

**MUSIC SYNTHESIZER**

# S90

**Data List**  
**Daten-Liste**  
**Liste des données**

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**MODULAR SYNTHESIS**  
**PLUG-IN SYSTEM**

# Voice List

## PRE1 (MSB 63, LSB 0)

Number	Voice Name	Category	Sub Category	
1	A01	3LayerS700	Ap	A.PIANO
2	A02	Soft Touch	Ap	A.PIANO
3	A03	PowerGrand	Ap	A.PIANO
4	A04	BriteRock	Ap	A.PIANO
5	A05	Jazz Grand	Ap	A.PIANO
6	A06	CP 80	Ap	E.GRAND
7	A07	BalladKeys	Ap	OTHER
8	A08	80's Layer	Ap	OTHER
9	A09	S700&Strg	Ap	OTHER
10	A10	S700&Ooh	Ap	OTHER
11	A11	PianoBakup	Ap	OTHER
12	A12	Max Tine	Kb	E.PIANO
13	A13	Early Fusn	Kb	E.PIANO
14	A14	Vintage'74	Kb	E.PIANO
15	A15	Sweetness	Kb	E.PIANO
16	A16	DynoStrait	Kb	E.PIANO
17	B01	ChorusHard	Kb	E.PIANO
18	B02	VintagCase	Kb	E.PIANO
19	B03	ChorusDyno	Kb	E.PIANO
20	B04	80th Boost	Kb	E.PIANO
21	B05	Contempo	Kb	E.PIANO
22	B06	Early 70's	Kb	E.PIANO
23	B07	Tonight	Kb	E.PIANO
24	B08	E.PianoPad	Kb	OTHER
25	B09	TX802	Kb	E.PIANO
26	B10	ChorusBel	Kb	E.PIANO
27	B11	BellDX	Kb	E.PIANO
28	B12	Dark DX	Kb	E.PIANO
29	B13	GS Tines	Kb	E.PIANO
30	B14	Rich FM	Kb	E.PIANO
31	B15	FilteredDX	Kb	E.PIANO
32	B16	Ice Piano	Kb	OTHER
33	C01	WurliTrem	Kb	E.PIANO
34	C02	WurliAmped	Kb	E.PIANO
35	C03	TouchClavi	Kb	CLAVI
36	C04	SuperClavi	Kb	CLAVI
37	C05	StereoClav	Kb	CLAVI
38	C06	HollowClav	Kb	CLAVI
39	C07	Nu Phasing	Kb	CLAVI
40	C08	Digi Clavi	Kb	CLAVI
41	C09	PulseClavi	Kb	CLAVI
42	C10	Twinkle	Cp	BELL
43	C11	Stick Bell	Cp	BELL
44	C12	Bell Chiff	Cp	BELL
45	C13	FngrCymb	Cp	BELL
46	C14	ChorusBell	Cp	BELL
47	C15	Tibetan	Cp	BELL
48	C16	EastBell	Cp	BELL
49	D01	Gamelan	Cp	BELL
50	D02	IceBells	Cp	BELL
51	D03	Digi Bell	Cp	BELL
52	D04	Marimbell	Cp	MALLET
53	D05	16+8+5&1/3	Or	ELECTRIC
54	D06	Petit	Or	ELECTRIC
55	D07	Glassy	Or	ELECTRIC
56	D08	Jazzy	Or	ELECTRIC
57	D09	Slow Jam	Or	ELECTRIC
58	D10	Greasy	Or	ELECTRIC
59	D11	Swishie	Or	ELECTRIC
60	D12	Clean	Or	ELECTRIC
61	D13	Full/CVib	Or	ELECTRIC
62	D14	Mellow	Or	ELECTRIC
63	D15	Nu Shade	Or	ELECTRIC
64	D16	Cool Cat	Or	ELECTRIC

Number	Voice Name	Category	Sub Category	
65	E01	Flutey	Or	ELECTRIC
66	E02	LeftManual	Or	ELECTRIC
67	E03	DrawContrl	Or	ELECTRIC
68	E04	Rocky	Or	ELECTRIC
69	E05	Expensive	Or	ELECTRIC
70	E06	Progressy	Or	ELECTRIC
71	E07	Crunchy	Or	ELECTRIC
72	E08	Early Bird	Or	ELECTRIC
73	E09	Jazz Split	Or	ELECTRIC
74	E10	GosplSplit	Or	ELECTRIC
75	E11	Tradi	Or	ELECTRIC
76	E12	Sunday	Or	PIPE
77	E13	BreathPipe	Or	PIPE
78	E14	Fluty Pipe	Or	PIPE
79	E15	Reedy Pipe	Or	PIPE
80	E16	OohPipes	Pd	CHOIR
81	F01	Flamenco	Gt	A.GUITAR
82	F02	Nylon Jam	Gt	A.GUITAR
83	F03	BriteSteel	Gt	A.GUITAR
84	F04	Strums	Gt	A.GUITAR
85	F05	Big Steel	Gt	A.GUITAR
86	F06	Folk Steel	Gt	A.GUITAR
87	F07	18 String	Gt	A.GUITAR
88	F18	HarpsiGtr	Gt	A.GUITAR
89	F09	HybridGtr	Gt	A.GUITAR
90	F10	JazzGTmelo	Gt	E.GUITAR
91	F11	Velo Jazz	Gt	E.GUITAR
92	F12	FM Jazz	Gt	E.GUITAR
93	F13	For Funk	Gt	E.GUITAR
94	F14	Spanky	Gt	E.GUITAR
95	F15	Funkiest	Gt	E.GUITAR
96	F16	Vin Strum	Gt	E.GUITAR
97	G01	1CoilChors	Gt	E.GUITAR
98	G02	CleanChors	Gt	E.GUITAR
99	G03	ChorusPlus	Gt	E.GUITAR
100	G04	SmoothChor	Gt	E.GUITAR
101	G05	TexBoogie	Gt	E.GUITAR
102	G06	Rockabilly	Gt	E.GUITAR
103	G07	65 Combo	Gt	E.GUITAR
104	G08	VinTremolo	Gt	E.GUITAR
105	G09	Crunchoid	Gt	E.GUITAR
106	G10	DynamicAmp	Gt	E.GUITAR
107	G11	Feedback	Gt	E.GUITAR
108	G12	VOODOOMAN	Gt	E.GUITAR
109	G13	BlueLead	Gt	E.GUITAR
110	G14	MeloRckLd	Gt	E.GUITAR
111	G15	MetalMute	Gt	E.GUITAR
112	G16	OverTheTop	Gt	E.GUITAR
113	H01	RoundWound	Ba	E.BASS
114	H02	FingerMan	Ba	E.BASS
115	H03	PrecFW	Ba	E.BASS
116	H04	PrecFW	Ba	E.BASS
117	H05	HybridBass	Ba	E.BASS
118	H06	Stand Up	Ba	A.BASS
119	H07	Fretless	Ba	E.BASS
120	H08	Slap&Fx	Ba	E.BASS
121	H09	BriteSlap	Ba	E.BASS
122	H10	Velo Bass	Ba	E.BASS
123	H11	Bs+Cym+Vb	Co	SPLIT
124	H12	Boogie on	Ba	SYNTH
125	H13	MiniDetune	Ba	SYNTH
126	H14	Long Spit	Ba	SYNTH
127	H15	Tack Bass	Ba	SYNTH
128	H16	Fat Octave	Ba	SYNTH

**PRE2 (MSB 63, LSB 1)**

Number	Voice Name	Category	Sub Category
1	A01	Violin	St SOLO
2	A02	Viola	St SOLO
3	A03	Cello	St SOLO
4	A04	SoloSpicat	St SOLO
5	A05	2 Solos	St ENSEMBLE
6	A06	Cello Duet	St ENSEMBLE
7	A07	Trio	St ENSEMBLE
8	A08	Chamber	St ENSEMBLE
9	A09	Small Ens	St ENSEMBLE
10	A10	Medium Ens	St ENSEMBLE
11	A11	Ens Mix	St ENSEMBLE
12	A12	Ensemble	St ENSEMBLE
13	A13	Hard Ens	St ENSEMBLE
14	A14	Background	St ENSEMBLE
15	A15	BigSymphony	St ENSEMBLE
16	A16	Str/Horns	Br SECTION
17	B01	Stringy	St SYNTH
18	B02	Polystring	St SYNTH
19	B03	JP Strings	St SYNTH
20	B04	MournStrgs	St SYNTH
21	B05	The Pizz	St ENSEMBLE
22	B06	Fanfare	Br SECTION
23	B07	Hi Brass	Br SECTION
24	B08	Fat Sect	Br SECTION
25	B09	Sforzando	Br SECTION
26	B10	Symphony	Br SECTION
27	B11	Big Band	Br SECTION
28	B12	Big Band 2	Br SECTION
29	B13	SaxBigBand	Br SECTION
30	B14	MedmBrass	Br SECTION
31	B15	Soft Brass	Br SECTION
32	B16	SoftVeloBr	Br SECTION
33	C01	TrpRomantc	Br SOLO
34	C02	Phase Mute	Br SOLO
35	C03	Legend	Br SOLO
36	C04	Trombone	Br SOLO
37	C05	Flugelleaz	Br SOLO
38	C06	F.Horn Ens	Br SECTION
39	C07	SlowAttack	Br SECTION
40	C08	Strng/Bras	Br SECTION
41	C09	Movie Ens	Br SECTION
42	C10	Powered	Br SYNTH
43	C11	ObStuff	Br SYNTH
44	C12	Prophy	Br SYNTH
45	C13	AnalogBras	Br SYNTH
46	C14	After 1984	Br SYNTH
47	C15	Soprano	Rp SAX/REED
48	C16	Alto Vib	Rp SAX/REED
49	D01	SaxEnsembl	Rp SAX/REED
50	D02	Tenor Sax	Rp SAX/REED
51	D03	Tenor Soft	Rp SAX/REED
52	D04	The Winds	Rp OTHER
53	D05	WindOrch	St ENSEMBLE
54	D06	SweetFlute	Rp PIPE
55	D07	PanBottle	Rp PIPE
56	D08	AmpHarpMW	Rp OTHER
57	D09	SmoothSaw	Ld SOFT
58	D10	Lucky	Ld SOFT
59	D11	Tri Solo	Ld SOFT
60	D12	Syntrump	Ld SOFT
61	D13	PWM Lead	Ld SOFT
62	D14	Clicky Saw	Ld SOFT
63	D15	Mini Pulse	Ld SOFT
64	D16	Sync Lead	Ld HARD

Number	Voice Name	Category	Sub Category
65	E01	Altair	Pd SOFT
66	E02	Analog	Pd SOFT
67	E03	Sweetland	Pd BRIGHT
68	E04	WarmSweepy	Pd BRIGHT
69	E05	SinePad	Pd SOFT
70	E06	Square	Pd SOFT
71	E07	VoxPad	Pd CHOIR
72	E08	Pure Syn	Pd BRIGHT
73	E09	MovingPad	Pd BRIGHT
74	E10	SimpleSaws	Pd SOFT
75	E11	X-Shower	Pd SOFT
76	E12	PWM Pad	Pd SOFT
77	E13	Bell Choir	Pd BRIGHT
78	E14	ObSoft	Pd SOFT
79	E15	MellowAnlg	Pd SOFT
80	E16	Glasschoir	Pd BRIGHT
81	F01	PeaceVox	Pd CHOIR
82	F02	StackChoir	Pd CHOIR
83	F03	Bronx	Pd CHOIR
84	F04	IceChoir	Pd CHOIR
85	F05	Fast Oohs	Pd CHOIR
86	F06	Ooze & OZ	Pd CHOIR
87	F07	NeoCrystal	Pd BRIGHT
88	F18	Pop Synth	Pd BRIGHT
89	F09	Fantasy	Pd SOFT
90	F10	Heavenly	Pd BRIGHT
91	F11	Retro	Pd BRIGHT
92	F12	Airy Nylon	Pd SOFT
93	F13	Antares	Pd BRIGHT
94	F14	Pan Sphere	Pd SOFT
95	F15	Tamburax	Pd BRIGHT
96	F16	IndianFlai	Pd BRIGHT
97	G01	SAKURA	Me MOTION
98	G02	RisingHigh	Me MOTION
99	G03	Champ	Me MOTION
100	G04	Gladiator	Me MOTION
101	G05	Hades	Me MOTION
102	G06	Glacy	Me MOTION
103	G07	Forest	Me MOTION
104	G08	MirrorRing	Me MOTION
105	G09	Poly	Sc HARD
106	G10	AnaTonk	Sc SOFT
107	G11	Jaipur	Gt PLUCK
108	G12	Dulcitar	Gt PLUCK
109	G13	Cimbalon	Cp PERCUSSION
110	G14	EthncFlute	Rp PIPE
111	G15	Hichiriki	Rp SAX/REED
112	G16	Ryuteki	Rp PIPE
113	H01	Gagaku	Rp PIPE
114	H02	Kokyu	St SOLO
115	H03	Digidoo	Rp PIPE
116	H04	Bali	Dr PERCUSSION
117	H05	Indo	Gt PLUCK
118	H06	Trip East	Dr PERCUSSION
119	H07	Tabla	Dr PERCUSSION
120	H08	Djembe	Dr PERCUSSION
121	H09	Djerimbe	Cp PERCUSSION
122	H10	Udu	Dr PERCUSSION
123	H11	Tribal	Dr PERCUSSION
124	H12	Log&Drum	Cp PERCUSSION
125	H13	Afro	Dr PERCUSSION
126	H14	Japanesque	Co SEQ
127	H15	EthnoShock	Me HIT
128	H16	Ethnology	Dr PERCUSSION

**PRE3 (MSB 63, LSB 2)**

Number	Voice Name	Category	Sub Category	
1	A01	Wide Comp	Ap	A.PIANO
2	A02	78rpmPiano	Ap	A.PIANO
3	A03	1968 45rpm	Ap	A.PIANO
4	A04	1971 33rpm	Ap	A.PIANO
5	A05	DigiGrand1	Ap	E.GRAND
6	A06	Harp&Piano	Ap	OTHER
7	A07	Glass EP	Kb	E.PIANO
8	A08	VintSwitch	Kb	E.PIANO
9	A09	Early Case	Kb	E.PIANO
10	A10	RdsScape	Kb	E.PIANO
11	A11	Feathers	Ap	A.PIANO
12	A12	StringyPno	Kb	OTHER
13	A13	Champagne	Or	OTHER
14	A14	Moet	Or	OTHER
15	A15	Compact	Or	ELECTRIC
16	A16	1967 Keys	Or	ELECTRIC
17	B01	YD-45C	Or	ELECTRIC
18	B02	Gnarly	Ba	E.BASS
19	B03	Modular	Ba	SYNTH
20	B04	Dark Jack	Ba	SYNTH
21	B05	OneVoice	Ba	SYNTH
22	B06	Dry Syn	Ba	SYNTH
23	B07	PlasticBas	Ba	SYNTH
24	B08	Bassline	Ba	SYNTH
25	B09	RubbaRap	Ba	SYNTH
26	B10	Juicy	Ba	SYNTH
27	B11	Dark	Ba	SYNTH
28	B12	UniBass	Ba	SYNTH
29	B13	Flyer	Ba	SYNTH
30	B14	QuackBass	Ba	SYNTH
31	B15	Moonbass	Ba	SYNTH
32	B16	ClassicSub	Ba	SYNTH
33	C01	DX100	Ba	SYNTH
34	C02	Lately	Ba	SYNTH
35	C03	FMBass	Ba	SYNTH
36	C04	Oct String	St	SYNTH
37	C05	3 Octave	St	SYNTH
38	C06	TapeStrngs	St	SYNTH
39	C07	VP Strings	St	SYNTH
40	C08	BriteTeeth	Br	SYNTH
41	C09	XDance	Br	SYNTH
42	C10	Timeless	Br	SYNTH
43	C11	FatSynth	Br	SYNTH
44	C12	Big Syn	Br	SYNTH
45	C13	Bluesharp	Rp	OTHER
46	C14	Sync	Ld	HARD
47	C15	Atk Reso	Ld	SOFT
48	C16	Singleline	Ld	SOFT
49	D01	Free LFO	Ld	HARD
50	D02	Soft Lead	Ld	SOFT
51	D03	PulseWound	Ld	HARD
52	D04	Big Drone	Ld	HARD
53	D05	Big Tune	Ld	HARD
54	D06	PowerWheel	Ld	HARD
55	D07	Flangefilt	Ld	HARD
56	D08	G-Funk	Ld	SOFT
57	D09	Maria AT	Ld	SOFT
58	D10	InThePast	Ld	HARD
59	D11	FatSawPad	Pd	BRIGHT
60	D12	Wide Sweep	Pd	BRIGHT
61	D13	Sunbeams	Pd	SOFT
62	D14	BPFx	Pd	BRIGHT
63	D15	FrozenPad	Pd	BRIGHT
64	D16	MICHINOKU	Pd	SOFT

Number	Voice Name	Category	Sub Category	
65	E01	Esmeralda	Pd	SOFT
66	E02	Romance	Pd	SOFT
67	E03	Circle	Pd	BRIGHT
68	E04	Dreamspher	Pd	BRIGHT
69	E05	Silverlake	Pd	SOFT
70	E06	Shadow	Pd	BRIGHT
71	E07	Platinum	Pd	BRIGHT
72	E08	Gently	Pd	SOFT
73	E09	Warming	Pd	SOFT
74	E10	PW-EMMY	Pd	SOFT
75	E11	X-fade Pad	Pd	SOFT
76	E12	Zosma	Pd	BRIGHT
77	E13	NoizRezz	Pd	BRIGHT
78	E14	Mira	Pd	BRIGHT
79	E15	MultiPulse	Pd	SOFT
80	E16	VoxWaves	Pd	CHOIR
81	F01	LazySweep	Pd	CHOIR
82	F02	Doomed	Pd	CHOIR
83	F03	PerkaVox	Sc	SOFT
84	F04	Punchy	Sc	HARD
85	F05	Eyeliner	Sc	HARD
86	F06	Quieck	Me	MOTION
87	F07	Aladdin	Me	MOTION
88	F18	QuadSwell	Me	MOTION
89	F09	Lilley Pad	Me	MOTION
90	F10	Didje Baz	Me	MOTION
91	F11	RING PAD	Me	MOTION
92	F12	Chaser 1	Me	MOTION
93	F13	Chaser 2	Me	MOTION
94	F14	Spacebreat	Me	MOTION
95	F15	Long HiPa	Me	MOTION
96	F16	Action Y	Me	MOTION
97	G01	Trancelan	Me	HIT
98	G02	Eternal	Me	MOTION
99	G03	VirtualSyn	Me	MOTION
100	G04	Interlude	Me	MOTION
101	G05	Flying	Me	MOTION
102	G06	TheSlayer	Me	MOTION
103	G07	White Rabb	Me	MOTION
104	G08	Siam	Me	MOTION
105	G09	Ududu	Co	SEQ
106	G10	Particle	Co	SEQ
107	G11	Shaper	Co	SEQ
108	G12	VintageArp	Co	SEQ
109	G13	Aah Dance	Co	SEQ
110	G14	Joker	Co	SEQ
111	G15	Holiday	Co	SEQ
112	G16	Android	Co	SEQ
113	H01	Spacious	Co	SEQ
114	H02	VoiceCuica	Co	SEQ
115	H03	Pop Arp	Co	SEQ
116	H04	Ping Pong	Co	SEQ
117	H05	Amoeba	Se	SYNTH
118	H06	Landing	Se	SYNTH
119	H07	I was born	Se	SYNTH
120	H08	PsychoGtr	Se	SYNTH
121	H09	NoGravity	Se	SYNTH
122	H10	Pulser	Se	SYNTH
123	H11	Racer	Se	SYNTH
124	H12	Storm	Se	NATURAL
125	H13	Oscillatin	Se	SYNTH
126	H14	FamilyFeud	Se	NATURAL
127	H15	WatrForest	Se	NATURAL
128	H16	Spacecraft	Se	SYNTH

**USER (MSB 63, LSB 8)**

Number	Voice Name	Category	Sub Category
1	A01	Ap	A.PIANO
2	A02	Ap	A.PIANO
3	A03	Ap	OTHER
4	A04	Ap	OTHER
5	A05	Ap	OTHER
6	A06	Ap	OTHER
7	A07	Ap	OTHER
8	A08	Ap	OTHER
9	A09	Kb	E.PIANO
10	A10	Kb	OTHER
11	A11	Kb	E.PIANO
12	A12	Kb	E.PIANO
13	A13	Kb	E.PIANO
14	A14	Or	PIPE
15	A15	Or	PIPE
16	A16	Or	OTHER
17	B01	Ba	E.BASS
18	B02	Ba	SYNTH
19	B03	Ba	SYNTH
20	B04	Ba	SYNTH
21	B05	Ba	SYNTH
22	B06	Ba	SYNTH
23	B07	St	SYNTH
24	B08	Gt	PLUCK
25	B09	Rp	PIPE
26	B10	Pd	BRIGHT
27	B11	Pd	SOFT
28	B12	Pd	BRIGHT
29	B13	Pd	BRIGHT
30	B14	Sc	HARD
31	B15	Me	MOTION
32	B16	St	ENSEM.
33	C01	Co	SEQ
34	C02	Co	SEQ
35	C03	Co	SPLIT
36	C04	Ap	OTHER
37	C05	Pd	BRIGHT
38	C06	Pd	SOFT
39	C07	Sc	HARD
40	C08	Me	MOTION
41	C09	Pd	BRIGHT
42	C10	Co	SEQ
43	C11	Me	MOTION
44	C12	St	SYNTH
45	C13	Pd	SOFT
46	C14	Pd	CHOIR
47	C15	Pd	BRIGHT
48	C16	Pd	BRIGHT
49	D01	Pd	SOFT
50	D02	Me	MOTION
51	D03	Co	SEQ
52	D04	Pd	BRIGHT
53	D05	Cp	BELL
54	D06	Co	SEQ
55	D07	Co	SEQ
56	D08	Co	SEQ
57	D09	Co	SEQ
58	D10	Me	MOTION
59	D11	Me	MOTION
60	D12	Pd	BRIGHT
61	D13	St	SYNTH
62	D14	St	SYNTH
63	D15	St	ENSEM.
64	D16	Ld	HARD

Number	Voice Name	Category	Sub Category
65	E01	Pd	SOFT
66	E02	Ap	OTHER
67	E03	St	SYNTH
68	E04	Gt	A.GTR
69	E05	Ap	OTHER
70	E06	Pd	CHOIR
71	E07	Me	MOTION
72	E08	Co	SEQ
73	E09	Ba	SYNTH
74	E10	Se	SYNTH
75	E11	Me	MOTION
76	E12	Ba	SYNTH
77	E13	Ld	HARD
78	E14	Ba	SYNTH
79	E15	Me	MOTION
80	E16	Pd	SOFT
81	F01	Ba	SYNTH
82	F02	Pd	CHOIR
83	F03	Co	SEQ
84	F04	Ba	SYNTH
85	F05	Ld	HARD
86	F06	Ld	HARD
87	F07	Gt	E.GTR
88	F18	Ap	OTHER
89	F09	Pd	SOFT
90	F10	Ba	SYNTH
91	F11	Ba	SYNTH
92	F12	Ba	SYNTH
93	F13	Ld	HARD
94	F14	Me	HIT
95	F15	Me	MOTION
96	F16	Gt	A.GTR
97	G01	Ba	SYNTH
98	G02	Ba	SYNTH
99	G03	Ld	SOFT
100	G04	Me	HIT
101	G05	Gt	E.GTR
102	G06	Ap	E.GRAND
103	G07	Kb	E.PIANO
104	G08	St	SYNTH
105	G09	Me	MOTION
106	G10	Ba	SYNTH
107	G11	Ld	HARD
108	G12	Ld	SOFT
109	G13	Se	SYNTH
110	G14	Ld	HARD
111	G15	Gt	E.GTR
112	G16	Kb	E.PIANO
113	H01	Ld	HARD
114	H02	Ba	SYNTH
115	H03	Ld	HARD
116	H04	Ld	HARD
117	H05	Ba	SYNTH
118	H06	Ld	SOFT
119	H07	Ba	SYNTH
120	H08	Se	SYNTH
121	H09	Ld	HARD
122	H10	Me	MOTION
123	H11	St	SYNTH
124	H12	Pd	CHOIR
125	H13	Ba	SYNTH
126	H14	Ld	SOFT
127	H15	Co	SEQ
128	H16	Ld	HARD

