 3, 3=Drum 4, 4=OFF
	synth 2 attack	NRPN	2:66	0 – 127	0	
	synth 2 hold	NRPN	2:67	0 – 127	50	
	synth 2 decay	NRPN	2:68	0 – 127	70	
	synth 2 depth	NRPN	1:69	0 – 127	0	
Mixer						
	synth 1 level	CC	12	0 – 127	100	
	synth 2 level	CC	14	0 – 127	100	