## GM (MSB 0, LSB 0)

Number	Voice Name	Category	Sub Category
1	A01	Ap	A.PIANO
2	A02	Ap	A.PIANO
3	A03	Ap	E.GRAND
4	A04	Ap	A.PIANO
5	A05	Kb	E.PIANO
6	A06	Kb	E.PIANO
7	A07	Kb	OTHER
8	A08	Kb	CLAVI
9	A09	Cp	MALLET
10	A10	Cp	MALLET
11	A11	Cp	PERCUSSION
12	A12	Cp	MALLET
13	A13	Cp	MALLET
14	A14	Cp	MALLET
15	A15	Cp	BELL
16	A16	Cp	PERCUSSION
17	B01	Or	ELECTRIC
18	B02	Or	ELECTRIC
19	B03	Or	ELECTRIC
20	B04	Or	PIPE
21	B05	Or	OTHER
22	B06	Kb	OTHER
23	B07	Rp	OTHER
24	B08	Kb	OTHER
25	B09	Gt	A.GUITAR
26	B10	Gt	A.GUITAR
27	B11	Gt	E.GUITAR
28	B12	Gt	E.GUITAR
29	B13	Gt	E.GUITAR
30	B14	Gt	E.GUITAR
31	B15	Gt	E.GUITAR
32	B16	Gt	E.GUITAR
33	C01	Ba	A.BASS
34	C02	Ba	E.BASS
35	C03	Ba	E.BASS
36	C04	Ba	E.BASS
37	C05	Ba	E.BASS
38	C06	Ba	E.BASS
39	C07	Ba	SYNTH
40	C08	Ba	SYNTH
41	C09	St	SOLO
42	C10	St	SOLO
43	C11	St	SOLO
44	C12	St	SOLO
45	C13	St	ENSEMBLE
46	C14	Gt	PLUCK
47	C15	Gt	PLUCK
48	C16	Cp	PERCUSSION
49	D01	St	ENSEMBLE
50	D02	St	ENSEMBLE
51	D03	St	SYNTH
52	D04	St	SYNTH
53	D05	Pd	CHOIR
54	D06	Pd	CHOIR
55	D07	Pd	CHOIR
56	D08	Me	HIT
57	D09	Br	SOLO
58	D10	Br	SOLO
59	D11	Br	SOLO
60	D12	Br	SOLO
61	D13	Br	SECTION
62	D14	Br	SECTION
63	D15	Br	SYNTH
64	D16	Br	SYNTH

Number	Voice Name	Category	Sub Category
65	E01	Rp	SAX/REED
66	E02	Rp	SAX/REED
67	E03	Rp	SAX/REED
68	E04	Rp	SAX/REED
69	E05	Rp	SAX/REED
70	E06	Rp	SAX/REED
71	E07	Rp	SAX/REED
72	E08	Rp	SAX/REED
73	E09	Rp	PIPE
74	E10	Rp	PIPE
75	E11	Rp	PIPE
76	E12	Rp	PIPE
77	E13	Rp	PIPE
78	E14	Rp	PIPE
79	E15	Rp	PIPE
80	E16	Rp	PIPE
81	F01	Ld	HARD
82	F02	Ld	HARD
83	F03	Ld	SOFT
84	F04	Ld	HARD
85	F05	Ld	HARD
86	F06	Ld	SOFT
87	F07	Ld	HARD
88	F18	Ld	HARD
89	F09	Pd	BRIGHT
90	F10	Pd	SOFT
91	F11	Pd	BRIGHT
92	F12	Pd	CHOIR
93	F13	Pd	SOFT
94	F14	Pd	BRIGHT
95	F15	Pd	BRIGHT
96	F16	Pd	BRIGHT
97	G01	Me	MOTION
98	G02	Pd	BRIGHT
99	G03	Cp	BELL
100	G04	Pd	SOFT
101	G05	Sc	HARD
102	G06	Me	MOTION
103	G07	Me	MOTION
104	G08	Pd	BRIGHT
105	G09	Gt	PLUCK
106	G10	Gt	PLUCK
107	G11	Gt	PLUCK
108	G12	Gt	PLUCK
109	G13	Cp	PERCUSSION
110	G14	Rp	SAX/REED
111	G15	St	SOLO
112	G16	Rp	SAX/REED
113	H01	Cp	BELL
114	H02	Dr	PERCUSSION
115	H03	Cp	PERCUSSION
116	H04	Dr	PERCUSSION
117	H05	Dr	PERCUSSION
118	H06	Dr	DRUMS
119	H07	Dr	DRUMS
120	H08	Se	SYNTH
121	H09	Se	NATURAL
122	H10	Se	NATURAL
123	H11	Se	NATURAL
124	H12	Se	NATURAL
125	H13	Se	NATURAL
126	H14	Se	NATURAL
127	H15	Se	NATURAL
128	H16	Se	NATURAL

# Drum Voice List

## Drum Voice Name List

### Bank Select MSB 63, LSB 32

PRE No.	Voice Name	
1	PoweredStd	
2	DryStandrd	
3	RockSt1	
4	RockSt2	
5	RockMono1	
6	Hip Hop1	
7	Hip Hop2	
8	HipStick1	
9	T9HipKit1	
10	R&B Kit1	
11	R&B Kit2	
12	AnalogT9	
13	AnalogT8	
14	Tekno Kit	
15	House Kit1	These drum kits have been specially programmed for different music styles, yet closely follow the standard instrument order of the GM kit.
16	House Kit2	
17	Big Kit	
18	Break Kit	
19	Drum'nBass	
20	Acid Kit	
21	Jungle Kit	
22	Electric	
23	Human Kit	
24	Hard Kit	
25	DistrtdKit	
26	AmbientKit	
27	Jazz Kit	
28	Hip Hop3	
29	Hip Hop4	
30	HipStick2	
31	Garage	
32	ALL-ROUND	These original drum kits, programmed for the S90, feature a special non-standard order for ease in playing.
33	Rock Multi	
34	Hip Multi	
35	Percussion	
36	Latin Perc	
37	Gtr/Bs Fx	
38	Wacko Kit	
39	Wood Bits	
40	Metal Bits	
41	Hands Kit	These original kits feature a variety of instruments and special sound effects, and are grouped according to their type.
42	Scratches	
43	AcstSnares	
44	StSnares	
45	AllKicks	
46	DanceKicks	
47	Snare & Fx	
48	EasySnares	

### Bank Select MSB 63, LSB 40

USER No.	Voice Name	
1	RockMono2	These drum kits have been specially programmed for different music styles, yet closely follow the standard instrument order of the GM kit.
2	RockMono3	
3	Hip Hop5	
4	Hip Hop6	
5	T9HipKit2	
6	HipStick3	
7	HipStick4	
8	R&B Kit3	

### Bank Select MSB 127, LSB 0

GM Drum No.	Voice Name
1	Stereo GM



















PRE 41 Hands Kit

Table with 3 columns: Note, Wave No., Wave Name. Contains 67 rows of musical data for Hands Kit.

PRE 42 Scratches

Table with 3 columns: Note, Wave No., Wave Name. Contains 67 rows of musical data for Scratches.

PRE 43 AcstSnares

Table with 3 columns: Note, Wave No., Wave Name. Contains 67 rows of musical data for AcstSnares.

PRE 44 StSnares

Table with 3 columns: Note, Wave No., Wave Name. Contains 67 rows of musical data for StSnares.

PRE 45 AllKicks

Table with 3 columns: Note, Wave No., Wave Name. Contains 67 rows of musical data for AllKicks.



PRE 46 DanceKicks

Table with columns: Note, Wave No., Wave Name. Contains 855 rows of drum kit wave data for PRE 46 DanceKicks.

PRE 47 Snare & Fx

Table with columns: Note, Wave No., Wave Name. Contains 539 rows of drum kit wave data for PRE 47 Snare & Fx.

PRE 48 EasySnares

Table with columns: Note, Wave No., Wave Name. Contains 895 rows of drum kit wave data for PRE 48 EasySnares.

USER 1 RockMono2

Table with columns: Note, Wave No., Wave Name. Contains 809 rows of drum kit wave data for USER 1 RockMono2.

USER 2 RockMono3

Table with columns: Note, Wave No., Wave Name. Contains 809 rows of drum kit wave data for USER 2 RockMono3.









# Effect Type List

Effect Category	Effect Name	LCD	MIDI (HEX)		No.				
			MSB	LSB	REV	CHO	InsEf1	InsEf2	Var(*)
---	NO EFFECT	off	00	00	0	0			0
---	THRU	Thru	00	00			0	0	
REV									
	HALL 1	Rev Hall 1	01	00	1			1	
	HALL 2	Rev Hall 2	01	01	2			2	
	ROOM 1	Rev Room 1	01	10	3			3	
	ROOM 2	Rev Room 2	01	11	4			4	
	ROOM 3	Rev Room 3	01	12	5			5	
	STAGE 1	Rev Stage 1	01	20	6			6	
	STAGE 2	Rev Stage 2	01	21	7			7	
	PLATE	Rev Plate	01	30	8			8	
	WHITE ROOM	RevWhiteRoom	01	40	9				
	TUNNEL	Rev Tunnel	01	41	10				
	BASEMENT	Rev Basement	01	42	11				
	CANYON	Rev Canyon	01	43	12				
DLY									
	DELAY L,C,R	Delay L,C,R	02	00				9	
	DELAY L,R	Delay L,R	02	10		18		10	
	ECHO	Echo	02	20		19		11	
	CROSS DELAY	Cross Delay	02	30		20		12	
	CONTROL DELAY (MONO)	Ctrl Delay 1	02	40		21		13	
	CONTROL DELAY (STEREO)	Ctrl Delay 2	02	48		22		14	
	TEMPO DELAY (MONO)	TempoDelay 1	02	50		23		15	
	TEMPO DELAY (STEREO)	TempoDelay 2	02	58		24		16	
	TEMPO CROSS DELAY	TempoCrosDly	02	60		25		17	
ER									
	EARLY REFLECTION 1	Early Ref 1	03	00				18	
	EARLY REFLECTION 2	Early Ref 2	03	01				19	
	GATE REVERB	Gate Reverb	03	10				20	
	REVERSE GATE	Reverse Gate	03	20				21	
KAR									
	KARAOKE 1	Karaoke 1	04	00				22	
	KARAOKE 2	Karaoke 2	04	01				23	
	KARAOKE 3	Karaoke 3	04	02				24	
CHO									
	CHORUS 1	Chorus 1	05	00		1	1	25	1
	CHORUS 2	Chorus 2	05	01		2	2	26	2
	CHORUS 3	Chorus 3	05	02		3	3	27	3
	CHORUS 4	Chorus 4	05	08		4	4	28	4
	CHORUS 5	Chorus 5	05	09		5		29	
	CELESTE 1	Celeste 1	05	10		6	5	30	5
	CELESTE 2	Celeste 2	05	11		7	6	31	6
	CELESTE 3	Celeste 3	05	12		8	7	32	7
	CELESTE 4	Celeste 4	05	18		9	8	33	8
	SYMPHONIC	Symphonic	05	20		10		34	
	ENSEMBLE DETUNE	Ensemble	05	30		11		35	
FLG									
	FLANGER 1	Flanger 1	06	00		12	9	36	9
	FLANGER 2	Flanger 2	06	01		13	10	37	10
	FLANGER 3	Flanger 3	06	08		14	11	38	11
	V-FLANGER	V-Flanger	06	10				39	
	TEMPO FLANGER	TempoFlanger	06	50		15		40	
	DYNAMIC FLANGER	DynamFlanger	06	60				41	
PHA									
	PHASER 1	Phaser 1	07	00		16	12	42	12
	PHASER 2	Phaser 2	07	08				43	
	TEMPO PHASER	TempoPhaser	07	50		17		44	
	DYNAMIC PHASER	DynamPhaser	07	60				45	
MOD									
	TREMOLO	Tremolo	08	00			13	46	13
	AUTO PAN	Auto Pan	08	10			14	47	14
	AUTO PAN 2	Auto Pan 2	08	11				48	
	ROTARY SPEAKER	Rotary SP 1	08	50				49	
	DISTORTION+ROTARY SPEAKER	Dist+RotSp1	08	51				50	
	OVERDRIVE+ROTARY SPEAKER	Odrv+RotSp1	08	52				51	
	AMP SIM.+ROTARY SPEAKER	Amp +RotSp1	08	53				52	
	2WAY ROTARY SPEAKER	Rotary Sp2	08	60				53	
	DISTORTION+2WAY ROTARY SPEAKER	Dist+RotSp2	08	61				54	
	OVERDRIVE+2WAY ROTARY SPEAKER	Odrv+RotSp2	08	62				55	
	AMP SIM.+2WAY ROTARY SPEAKER	Amp +RotSp2	08	63				56	
	DUAL ROTOR SPEAKER1	Dual RotSp 1	08	70				57	
	DUAL ROTOR SPEAKER2	Dual RotSp 2	08	71				58	
	DUAL ROTOR SPEAKER3	Dual RotSp 3	08	72				59	

(\*) Performance Mode Only.

Effect Category	Effect Name	LCD	MIDI (HEX)		No.				
			MSB	LSB	REV	CHO	InsEf1	InsEf2	Var(*)
DST									
	DISTORTION	Distortion	09	00			15	60	15
	COMP DISTORTION	Comp + Dist	09	01				61	
	V-DISTORTION	V-Distortion	09	10				62	
	OVER DRIVE	Overdrive	09	20			16	63	16
	AMP SIMULATOR	AmpSimulator	09	30			17	64	17
	AMP SIMULATOR 2	AmpSim 2	09	31			18	65	18
	DIST+DELAY	Dist + Delay	09	40				66	
	OVERDRIVE+DELAY	Odrv + Delay	09	41				67	
DYN									
	COMPRESSOR	Compressor	0A	00			19	68	19
	NOISE GATE	Noise Gate	0A	20			20	69	20
	COMP+DIST+DELAY	Cmp+Dist+Dly	0A	40				70	
	COMP+OVERDRIVE+DELAY	Cmp+Odrv+Dly	0A	41				71	
	MULTI BAND COMPRESSOR 1	MltBndComp 1	0A	50				72	
	MULTI BAND COMPRESSOR 2	MltBndComp 2	0A	51				73	
PCH									
	PITCH CHANGE 1	PitchChange1	0B	00				74	
	PITCH CHANGE 2	PitchChange2	0B	01				75	
WAH									
	AUTO WAH	Auto Wah	0C	00			21	76	21
	AUTO WAH + DIST	A.Wah+Dist	0C	01				77	
	AUTO WAH + OVERDRIVE	A.Wah+Odrv	0C	02				78	
	TOUCH WAH	Touch Wah	0C	10			22	79	22
	TOUCH WAH + DIST	T.Wah+Dist	0C	11				80	
	TOUCH WAH + OVERDRIVE	T.Wah+Odrv	0C	12				81	
	WAH+DIST+DELAY	Wah+Dist+Dly	0C	40				82	
	WAH+OVERDRIVE+DELAY	Wah+Odrv+Dly	0C	41				83	
L-F									
	LO-FI	Lo-Fi	0D	00				84	
	LOW RESOLUTION	LoResolution	0D	10				85	
	NOISY	Noisy	0D	20				86	
	ATTACK LO-FI	Attack LoFi	0D	30				87	
	DIGITAL TURNTABLE	D.Turntable	0D	50				88	
TEC									
	DIGITAL SCRATCH	D.Scratch	0E	00				89	
	AUTO SYNTH	Auto Synth	0E	10				90	
	TECH MODULATION	Tech Mod	0E	20				91	
	JUMP	Jump	0E	30				92	
	ISOLATION	Isolator	0E	40				93	
	SLICE	Slice	0E	50				94	
MSC									
	3-BAND EQ	3 Band EQ	0F	00			23	95	23
	2-BAND EQ	2 Band EQ	0F	01			24	96	24
	HARMONIC ENHANCER	Enhancer	0F	10			25	97	25
	VOICE CANCEL	Voice Cancel	0F	20				98	
	AMBIENCE	Ambience	0F	30				99	
	TALKING MODULATOR	Talking Mod	0F	40				100	
	BEAT CHANGE	Beat Change	0F	50				101	
	RING MODULATOR	Ring Mod	0F	70				102	
	DYNAMIC RING MODULATOR	DynamRingMod	0F	71				103	
	DYNAMIC FILTER	DynamFilter	0F	78				104	

(\*) Performance Mode Only.

# Effect Parameter List

## 1. Reverb

### 01 HALL 1-08 PLATE

No.	Parameter	Range	Value	MIDI Parameter Number	Table
1	Reverb Time	0.3s-30.0s	(0-69)	1	4
2	Initial Delay	0.1ms-200.0ms	(0-127)	3	5
3	Reverb Delay	0.1ms-200.0ms	(0-127)	6	5
4	HPF Cutoff Frequency	20Hz-8.0kHz	(0-52)	4	3
5	LPF Cutoff Frequency	1.0kHz-20.0kHz	(34-60)	5	3
6	Diffusion	0-10	(0-10)	2	
7	Density	0-4	(0-4)	7	
8	ER/Rev Balance	E63>R-E=R-E<R63	(1-127)	8	
9	Feedback Level	-63-+63	(1-127)	10	
10	Feedback High Damp	0.1-1.0	(1-10)	9	

### 09 WHITE ROOM-12 CANYON

No.	Parameter	Range	Value	MIDI Parameter Number	Table
1	Reverb Time	0.3s-30.0s	(0-69)	1	4
2	Initial Delay	0.1ms-200.0ms	(0-127)	3	5
3	Reverb Delay	0.1ms-200.0ms	(0-127)	10	5
4	HPF Cutoff Frequency	20Hz-8.0kHz	(0-52)	4	3
5	LPF Cutoff Frequency	1.0kHz-20.0kHz	(34-60)	5	3
6	Diffusion	0-10	(0-10)	2	
7	Width	0.5m-30.2m	(0-104)	6	11
8	Height	0.5m-30.2m	(0-104)	7	11
9	Depth	0.5m-30.2m	(0-104)	8	11
10	Wall Vary	0-30	(0-30)	9	

## 2. Chorus

### 01 CHORUS 1-09 CELESTE 4

No.	Parameter	Range	Value	MIDI Parameter Number	Table
1	LFO Speed	0.0Hz-39.70Hz	(0-127)	1	1
2	LFO Depth	0-127	(0-127)	2	
3	EQ Low Frequency	32Hz-2.0kHz	(4-40)	5	3
4	EQ Low Gain	-12dB-+12dB	(52-76)	6	
5	EQ High Frequency	500Hz-16.0kHz	(28-58)	7	3
6	EQ High Gain	-12dB-+12dB	(52-76)	8	
7	Delay Offset	0.0ms-50.0ms	(0-127)	4	2
8	Feedback Level	-63-+63	(1-127)	3	

### 10 SYMPHONIC

No.	Parameter	Range	Value	MIDI Parameter Number	Table
1	LFO Speed	0.0Hz-39.70Hz	(0-127)	1	1
2	LFO Depth	0-127	(0-127)	2	
3	Delay Offset	0.0ms-50.0ms	(0-127)	3	2
4	EQ Low Frequency	32Hz-2.0kHz	(4-40)	4	3
5	EQ Low Gain	-12dB-+12dB	(52-76)	5	
6	EQ High Frequency	500Hz-16.0kHz	(28-58)	6	3
7	EQ High Gain	-12dB-+12dB	(52-76)	7	

### 11 ENSEMBLE DETUNE

No.	Parameter	Range	Value	MIDI Parameter Number	Table
1	Detune	-50cent-+50cent	(14-114)	1	
2	Initial Delay Lch	0.0ms-50.0ms	(0-127)	2	2
3	Initial Delay Rch	0.0ms-50.0ms	(0-127)	3	2

### 12 FLANGER 1-14 FLANGER 3

No.	Parameter	Range	Value	MIDI Parameter Number	Table
1	LFO Speed	0.0Hz-39.70Hz	(0-127)	1	1
2	LFO Depth	0-127	(0-127)	2	
3	LFO Phase Difference	-180deg-+180deg	(4-124)	5	
4	EQ Low Frequency	32Hz-2.0kHz	(4-40)	6	3
5	EQ Low Gain	-12dB-+12dB	(52-76)	7	
6	EQ High Frequency	500Hz-16.0kHz	(28-58)	8	3
7	EQ High Gain	-12dB-+12dB	(52-76)	9	
8	Delay Offset	0.0ms-50.0ms	(0-127)	4	2
9	Feedback Level	-63-+63	(1-127)	3	

### 15 TEMPO FLANGER

No.	Parameter	Range	Value	MIDI Parameter Number	Table
1	LFO Speed	16th, 8th/3, 16th., 8th, 4th/3, 8th., 4th, 2nd/3, 4th., 2nd, Whole/3, 2nd., 4thx4, 4thx5, 4thx6, 4thx7, 4thx8	(5-21)	1	
2	LFO Depth	0-127	(0-127)	2	
3	LFO Phase Difference	-180deg-+180deg	(0-2)	5	
4	LFO Phase Reset	off(free run), Key On Reset, SEQ Start Reset	(4-124)	6	
5	EQ Low Frequency	32Hz-2.0kHz	(4-40)	7	3
6	EQ Low Gain	-12dB-+12dB	(52-76)	8	
7	EQ High Frequency	500Hz-16.0kHz	(28-58)	9	3
8	EQ High Gain	-12dB-+12dB	(52-76)	10	
9	Delay Offset	0.0ms-50.0ms	(0-127)	4	2
10	Feedback Level	-63-+63	(1-127)	3	

### 16 PHASER 1

No.	Parameter	Range	Value	MIDI Parameter Number	Table
1	LFO Speed	0.0Hz-39.70Hz	(0-127)	1	1
2	LFO Depth	0-127	(0-127)	2	
3	Diffusion	mono/stereo	(0-1)	6	
4	EQ Low Frequency	32Hz-2.0kHz	(4-40)	7	3
5	EQ Low Gain	-12dB-+12dB	(52-76)	8	
6	EQ High Frequency	500Hz-16.0kHz	(28-58)	9	3
7	EQ High Gain	-12dB-+12dB	(52-76)	10	
8	Stage	4, 5, 6	(4-6)	5	
9	Phase Shift Offset	0-127	(0-127)	3	
10	Feedback Level	-63-+63	(1-127)	4	

### 17 TEMPO PHASER

No.	Parameter	Range	Value	MIDI Parameter Number	Table
1	LFO Speed	16th, 8th/3, 16th., 8th, 4th/3, 8th., 4th, 2nd/3, 4th., 2nd, Whole/3, 2nd., 4thx4, 4thx5, 4thx6, 4thx7, 4thx8	(5-21)	1	
2	LFO Depth	0-127	(0-127)	2	
3	LFO Phase Reset	off(free run), Key On Reset, SEQ Start Reset	(0-2)	6	
4	EQ Low Frequency	32Hz-2.0kHz	(4-40)	7	3
5	EQ Low Gain	-12dB-+12dB	(52-76)	8	
6	EQ High Frequency	500Hz-16.0kHz	(28-58)	9	3
7	EQ High Gain	-12dB-+12dB	(52-76)	10	
8	Stage	4, 5, 6	(4-6)	5	
9	Phase Shift Offset	0-127	(0-127)	3	
10	Feedback Level	-63-+63	(1-127)	4	

### 18 DELAY L, R

No.	Parameter	Range	Value	MIDI Parameter Number	Table
1	Lch Delay Time	0.1ms-740.0ms	(0-127)	1	19
2	Rch Delay Time	0.1ms-740.0ms	(0-127)	2	19
3	Lch Feedback Level	0.1ms-740.0ms	(0-127)	3	19
4	Rch Feedback Level	0.1ms-740.0ms	(0-127)	4	19
5	Feedback Level	-63-+63	(1-127)	5	
6	Feedback High Damp	0.1-1.0	(1-10)	6	
7	EQ Low Frequency	32Hz-2.0kHz	(4-40)	7	3
8	EQ Low Gain	-12dB-+12dB	(52-76)	8	
9	EQ High Frequency	500Hz-16.0kHz	(28-58)	9	3
10	EQ High Gain	-12dB-+12dB	(52-76)	10	

### 19 ECHO

No.	Parameter	Range	Value	MIDI Parameter Number	Table
1	Lch Delay1 Time	0.1ms-740.0ms	(0-127)	1	19
2	Rch Delay1 Time	0.1ms-740.0ms	(0-127)	3	19
3	Lch Feedback Level	-63-+63	(1-127)	2	
4	Rch Feedback Level	-63-+63	(1-127)	4	
5	Feedback High Damp	0.1-1.0	(1-10)	5	
6	EQ Low Frequency	32Hz-2.0kHz	(4-40)	6	3
7	EQ Low Gain	-12dB-+12dB	(52-76)	7	
8	EQ High Frequency	500Hz-16.0kHz	(28-58)	8	3
9	EQ High Gain	-12dB-+12dB	(52-76)	9	



### 20 CROSS DELAY

No.	Parameter	Range	Value	MIDI Parameter Number	Table
1	L →R Delay Time	0.1ms~740.0ms	(0~127)	1	19
2	R →L Delay Time	0.1ms~740.0ms	(0~127)	2	19
3	Input Select	L, R, L&R	(0~2)	4	
4	Feedback Level	-63~+63	(1~127)	3	
5	Feedback High Damp	0.1~1.0	(1~10)	5	
6	EQ Low Frequency	32Hz~2.0kHz	(4~40)	6	3
7	EQ Low Gain	-12dB~+12dB	(52~76)	7	
8	EQ High Frequency	500Hz~16.0kHz	(28~58)	8	3
9	EQ High Gain	-12dB~+12dB	(52~76)	9	

### 21 CONTROL DELAY(MONO)

No.	Parameter	Range	Value	MIDI Parameter Number	Table
1	Delay Time	0.1ms~1480.0ms	(0~127)	1	20
2	Delay Transition Rate	1~48	(1~48)	2	
3	Feedback Level	-63~+63	(1~127)	3	
4	Feedback High Damp	0.1~1.0	(1~10)	4	
5	Delay Time Offset	0~127	(0~127)	5	
6	Control Type	normal, scratch	(0~1)	6	
7	EQ Low Frequency	32Hz~2.0kHz	(4~40)	7	3
8	EQ Low Gain	-12dB~+12dB	(52~76)	8	
9	EQ High Frequency	500Hz~16.0kHz	(28~58)	9	3
10	EQ High Gain	-12dB~+12dB	(52~76)	10	

### 22 CONTROL DELAY(STEREO)

No.	Parameter	Range	Value	MIDI Parameter Number	Table
1	Delay Time	0.1ms~740.0ms	(0~127)	1	19
2	Delay Transition Rate	1~48	(1~48)	2	
3	Feedback Level	-63~+63	(1~127)	3	
4	Feedback High Damp	0.1~1.0	(1~10)	4	
5	Delay Time Offset	0~127	(0~127)	5	
6	Control Type	normal, scratch	(0~1)	6	
7	EQ Low Frequency	32Hz~2.0kHz	(4~40)	7	3
8	EQ Low Gain	-12dB~+12dB	(52~76)	8	
9	EQ High Frequency	500Hz~16.0kHz	(28~58)	9	3
10	EQ High Gain	-12dB~+12dB	(52~76)	10	

### 23 TEMPO DELAY (MONO)--24 TEMPO DELAY (STEREO)

No.	Parameter	Range	Value	MIDI Parameter Number	Table
1	Delay Time	32nd, 16th/3, 32nd., 16th, 8th/3, 16th., 8th, 4th/3, 8th., 4th, 2nd/3, 4th., 2nd	(2~14)	1	
2	Lag	-63ms~+63ms	(1~127)	5	
3	L/R Diffusion	-63ms~+63ms	(1~127)	4	
4	Feedback Level	-63~+63	(1~127)	2	
5	Feedback High Damp	0.1~1.0	(1~10)	3	
6	EQ Low Frequency	32Hz~2.0kHz	(4~40)	6	3
7	EQ Low Gain	-12dB~+12dB	(52~76)	7	
8	EQ High Frequency	500Hz~16.0kHz	(28~58)	8	3
9	EQ High Gain	-12dB~+12dB	(52~76)	9	

### 25 TEMPO CROSS DELAY

No.	Parameter	Range	Value	MIDI Parameter Number	Table
1	L →R Delay Time	32nd, 16th/3, 32nd., 16th, 8th/3, 16th., 8th, 4th/3, 8th., 4th, 2nd/3, 4th., 2nd	(2~14)	1	
2	R →L Delay Time	32nd, 16th/3, 32nd., 16th, 8th/3, 16th., 8th, 4th/3, 8th., 4th, 2nd/3, 4th., 2nd	(2~14)	2	
3	Input Select	L, R, L&R	(0~2)	5	
4	Lag	-63ms~+63ms	(1~127)	6	
5	Feedback Level	-63~+63	(1~127)	3	
6	Feedback High Damp	0.1~1.0	(1~10)	4	
7	EQ Low Frequency	32Hz~2.0kHz	(4~40)	7	3
8	EQ Low Gain	-12dB~+12dB	(52~76)	8	
9	EQ High Frequency	500Hz~16.0kHz	(28~58)	9	3
10	EQ High Gain	-12dB~+12dB	(52~76)	10	

## 3. Insertion Effect 2

### 001 HALL1-008 PLATE

No.	Parameter	Range	Value	MIDI Parameter Number	Table
1	Reverb Time	0.3s~30.0s	(0~69)	1	4
2	Initial Delay	0.1ms~99.3ms	(0~63)	3	5
3	Reverb Delay	0.1ms~99.3ms	(0~63)	11	5
4	Dry/Wet Balance	D63>W=D=W~D<W63	(1~127)	10	
5	HPF Cutoff Frequency	20Hz~8.0kHz	(0~52)	4	3
6	LPF Cutoff Frequency	1.0kHz~20.0kHz	(34~60)	5	3
7	Diffusion	0~10	(0~10)	2	
8	Density	0~4	(0~4)	12	
9	ER/Rev Balance	E63>R=E=R~E<R63	(1~127)	13	
10	Feedback Level	-63~+63	(1~127)	15	
11	Feedback High Damp	0.1~1.0	(1~10)	14	

### 009 DELAY L, C, R

No.	Parameter	Range	Value	MIDI Parameter Number	Table
1	Lch Delay Time	0.1ms~1486.0ms	(1~14860)	1	
2	Rch Delay Time	0.1ms~1486.0ms	(1~14860)	2	
3	Cch Delay Time	0.1ms~1486.0ms	(1~14860)	3	
4	Dry/Wet Balance	D63>W=D=W~D<W63	(1~127)	10	
5	Cch Level	0~127	(0~127)	6	
6	Feedback Time	0.1ms~1486.0ms	(1~14860)	4	
7	Feedback Level	-63~+63	(1~127)	5	
8	Feedback High Damp	0.1~1.0	(1~10)	7	
9	EQ Low Frequency	32Hz~2.0kHz	(4~40)	13	3
10	EQ Low Gain	-12dB~+12dB	(52~76)	14	
11	EQ High Frequency	500Hz~16.0kHz	(28~58)	15	3
12	EQ High Gain	-12dB~+12dB	(52~76)	16	

### 010 DELAY L, R

No.	Parameter	Range	Value	MIDI Parameter Number	Table
1	Lch Delay Time	0.1ms~1486.0ms	(1~14860)	1	
2	Rch Delay Time	0.1ms~1486.0ms	(1~14860)	2	
3	Dry/Wet Balance	D63>W=D=W~D<W63	(1~127)	10	
4	Lch Feedback Time	0.1ms~1486.0ms	(1~14860)	3	
5	Rch Feedback Time	0.1ms~1486.0ms	(1~14860)	4	
6	Feedback Level	-63~+63	(1~127)	5	
7	Feedback High Damp	0.1~1.0	(1~10)	6	
8	EQ Low Frequency	32Hz~2.0kHz	(4~40)	13	3
9	EQ Low Gain	-12dB~+12dB	(52~76)	14	
10	EQ High Frequency	500Hz~16.0kHz	(28~58)	15	3
11	EQ High Gain	-12dB~+12dB	(52~76)	16	

### 011 ECHO

No.	Parameter	Range	Value	MIDI Parameter Number	Table
1	Lch Delay1 Time	0.1ms~743.0ms	(1~7430)	1	
2	Rch Delay1 Time	0.1ms~743.0ms	(1~7430)	3	
3	Dry/Wet Balance	D63>W=D=W~D<W63	(1~127)	10	
4	Lch Feedback Level	-63~+63	(1~127)	2	
5	Rch Feedback Level	-63~+63	(1~127)	4	
6	Feedback High Damp	0.1~1.0	(1~10)	5	
7	Lch Delay2 Time	0.1ms~743.0ms	(1~7430)	6	
8	Rch Delay2 Time	0.1ms~743.0ms	(1~7430)	7	
9	Delay2 Level	0~127	(0~127)	8	
10	EQ Low Frequency	32Hz~2.0kHz	(4~40)	13	3
11	EQ Low Gain	-12dB~+12dB	(52~76)	14	
12	EQ High Frequency	500Hz~16.0kHz	(28~58)	15	3
13	EQ High Gain	-12dB~+12dB	(52~76)	16	

### 012 CROSS DELAY

No.	Parameter	Range	Value	MIDI Parameter Number	Table
1	L →R Delay Time	0.1ms~743.0ms	(1~7430)	1	
2	R →L Delay Time	0.1ms~743.0ms	(1~7430)	2	
3	Input Select	L, R, L&R	(0~2)	4	
4	Dry/Wet Balance	D63>W=D=W~D<W63	(1~127)	10	
5	Feedback Level	-63~+63	(1~127)	3	
6	Feedback High Damp	0.1~1.0	(1~10)	5	
7	EQ Low Frequency	32Hz~2.0kHz	(4~40)	13	3
8	EQ Low Gain	-12dB~+12dB	(52~76)	14	
9	EQ High Frequency	500Hz~16.0kHz	(28~58)	15	3
10	EQ High Gain	-12dB~+12dB	(52~76)	16	

**013 CONTROL DELAY(MONO)**

No.	Parameter	Range	Value	MIDI Parameter Number	Table
1	Delay Time	0.1ms-1486.0ms	(1-14860)	1	
2	Delay Transition Rate	1-48	(1-48)	2	
3	Dry/Wet Balance	D63>W-D=W-D<W63	(1-127)	10	
4	Control Type	normal, scratch	(0-1)	11	
5	Feedback Level	-63~+63	(1-127)	3	
6	Feedback High Damp	0.1-1.0	(1-10)	4	
7	EQ Low Frequency	32Hz-2.0kHz	(4-40)	6	3
8	EQ Low Gain	-12dB~+12dB	(52-76)	7	
9	EQ High Frequency	500Hz-16.0kHz	(28-58)	8	3
10	EQ High Gain	-12dB~+12dB	(52-76)	9	

**014 CONTROL DELAY (STEREO)**

No.	Parameter	Range	Value	MIDI Parameter Number	Table
1	Delay Time	0.1ms-743.0ms	(1-7430)	1	
2	Delay Transition Rate	1-48	(1-48)	2	
3	Dry/Wet Balance	D63>W-D=W-D<W63	(1-127)	10	
4	Control Type	normal, scratch	(0-1)	11	
5	Feedback Level	-63~+63	(1-127)	3	
6	Feedback High Damp	0.1-1.0	(1-10)	4	
7	EQ Low Frequency	32Hz-2.0kHz	(4-40)	6	3
8	EQ Low Gain	-12dB~+12dB	(52-76)	7	
9	EQ High Frequency	500Hz-16.0kHz	(28-58)	8	3
10	EQ High Gain	-12dB~+12dB	(52-76)	9	

**015 TEMPO DELAY (MONO)-016 TEMPO DELAY (STEREO)**

No.	Parameter	Range	Value	MIDI Parameter Number	Table
1	Delay Time	32nd, 16th/3, 32nd., 16th, 8th/3, 16th., 8th, 4th/3, 8th., 4th, 2nd/3, 4th., 2nd	(2-14)	1	
2	Dry/Wet Balance	D63>W-D=W-D<W63	(1-127)	10	
3	Lag	-63ms~+63ms	(1-127)	6	
4	L/R Diffusion	-63ms~+63ms	(1-127)	5	
5	Feedback Level	-63~+63	(1-127)	3	
6	Feedback High Dump	0.1-1.0	(1-10)	4	
7	EQ Low Frequency	32Hz-2.0kHz	(4-40)	13	3
8	EQ Low Gain	-12dB~+12dB	(52-76)	14	
9	EQ High Frequency	500Hz-16.0kHz	(28-58)	15	3
10	EQ High Gain	-12dB~+12dB	(52-76)	16	

**017 TEMPO CROSS DELAY**

No.	Parameter	Range	Value	MIDI Parameter Number	Table
1	L-R Delay Time	32nd, 16th/3, 32nd., 16th, 8th/3, 16th., 8th, 4th/3, 8th., 4th, 2nd/3, 4th., 2nd	(2-14)	1	
2	R-L Delay Time	32nd, 16th/3, 32nd., 16th, 8th/3, 16th., 8th, 4th/3, 8th., 4th, 2nd/3, 4th., 2nd	(2-14)	2	
3	Input Select	L, R, L&R	(0-2)	6	
4	Dry/Wet Balance	D63>W-D=W-D<W63	(1-127)	10	
5	Lag	-63ms~+63ms	(1-127)	8	
6	Feedback Level	-63~+63	(1-127)	4	
7	Feedback High Dump	0.1-1.0	(1-10)	5	
8	EQ Low Frequency	32Hz-2.0kHz	(4-40)	13	3
9	EQ Low Gain	-12dB~+12dB	(52-76)	14	
10	EQ High Frequency	500Hz-16.0kHz	(28-58)	15	3
11	EQ High Gain	-12dB~+12dB	(52-76)	16	

**018 EARLY REFLECTION 1-019 EARLY REFLECTION 2**

No.	Parameter	Range	Value	MIDI Parameter Number	Table
1	Type	S-hall, L-hall, random, reverse, plate, spring	(0-5)	1	
2	Room Size	0.1-20.0	(0-127)	2	6
3	Dry/Wet Balance	D63>W-D=W-D<W63	(1-127)	10	
4	Diffusion	0-10	(0-10)	3	
5	Initial Delay	0.1ms-200.0ms	(0-127)	4	5
6	Liveness	0-10	(0-10)	11	
7	Density	0-3	(0-3)	12	
8	HPF Cutoff Frequency	20Hz-8.0kHz	(0-52)	6	3
9	LPF Cutoff Frequency	1.0kHz-20.0kHz	(34-60)	7	3
10	Feedback Level	-63~+63	(1-127)	5	
11	Feedback High Damp	0.1-1.0	(1-10)	13	

**020 GATE REVERB-021 REVERSE GATE**

No.	Parameter	Range	Value	MIDI Parameter Number	Table
1	Type	type-A, type-B	(0-1)	1	
2	Room Size	0.1-20.0	(0-127)	2	6
3	Dry/Wet Balance	D63>W-D=W-D<W63	(1-127)	10	
4	Diffusion	0-10	(0-10)	3	
5	Initial Delay	0.1ms-200.0ms	(0-127)	4	5
6	Liveness	0-10	(0-10)	11	
7	Density	0-3	(0-3)	12	
8	HPF Cutoff Frequency	20Hz-8.0kHz	(0-52)	6	3
9	LPF Cutoff Frequency	1.0kHz-20.0kHz	(34-60)	7	3
10	Feedback Level	-63~+63	(1-127)	5	
11	Feedback High Damp	0.1-1.0	(1-10)	13	

**022 KARAOKE 1-024 KARAOKE 3**

No.	Parameter	Range	Value	MIDI Parameter Number	Table
1	Delay Time	0.1ms-400.0ms	(0-127)	1	7
2	Feedback Level	-63~+63	(1-127)	2	
3	Dry/Wet Balance	D63>W-D=W-D<W63	(1-127)	10	
4	HPF Cutoff Frequency	20Hz-8.0kHz	(0-52)	3	3
5	LPF Cutoff Frequency	1.0kHz-20.0kHz	(34-60)	4	3

**025 CHORUS 1-033 CELESTE 4**

No.	Parameter	Range	Value	MIDI Parameter Number	Table
1	LFO Speed	0.0Hz-39.70Hz	(0-127)	1	1
2	LFO Depth	0-127	(0-127)	2	
3	Input Mode	mono/stereo	(0-1)	15	
4	EQ Low Frequency	32Hz-2.0kHz	(4-40)	6	3
5	EQ Low Gain	-12dB~+12dB	(52-76)	7	
6	EQ High Frequency	500Hz-16.0kHz	(28-58)	8	3
7	EQ High Gain	-12dB~+12dB	(52-76)	9	
8	EQ Mid Frequency	100Hz-10.0kHz	(14-54)	11	3
9	EQ Mid Gain	-12dB~+12dB	(52-76)	12	
10	EQ Mid Width	0.1-12.0	(1-120)	13	
11	Delay Offset	0.0ms-50.0ms	(0-127)	4	2
12	Feedback Level	-63~+63	(1-127)	3	
13	Dry/Wet Balance	D63>W-D=W-D<W63	(1-127)	10	

**034 SYMPHONIC**

No.	Parameter	Range	Value	MIDI Parameter Number	Table
1	LFO Speed	0.0Hz-39.70Hz	(0-127)	1	1
2	LFO Depth	0-127	(0-127)	2	
3	Delay Offset	0.0ms-50.0ms	(0-127)	4	2
4	EQ Low Frequency	32Hz-2.0kHz	(4-40)	6	3
5	EQ Low Gain	-12dB~+12dB	(52-76)	7	
6	EQ High Frequency	500Hz-16.0kHz	(28-58)	8	3
7	EQ High Gain	-12dB~+12dB	(52-76)	9	
8	EQ Mid Frequency	100Hz-10.0kHz	(14-54)	11	3
9	EQ Mid Gain	-12dB~+12dB	(52-76)	12	
10	EQ Mid Width	0.1-12.0	(1-120)	13	
11	Dry/Wet Balance	D63>W-D=W-D<W63	(1-127)	10	

**035 ENSEMBLE DETUNE**

No.	Parameter	Range	Value	MIDI Parameter Number	Table
1	Detune	-50cent~+50cent	(14-114)	1	
2	Lch Initial Delay	0.0ms-50.0ms	(0-127)	2	2
3	Rch Initial Delay	0.0ms-50.0ms	(0-127)	3	2
4	Dry/Wet Balance	D63>W-D=W-D<W63	(1-127)	10	
5	EQ Low Frequency	32Hz-2.0kHz	(4-40)	11	3
6	EQ Low Gain	-12dB~+12dB	(52-76)	12	
7	EQ High Frequency	500Hz-16.0kHz	(28-58)	13	3
8	EQ High Gain	-12dB~+12dB	(52-76)	14	

**036 FLANGER 1--038 FLANGER 3**

No.	Parameter	Range	Value	MIDI Parameter Number	Table
1	LFO Speed	0.0Hz-39.70Hz	(0-127)	1	1
2	LFO Depth	0-127	(0-127)	2	
3	LFO Phase Difference	-180deg--+180deg	(4-124)	14	
4	EQ Low Frequency	32Hz-2.0kHz	(4-40)	6	3
5	EQ Low Gain	-12dB--+12dB	(52-76)	7	
6	EQ High Frequency	500Hz-16.0kHz	(28-58)	8	3
7	EQ High Gain	-12dB--+12dB	(52-76)	9	
8	EQ Mid Frequency	100Hz-10.0kHz	(14-54)	11	3
9	EQ Mid Gain	-12dB--+12dB	(52-76)	12	
10	EQ Mid Width	0.1-12.0	(1-120)	13	
11	Delay Offset	0.0ms-50.0ms	(0-127)	4	2
12	Feedback Level	-63--+63	(1-127)	3	
13	Dry/Wet Balance	D63>W-D=W-D<W63	(1-127)	10	

**039 V-FLANGER**

No.	Parameter	Range	Value	MIDI Parameter Number	Table
1	LFO Speed	0.0Hz-39.70Hz	(0-127)	1	1
2	LFO Depth	0-127	(0-127)	2	
3	LFO Wave	Triangle, Sine, Random	(0-2)	3	
4	Modulation Phase	-180--+180	(0-16)	5	
5	EQ Low Frequency	32Hz-2.0kHz	(4-40)	6	3
6	EQ Low Gain	-12dB--+12dB	(52-76)	7	
7	EQ High Frequency	500Hz-16.0kHz	(28-58)	8	3
8	EQ High Gain	-12dB--+12dB	(52-76)	9	
9	EQ Mid Frequency	100Hz-10.0kHz	(14-54)	11	3
10	EQ Mid Gain	-12dB--+12dB	(52-76)	12	
11	EQ Mid Width	0.1-12.0	(1-120)	13	
12	Analog Feel	0-10	(0-10)	16	
13	Feedback Level	-100--+100%	(0-200)	14	
14	Feedback High Damp	0.1-1.0	(1-10)	15	
15	Delay offset	0.09-36.21ms	(0-139)	4	
16	Dry/Wet Balance	D63>W-D=W-D<W63	(1-127)	10	

**040 TEMPO FLANGER**

No.	Parameter	Range	Value	MIDI Parameter Number	Table
1	LFO Speed	16th, 8th/3, 16th., 8th, 4th/3, 8th., 4th, 2nd/3, 4th., 2nd, Whole/3, 2nd., 4thx4, 4thx5, 4thx6, 4thx7, 4thx8	(5-21)	1	
2	LFO Depth	0-127	(0-127)	2	
3	LFO Phase Difference	-180deg--+180deg	(4-124)	14	
4	LFO Phase Reset	off(free run), Key On Reset, SEQ Start Reset	(0-2)	5	
5	EQ Low Frequency	32Hz-2.0kHz	(4-40)	6	3
6	EQ Low Gain	-12dB--+12dB	(52-76)	7	
7	EQ High Frequency	500Hz-16.0kHz	(28-58)	8	3
8	EQ High Gain	-12dB--+12dB	(52-76)	9	
9	EQ Mid Frequency	100Hz-10.0kHz	(14-54)	11	3
10	EQ Mid Gain	-12dB--+12dB	(52-76)	12	
11	EQ Mid Width	0.1-12.0	(1-120)	13	
12	Delay offset	0.0ms-50.0ms	(0-127)	4	2
13	Feedback Level	-63--+63	(1-127)	3	
14	Dry/Wet Balance	D63>W-D=W-D<W63	(1-127)	10	

**41 DYNAMIC FLANGER**

No.	Parameter	Range	Value	MIDI Parameter Number	Table
1	Sensitivity	0-127	(0-127)	1	
2	Delay Time Offset	0-127	(0-127)	2	
3	Feedback Level	-63--+63	(1-127)	3	
4	Attack Time	0.3ms-227ms	(0-127)	4	17
5	Release Time	2.6ms-2171ms	(0-127)	5	18
6	Release Curve	0-127	(0-127)	6	
7	Direction	up, down	(0-1)	7	
8	Dyna Threshold Level	0-127	(0-127)	8	
9	Dyna Level Offset	0-127	(0-127)	9	
10	Dry/Wet Balance	D63>W-D=W-D<W63	(1-127)	10	
11	EQ Low Frequency	32Hz-2.0kHz	(4-40)	13	3
12	EQ Low Gain	-12dB--+12dB	(52-76)	14	
13	EQ High Frequency	500Hz-16.0kHz	(28-58)	15	3
14	EQ High Gain	-12dB--+12dB	(52-76)	16	

**42 PHASER 1**

No.	Parameter	Range	Value	MIDI Parameter Number	Table
1	LFO Speed	0.0Hz-39.70Hz	(0-127)	1	1
2	LFO Depth	0-127	(0-127)	2	
3	Diffusion	mono/stereo	(0-1)	12	
4	EQ Low Frequency	32Hz-2.0kHz	(4-40)	6	3
5	EQ Low Gain	-12dB--+12dB	(52-76)	7	
6	EQ High Frequency	500Hz-16.0kHz	(28-58)	8	3
7	EQ High Gain	-12dB--+12dB	(52-76)	9	
8	Stage	4, 5, 6, 7, 8, 9, 10, 11, 12	(4-12)	11	
9	Phase Shift Offset	0-127	(0-127)	3	
10	Feedback Level	-63--+63	(1-127)	4	
11	Dry/Wet Balance	D63>W-D=W-D<W63	(1-127)	10	

**043 PHASER 2**

No.	Parameter	Range	Value	MIDI Parameter Number	Table
1	LFO Speed	0.0Hz-39.70Hz	(0-127)	1	1
2	LFO Depth	0-127	(0-127)	2	
3	LFO Phase Difference	-180deg--+180deg	(4-124)	13	
4	EQ Low Frequency	32Hz-2.0kHz	(4-40)	6	3
5	EQ Low Gain	-12dB--+12dB	(52-76)	7	
6	EQ High Frequency	500Hz-16.0kHz	(28-58)	8	3
7	EQ High Gain	-12dB--+12dB	(52-76)	9	
8	Stage	3, 4, 5, 6	(3-6)	11	
9	Phase Shift Offset	0-127	(0-127)	3	
10	Feedback Level	-63--+63	(1-127)	4	
11	Dry/Wet Balance	D63>W-D=W-D<W63	(1-127)	10	

**44 TEMPO PHASER**

No.	Parameter	Range	Value	MIDI Parameter Number	Table
1	LFO Speed	16th, 8th/3, 16th., 8th, 4th/3, 8th., 4th, 2nd/3, 4th., 2nd, Whole/3, 2nd., 4thx4, 4thx5, 4thx6, 4thx7, 4thx8	(5-21)	1	
2	LFO Depth	0-127	(0-127)	2	
4	LFO Phase Reset	off(free run), Key On Reset, SEQ Start Reset	(0-2)	5	
3	LFO Phase Difference (deg)	-180deg--+180deg	(4-124)	13	
5	EQ Low Frequency	32Hz-2.0kHz	(4-40)	6	3
6	EQ Low Gain	-12dB--+12dB	(52-76)	7	
7	EQ High Frequency	500Hz-16.0kHz	(28-58)	8	3
8	EQ High Gain	-12dB--+12dB	(52-76)	9	
9	Stage	3, 4, 5, 6	(3-6)	11	
10	Phase Shift Offset	0-127	(0-127)	3	
11	Feedback Level	-63--+63	(1-127)	4	
12	Dry/Wet Balance	D63>W-D=W-D<W63	(1-127)	10	

**045 DYNAMIC PHASER**

No.	Parameter	Range	Value	MIDI Parameter Number	Table
1	Sensitivity	0-127	(0-127)	1	
2	Dyna Level Offset	0-127	(0-127)	2	
3	Feedback Level	-63--+63	(1-127)	3	
4	Attack Time	0.3ms-227ms	(0-127)	4	17
5	Release Time	2.6ms-2171ms	(0-127)	5	18
6	Release Curve	0-127	(0-127)	6	
7	Direction	up, down	(0-1)	7	
8	Dyna Threshold Level	0-127	(0-127)	8	
9	Dry/Wet Balance	D63>W-D=W-D<W63	(1-127)	10	
10	Stage	4, 5, 6	(4-6)	11	
11	EQ Low Frequency	32Hz-2.0kHz	(4-40)	13	3
12	EQ Low Gain	-12dB--+12dB	(52-76)	14	
13	EQ High Frequency	500Hz-16.0kHz	(28-58)	15	3
14	EQ High Gain	-12dB--+12dB	(52-76)	16	

**046 TREMOLO**

No.	Parameter	Range	Value	MIDI Parameter Number	Table
1	LFO Speed	0.0Hz-39.70Hz	(0-127)	1	1
2	AM Depth	0-127	(0-127)	2	
3	PM Depth	0-127	(0-127)	3	
4	LFO Phase Difference	-180deg-+180deg	(4-124)	14	
5	EQ Low Frequency	32Hz-2.0kHz	(4-40)	6	3
6	EQ Low Gain	-12dB-+12dB	(52-76)	7	
7	EQ High Frequency	500Hz-16.0kHz	(28-58)	8	3
8	EQ High Gain	-12dB-+12dB	(52-76)	9	
9	EQ Mid Frequency	100Hz-10.0kHz	(14-54)	11	3
10	EQ Mid Gain	-12dB-+12dB	(52-76)	12	
11	EQ Mid Width	0.1-12.0	(1-120)	13	
12	Input Mode	mono/stereo	(0-1)	15	

**047 AUTO PAN**

No.	Parameter	Range	Value	MIDI Parameter Number	Table
1	LFO Speed	0.0Hz-39.70Hz	(0-127)	1	1
2	L/R Depth	0-127	(0-127)	2	
3	F/R Depth	0-127	(0-127)	3	
4	PAN Direction	L<>R, L>>R, L<<R, Lturn, Rturn, L/R	(0-5)	4	
5	EQ Low Frequency	32Hz-2.0kHz	(4-40)	6	3
6	EQ Low Gain	-12dB-+12dB	(52-76)	7	
7	EQ High Frequency	500Hz-16.0kHz	(28-58)	8	3
8	EQ High Gain	-12dB-+12dB	(52-76)	9	
9	EQ Mid Frequency	100Hz-10.0kHz	(14-54)	11	3
10	EQ Mid Gain	-12dB-+12dB	(52-76)	12	
11	EQ Mid Width	0.1-12.0	(1-120)	13	

**048 AUTO PAN 2**

No.	Parameter	Range	Value	MIDI Parameter Number	Table
1	LFO Speed	0.0Hz-39.70Hz	(0-127)	1	1
2	LFO Wave	0-28	(0-28)	2	
3	L/R Depth	0-127	(0-127)	3	
4	F/R Depth	0-127	(0-127)	4	
5	EQ Low Frequency	32Hz-2.0kHz	(4-40)	6	3
6	EQ Low Gain	-12dB-+12dB	(52-76)	7	
7	EQ High Frequency	500Hz-16.0kHz	(28-58)	8	3
8	EQ High Gain	-12dB-+12dB	(52-76)	9	
9	PAN Direction	L<>R, L>>R, L<<R, Lturn, Rturn, L/R	(0-5)	5	
10	EQ Mid Frequency	100Hz-10.0kHz	(14-54)	11	3
11	EQ Mid Gain	-12dB-+12dB	(52-76)	12	
12	EQ Mid Width	0.1-12.0	(1-120)	13	

**049 ROTARY SPEAKER**

No.	Parameter	Range	Value	MIDI Parameter Number	Table
1	LFO Speed	0.0Hz-39.70Hz	(0-127)	1	1
2	LFO Depth	0-127	(0-127)	2	
3	EQ Low Frequency	32Hz-2.0kHz	(4-40)	6	3
4	EQ Low Gain	-12dB-+12dB	(52-76)	7	
5	EQ High Frequency	500Hz-16.0kHz	(28-58)	8	3
6	EQ High Gain	-12dB-+12dB	(52-76)	9	
7	EQ Mid Frequency	100Hz-10.0kHz	(14-54)	11	3
8	EQ Mid Gain	-12dB-+12dB	(52-76)	12	
9	EQ Mid Width	0.1-12.0	(1-120)	13	
10	Dry/Wet Balance	D63>W-D=W-D<W63	(1-127)	10	

**050 DISTORTION + ROTARY SPEAKER-051 OVERDRIVE + ROTARY SPEAKER**

No.	Parameter	Range	Value	MIDI Parameter Number	Table
1	LFO Speed	0.0Hz-39.70Hz	(0-127)	1	1
2	LFO Depth	0-127	(0-127)	2	
3	Drive	0-127	(0-127)	14	
4	Drive LPF Cutoff Freq	1.0kHz-20.0kHz	(34-60)	15	3
5	Drive Output Level	0-127	(0-127)	16	
6	EQ Low Frequency	32Hz-2.0kHz	(4-40)	6	3
7	EQ Low Gain	-12dB-+12dB	(52-76)	7	
8	EQ High Frequency	500Hz-16.0kHz	(28-58)	8	3
9	EQ High Gain	-12dB-+12dB	(52-76)	9	

**052 AMP SIM. + ROTARY SPEAKER**

No.	Parameter	Range	Value	MIDI Parameter Number	Table
1	LFO Speed	0.0Hz-39.70Hz	(0-127)	1	1
2	LFO Depth	0-127	(0-127)	2	
3	Amp Type	off, stack, combo, tube	(0-3)	3	
4	Amp Drive	0-127	(0-127)	14	
5	Amp LPF Cutoff Freq	1.0kHz-20.0kHz	(34-60)	15	3
6	Amp Output Level	0-127	(0-127)	16	
7	EQ Low Frequency	32Hz-2.0kHz	(4-40)	6	3
8	EQ Low Gain	-12dB-+12dB	(52-76)	7	
9	EQ High Frequency	500Hz-16.0kHz	(28-58)	8	3
10	EQ High Gain	-12dB-+12dB	(52-76)	9	

**053 2-WAY ROTARY SPEAKER**

No.	Parameter	Range	Value	MIDI Parameter Number	Table
1	Rotor Speed	0.0Hz-39.70Hz	(0-127)	1	1
2	Drive Low	0-127	(0-127)	2	
3	Drive High	0-127	(0-127)	3	
4	Low/High Balance	L63>H-L=H-L<H63	(1-127)	4	
5	Mic L-R Angle	0deg-180deg	(0-60)	5	
6	Divide Frequency	100Hz-10.0kHz	(14-54)	11	3
7	EQ Low Frequency	32Hz-2.0kHz	(4-40)	6	3
8	EQ Low Gain	-12dB-+12dB	(52-76)	7	
9	EQ High Frequency	500Hz-16.0kHz	(28-58)	8	3
10	EQ High Gain	-12dB-+12dB	(52-76)	9	

**054 DISTORTION + 2-WAY ROTARY SPEAKER-055 OVERDRIVE + 2-WAY ROTARY SPEAKER**

No.	Parameter	Range	Value	MIDI Parameter Number	Table
1	Rotor Speed	0.0Hz-39.70Hz	(0-127)	1	1
2	Drive Low	0-127	(0-127)	2	
3	Drive High	0-127	(0-127)	3	
4	Low/High Balance	L63>H-L=H-L<H63	(1-127)	4	
5	Mic L-R Angle	0deg-180deg	(0-60)	12	
6	Divide Frequency	100Hz-10.0kHz	(14-54)	11	3
7	Drive	0-127	(0-127)	14	
8	Drive LPF Cutoff Freq	1.0kHz-20.0kHz	(34-60)	15	3
9	Drive Output Level	0-127	(0-127)	16	
10	EQ Low Frequency	32Hz-2.0kHz	(4-40)	6	3
11	EQ Low Gain	-12dB-+12dB	(52-76)	7	
12	EQ High Frequency	500Hz-16.0kHz	(28-58)	8	3
13	EQ High Gain	-12dB-+12dB	(52-76)	9	

**056 AMP SIM. + 2-WAY ROTARY SPEAKER**

No.	Parameter	Range	Value	MIDI Parameter Number	Table
1	Rotor Speed	0.0Hz-39.70Hz	(0-127)	1	1
2	Drive Low	0-127	(0-127)	2	
3	Drive High	0-127	(0-127)	3	
4	Low/High Balance	L63>H-L=H-L<H63	(1-127)	4	
5	Mic L-R Angle	0deg-180deg	(0-60)	12	
6	Divide Frequency	100Hz-10.0kHz	(14-54)	11	3
7	Amp Type	off, stack, combo, tube	(0-3)	13	
8	Amp Drive	0-127	(0-127)	14	
9	Amp LPF Cutoff Freq	1.0kHz-20.0kHz	(34-60)	15	3
10	Amp Output Level	0-127	(0-127)	16	
11	EQ Low Frequency	32Hz-2.0kHz	(4-40)	6	3
12	EQ Low Gain	-12dB-+12dB	(52-76)	7	
13	EQ High Frequency	500Hz-16.0kHz	(28-58)	8	3
14	EQ High Gain	-12dB-+12dB	(52-76)	9	

**057 DUAL ROTOR SPEAKER 1-059 DUAL ROTOR SPEAKER 3**

No.	Parameter	Range	Value	MIDI Parameter Number	Table
1	Speed Control	slow, fast	(0-1)	16	
2	Slow-Fast Time of Rotor	0-127	(0-127)	5	
3	Slow-Fast Time of Horn	0-127	(0-127)	6	
4	Rotor Speed Slow	0.0Hz-2.65Hz	(0-63)	1	1
5	Horn Speed Slow	0.0Hz-2.65Hz	(0-63)	2	1
6	Rotor Speed Fast	2.692Hz-39.70Hz	(64-127)	3	1
7	Horn Speed Fast	2.692Hz-39.70Hz	(64-127)	4	1
8	Mic L-R Angle	0deg-180deg	(0-60)	15	
9	Drive Low	0-127	(0-127)	7	
10	Drive High	0-127	(0-127)	8	
11	Low/High Balance	L63>H-L=H-L<H63	(1-127)	9	
12	EQ Low Frequency	32Hz-2.0kHz	(4-40)	11	3
13	EQ Low Gain	-12dB-+12dB	(52-76)	12	
14	EQ High Frequency	500Hz-16.0kHz	(28-58)	13	3
15	EQ High Gain	-12dB-+12dB	(52-76)	14	

**060 DISTORTION, 063 OVERDRIVE**

No.	Parameter	Range	Value	MIDI Parameter Number	Table
1	Drive	0-127	(0-127)	1	
2	Edge	0-127	(0-127)	11	
3	Output Level	0-127	(0-127)	5	
4	EQ Low Frequency	32Hz-2.0kHz	(4-40)	2	3
5	EQ Low Gain	-12dB-+12dB	(52-76)	3	
6	LPF Cutoff Frequency	1.0kHz-20.0kHz	(34-60)	4	3
7	EQ Mid Frequency	100Hz-10.0kHz	(14-54)	7	3
8	EQ Mid Gain	-12dB-+12dB	(52-76)	8	
9	EQ Mid Width	0.1-12.0	(1-120)	9	
10	Dry/Wet Balance	D63>W-D=W-D<W63	(1-127)	10	

**061 COMP DISTORTION**

No.	Parameter	Range	Value	MIDI Parameter Number	Table
1	Attack	1ms-40ms	(0-19)	12	8
2	Release	10ms-680ms	(0-15)	13	9
3	Threshold	-48dB--6dB	(79-121)	14	
4	Ratio	1-20.0	(0-7)	15	10
5	EQ Low Frequency	32Hz-2.0kHz	(4-40)	2	3
6	EQ Low Gain	-12dB-+12dB	(52-76)	3	
7	Drive	0-127	(0-127)	1	
8	Output Level	0-127	(0-127)	5	
9	EQ Mid Frequency	100Hz-10.0kHz	(14-54)	7	3
10	EQ Mid Gain	-12dB-+12dB	(52-76)	8	
11	EQ Mid Width	0.1-12.0	(1-120)	9	
12	Edge	0-127	(0-127)	11	
13	LPF Cutoff Frequency	1.0kHz-20.0kHz	(34-60)	4	3
14	Dry/Wet Balance	D63>W-D=W-D<W63	(1-127)	10	

**062 V-DISTORTION**

No.	Parameter	Range	Value	MIDI Parameter Number	Table
1	Over Drive	0-100%	(0-100)	1	
2	Device	Transistor, Vintage Tube, Dsitortion1, Dsitortion2, Fuzz	(0-4)	2	
3	Speaker Type	Flat, Stack, Combo, Twin, Radio, Megaphone	(0-5)	3	
4	Presence	-10-10	(0-20)	4	
5	Lch Delay Time	0.1ms-1486.0ms	(1-14860)	6	
6	Rch Delay Time	0.1ms-1486.0ms	(1-14860)	7	
7	Feedback Time	0.1ms-1486.0ms	(1-14860)	8	
8	Feedback Level	-63-+63	(1-127)	9	
9	Feedback High Damp	0.1-1.0	(1-10)	12	
10	Dist Output Level	0-100%	(0-100)	5	
11	Delay Mix	0-127	(0-127)	11	
12	Dry/Wet Balance	D63>W-D=W-D<W63	(1-127)	10	

**064 AMP SIMULATOR**

No.	Parameter	Range	Value	MIDI Parameter Number	Table
1	AMP type	off, stack, combo, tube	(0-3)	2	
2	drive	0-127	(0-127)	1	
3	edge	0-127	(0-127)	11	
4	LPF cutoff frequency	1.0kHz-20.0kHz	(34-60)	3	3
5	output level	0-127	(0-127)	4	

**065 AMP SIMULATOR 2**

No.	Parameter	Range	Value	MIDI Parameter Number	Table
1	AMP type	off, stack, combo, tube, crunch, hi gain, british	(0-3)	2	
2	drive	0-127	(0-127)	1	
3	output level	0-127	(0-127)	4	
4	LPF cutoff frequency	1.0kHz-20.0kHz	(34-60)	3	3
5	Dry/Wet Balance	D63>W-D=W-D<W63	(1-127)	10	

**066 DIST + DELAY, 067 OVERDRIVE + DELAY**

No.	Parameter	Range	Value	MIDI Parameter Number	Table
1	Dist Drive	0-127	(0-127)	6	
2	Dist EQ Low Gain	-12dB-+12dB	(52-76)	8	
3	Dist EQ Mid Gain	-12dB-+12dB	(52-76)	9	
4	Dist Output Level	0-127	(0-127)	7	
5	Delay Time L	0.1ms-1486.0ms	(1-14860)	1	
6	Delay Time R	0.1ms-1486.0ms	(1-14860)	2	
7	Delay Feedback Time	0.1ms-1486.0ms	(1-14860)	3	
8	Delay Feedback Level	-63-+63	(1-127)	4	
9	Delay Mix	0-127	(0-127)	5	
10	Dry/Wet Balance	D63>W-D=W-D<W63	(1-127)	10	

**068 COMPRESSOR**

No.	Parameter	Range	Value	MIDI Parameter Number	Table
1	Attack	1ms-40ms	(0-19)	1	8
2	Release	10ms-680ms	(0-15)	2	9
3	Threshold	-48dB--6dB	(79-121)	3	
4	Ratio	1-20.0	(0-7)	4	10
5	Output Level	0-127	(0-127)	5	

**069 NOISE GATE**

No.	Parameter	Range	Value	MIDI Parameter Number	Table
1	Attack	1ms-40ms	(0-19)	1	8
2	Release	10ms-680ms	(0-15)	2	9
3	Threshold	-72dB--30dB	(55-97)	3	
4	Output Level	0-127	(0-127)	4	

**070 COMP + DIST + DELAY-071 COMP + OVERDRIVE + DELAY**

No.	Parameter	Range	Value	MIDI Parameter Number	Table
1	Comp Attack	1ms-40ms	(0-19)	11	8
2	Comp Release	10ms-680ms	(0-15)	12	9
3	Comp Threshold	-48dB--6dB	(79-121)	13	
4	Comp Ratio	1-20.0	(0-7)	14	10
5	Drive	0-127	(0-127)	4	
6	Drive EQ Low Gain	-12dB-+12dB	(52-76)	6	
7	Drive EQ Mid Gain	-12dB-+12dB	(52-76)	7	
8	Drive Output Level	0-127	(0-127)	5	
9	Delay Time	0.1ms-1486.0ms	(1-14860)	1	
10	Delay Feedback Level	-63-+63	(1-127)	2	
11	Delay Mix	0-127	(0-127)	3	
12	Dry/Wet Balance	D63>W-D=W-D<W63	(1-127)	10	

**072 MULTI BAND COMPRESSOR 1**

No.	Parameter	Range	Value	MIDI Parameter Number	Table
1	Type	Normal, Low, Mid, High, Low/High, Low/Mid, Mid/High, Full Bit, Wild, Attacky, Low End, Hard	(0-11)	1	
2	Threshold Offset	-32-+32	(32-96)	2	
3	Low Gain Offset	-63-+63	(1-127)	3	
4	Mid Gain Offset	-63-+63	(1-127)	4	
5	High Gain Offset	-63-+63	(1-127)	5	

**073 MULTI BAND COMPRESSOR 2**

No.	Parameter	Range	Value	MIDI Parameter Number	Table
1	Low Attack	1ms-200ms	(0-29)	1	8
2	Low Release	10ms-3000ms	(0-15)	2	9
3	Low Threshold	-54dB--6dB	(73-121)	3	
4	Low Ratio	1-20.0	(0-7)	4	10
5	Low Gain	-∞-+18dB	(0-55)	5	14
6	Mid Attack	1ms-200ms	(0-29)	6	8
7	Mid Release	10ms-3000ms	(0-15)	7	9
8	Mid Threshold	-54dB--6dB	(73-121)	8	
9	Mid Ratio	1-20.0	(0-7)	9	10
10	Mid Gain	-∞-+18dB	(0-55)	10	14
11	High Attack	1ms-200ms	(0-29)	11	8
12	High Release	10ms-3000ms	(0-15)	12	9
13	High Threshold	-54dB--6dB	(73-121)	13	
14	High Ratio	1-20.0	(0-7)	14	10
15	High Gain	-∞-+18dB	(0-55)	15	14
16	Divide Freq	32Hz, 1.2kHz-630Hz, 10.0kHz	(0-89)	16	15

**074 PITCH CHANGE 1-075 PITCH CHANGE 2**

In 075 PITCH CHANGE 2, the unit of Fine 1 and Fine 2 (numbers 5 and 6) is cent.

No.	Parameter	Range	Value	MIDI Parameter Number	Table
1	Pitch	-24-+24	(40-88)	1	
2	Initial Delay	0.1ms-248.9ms	(0-79)	2	7
3	Feedback Level	-63-+63	(1-127)	5	
4	Dry/Wet Balance	D63>W-D=W-D<W63	(1-127)	10	
5	Fine1	-50-+50	(14-114)	3	
6	Fine2	-50-+50	(14-114)	4	
7	Pan1	L63-C-R63	(1-127)	11	
8	Output Level1	0-127	(0-127)	12	
9	Pan2	L63-C-R63	(1-127)	13	
10	Output Level2	0-127	(0-127)	14	

**076 AUTO WAH**

No.	Parameter	Range	Value	MIDI Parameter Number	Table
1	LFO Speed	0.0Hz-39.70Hz	(0-127)	1	1
2	LFO Depth	0-127	(0-127)	2	
3	Cutoff Frequency Offset	0-127	(0-127)	3	
4	Resonance	1-12.0	(10-120)	4	
5	EQ Low Frequency	32Hz-2.0kHz	(4-40)	6	3
6	EQ Low Gain	-12dB-+12dB	(52-76)	7	
7	EQ High Frequency	500Hz-16.0kHz	(28-58)	8	3
8	EQ High Gain	-12dB-+12dB	(52-76)	9	

**077 AUTO WAH + DIST-078 AUTO WAH + OVERDRIVE**

No.	Parameter	Range	Value	MIDI Parameter Number	Table
1	LFO Speed	0.0Hz-39.70Hz	(0-127)	1	1
2	LFO Depth	0-127	(0-127)	2	
3	Cutoff Frequency Offset	0-127	(0-127)	3	
4	Resonance	1-12.0	(10-120)	4	
5	EQ Low Frequency	32Hz-2.0kHz	(4-40)	6	3
6	EQ Low Gain	-12dB-+12dB	(52-76)	7	
7	EQ High Frequency	500Hz-16.0kHz	(28-58)	8	3
8	EQ High Gain	-12dB-+12dB	(52-76)	9	
9	Drive	0-127	(0-127)	11	
10	Drive Low Gain	-12dB-+12dB	(52-76)	12	
11	Drive Mid Gain	-12dB-+12dB	(52-76)	13	
12	Drive LPF Cutoff Freq	1.0kHz-20.0kHz	(34-60)	14	3
13	Drive Output Level	0-127	(0-127)	15	
14	Dry/Wet Balance	D63>W-D=W-D<W63	(1-127)	10	

**079 TOUCH WAH**

No.	Parameter	Range	Value	MIDI Parameter Number	Table
1	Sensitive	0-127	(0-127)	1	
2	Cutoff Frequency Offset	0-127	(0-127)	2	
3	Resonance	1-12.0	(10-120)	3	
4	EQ Low Frequency	32Hz-2.0kHz	(4-40)	6	3
5	EQ Low Gain	-12dB-+12dB	(52-76)	7	
6	EQ High Frequency	500Hz-16.0kHz	(28-58)	8	3
7	EQ High Gain	-12dB-+12dB	(52-76)	9	
8	Dry/Wet Balance	D63>W-D=W-D<W63	(1-127)	10	

**080 TOUCH WAH + DIST-081 TOUCH WAH + OVERDRIVE**

No.	Parameter	Range	Value	MIDI Parameter Number	Table
1	Sensitive	0-127	(0-127)	1	
2	Cutoff Frequency Offset	0-127	(0-127)	2	
3	Resonance	1-12.0	(10-120)	3	
4	EQ Low Frequency	32Hz-2.0kHz	(4-40)	6	3
5	EQ Low Gain	-12dB-+12dB	(52-76)	7	
6	EQ High Frequency	500Hz-16.0kHz	(28-58)	8	3
7	EQ High Gain	-12dB-+12dB	(52-76)	9	
8	Drive	0-127	(0-127)	11	
9	Drive Low Gain	-12dB-+12dB	(52-76)	12	
10	Drive Mid Gain	-12dB-+12dB	(52-76)	13	
11	Drive LPF Cutoff Freq	1.0kHz-20.0kHz	(34-60)	14	3
12	Drive Output Level	0-127	(0-127)	15	
13	Dry/Wet Balance	D63>W-D=W-D<W63	(1-127)	10	

**082 WAH + DIST + DELAY-083 WAH + OVERDRIVE + DELAY**

No.	Parameter	Range	Value	MIDI Parameter Number	Table
1	Wah Sensitive	0-127	(0-127)	11	
2	Wah Cutoff Frequency	0-127	(0-127)	12	
3	Wah Resonance	1-12.0	(10-120)	13	
4	Wah Release	10ms-680ms	(52-67)	14	12
5	Dist Drive	0-127	(0-127)	4	
6	Dist EQ Low Gain	-12dB-+12dB	(52-76)	6	
7	Dist EQ Mid Gain	-12dB-+12dB	(52-76)	7	
8	Dist Output Level	0-127	(0-127)	5	
9	Delay Time	0.1ms-1486.0ms	(1-14860)	1	
10	Delay Feedback Level	-63-+63	(1-127)	2	
11	Delay Mix	0-127	(0-127)	3	
12	Dry/Wet Balance	D63>W-D=W-D<W63	(1-127)	10	

**084 LO-FI**

No.	Parameter	Range	Value	MIDI Parameter Number	Table
1	Sampling Freq. Control	44.1kHz-344.5Hz	(0-127)	1	
2	Word Length	1-127	(1-127)	2	
3	Output Gain	-6dB-+36dB	(0-42)	3	
4	Filter Type	thru, Power Bass, Radio, Telephone, Clean, Low	(0-5)	5	
5	Pre-LPF Cutoff Freq	63Hz-20.0kHz	(10-60)	4	3
6	Pre-LPF Resonance	1-12.0	(10-120)	6	
7	Bit Assign	0-6	(0-6)	7	
8	Emphasis	off/on	(0-1)	8	
9	Input Mode	mono/stereo	(0-1)	15	
10	Dry/Wet Balance	D63>W-D=W-D<W63	(1-127)	10	

**085 LOW RESOLUTION**

No.	Parameter	Range	Value	MIDI Parameter Number	Table
1	Mod Depth	0-127	(0-127)	2	
2	Mod Delay Offset	1-127	(1-127)	1	
3	Mod Feedback	-63-+63	(1-127)	3	
4	Mod Mix Balance	0-127	(0-127)	5	
5	Resolution	1, 1/2-1/128	(0-7)	4	
6	Phase Inverse R	off, wet	(0-1)	6	
7	Dry/Wet Balance	D63>W-D=W-D<W63	(1-127)	10	

**086 NOISY**

No.	Parameter	Range	Value	MIDI Parameter Number	Table
1	Mod Depth	0-10	(0-10)	2	
2	Mod Speed	0-127	(0-127)	3	
3	Mod Feedback	-63-+63	(1-127)	4	
4	Mod Mix Balance	1-127	(1-127)	7	
5	Drive	0-127	(0-127)	1	
6	AM Speed	0.00Hz-39.7Hz	(0-127)	5	1
7	AM Depth	0-127	(0-127)	6	
8	LPF Cutoff Frequency	1.0kHz-20.0kHz	(34-60)	8	3
9	LPF Resonance	1.0-12.0	(10-120)	9	
10	EQ Frequency	100Hz-10.0kHz	(14-54)	10	3
11	EQ Gain	-12-+12dB	(52-76)	11	
12	EQ Width	1.0-12.0	(10-120)	12	
13	Dry/Wet Balance	D63>W-D=W-D<W63	(1-127)	10	

**087 ATTACK LO-FI**

No.	Parameter	Range	Value	MIDI Parameter Number	Table
1	Sensitive	0-127	(0-127)	1	
2	Resolution	1, 1/2-1/32	(0-5)	2	
3	Peak Frequency	100Hz-10.0kHz	(14-54)	3	3
4	LPF Cutoff Frequency	1.0kHz-20.0kHz	(34-60)	4	3
5	Flanger Speed	0.00Hz-39.7Hz	(0-127)	5	1
6	Flanger LFO Wave	tri, sine, saw up, saw down	(0-3)	6	
7	Flanger Depth	0-127	(0-127)	7	
8	Flanger Depth Ofst R	-63-+63	(1-127)	8	
9	Flanger Delay	0.1-650.0ms	(1-6500)	9	
10	Flanger Delay Ofst R	0-884	(0-884)	10	
11	Flanger Feedback	-63-+63	(1-127)	11	
12	Flanger Feedback Ofst R	-63-+63	(1-127)	12	
13	Flanger Feedback HiDamp	0.1-1.0	(1-10)	13	
14	Feedback HiDamp Ofst R	-0.9-+0.9	(1-19)	14	
15	Flanger Mix Balance	1-127	(1-127)	15	
16	Dry/Wet Balance	D63>W-D=W-D<W63	(1-127)	10	

**088 DIGITAL TURNTABLE**

No.	Parameter	Range	Value	MIDI Parameter Number	Table
1	Click Density	0-5	(0-5)	1	
2	Click Level	0-127	(0-127)	2	
3	Noise Tone	0-6	(0-6)	3	
4	Dry Send to Noise	0-127	(0-127)	6	
5	Noise Mod Speed	0.00Hz-39.7Hz	(0-127)	4	1
6	Noise Mod Depth	0-127	(0-127)	5	
7	Noise LPF Freq	1.0kHz-20.0kHz	(34-60)	7	3
8	Noise LPF Q	1.0-12.0	(10-120)	8	
9	Noise Level	0-127	(0-127)	9	
10	Dry LPF Frequency	1.0kHz-20.0kHz	(34-60)	10	3
11	Dry Level	0-127	(0-127)	11	

**089 DIGITAL SCRATCH**

No.	Parameter	Range	Value	MIDI Parameter Number	Table
1	Input Level	0-127	(0-127)	1	
2	Initial Delay	0.1-460.0ms	(1-4600)	2	
3	Scratch Speed	1-127	(1-127)	3	
4	Scratch Depth	0-127	(0-127)	4	
5	HPF Cutoff Frequency	20Hz-8.0kHz	(0-52)	10	3
6	Auto Pan Speed	0.00Hz-39.7Hz	(0-127)	5	1
7	Auto Pan Depth	0-127	(0-127)	6	
8	EQ Frequency	100Hz-10.0kHz	(14-54)	7	3
9	EQ Gain	-12~+12dB	(52-76)	8	
10	EQ Width	1.0-12.0	(10-120)	9	
11	Dry/Wet Balance	D63>W-D=W-D<W63	(1-127)	10	

**090 AUTO SYNTH**

No.	Parameter	Range	Value	MIDI Parameter Number	Table
1	Mod Speed	0-127	(0-127)	1	
2	Mod Wave Type	typeA, typeB, typeC, typeD	(0-3)	2	
3	Mod Depth	0-127	(0-127)	3	
4	Mod Depth Ofst R	-63~+63	(1-127)	4	
5	HPF Frequency	20Hz-8.0kHz	(0-52)	6	3
6	LPF Frequency	1.0kHz-20.0kHz	(34-60)	5	3
7	Dry Mix Level	0-127	(0-127)	7	
8	Delay Level	0-127	(0-127)	10	
9	Delay Time	0.1-370.0ms	(1-3700)	8	
10	Delay Time Ofst R	0-884	(0-884)	9	
11	Feedback Level	-63~+63	(1-127)	10	
12	FB Level Ofst R	-63~+63	(1-127)	11	
13	AM Speed	0.00Hz-39.7Hz	(0-127)	13	1
14	AM Wave	tri, sine, saw up, saw down	(0-3)	14	
15	AM Depth	0-127	(0-127)	15	
16	AM Inverse R	normal, inverse	(0-1)	16	

**091 TECH MODULATION**

No.	Parameter	Range	Value	MIDI Parameter Number	Table
1	Mod Speed	0-127	(0-127)	1	
2	Mod Depth	0-127	(0-127)	2	
3	Mod Gain	-12~+12dB	(52-76)	4	
4	Mod Mix Balance	D63>W-D=W-D<W63	(1-127)	7	
5	Pre Mod HPF Cutoff Freq	20Hz-8.0kHz	(0-52)	3	3
6	Mod LPF Cutoff Freq	1.0kHz-20.0kHz	(34-60)	5	3
7	Mod LPF Resonance	1.0-12.0	(10-120)	6	
8	Delay Time	0.1-740.0ms	(1-7400)	8	
9	Delay Time Ofst R	0-884	(0-884)	9	
10	Feedback Level	-63~+63	(1-127)	10	
11	Feedback Level Ofst R	-63~+63	(1-127)	11	
12	Feedback Hi Damp	0.1-1.0	(1-10)	12	
13	Feedback Hi Damp Ofst R	-0.9~+0.9	(1-19)	13	
14	Dry/Wet Balance	D63>W-D=W-D<W63	(1-127)	10	

**092 JUMP**

No.	Parameter	Range	Value	MIDI Parameter Number	Table
1	Depth	0-127	(0-127)	1	
2	Speed	0-127	(0-127)	2	
3	Direction	L<>R, L>>R	(0-1)	3	
4	Type	typeA, typeB, typeC	(0-2)	4	
5	Jump Wave Type	typeA, typeB, typeC, typeD	(0-3)	5	
6	Resolution	1, 1/2- 1/256	(0-8)	6	
7	HPF Frequency	20Hz-8.0kHz	(0-52)	8	3
8	LPF Frequency	1.0kHz-20.0kHz	(34-60)	7	3
9	Dry/Wet Balance	D63>W-D=W-D<W63	(1-127)	10	

**093 ISOLATION**

No.	Parameter	Range	Value	MIDI Parameter Number	Table
1	On/off SW	off, on	(0-1)	1	
2	Low Level	0-127	(0-127)	2	
3	Mid Level	0-127	(0-127)	3	
4	High Level	0-127	(0-127)	4	
5	Low Mute	off/on	(0-1)	5	
6	Mid Mute	off/on	(0-1)	6	
7	High Mute	off/on	(0-1)	7	

**094 SLICE**

No.	Parameter	Range	Value	MIDI Parameter Number	Table
1	Divide Type	4th, 8th, 16th	(0-2)	1	
2	Gate Time	0-100%	(0-100)	2	
3	Pan AEG Type	A-E	(0-4)	3	
4	Pan AEG Min Level	0-127	(0-127)	4	
5	Pan Depth	-63~+63	(1-127)	5	
6	Divide Min Level	0-127	(0-127)	6	
7	Pan Type	A-J	(0-9)	7	
8	Drive	0-127	(0-127)	8	
9	AEG Phase	0-15 (x16th note)	(0-15)	9	
10	Dry/Wet Balance	D63>W-D=W-D<W63	(1-127)	10	
11	EQ low frequency	32Hz-2.0kHz	(4-40)	13	3
12	EQ low gain	-12dB~+12dB	(52-76)	14	
13	EQ high frequency	500Hz-16.0kHz	(28-58)	15	3
14	EQ high gain	-12dB~+12dB	(52-76)	16	

**095 3-BAND EQ**

No.	Parameter	Range	Value	MIDI Parameter Number	Table
1	EQ Low Frequency	50Hz-2.0kHz	(8-40)	6	3
2	EQ Low Gain	-12dB~+12dB	(52-76)	1	
3	EQ High Frequency	500Hz-16.0kHz	(28-58)	7	3
4	EQ High Gain	-12dB~+12dB	(52-76)	5	
5	EQ Mid Frequency	100H-10.0kHz	(14-54)	2	3
6	EQ Mid Gain	-12dB~+12dB	(52-76)	3	
7	EQ Mid Width	0.1-12.0	(1-120)	4	
8	Input Mode	mono/stereo	(0-1)	15	

**096 2-BAND EQ**

No.	Parameter	Range	Value	MIDI Parameter Number	Table
1	EQ Low Frequency	32Hz-2.0kHz	(4-40)	1	3
2	EQ Low Gain	-12dB~+12dB	(52-76)	2	
3	EQ High Frequency	500Hz-16.0kHz	(28-58)	3	3
4	EQ High Gain	-12dB~+12dB	(52-76)	4	

**097 HARMONIC ENHANCER**

No.	Parameter	Range	Value	MIDI Parameter Number	Table
1	HPF Cutoff Frequency	500Hz-16.0kHz	(28-58)	1	3
2	Drive	0-127	(0-127)	2	
3	Mix Level	0-127	(0-127)	3	

**098 VOICE CANCEL**

No.	Parameter	Range	Value	MIDI Parameter Number	Table
1	Low Adjust	0-26	(0-26)	11	
2	High Adjust	0-26	(0-26)	12	

**099 AMBIENCE**

No.	Parameter	Range	Value	MIDI Parameter Number	Table
1	Delay Time	0.0ms-50.0ms	(0-127)	1	2
2	Wet Output Phase	normal/inverse	(0-1)	2	
3	Dry/Wet Balance	D63>W-D=W-D<W63	(1-127)	10	
4	EQ Low Frequency	32Hz-2.0kHz	(4-40)	6	3
5	EQ Low Gain	-12dB~+12dB	(52-76)	7	
6	EQ High Frequency	500Hz-16.0kHz	(28-58)	8	3
7	EQ High Gain	-12dB~+12dB	(52-76)	9	

**100 TALKING MODULATOR**

No.	Parameter	Range	Value	MIDI Parameter Number	Table
1	Vowel	a/i/u/e/o	(0-4)	1	
2	Move Speed	1-62	(1-62)	2	
3	Drive	0-127	(0-127)	3	
4	Output Level	0-127	(0-127)	4	

**101 BEAT CHANGE**

No.	Parameter	Range	Value	MIDI Parameter Number	Table
1	BeatChange	-63~+63	(1-127)	1	
2	Beat Range	0-12	(0-12)	2	
3	PitchChange	-63~+63	(1-127)	3	
4	Pitch Range	0-12	(0-12)	4	
5	EQ Frequency	32Hz-2.0kHz	(4-40)	6	
6	EQ Gain	-12dB~+12dB	(52-76)	7	
7	EQ Width	1.0-12.0	(10-120)	8	
8	Accuracy Type	sound4-normal-rythm4	(0-8)	5	
9	Dry/Wet Balance	D63>W-D=W-D<W63	(1-127)	10	

**102 RING MODULATOR**

No.	Parameter	Range	Value	MIDI Parameter Number	Table
1	Carrier Freq Coarse	0.5 - 5kHz	(0-127)	1	16
2	Carrier Freq Fine	0-127	(0-127)	2	
3	LFO Wave	tri, sine	(0-1)	3	
4	LFO Depth	0-127	(0-127)	4	
5	LFO Speed	0.0Hz-39.70Hz	(0-127)	5	1
6	HPF Cutoff Frequency	20Hz-8.0kHz	(0-52)	6	3
7	LPF Cutoff Frequency	1.0kHz-20.0kHz	(34-60)	7	3
8	Dry/Wet Balance	D63>W-D=W-D<W63	(1-127)	10	
9	EQ Low Frequency	32Hz-2.0kHz	(4-40)	13	3
10	EQ Low Gain	-12dB~+12dB	(52-76)	14	
11	EQ High Frequency	500Hz-16.0kHz	(28-58)	15	3
12	EQ High Gain	-12dB~+12dB	(52-76)	16	

**103 DYNAMIC RING MODULATOR**

No.	Parameter	Range	Value	MIDI Parameter Number	Table
1	Sensitivity	0-127	(0-127)	1	
2	HPF Cutoff Frequency	20Hz-8.0kHz	(0-52)	2	3
3	LPF Cutoff Frequency	1.0kHz-20.0kHz	(34-60)	3	3
4	Attack Time	0.3ms-227ms	(0-127)	4	17
5	Release Time	2.6ms-2171ms	(0-127)	5	18
6	Release Curve	0-127	(0-127)	6	
7	Direction	up, down	(0-1)	7	
8	Dyna Threshold Level	0-127	(0-127)	8	
9	Dyna Level Offset	0-127	(0-127)	9	
10	Dry/Wet Balance	D63>W-D=W-D<W63	(1-127)	10	
11	EQ Low Frequency	32Hz-2.0kHz	(4-40)	13	3
12	EQ Low Gain	-12dB~+12dB	(52-76)	14	
13	EQ High Frequency	500Hz-16.0kHz	(28-58)	15	3
14	EQ High Gain	-12dB~+12dB	(52-76)	16	

**104 DYNAMIC FILTER**

No.	Parameter	Range	Value	MIDI Parameter Number	Table
1	Filter Type	LPF(12dB), LPF(18dB), LPF(24dB), HPF, BPF, BEF	(0-5)	1	
2	Sensitivity	0-127	(0-127)	2	
3	Dyna Level Offset	0-127	(0-127)	3	
4	Resonance	-16~+111	(0-127)	4	
5	Attack Time	0.3ms-227ms	(0-127)	5	17
6	Release Time	2.6ms-2171ms	(0-127)	6	18
7	Release Curve	0-127	(0-127)	7	
8	Direction	up, down	(0-1)	8	
9	Dyna Threshold Level	0-127	(0-127)	9	
10	Dry/Wet Balance	D63>W-D=W-D<W63	(1-127)	10	
11	EQ Low Frequency	32Hz-2.0kHz	(4-40)	13	3
12	EQ Low Gain	-12dB~+12dB	(52-76)	14	
13	EQ High Frequency	500Hz-16.0kHz	(28-58)	15	3
14	EQ High Gain	-12dB~+12dB	(52-76)	16	

**4. Insertin Effect 1/Variation Effect (Performance Mode only)**

**01 CHORUS 1-08 CELESTE 4**

No.	Parameter	Range	Value	MIDI Parameter Number	Table
1	LFO Speed	0.0Hz-39.70Hz	(0-127)	1	1
2	LFO Depth	0-127	(0-127)	2	
3	Input Mode	mono/stereo	(0-1)	9	
4	EQ Low Frequency	32Hz-2.0kHz	(4-40)	5	3
5	EQ Low Gain	-12dB~+12dB	(52-76)	6	
6	EQ High Frequency	500Hz-16.0kHz	(28-58)	7	3
7	EQ High Gain	-12dB~+12dB	(52-76)	8	
8	Delay Offset	0.0ms-50.0ms	(0-127)	4	2
9	Feedback Level	-63~+63	(1-127)	3	
10	Dry / Wet Balance	D63>W-D=W-D<W63	(1-127)	10	

**09 FLANGER 1-11 FLANGER 3**

No.	Parameter	Range	Value	MIDI Parameter Number	Table
1	LFO Speed	0.0Hz-39.70Hz	(0-127)	1	1
2	LFO Depth	0-127	(0-127)	2	
3	LFO Phase Difference	-180deg~+180deg	(4-124)	9	
4	EQ Low Frequency	32Hz-2.0kHz	(4-40)	5	
5	EQ Low Gain	-12dB~+12dB	(52-76)	6	
6	EQ High Frequency	500Hz-16.0kHz	(28-58)	7	
7	EQ High Gain	-12dB~+12dB	(52-76)	8	
8	Delay Offset	0.0ms-50.0ms	(0-127)	4	2
9	Feedback Level	-63~+63	(1-127)	3	
10	Dry / Wet Balance	D63>W-D=W-D<W63	(1-127)	10	

**12 PHASER 1**

No.	Parameter	Range	Value	MIDI Parameter Number	Table
1	LFO Speed	0.0Hz-39.70Hz	(0-127)	1	1
2	LFO Depth	0-127	(0-127)	2	
3	EQ Low Frequency	32Hz-2.0kHz	(4-40)	6	
4	EQ Low Gain	-12dB~+12dB	(52-76)	7	3
5	EQ High Frequency	500Hz-16.0kHz	(28-58)	8	
6	EQ High Gain	-12dB~+12dB	(52-76)	9	3
7	Stage	4, 5, 6	(4-6)	5	
8	Phase Shift Offset	0-127	(0-127)	3	
9	Feedback Level	-63~+63	(1-127)	4	
10	Dry / Wet Balance	D63>W-D=W-D<W63	(1-127)	10	

**13 TREMOLO**

No.	Parameter	Range	Value	MIDI Parameter Number	Table
1	LFO Speed	0.0Hz-39.70Hz	(0-127)	1	1
2	AM Depth	0-127	(0-127)	2	
3	PM Depth	0-127	(0-127)	3	
4	LFO Phase Difference	-180deg~+180deg	(4-124)	4	
5	EQ Low Frequency	32Hz-2.0kHz	(4-40)	5	3
6	EQ Low Gain	-12dB~+12dB	(52-76)	6	
7	EQ High Frequency	500Hz-16.0kHz	(28-58)	7	3
8	EQ High Gain	-12dB~+12dB	(52-76)	8	
9	Input Mode	mono/stereo	(0-1)	9	

**14 AUTO PAN**

No.	Parameter	Range	Value	MIDI Parameter Number	Table
1	LFO Speed	0.0Hz-39.70Hz	(0-127)	1	1
2	L/R Depth	0-127	(0-127)	2	
3	F/R Depth	0-127	(0-127)	3	
4	PAN Direction	L<>R, L>>R, L<<R, Lturn, Rturn, L/R	(0-5)	4	
5	EQ Low Frequency	32Hz-2.0kHz	(4-40)	5	3
6	EQ Low Gain	-12dB~+12dB	(52-76)	6	
7	EQ High Frequency	500Hz-16.0kHz	(28-58)	7	3
8	EQ High Gain	-12dB~+12dB	(52-76)	8	



### 15 DISTORTION, 16 OVERDRIVE

No.	Parameter	Range	Value	MIDI Parameter Number	Table
1	Drive	0-127	(0-127)	1	
2	Edge	0-127	(0-127)	8	
3	Output Level	0-127	(0-127)	9	
4	EQ Low Frequency	32Hz-2.0kHz	(4-40)	2	3
5	EQ Low Gain	-12dB~+12dB	(52-76)	3	
6	LPF Cutoff Frequency	1.0kHz-20.0kHz	(34-60)	7	3
7	EQ Mid Frequency	100Hz-10.0kHz	(14-54)	4	3
8	EQ Mid Gain	-12dB~+12dB	(52-76)	5	
9	EQ Mid Width	0.1-12.0	(1-120)	6	
10	Dry / Wet Balance	D63>W-D=W-D<W63	(1-127)	10	

### 17 AMP SIMULATOR

No.	Parameter	Range	Value	MIDI Parameter Number	Table
1	AMP type	off, stack, combo, tube	(0-3)	2	
2	drive	0-127	(0-127)	1	
3	edge	0-127	(0-127)	4	
4	output level	0-127	(0-127)	5	
5	LPF cutoff frequency	1.0kHz-20.0kHz	(34-60)	3	3
6	Dry / Wet Balance	D63>W-D=W-D<W63	(1-127)	6	

### 18 AMP SIMULATOR 2

No.	Parameter	Range	Value	MIDI Parameter Number	Table
1	AMP type	off, stack, combo, tube, crunch, hi gain, british	(0-3)	2	
2	drive	0-127	(0-127)	1	
3	output level	0-127	(0-127)	4	
4	LPF cutoff frequency	1.0kHz-20.0kHz	(34-60)	3	3
5	Dry / Wet Balance	D63>W-D=W-D<W63	(1-127)	5	

### 19 COMPRESSOR

No.	Parameter	Range	Value	MIDI Parameter Number	Table
1	Attack	1ms-40ms	(0-19)	1	8
2	Release	10ms-680ms	(0-15)	2	9
3	Threshold	-48dB~-6dB	(79-121)	3	
4	Ratio	1-20.0	(0-7)	4	10
5	Output Level	0-127	(0-127)	5	

### 20 NOISE GATE

No.	Parameter	Range	Value	MIDI Parameter Number	Table
1	Attack	1ms-40ms	(0-19)	1	8
2	Release	10ms-680ms	(0-15)	2	9
3	Threshold	-72dB~-30dB	(55-97)	3	
4	Output Level	0-127	(0-127)	4	

### 21 AUTO WAH

No.	Parameter	Range	Value	MIDI Parameter Number	Table
1	LFO Speed	0.0Hz-39.70Hz	(0-127)	1	1
2	LFO Depth	0-127	(0-127)	2	
3	Cutoff Frequency Offset	0-127	(0-127)	3	
4	Resonance	1-12.0	(10-120)	4	
5	EQ Low Frequency	32Hz-2.0kHz	(4-40)	5	3
6	EQ Low Gain	-12dB~+12dB	(52-76)	6	
7	EQ High Frequency	500Hz-16.0kHz	(28-58)	7	3
8	EQ High Gain	-12dB~+12dB	(52-76)	8	
9	Dry / Wet Balance	D63>W-D=W-D<W63	(1-127)	9	

### 22 TOUCH WAH

No.	Parameter	Range	Value	MIDI Parameter Number	Table
1	Sensitive	0-127	(0-127)	1	
2	Cutoff Frequency Offset	0-127	(0-127)	2	
3	Resonance	1-12.0	(10-120)	3	
4	EQ Low Frequency	32Hz-2.0kHz	(4-40)	4	3
5	EQ Low Gain	-12dB~+12dB	(52-76)	5	
6	EQ High Frequency	500Hz-16.0kHz	(28-58)	6	3
7	EQ High Gain	-12dB~+12dB	(52-76)	7	
9	Dry / Wet Balance	D63>W-D=W-D<W63	(1-127)	8	

### 23 3-BAND EQ

No.	Parameter	Range	Value	MIDI Parameter Number	Table
1	EQ Low Frequency	50Hz-2.0kHz	(8-40)	1	3
2	EQ Low Gain	-12dB~+12dB	(52-76)	2	
3	EQ High Frequency	500Hz-16.0kHz	(28-58)	6	3
4	EQ High Gain	-12dB~+12dB	(52-76)	7	
5	EQ Mid Frequency	100Hz-10.0kHz	(14-54)	3	3
6	EQ Mid Gain	-12dB~+12dB	(52-76)	4	
7	EQ Mid Width	0.1-12.0	(1-120)	5	
8	Input Mode	mono/stereo	(0-1)	8	

### 24 2-BAND EQ

No.	Parameter	Range	Value	MIDI Parameter Number	Table
1	EQ Low Frequency	32Hz-2.0kHz	(4-40)	1	3
2	EQ Low Gain	-12dB~+12dB	(52-76)	2	
3	EQ High Frequency	500Hz-16.0kHz	(28-58)	3	3
4	EQ High Gain	-12dB~+12dB	(52-76)	4	

### 25 HARMONIC ENHANCER

No.	Parameter	Range	Value	MIDI Parameter Number	Table
1	HPF Cutoff Frequency	500Hz-16.0kHz	(28-58)	1	3
2	Drive	0-127	(0-127)	2	
3	Mix Level	0-127	(0-127)	3	





# Control List

## Assign A/B DESTINATION

No.	Display	Description
0	"off"	off
1	"EQLow-G"	MEQ Low Gain
2	"EQLow-F"	MEQ Low Frequency
3	"EQLow-Q"	MEQ Low Q
4	"EQLoM-G"	MEQ Low Mid Gain
5	"EQLoM-F"	MEQ Low Mid Frequency
6	"EQLoM-Q"	MEQ Low Mid Q
7	"EQMid-G"	MEQ Mid Gain
8	"EQMid-F"	MEQ Mid Frequency
9	"EQMid-Q"	MEQ Mid Q
10	"EQHiM-G"	MEQ High Mid Gain
11	"EQHiM-F"	MEQ High Mid Frequency
12	"EQHiM-Q"	MEQ High Mid Q
13	"EQHighG"	MEQ High Gain
14	"EQHighF"	MEQ High Frequency
15	"EQHighQ"	MEQ High Q
16	"REV-P1"	Reverb Parameter 1
:	:	:
25	"REV-P10"	Reverb Parameter 10
26	"REV-Rtn"	Reverb Return
27	"REV-Pan"	Reverb Pan
28	"CHO-P1"	Chorus Parameter 1
:	:	:
37	"CHO-P10"	Chorus Parameter 10
38	"CHO-Rtn"	Chorus Return
39	"CHO-Pan"	Chorus Pan
40	"Cho>Rev"	Send Chorus To Reverb
41	"Cho-Ctl"	Chorus Control
42	"ARP-Typ"	Arpeggio Type
43	"ARP-Unt"	Arpeggio Unit Multiply
44	"ARP-Vel"	Arpeggio Velocity Rate
45	"ARP-Gat"	Arpeggio Gate Time Rate
46	"Tempo"	Arpeggio/Sequencer Tempo
47	"AEG-Atk"	AEG Attack Time
48	"AEG-Dcy"	AEG Decay Time
49	"AEG-Sus"	AEG Sustain Level
50	"AEG-Rel"	AEG Release Time
47	"FEG-Atk"	FEG Attack Time
48	"FEG-Dcy"	FEG Decay Time
49	"FEG-Rel"	FEG Release Time
50	"FEG-Dpt"	FEG Depth
51	"Cutoff"	Cutoff Frequency
52	"Reso"	Resonance

## VOICE CONTROL SET DESTINATION

No.	Display	Description	Normal	Others
0	"off"	off	○	○
1	"Volume"	Voice Volume	○	○
2	"RevSend"	Reverb Send	○	○
3	"ChoSend"	Chorus Send	○	○
4	"INS1-P1"	Insertion Effect 1 Parameter 1	○	○
:	:	:	:	:
13	"INS1P10"	Insertion Effect 1 Parameter 10	○	○
14	"INS2-P1"	Insertion Effect 2 Parameter 1	○	○
:	:	:	:	:
29	"INS2P16"	Insertion Effect 2 Parameter 16	○	○
30	"CLFOSpd"	Common LFO Speed	○	×
31	"CLFO-D1"	Common LFO Depth1	○	×
32	"CLFO-D2"	Common LFO Depth2	○	×
33	"PorTime"	Portamento Time	○	×
34	"ELM-Lvl"	Element Level	○	×
35	"ELM-Pan"	Element Pan	○	×
36	"ELM-Dly"	Element Key On Delay	○	×
37	"ELFOSpd"	Element LFO Speed	○	×
38	"ELFO-PM"	Element LFO Pitch Modulation Depth	○	×
39	"ELFO-AM"	Element LFO Amplitude Modulation Depth	○	×
40	"ELFO-FM"	Element LFO Filter Modulation Depth	○	×
41	"PCH-Crs"	Element Pitch Coarse	○	×
42	"PCH-Fin"	Element Pitch Fine	○	×
43	"PEG-Dpt"	Element Pitch EG Depth	○	×
44	"PEG-Hld"	Element Pitch EG Hold Time	○	×
45	"PEG-Atk"	Element Pitch EG Attack Time	○	×
46	"PEG-D1"	Element Pitch EG Decay1 Time	○	×
47	"PEG-D2"	Element Pitch EG Decay2 Time	○	×
48	"PEG-Rel"	Element Pitch EG Release Time	○	×
49	"AEG-Atk"	Element Amplitude EG Attack Time	○	×
50	"AEG-D1"	Element Amplitude EG Decay1 Time	○	×
51	"AEG-D2"	Element Amplitude EG Decay2 Time	○	×
52	"AEG-Rel"	Element Amplitude EG Release Time	○	×
53	"FEG-Dpt"	Element Filter EG Depth	○	×
54	"FEG-Hld"	Element Filter EG Hold Time	○	×
55	"FEG-Atk"	Element Filter EG Attack Time	○	×
56	"FEG-D1"	Element Filter EG Decay1 Time	○	×
57	"FEG-D2"	Element Filter EG Decay2 Time	○	×
58	"FEG-Rel"	Element Filter EG Release Time	○	×
59	"FLT-Frq"	Element Filter Cutoff Frequency	○	×
60	"FLT-Rez"	Element Filter Resonance	○	×
61	"HPF-Frq"	Element HPF Cutoff Frequency	○	×
62	"CLFO-D3"	Common LFO Depth3	○	×

# Arpeggio Type List

## Preset1

No.	Name	Type
1	UpOct1	Sq
2	UpOct2	Sq
3	UpOct4	Sq
4	DownOct1	Sq
5	DownOct2	Sq
6	DownOct4	Sq
7	U/DAOct1	Sq
8	U/DAOct2	Sq
9	U/DAOct4	Sq
10	U/DBOct1	Sq
11	U/DBOct2	Sq
12	U/DBOct4	Sq
13	RndmOct1	Sq
14	RndmOct2	Sq
15	RndmOct4	Sq
16	Oct2Up	Sq
17	Oct4Up	Sq
18	UnisonUp	Sq
19	Up&Down1	Sq
20	Up&Down2	Sq
21	Up&Down4	Sq
22	Up&Alt1	Sq
23	Up&Rndm1	Sq
24	Up&Rndm2	Sq
25	Up&Rndm4	Sq
26	ChdAltB1	Sq
27	ChdAltB2	Sq
28	ChdAltB4	Sq
29	ChdRndm1	Sq
30	ChdRndm2	Sq
31	ChdRndm4	Sq
32	Techno A	Ph
33	Techno B	Ph
34	Techno C	Ph
35	DAHouse	Ph
36	SyncopaA	Ph
37	SyncopaB	Ph
38	SyncpEco	Ph
39	TekEchoA	Ph
40	TekEchoB	Ph
41	PulsLine	Ph
42	SeqS&H A	Ph
43	SeqS&H B	Ph
44	CleanGtA	Ph
45	CleanGtB	Ph
46	CleanGtC	Ph
47	CleanGtD	Ph
48	Pno16Bt	Ph
49	PnoLatin	Ph
50	GruvBass	Ph
51	Ocean	Ph
52	Orbit	Ph
53	X-SweepA	Ph
54	X-SweepB	Ph
55	X-SweepC	Ph
56	Lamb	Ph
57	Thips	Ph
58	Hardcore	Ph
59	Harmo	Ph
60	Ascorbic	Ph
61	Doves	Ph
62	Chodal	Ph
63	Simple	Ph
64	Waggle	Ph

No.	Name	Type
65	SuperArp	Ph
66	MuteArpA	Ph
67	MuteArpB	Ph
68	VelGruvA	Ph
69	VelGruvB	Ph
70	SpaceArp	Ph
71	MuteLine	Ph
72	StepLine	Ph
73	AcidLine	Ph
74	SplitArp	Ph
75	Step Seq	Ph
76	PolyArpA	Ph
77	PolyArpB	Ph
78	Ana Seq	Ph
79	Planet	Ph
80	Rosync	Ph
81	StrumArp	Ph
82	Guit1Arp	Ph
83	RolliArp	Ph
84	Guit2Arp	Ph
85	Guit3Arp	Ph
86	Guit4Arp	Ph
87	Harp Arp	Ph
88	BigBeatA	Dr
89	BigBeatB	Dr
90	BigBeatC	Dr
91	BigBeatD	Dr
92	Rock A	Dr
93	Rock B	Dr
94	Rock C	Dr
95	BigBeatE	Dr
96	BigBeatF	Dr
97	BigBeatG	Dr
98	BigBeatH	Dr
99	BigBeatI	Dr
100	BrkTrnce	Dr
101	House A	Dr
102	House B	Dr
103	House C	Dr
104	Garage	Dr
105	House D	Dr
106	House E	Dr
107	HipHop A	Dr
108	JazzHop	Dr
109	Abstract	Dr
110	LoBeat A	Dr
111	LoBeat B	Dr
112	LoBeat C	Dr
113	LoBeat D	Dr
114	LoBeat E	Dr
115	LoBeat F	Dr
116	DrumnBsA	Dr
117	DrumnBsB	Dr
118	Linear	Dr
119	08beat A	Sp
120	08beat B	Sp
121	08beat C	Sp
122	16beat A	Sp
123	16beat B	Sp
124	1Bar	Sp
125	1BarRndm	Sp
126	GateCutA	Ct
127	GateCutB	Ct
128	GateCutC	Ct

## Preset2

No.	Name	Type
1	Strum A	Ph
2	Strum B	Ph
3	Strum C	Ph
4	Strum D	Ph
5	Strum E	Ph
6	Strum F	Ph
7	Strum G	Ph
8	Strum H	Ph
9	Strum I	Ph
10	Strum J	Ph
11	LatinPHA	Ph
12	LatinPHB	Ph
13	LatinPHC	Ph
14	Funky A	Ph
15	Funky B	Ph
16	Funky C	Ph
17	Funky D	Ph
18	RockGtrA	Ph
19	RockGtrB	Ph
20	RockGtrC	Ph
21	Lick A	Ph
22	Lick B	Ph
23	Lick C	Ph
24	Lick D	Ph
25	Lick E	Ph
26	Lick F	Ph
27	News A	Ph
28	News B	Ph
29	Fugue	Ph
30	AcidBs A	Ph
31	AcidBs B	Ph
32	SlapBs A	Ph
33	SlapBs B	Ph
34	Walkin	Ph
35	Trill A	Ph
36	Trill B	Ph
37	Trill C	Ph
38	FlutterA	Ph
39	FlutterB	Ph
40	FlutterC	Ph
41	Flute A	Ph
42	Flute B	Ph
43	Flute C	Ph
44	Cresendo	Ph
45	MOD A	Ph
46	MOD B	Ph
47	MOD C	Ph
48	Pickin A	Ph
49	Pickin B	Ph
50	Pickin C	Ph
51	ArmDown	Ct
52	BendVib	Ct
53	BotDwVib	Ct
54	BotUpVib	Ct
55	CHVib	Ct
56	HamVib	Ct
57	PullVibA	Ct
58	PullVibB	Ct
59	SlideVib	Ct
60	Trill D	Ct
61	Trill E	Ct
62	UDCHVib	Ct
63	Vibra A	Ct
64	Vibra B	Ct

No.	Name	Type
65	FlipHopA	Dr
66	FlipHopB	Dr
67	FlipHopC	Dr
68	FlipHopD	Dr
69	GangstaA	Dr
70	GangstaB	Dr
71	GangstaC	Dr
72	GangstaD	Dr
73	i-Hop A	Dr
74	i-Hop B	Dr
75	i-Hop C	Dr
76	i-Hop D	Dr
77	R&BSmthA	Dr
78	R&BSmthB	Dr
79	R&BSmthC	Dr
80	R&BSmthD	Dr
81	House F	Dr
82	House G	Dr
83	House H	Dr
84	Funk A	Dr
85	Funk B	Dr
86	Funk C	Dr
87	Funk D	Dr
88	Gospel A	Dr
89	Gospel B	Dr
90	Bebop A	Dr
91	Bebop B	Dr
92	PopRckAA	Dr
93	PopRckAB	Dr
94	PopRckAC	Dr
95	PopRckAD	Dr
96	PopRckBA	Dr
97	PopRckBB	Dr
98	PopRckBC	Dr
99	PopRckBD	Dr
100	MondoRkA	Dr
101	MondoRkB	Dr
102	MondoRkC	Dr
103	MondoRkD	Dr
104	BalladAA	Dr
105	BalladAB	Dr
106	BalladAC	Dr
107	BalladAD	Dr
108	BalladBA	Dr
109	BalladBB	Dr
110	Roll A	Dr
111	Roll B	Dr
112	Roll C	Dr
113	Roll D	Dr
114	Latin A	Dr
115	Latin B	Dr
116	Latin C	Dr
117	Latin D	Dr
118	Latin E	Dr
119	DrumnBsC	Dr
120	DrumnBsD	Dr
121	DrumnBsE	Dr
122	DrumnBsF	Dr
123	DrumnBsG	Dr
124	EuroTekA	Dr
125	EuroTekB	Dr
126	EuroTekC	Dr
127	EuroTekD	Dr
128	EuroTekE	Dr

# MIDI Data Format

Many MIDI messages listed in the MIDI Data Format section are expressed in hexadecimal or binary numbers. Hexadecimal numbers may include the letter "H" as a suffix. The letter "n" indicates a certain whole number. The chart below lists the corresponding decimal number for each hexadecimal/binary number. For more information, refer to the Owner's Manual (page 118).

## SYNTHESIZER/SEQUENCER PART

### (1) TRANSMIT FLOW

MIDI<-	+[SW1]-+-----	NOTE ON/OFF	9nH
OUT			
	+-----	KEY'S AFTER TOUCH	AnH (Seq only)
	+-----	CONTROL CHANGE	
		MODULATION	BnH,01H
		VOLUME	BnH,07H
		PAN	BnH,0AH
		SUSTAIN SWITCH	BnH,40H
		FILTER RESONANCE	BnH,47H
		EG RELEASE TIME	BnH,48H
		EG ATTACK TIME	BnH,49H
		FILTER CUTOFF FREQ	BnH,4AH
		EG DECAY TIME	BnH,4BH
		REVERB SEND	BnH,5BH
		CHORUS SEND	BnH,5DH
		ASSIGNABLE CONTROLLERS	BnH,(00H .. 5FH)
		SEQ REMOVT CONTROL	BnH,(00H .. 7FH)
	+-[SW7]-	BANK SEL MSB	BnH,00H
		BANK SEL LSB	BnH,20H
	+-----	CHANNEL MODE MESSAGE (Seq only)	
		RESET ALL CONTROLLERS	BnH,79H
		LOCAL CONTROL	BnH,7AH
		OMNI MODE OFF	BnH,7CH
		OMNI MODE ON	BnH,7DH
		MONO MODE ON	BnH,7EH
		POLY MODE ON	BnH,7FH
	+-[SW8]-	PROGRAM CHANGE	CnH
	+-----	CHANNEL AFTER TOUCH	DnH
	+-----	PITCH BEND CHANGE	EnH
	+-[SW4]-	SYSTEM COMMON MESSAGE	
		SONG POSITION POINTER	F2H
	+-[SW4]-	SYSTEM REALTIME MESSAGE	
		TIMING CLOCK	F8H
		START	FAH
		CONTINUE	FBH
		STOP	FCH
		ACTIVE SENSING	FEH
	+-[SW5]-	SYSTEM EXCLUSIVE MESSAGE	
		<BULK DUMP>	F0H 43H 0nH 6BH bhH blH ahH amH alH ddH... ddH ccH F7H
		<PARAMETER CHANGE>	F0H 43H 1nH 6BH ahH amH alH ddH... ddH F7H
		<BULK DUMP REQUEST>	F0H 43H 2nH 6BH ahH amH alH ddH... ddH F7H *3
		<PARAMETER REQUEST>	F0H 43H 3nH 6BH ahH amH alH F7H *3
		IDENTITY REPLY	F0H 7EH 7FH 06H 02H 43H 00H 41H 05H 2AH 00H 00H 00H 7FH F7H

- [SW1] MIDI Transmit Channel  
In the Master mode: complies with Zone Transmit Channel.  
In the mode other than the Master: complies with Keyboard Transmit Channel.
- [SW2] MIDI Control Mode
- [SW4] Seq MIDI Control
- [SW5] MIDI Device Number  
When set to all, transmitted via 1.
- [SW6] In the Voice mode, only the Voice related data can be transmitted.  
In the Performance mode, only the Performance related data can be transmitted.  
The System data can be transmitted/recognized in any mode.
- [SW7] SYSTEM Bank Select Switch
- [SW8] SYSTEM Program Change Switch

### (2) RECEIVE FLOW

MIDI>-	+[SW10]-+-----	NOTE OFF	8nH
	+-----	NOTE ON/OFF	9nH
	+-----	CONTROL CHANGE	
		MODULATION	BnH,01H
		PORTAMENTO TIME	BnH,05H
		DATA ENTRY MSB	BnH,06H
		DATA ENTRY LSB	BnH,26H
		MAIN VOLUME	BnH,07H
		PAN	BnH,0AH
		EXPRESSION	BnH,0BH
		SUSTAIN SWITCH	BnH,40H
		PORTAMENTO SWITCH	BnH,41H
		SOSTENUTO	BnH,42H
		HARMONIC CONTENT	BnH,47H
		EG RELEASE TIME	BnH,48H
		EG ATTACK TIME	BnH,49H
		BRIGHTNESS	BnH,4AH
		EG DECAY TIME	BnH,4BH
		EFFECT1 DEPTH	BnH,5BH
		EFFECT3 DEPTH	BnH,5DH
		DATA ENTRY INC	BnH,60H
		DATA ENTRY DEC	BnH,61H
		ALL SOUND OFF	BnH,78H
		ASSIGNABLE CONTROLLER	BnH,(00H .. 5FH)
		NRPN	BnH,62H,63H *2
		RPN	
		PITCH BEND SENS.	BnH,64H,00H,65H,00H,06H,mmH
		FINE TUNING	BnH,64H,01H,65H,00H,06H,mmH,26H,11H *1
		COARSE TUNING	BnH,64H,02H,65H,00H,06H,mmH *1
		RPN RESET	BnH,64H,7FH,65H,7FH
	+-[SW2]-	EG SUSTAIN LEVEL	BnH,1FH
	+-[SW7]-	BANK SEL MSB	BnH,00H
		BANK SEL LSB	BnH,20H
	+-----	CHANNEL MODE MESSAGE	
		RESET ALL CONTROLLERS	BnH,79H
		OMNI MODE OFF	BnH,7CH
		OMNI MODE ON	BnH,7DH
		MONO MODE ON	BnH,7EH
		POLY MODE ON	BnH,7FH
	+-[SW8]-	PROGRAM CHANGE	CnH
	+-----	CHANNEL AFTER TOUCH	DnH
	+-----	PITCH BEND CHANGE	EnH
	+-[SW3]-+-----	SYSTEM REALTIME MESSAGE	
		TIMING CLOCK	F8H
	+-[SW4]-+-----	SYSTEM REALTIME MESSAGE	
		START	FAH
		CONTINUE	FBH
		STOP	FCH
		ACTIVE SENSING	FEH
	+-[SW5]-+-----	SYSTEM EXCLUSIVE MESSAGE	
		MIDI MASTER VOLUME	F0H 7FH 7FH 04H 01H 11H mmH F7H
		<BULK DUMP>	F0H 43H 0nH 6BH bhH blH ahH amH alH ddH... ddH ccH F7H *3
		<PARAMETER CHANGE>	F0H 43H 1nH 6BH ahH amH alH ddH... ddH F7H *3
		<BULK DUMP REQUEST>	F0H 43H 2nH 6BH ahH amH alH ddH... ddH F7H *3
		<PARAMETER REQUEST>	F0H 43H 3nH 6BH ahH amH alH F7H *3
	+-[SW11]-	XG SYSTEM ON	F0H 43H 1nH 4CH 00H 00H 7EH 00H F7H
	+-[SW11]-	GM MODE ON	F0H 7EH 7FH 09H 01H F7H
	+-----	SYSTEM EXCLUSIVE MESSAGE	
		IDENTITY REQUEST	F0H 7EH 0nH 06H 01H F7H

- [SW2] MIDI Control Mode
- [SW3] MIDI Sync (can be set to "internal", or "MIDI")
- [SW4] Seq MIDI Control
- [SW5] MIDI Device Number  
When this is not set to off, the MIDI Master Volume can be recognized in any mode.
- [SW6] In the Voice mode, only the Voice related data can be transmitted.  
In the Performance mode, only the Performance related data can be transmitted.  
The System data can be transmitted/recognized in any mode.
- [SW7] SYSTEM Bank Select Switch
- [SW8] SYSTEM Program Change Switch (In the Voice mode, recognized only in the play mode.)
- [SW9] SYSTEM Bulk Protect and same as SW6.
- [SW10] MIDI Receive Channel  
In the Mixing mode: complies with Part Receive Channel and Part Receive Switch.  
In the other mode: complies with Basic Receive Channel.
- [SW11] SYSTEM Receive GM/XG On

\*1: Mixing Mode Only  
\*2: Available only for the Plug-in voices  
\*3: The messages of Plug-in Voice (MODEL ID = 64H) can be recognized/transmitted.

### (3) TRANSMIT/RECEIVE DATA

#### (3-1) CHANNEL VOICE MESSAGES

##### (3-1-1) NOTE OFF

STATUS 1000nnnn(8nH) n = 0-15 CHANNEL NUMBER  
 NOTE No. 0kkkkkkk k = 0 (C-2)-127 (G8)  
 VELOCITY 0vvvvvvv V: ignored

##### (3-1-2) NOTE ON/OFF

STATUS 1001nnnn(9nH) n = 0-15 CHANNEL NUMBER  
 NOTE NUMBER 0kkkkkkk k = 0 (C-2)-127 (G8)  
 VELOCITY NOTE ON 0vvvvvvv(v≠0)  
 NOTE OFF 0vvvvvvv(v=0)

##### (3-1-3) CONTROL CHANGE

STATUS 1011nnnn(BnH) n = 0-15 CHANNEL NUMBER  
 CONTROL NUMBER 0ccccccc  
 CONTROL VALUE 0vvvvvvv

\* TRANSMITTED CONTROL NUMBER

c = 0	BANK SEL MSB	; v = 0 - 127	*3
c = 32	BANK SEL LSB	; v = 0 - 127	*3
c = 1	MODULATION	; v = 0 - 127	
c = 7	MAIN VOLUME	; v = 0 - 127	
c = 10	PAN	; v = 0 - 127	
c = 11	EXPRESSION	; v = 0 - 127	
c = 64	SUSTAIN SWITCH	; v = 0, 127	
c = 71	FILTER RESONANCE	; v = 0:-64 - 64:0 - 127:+63	
c = 72	EG RELEASE TIME	; v = 0:-64 - 64:0 - 127:+63	
c = 73	EG ATTACK TIME	; v = 0:-64 - 64:0 - 127:+63	
c = 74	FILTER CUTOFF FREQ	; v = 0:-64 - 64:0 - 127:+63	
c = 75	EG DECAY TIME	; v = 0:-64 - 64:0 - 127:+63	
c = 91	REVERB SEND	; v = 0, 127	
c = 93	CHORUS SEND	; v = 0, 127	
c = 0..95	ASSIGNABLE CONTROLLERS	; v = 0 - 127	*6

The Sequencer Part will play back all recorded control change messages.

##### \* RECEIVED CONTROL NUMBER

c = 0	BANK SEL MSB	; v = 0 - 127	*3
c = 32	BANK SEL LSB	; v = 0 - 127	*3
c = 1	MODULATION	; v = 0 - 127	
c = 5	PORTAMENTO TIME	; v = 0 - 127	*2
c = 6	DATA ENTRY MSB	; v = 0 - 127	*1
c = 38	DATA ENTRY LSB	; v = 0 - 127	*1
c = 7	MAIN VOLUME	; v = 0 - 127	
c = 10	PAN	; v = 0 - 127	
c = 11	EXPRESSION	; v = 0 - 127	
c = 31	EG SUSTAIN LEVEL	; v = 0:-64 - 64:0 - 127:+63	*2,*5
c = 64	SUSTAIN SWITCH	; v = 0-63:OFF, 64-127:ON	*2
c = 65	PORTAMENTO SWITCH	; v = 0-63:OFF, 64-127:ON	*2
c = 66	SOSTENUTO	; v = 0-63:OFF, 64-127:ON	*2
c = 71	HARMONIC CONTENT	; v = 0:-64 - 64:0 - 127:+63	
c = 72	EG RELEASE TIME	; v = 0:-64 - 64:0 - 127:+63	*2
c = 73	EG ATTACK TIME	; v = 0:-64 - 64:0 - 127:+63	
c = 74	BRIGHTNESS	; v = 0:-64 - 64:0 - 127:+63	
c = 75	EG DECAY TIME	; v = 0:-64 - 64:0 - 127:+63	
c = 91	EFFECT1 DEPTH	; v = 0 - 127	
c = 93	EFFECT3 DEPTH	; v = 0 - 127	
c = 96	DATA ENTRY INC	; v = 127	*1
c = 97	DATA ENTRY DEC	; v = 127	*1
c = 0..95	ASSIGNABLE CONTROLLER	; v = 0 - 127	*6
c = 0..95	ARPEGGIO SW	; v = 0-63:OFF, 64-127:ON	*6
c = 0..95	ARPEGGIO HOLD	; v = 0-63:OFF, 64-127:ON	*6

\*1 Used only when a value is set using RPN.

\*2 Invalid with Drum Voices.

\*3 Relation between BANK CHANGE and PROGRAM is as follows:

CATEGORY	MSB	LSB	PROGRAM No.
GM Voice	0	0	0..127 (1..128)
GM Drum Voice	127	0	0..1 (1..2)
Normal Voice Preset 1	63	0	0..127 (1..128)
Preset 2	63	1	0..127 (1..128)
Preset 3	63	2	0..127 (1..128)
User	63	8	0..127 (1..128)
Drum Voice Preset	63	32	0..47 (1..48)
User	63	40	0..15 (1..16)
Plug-in Voice User 1	63	24	0..63 (1..64)
User 2	63	25	0..63 (1..64)
User 3	63	26	0..63 (1..64)
Performance User	63	64	0..127 (1..128)
Plug-in Voice Preset 1 (Slot1)	63	70	0..63 (1..64) *4
Preset 2 (Slot1)	63	71	0..63 (1..64) *4
Preset 3 (Slot1)	63	72	0..63 (1..64) *4
Preset 1 (Slot2)	63	73	0..63 (1..64) *4
Preset 2 (Slot2)	63	74	0..63 (1..64) *4
Preset 3 (Slot2)	63	75	0..63 (1..64) *4
Preset 1 (Slot3)	63	76	0..63 (1..64) *4
Preset 2 (Slot3)	63	77	0..63 (1..64) *4
Preset 3 (Slot3)	63	78	0..63 (1..64) *4

\*4 Can be selected only when the corresponding Plug-in board has been installed.

\*5 Transmitted/received only when MODE2 is selected in CONTROL CHANGE MODE.

\*6 The default CONTROL NUMBERS of ASSIGNABLE CONTROLLER are as follows:

BREATH CONTROLLER	2
FOOT CONTROLLER	4
Assign1	16
Assign2	17
Assign A	18
Assign B	19
FOOT SWITCH	88
ARPEGGIO HOLD	89
ARPEGGIO SWITCH	90

PORTAMENTO TIME sets the time it takes for the pitch to reach the next note played when PORTAMENTO SWITCH is set to on.

PAN position relatively changes according to the preset value for each voice.

EFFECT1 DEPTH controls reverb send level.

EFFECT3 DEPTH controls chorus send level.

HARMONIC CONTENT adjusts the resonance preset for each voice.

Setting a value adds to or subtracts from the center value, 64, since it is an offset parameter.

The larger the value more resonant sound will be produced. The effective range may be narrower than the range you can designate depending on the selected voice.

The parameters, EG ATTACK TIME, EG DECAY TIME, EG SUSTAIN LEVEL, EG RELEASE TIME adjust the envelopes preset for each voice.

Setting these values add to or subtract from the center value, 64, since these are offset parameters.

BRIGHTNESS adjusts the cutoff frequency preset for each voice.

Setting a value adds to or subtracts from the center value, 64, since it is an offset parameter.

The smaller the value the cutoff frequency will be lowered. The effective range may be narrower than the range you can designate depending on the selected voice.

Bank Select will be actually executed when the Program Change message is received.

Bank Select and Program Change numbers that are not supported by Yamaha will be ignored, but transmitted to the Plug-in board.

##### (3-1-4) PROGRAM CHANGE

STATUS 1100nnnn(CnH) n = 0-15 CHANNEL NUMBER  
 PROGRAM NUMBER 0pppppppp = 0-127

##### (3-1-5) CHANNEL AFTER TOUCH

STATUS 1101nnnn(DnH) n = 0-15 CHANNEL NUMBER  
 VALUE 0vvvvvvv v = 0-127 AFTER TOUCH VALUE

##### (3-1-6) PITCH BEND CHANGE

STATUS 1110nnnn(EnH) n = 0-15 CHANNEL NUMBER  
 LSB 0vvvvvvv PITCH BEND CHANGE LSB  
 MSB 0vvvvvvv PITCH BEND CHANGE MSB  
 Transmitted with a resolution of 7 bits.

#### (3-2) CHANNEL MODE MESSAGES

STATUS 1011nnnn(BnH) n = 0-15 CHANNEL NUMBER  
 CONTROL NUMBER 0ccccccc c = CONTROL NUMBER  
 CONTROL VALUE 0vvvvvvv v = DATA VALUE

##### (3-2-1) ALL SOUND OFF (CONTROL NUMBER = 78H, DATA VALUE = 0)

All the sounds currently played including the channel messages such as note-on and hold-on in a certain channel are muted when receiving this message.

##### (3-2-2) RESET ALL CONTROLLERS (CONTROL NUMBER = 79H, DATA VALUE = 0)

Resets the values set for the following controllers.

PITCH BEND CHANGE	0 (center)
CHANNEL AFTER TOUCH	0 (minimum)
MODULATION	0 (minimum)
EXPRESSION	127 (maximum)
BREATH CONTROLLER	127 (maximum)
FOOT CONTROLLER	127 (maximum)
Assign 1	0 (center)
Assign 2	0 (center)
SUSTAIN SWITCH	0 (off)
SOSTENUTO SWITCH	0 (off)
RPN	Not assigned; No change

Doesn't reset the following data:

PROGRAM CHANGE, BANK SELECT MSB/LSB, VOLUME, PAN, HARMONIC CONTENT, SUSTAIN LEVEL, RELEASE TIME, ATTACK TIME, DECAY TIME, BRIGHTNESS, EFFECT SEND LEVEL 1, EFFECT SEND LEVEL 3, PORTAMENTO SWITCH, PITCH BEND SENSITIVITY, FINE TUNING, COARSE TUNING

##### (3-2-3) ALL NOTE OFF (CONTROL NUMBER = 7BH, DATA VALUE = 0)

All the notes currently set to on in certain channel(s) are muted when receiving this message. However, if Sustain or Sostenuto is on, notes will continue sounding until these are turned off.

##### (3-2-4) OMNI MODE OFF (CONTROL NUMBER = 7CH, DATA VALUE = 0)

Performs the same function as when receiving ALL NOTES OFF.

Sets VOICE RECEIVE CHANNEL to "OMNI OFF," channel 1.

##### (3-2-5) OMNI MODE ON (CONTROL NUMBER = 7DH, DATA VALUE = 0)

Performs the same function as when receiving ALL NOTES OFF.

Sets VOICE RECEIVE CHANNEL to "OMNI ON."

##### (3-2-6) MONO (CONTROL NUMBER = 7EH, DATA VALUE = 0..16)

Performs the same function as when receiving ALL SOUNDS OFF. If the 3rd byte (mono) is within 0 through 16, the channel will be Mode4(m = 1).

In the Voice mode, the mode can be Mode2(m=1) according to VOICE RECEIVE CHANNEL.

##### (3-2-7) POLY (CONTROL NUMBER = 7FH, DATA VALUE = 0)

Performs the same function as when receiving ALL SOUNDS OFF. The channel will be Mode3.

In the Voice mode, the mode can be Mode1 according to VOICE RECEIVE CHANNEL.

**(3-3) REGISTERED PARAMETER NUMBER**

STATUS	1011nnnn (8nH)	n = 0-15 CHANNEL NUMBER
LSB	01100100 (64H)	
RPN LSB	0ppppppp	p = RPN LSB (Refer to the table as shown below)
MSB	01100101 (65H)	
RPN MSB	0qqqqqqq	q = RPN MSB (Refer to the table as shown below)
DATA ENTRY MSB	00000110 (06H)	
DATA VALUE	0mmmmmm	m = Data Value
DATA ENTRY LSB	00100110 (26H)	
DATA VALUE	01111111	l = Data Value

First, designate the parameter using RPN MSB/LSB numbers. Then, set its value with data entry MSB/LSB.

RPN LSB MSB	D. ENTRY MSB LSB	PARAMETER NAME	DATA RANGE
00H 00H	mmH ---	PITCH BEND SENSITIVITY	00H - 18H (0 - 24 semitones)
01H 00H	mmH 11H	MASTER FINE TUNE	{mmH,11H}={00H,00H}-{40H,00H}-{7FH,7FH} (-8192*100/8192) - 0 - (+8192*100/8192)
02H 00H	mmH ---	MASTER COARSE TUNE	28H - 40H - 58H (-24 - 0 - +24 semitones)
7FH 7FH	--- ---	RPN RESET	

RPN numbers will be left not designated.  
The internal values are not affected.

**(3-4) NON-REGISTERED PARAMETER NUMBER**

There are no applicable parameters.  
These are transmitted to the Plug-in board.

**(3-5) SYSTEM REAL TIME MESSAGES**

**(3-5-1) ACTIVE SENSING**

STATUS	11111110 (FEH)
--------	----------------

Transmitted at every 200 msec.  
Once this code is received, the instrument starts sensing. When no status nor data is received for over approximately 350 ms, MIDI receiving buffer will be cleared, and the sounds currently played and the sustain switch are forcibly turned off. In this case, each control data will be reset to a certain value.

**(3-6) SYSTEM EXCLUSIVE MESSAGE**

**(3-6-1) UNIVERSAL NON REALTIME MESSAGE**

**(3-6-1-1) GENERAL MIDI MODE ON**

FOH 7EH 7FH 09H 01H F7H
-------------------------

Received only when the SEQ PLAY MODE is selected.

**(3-6-1-2) IDENTITY REQUEST (Receive only)**

FOH 7EH 0nH 06H 01H F7H ("n" = Device No. However, this instrument receives under "omni.")
--

**(3-6-1-3) IDENTITY REPLY (Transmit only)**

FOH 7EH 7FH 06H 02H 43H 00H 41H ddH ddH 00H 00H 00H 7FH F7H
---

dd;Device Number Code  
S90: 05 2A

**(3-6-2) UNIVERSAL REALTIME MESSAGE**

**(3-6-2-1) MIDI MASTER VOLUME**

FOH 7FH 7FH 04H 01H 11H mmH F7H
---------------------------------

Sets the MASTER VOLUME value.  
The value "mm" is used to set the master volume (the value "ll" should be ignored).

**(3-6-3) PARAMETER CHANGE**

**(3-6-3-1) XG SYSTEM ON**

11110000	F0	Exclusive status
01000011	43	YAMAHA ID
0001nnnn	1n	Device Number
01001100	4C	Model ID
0aaaaaaa	00	Address High
0aaaaaaa	00	Address Mid
0aaaaaaa	7E	Address Low
0	0	Data
11110111	F7	End of Exclusive

Received only when the SEQ PLAY MODE is selected.  
Be aware that executing this message takes ca. 170ms and that, therefore, a certain interval before executing the following message is needed.

**(3-6-3-2) NATIVE PARAMETER CHANGE, MODE CHANGE**

11110000	F0	Exclusive status
01000011	43	YAMAHA ID
0001nnnn	1n	Device Number
01101011	6B	Model ID
0aaaaaaa	aaaaaaa	Address High
0aaaaaaa	aaaaaaa	Address Mid
0aaaaaaa	aaaaaaa	Address Low
0ddddd	ddddd	Data
11110111	F7	End of Exclusive

For parameters with data size of 2 or more, the appropriate number of data bytes will be transmitted.  
See the following MIDI Data Table for Address and Byte Count.  
Always received no matter which device number is selected, in the case of REMOTE SWITCH.

**(3-6-4) BULK DUMP**

11110000	F0	Exclusive status
01000011	43	YAMAHA ID
0000nnnn	0n	Device Number
01101011	6B	Model ID
0bbbbbbb	bbbbbbb	Byte Count
0bbbbbbb	bbbbbbb	Byte Count
0aaaaaaa	aaaaaaa	Address High
0aaaaaaa	aaaaaaa	Address Mid
0aaaaaaa	aaaaaaa	Address Low
0	0	Data
0ccccccc	ccccccc	Check-sum
11110111	F7	End of Exclusive

See the following MIDI Data Table for Address and Byte Count.  
The Check sum is the value that results in a value of 0 for the lower 7 bits when the Byte Count, Start Address, Data and Check sum itself are added.

**(3-6-5) DUMP REQUEST**

11110000	F0	Exclusive status
01000011	43	YAMAHA ID
0010nnnn	2n	Device Number
01101011	6B	Model ID
0aaaaaaa	aaaaaaa	Address High
0aaaaaaa	aaaaaaa	Address Mid
0aaaaaaa	aaaaaaa	Address Low
11110111	F7	End of Exclusive

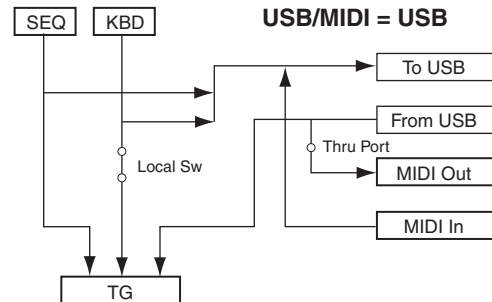
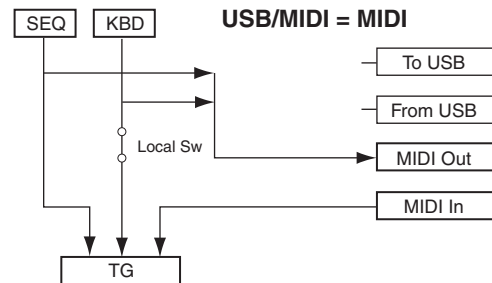
See the following MIDI Data Table for Address and Byte Count.

**(3-6-6) PARAMETER REQUEST**

11110000	F0	Exclusive status
01000011	43	YAMAHA ID
0011nnnn	3n	Device Number
01101011	6B	Model ID
0aaaaaaa	aaaaaaa	Address High
0aaaaaaa	aaaaaaa	Address Mid
0aaaaaaa	aaaaaaa	Address Low
11110111	F7	End of Exclusive

See the following MIDI Data Table for Address and Byte Count.

**(4) SYSTEM OVERVIEW (Keyboard, Sequencer and Tone Generator)**



The optional mLAN board can be installed to the S90.

Although three types of note on/note off data, received via MIDI, played by the internal sequencer and played on the keyboard will be distinguished, the other controllers (channel messages) equally affect the entire notes.

ALL SOUND OFF clears all the sounds in the specific channel(s) played by both the keyboard and the data via MIDI.  
ALL NOTES OFF received via MIDI clears the sounds in the specific channel(s) played via MIDI.



# MIDI Data Table

## Bank Select

Available Bank Select/Program Change

MSB (HEX)	LSB (HEX)	Program No.	Type	Memory (Bank)
0	00	0 - 127	Normal Voice	GM Voice
127	7F	0	Drum Voice	GM Drum
63	3F	0 - 127	Normal Voice	Preset 1
		1 01		Preset 2
		2 02		Preset 3
		8 08		User
		32 20	Drum Voice	Preset
		40 28		User
		24 18	Plug-in Voice	User 1(Slot1)
		25 19		User 2(Slot2)
		26 1A		User 3(Slot3)
		70 46		Preset 1(Slot1)
		71 47		Preset 2(Slot1)
		72 48		Preset 3(Slot1)
		73 49		Preset 1(Slot2)
		74 4A		Preset 2(Slot2)
		75 4B		Preset 3(Slot2)
		76 4C		Preset 1(Slot3)
77 4D	Preset 2(Slot3)			
78 4E	Preset 3(Slot3)			
Depending on the installed Plug-in Board.				Plug-in Direct
63	3F	64 40	Performance	User(Internal)

When only the Program Change is received after entering any of the mode, the corresponding voice in the currently selected Type/Memory is called up.  
 The Master number and the Performance/Sequence Play/Voice mode can be changed only via the Parameter Change.  
 In the Performance mode, the Part Voice cannot be changed via the Program Change.

<Table 1>  
Parameter Base Address

Parameter Block	Top Address			Description	
	H	M	L		
SYSTEM	00	00	00	System	
	00	10	00	Plug-in Board Native System	
	00	20	00	Master EQ for Voice	
	01	00	00	Seq Remote Mode Common	
	02	00	00	Seq Remote Mode Track1 Message	
	:	:	:	:	
	02	0F	00	Seq Remote Mode Track16 Message	
MODE CHANGE	0A	00	00	Mode Change	
BULK CONTROL	0E	00	00	Header	
	0F	00	00	Footer	
MULTIPLE BULK CONTROL	10	00	00	Header	
	11	00	00	Footer	
MASTER KEYBOARD	33	00	00	Common	
	32	00	00	Zone1	
	32	03	00	Zone4	
PERFORMANCE COMMON	30	00	00	Performance Common	
PERFORMANCE PART	31	00	00	Part1	
	:	:	:	:	
	31	03	00	Part4	
	31	60	00	Plug-in 1 Part	
	31	61	00	Plug-in 2 Part	
	31	62	00	Plug-in 3 Part	
NORMAL VOICE COMMON	40	00	00	Common1	
	40	00	40	Common2	
	40	01	00	Reverb	
	40	02	00	Chorus	
	40	03	00	Insertion 1	
	40	04	00	Insertion 2	
	40	05	00	Controller	
	40	06	00	LFO	
	40	70	00	Extra	
	NORMAL VOICE ELEMENT GROUP1	41	ee	00	ee : Element No.
	NORMAL VOICE ELEMENT GROUP2	42	ee	00	ee : Element No.
NORMAL VOICE ELEMENT GROUP3	43	ee	00	ee : Element No.	
NORMAL VOICE ELEMENT GROUP4	44	ee	00	ee : Element No.	
DRUM COMMON	46	00	00	Common1	
	46	00	40	Common2	
	46	01	00	Reverb	
	46	02	00	Chorus	
	46	03	00	Insertion 1	
	46	04	00	Insertion 2	
	46	05	00	Controller	
	46	70	00	Extra	
DRUM ELEMENT GROUP1	47	ee	00	ee : Element No.	
DRUM ELEMENT GROUP2	48	ee	00	ee : Element No.	
DRUM ELEMENT GROUP3	49	ee	00	ee : Element No.	
DRUM ELEMENT GROUP4	4A	ee	00	ee : Element No.	
VOICE PLUG-IN	4C	00	00	Common	
	4C	01	00	Reverb	
	4C	02	00	Chorus	
	4C	03	00	Insertion 1	
	4C	04	00	Insertion 2	
	4C	05	00	Controller	
	4C	10	00	Plug-in XG Part	
	4C	20	00	Native	
4C	70	00	Extra		
Mix	36	00	00	Mix Common	
	37	00	00	Part1	
	:	:	:	:	
	37	0F	00	Part16	
	37	60	00	Plug-in 1 Part	
37	61	00	Plug-in 2 Part		
37	62	00	Plug-in 3 Part		

















Table with 6 columns: Address, Size, Data Range (HEX), Parameter Name, Description, Notes. It lists various filter and resonance parameters for MIDI parameters 43 and 44.

TOTAL SIZE = 50 32 (HEX)

Table with 6 columns: Address, Size, Data Range (HEX), Parameter Name, Description, Notes. It lists EQ parameters for MIDI parameters 44 and 45.

TOTAL SIZE = 8 08 (HEX)

Table with 6 columns: Address, Size, Data Range (HEX), Parameter Name, Description, Notes. It lists LFO and LFO key parameters for MIDI parameters 44 and 45.

TOTAL SIZE = 7 07 (HEX)

ee = Element Number (00..03: Element1..4)

<Table 9-1> MIDI PARAMETER CHANGE TABLE (DRUM VOICE COMMON)

Table with 6 columns: Address, Size, Data Range (HEX), Parameter Name, Description, Notes. It lists MIDI parameters 46 through 7F, including voice names, ARP parameters, QED parameters, EQ parameters, and various control functions.

TOTAL SIZE = 66 42 (HEX)

Table with 6 columns: Address, Size, Data Range (HEX), Parameter Name, Description, Notes. It lists MIDI parameters 46 through 07, including volume, pitch bend range, and reverb/send parameters.

TOTAL SIZE = 8 08 (HEX)

Address	Size	Data Range (HEX)	Parameter Name	Description	Notes
46 00 40	1	00 - 02	Insertion Connect Type	Para, S→L, L→S	
46 00 41	1	00 - 7F	Ins-EF Reverb Send Level	0 - 127	
46 00 42	1	00 - 7F	Ins-EF Chorus Send Level	0 - 127	
46 00 43	1	00	reserved		
TOTAL SIZE = 4 04 (HEX)					

46 01 00	2	00 - 7F	Reverb Type MSB	Refer to Effect Parameter List	
		00 - 7F	Reverb Type LSB		
46 01 02	2	00 - 7F	Reverb Parameter 1 MSB	-	
		00 - 7F	Reverb Parameter 1 LSB		
46 01 04	2	00 - 7F	Reverb Parameter 2 MSB	-	
		00 - 7F	Reverb Parameter 2 LSB		
46 01 06	2	00 - 7F	Reverb Parameter 3 MSB	-	
		00 - 7F	Reverb Parameter 3 LSB		
46 01 08	2	00 - 7F	Reverb Parameter 4 MSB	-	
		00 - 7F	Reverb Parameter 4 LSB		
46 01 0A	2	00 - 7F	Reverb Parameter 5 MSB	-	
		00 - 7F	Reverb Parameter 5 LSB		
46 01 0C	2	00 - 7F	Reverb Parameter 6 MSB	-	
		00 - 7F	Reverb Parameter 6 LSB		
46 01 0E	2	00 - 7F	Reverb Parameter 7 MSB	-	
		00 - 7F	Reverb Parameter 7 LSB		
46 01 10	2	00 - 7F	Reverb Parameter 8 MSB	-	
		00 - 7F	Reverb Parameter 8 LSB		
46 01 12	2	00 - 7F	Reverb Parameter 9 MSB	-	
		00 - 7F	Reverb Parameter 9 LSB		
46 01 14	2	00 - 7F	Reverb Parameter 10 MSB	-	
		00 - 7F	Reverb Parameter 10 LSB		
46 01 16	1	00 - 7F	Reverb Return	→dB...0dB...+6dB(0...96...127)	
46 01 17	1	01 - 7F	Reverb Pan	L63...C...R63	
TOTAL SIZE = 24 18 (HEX)					

46 02 00	2	00 - 7F	Chorus Type MSB	Refer to Effect Parameter List	
		00 - 7F	Chorus Type LSB		
46 02 02	2	00 - 7F	Chorus Parameter 1 MSB	-	
		00 - 7F	Chorus Parameter 1 LSB		
46 02 04	2	00 - 7F	Chorus Parameter 2 MSB	-	
		00 - 7F	Chorus Parameter 2 LSB		
46 02 06	2	00 - 7F	Chorus Parameter 3 MSB	-	
		00 - 7F	Chorus Parameter 3 LSB		
46 02 08	2	00 - 7F	Chorus Parameter 4 MSB	-	
		00 - 7F	Chorus Parameter 4 LSB		
46 02 0A	2	00 - 7F	Chorus Parameter 5 MSB	-	
		00 - 7F	Chorus Parameter 5 LSB		
46 02 0C	2	00 - 7F	Chorus Parameter 6 MSB	-	
		00 - 7F	Chorus Parameter 6 LSB		
46 02 0E	2	00 - 7F	Chorus Parameter 7 MSB	-	
		00 - 7F	Chorus Parameter 7 LSB		
46 02 10	2	00 - 7F	Chorus Parameter 8 MSB	-	
		00 - 7F	Chorus Parameter 8 LSB		
46 02 12	2	00 - 7F	Chorus Parameter 9 MSB	-	
		00 - 7F	Chorus Parameter 9 LSB		
46 02 14	2	00 - 7F	Chorus Parameter 10 MSB	-	
		00 - 7F	Chorus Parameter 10 LSB		
46 02 16	1	00 - 7F	Chorus Return	→dB...0dB...+6dB(0...96...127)	
46 02 17	1	01 - 7F	Chorus Pan	L63...C...R63	
46 02 18	1	00 - 7F	Send Chorus To Reverb	→dB...0dB(0...127)	
TOTAL SIZE = 25 19 (HEX)					

46 03 00	2	00 - 7F	Insertion-1 Type MSB	Refer to Effect Parameter List	
		00 - 7F	Insertion-1 Type LSB		
46 03 02	2	00 - 7F	Insertion-1 Parameter1 MSB	-	
		00 - 7F	Insertion-1 Parameter1 LSB		
46 03 04	2	00 - 7F	Insertion-1 Parameter2 MSB	-	
		00 - 7F	Insertion-1 Parameter2 LSB		
46 03 06	2	00 - 7F	Insertion-1 Parameter3 MSB	-	
		00 - 7F	Insertion-1 Parameter3 LSB		
46 03 08	2	00 - 7F	Insertion-1 Parameter4 MSB	-	
		00 - 7F	Insertion-1 Parameter4 LSB		
46 03 0A	2	00 - 7F	Insertion-1 Parameter5 MSB	-	
		00 - 7F	Insertion-1 Parameter5 LSB		
46 03 0C	2	00 - 7F	Insertion-1 Parameter6 MSB	-	
		00 - 7F	Insertion-1 Parameter6 LSB		
46 03 0E	2	00 - 7F	Insertion-1 Parameter7 MSB	-	
		00 - 7F	Insertion-1 Parameter7 LSB		
46 03 10	2	00 - 7F	Insertion-1 Parameter8 MSB	-	
		00 - 7F	Insertion-1 Parameter8 LSB		
46 03 12	2	00 - 7F	Insertion-1 Parameter9 MSB	-	
		00 - 7F	Insertion-1 Parameter9 LSB		
46 03 14	2	00 - 7F	Insertion-1 Parameter10 MSB	-	
		00 - 7F	Insertion-1 Parameter10 LSB		
TOTAL SIZE = 22 16 (HEX)					

Address	Size	Data Range (HEX)	Parameter Name	Description	Notes
46 04 00	2	00 - 7F	Insertion-2 Type MSB	Refer to Effect Parameter List	
		00 - 7F	Insertion-2 Type LSB		
46 04 02	2	00 - 7F	Insertion-2 Parameter 1 MSB	-	
		00 - 7F	Insertion-2 Parameter 1 LSB		
46 04 04	2	00 - 7F	Insertion-2 Parameter 2 MSB	-	
		00 - 7F	Insertion-2 Parameter 2 LSB		
46 04 06	2	00 - 7F	Insertion-2 Parameter 3 MSB	-	
		00 - 7F	Insertion-2 Parameter 3 LSB		
46 04 08	2	00 - 7F	Insertion-2 Parameter 4 MSB	-	
		00 - 7F	Insertion-2 Parameter 4 LSB		
46 04 0A	2	00 - 7F	Insertion-2 Parameter 5 MSB	-	
		00 - 7F	Insertion-2 Parameter 5 LSB		
46 04 0C	2	00 - 7F	Insertion-2 Parameter 6 MSB	-	
		00 - 7F	Insertion-2 Parameter 6 LSB		
46 04 0E	2	00 - 7F	Insertion-2 Parameter 7 MSB	-	
		00 - 7F	Insertion-2 Parameter 7 LSB		
46 04 10	2	00 - 7F	Insertion-2 Parameter 8 MSB	-	
		00 - 7F	Insertion-2 Parameter 8 LSB		
46 04 12	2	00 - 7F	Insertion-2 Parameter 9 MSB	-	
		00 - 7F	Insertion-2 Parameter 9 LSB		
46 04 14	2	00 - 7F	Insertion-2 Parameter 10 MSB	-	
		00 - 7F	Insertion-2 Parameter 10 LSB		
46 04 16	2	00 - 7F	Insertion-2 Parameter 11 MSB	-	
		00 - 7F	Insertion-2 Parameter 11 LSB		
46 04 18	2	00 - 7F	Insertion-2 Parameter 12 MSB	-	
		00 - 7F	Insertion-2 Parameter 12 LSB		
46 04 1A	2	00 - 7F	Insertion-2 Parameter 13 MSB	-	
		00 - 7F	Insertion-2 Parameter 13 LSB		
46 04 1C	2	00 - 7F	Insertion-2 Parameter 14 MSB	-	
		00 - 7F	Insertion-2 Parameter 14 LSB		
46 04 1E	2	00 - 7F	Insertion-2 Parameter 15 MSB	-	
		00 - 7F	Insertion-2 Parameter 15 LSB		
46 04 20	2	00 - 7F	Insertion-2 Parameter 16 MSB	-	
		00 - 7F	Insertion-2 Parameter 16 LSB		
TOTAL SIZE = 34 22 (HEX)					

46 05 00	1	00 - 09	Controller Set1 Source	PB, MW, ---, AT, FC2, FS, FC1, BC, AS1, AS2	
46 05 01	2	00	Controller Set1 Destination MSB	0 - 29	
		00 - 1D	Controller Set1 Destination LSB		
46 05 03	1	00 - 7F	Controller Set1 Depth	-64 - +63	
46 05 04	1		reserved		
46 05 05	1	00 - 09	Controller Set2 Source	PB, MW, ---, AT, FC2, FS, FC1, BC, AS1, AS2	
46 05 06	2	00	Controller Set2 Destination MSB	0 - 29	
		00 - 1D	Controller Set2 Destination LSB		
46 05 08	1	00 - 7F	Controller Set2 Depth	-64 - +63	
46 05 09	1		reserved		
46 05 0A	1	00 - 09	Controller Set3 Source	PB, MW, ---, AT, FC2, FS, FC1, BC, AS1, AS2	
46 05 0B	2	00	Controller Set3 Destination MSB	0 - 29	
		00 - 1D	Controller Set3 Destination LSB		
46 05 0D	1	00 - 7F	Controller Set3 Depth	-64 - +63	
46 05 0E	1		reserved		
46 05 0F	1	00 - 09	Controller Set4 Source	PB, MW, ---, AT, FC2, FS, FC1, BC, AS1, AS2	
46 05 10	2	00	Controller Set4 Destination MSB	0 - 29	
		00 - 1D	Controller Set4 Destination LSB		
46 05 12	1	00 - 7F	Controller Set4 Depth	-64 - +63	
46 05 13	1		reserved		
46 05 14	1	00 - 09	Controller Set5 Source	PB, MW, ---, AT, FC2, FS, FC1, BC, AS1, AS2	
46 05 15	2	00	Controller Set5 Destination MSB	0 - 29	
		00 - 1D	Controller Set5 Destination LSB		
46 05 17	1	00 - 7F	Controller Set5 Depth	-64 - +63	
46 05 18	1		reserved		
46 05 19	1	00 - 09	Controller Set6 Source	PB, MW, ---, AT, FC2, FS, FC1, BC, AS1, AS2	
46 05 1A	2	00	Controller Set6 Destination MSB	0 - 29	
		00 - 1D	Controller Set6 Destination LSB		
46 05 1C	1	00 - 7F	Controller Set6 Depth	-64 - +63	
46 05 1D	1		reserved		
TOTAL SIZE = 30 1E (HEX)					

**<Table 9-2>  
MIDI PARAMETER CHANGE TABLE (DRUM VOICE KEY)**

Address	Size	Data Range (HEX)	Parameter Name	Description	Notes
47 ee 00	1	00-01	Element Assign	off, on	
47 ee 01	1	00-01	Wave Type	0:PresetWave 1:Voice	
47 ee 02	1	00	reserved		
47 ee 03	1	00-01	Receive Note Off	off, on	
47 ee 04	1	00-01	Assign Mode	single, multi	*1
47 ee 05	1	00-7F	Alternate Group	0:off, 1-127	
47 ee 06	2	00-7F	Wave Number MSB	1st bit6-0 → bit13-7 (User: 0-256)	
		00-7F	Wave Number LSB	2nd bit6-0 → bit6-0	
47 ee 08	3	00-7F	Voice Bank Number MSB	0 - 127	*1
		00-7F	Voice Bank Number LSB	0 - 127	*1
		00-7F	Voice Number	0 - 127	*1
47 ee 0B	1	01-7F	Pan	L63 - C - R63	*1
47 ee 0C	1	00-7F	Random Pan Depth	0 - 127	
47 ee 0D	1	00-7F	Alternate Pan Depth	L64 - 0 - R63	
47 ee 0E	1	00-7F	Reverb Send Level	0 - 127	*1
47 ee 0F	1	00-7F	Chorus Send Level	0 - 127	*1
47 ee 10	1		reserved		
47 ee 11	1	00-02	Insertion Effect Switch	thru, ins1, ins2	*1
47 ee 12	1	00-47	Output Select	0: L&R 8: asnL&R, 10: asn1&2, 11: asn3&4 64- 65: asnL, asnR, 68-71: asn1-4	*1

TOTAL SIZE = 19 13 (HEX)

47 ee 20	1	00-7F	Element Level	0 - 127	*1
47 ee 21	1	00-7F	Level Velocity Sensitivity	-64 - +63	
47 ee 22	1	00	reserved		
47 ee 23	1	00-7F	AEG Attack Time	0 - 127	
47 ee 24	1	00-7F	AEG Decay1 Time	0 - 127	
47 ee 25	1	00-7F	AEG Decay2 Time	0 - 126,hold	
47 ee 26	1	00	reserved		
47 ee 27	1	00	reserved		
47 ee 28	1	00	reserved		
47 ee 29	1	00-7F	AEG Decay1 Level	0 - 127	
47 ee 2A	1	00	reserved		
47 ee 2B	1	00	reserved		

TOTAL SIZE = 12 0C (HEX)

48 ee 00	1	10-70	Coarse Tune	-48 - +48	*1
48 ee 01	1	00-7F	Fine Tune	-64 - +63	*1
48 ee 02	1	00-7F	Pitch Velocity Sensitivity	-64 - +63	

TOTAL SIZE = 3 03 (HEX)

49 ee 00	1	00	reserved		
49 ee 01	2	00-01 00-7F	LPF Cutoff Frequency MSB LPF Cutoff Frequency LSB	0 - 255	
49 ee 03	1	00-7F	LPF Cutoff Velocity Sensitivity	-64 - +63	
49 ee 04	1	00-1F	LPF Resonance	0 - 31	
49 ee 05	1	40	reserved		
49 ee 06	2	00-01 00-7F	HPF Cutoff Frequency MSB HPF Cutoff Frequency LSB	0 - 255	

TOTAL SIZE = 8 08 (HEX)

4A ee 00	1	00-05	EQ Type	EQ LH, PEQ, Boost6, Boost12, Boost18, thru	
4A ee 01	1	00-1F	EQ Resonance	0 - 31	
4A ee 02	2	00-01 00-7F	EQ 1 Frequency MSB EQ 1 Frequency LSB	EQ L/H: 46-182, PEQ: 83-251	
4A ee 04	1	20-60	EQ 1 GAIN	-32 - +32	
4A ee 05	2	00-01 00-7F	EQ 2 Frequency MSB EQ 2 Frequency LSB	EQ L/H:131-241	
4A ee 07	1	20-60	EQ 2 GAIN	-32 - +32	

TOTAL SIZE = 8 08 (HEX)

ee = Element Number (00..48: C0 - C6)

\*1 When the Wave/Voice type is set to "voice", only these parameters are available.

**<Table 10>  
MIDI PARAMETER CHANGE TABLE (PLUG-IN VOICE)**

Address	Size	Data Range (HEX)	Parameter Name	Description	Notes
4C 70 00	1	20-7E	Voice Name1	32..126(ASCII)	
4C 70 01	1	20-7E	Voice Name2	32..126(ASCII)	
4C 70 02	1	20-7E	Voice Name3	32..126(ASCII)	
4C 70 03	1	20-7E	Voice Name4	32..126(ASCII)	
4C 70 04	1	20-7E	Voice Name5	32..126(ASCII)	
4C 70 05	1	20-7E	Voice Name6	32..126(ASCII)	
4C 70 06	1	20-7E	Voice Name7	32..126(ASCII)	
4C 70 07	1	20-7E	Voice Name8	32..126(ASCII)	
4C 70 08	1	20-7E	Voice Name9	32..126(ASCII)	
4C 70 09	1	20-7E	Voice Name10	32..126(ASCII)	
4C 70 0A	1		reserved		
4C 70 0B	1		reserved		
4C 70 0C	1	00-10	Voice Category(Main)	0..16(--Co)	Ap, Kb, Or, Gt, Ba, St, Br, Rp, Ld, Pd, Sc, Cp, Dr, Se, Me, Co
4C 70 0D	1	00-03	Voice Category(Sub)	0..3(--Sub1..Sub3)	depends on Main Category
4C 70 0E	1		reserved		
4C 70 0F	1		reserved		
4C 70 10	1		reserved		
4C 70 11	1		reserved		
4C 70 12	1		reserved		
4C 70 13	1	00-02	QED ARP Type Bank	pre1, pre2, user	
4C 70 14	1	00-7F	QED ARP Type	UpOct1 - GateCut3	
4C 70 15	1	00-01	ARP Switch	off, on	
4C 70 16	1	00-02	ARP Hold	sync-off, off, on	
4C 70 17	1	00-06	ARP Unit Multiply	50%, 66%, 75%, 100%, 133%, 150%, 200%	
4C 70 18	1	00-7F	ARP Note Limit Low	C-2..G8	
4C 70 19	1	00-7F	ARP Note Limit High	C-2..G8	
4C 70 1A	1	01-7F	ARP Velocity Limit Low	1 - 127	
4C 70 1B	1	01-7F	ARP Velocity Limit High	1 - 127	
4C 70 1C	1	00-02	ARP Key Mode	sort, thru, direct	
4C 70 1D	1	00-01	ARP Vel Mode	original, thru	
4C 70 1E	2	0000-00C8	ARP Velocity Rate MSB ARP Velocity Rate LSB	0...200%	
4C 70 20	2	0000-00C8	ARP Gate Time Rate MSB ARP Gate Time Rate LSB	0...200%	
4C 70 22	2	0001-012C	QED ARP Tempo MSB QED ARP Tempo LSB	1..300	
4C 70 24	1	00-04	CS Function Select	0=Pan&Send, 1= Tone, 2=Assign, 3=MeqOffset, 4=Volume	
4C 70 25	1	01-7F	Pan	L63..C..R63	
4C 70 26	1	00-7F	Chorus Control	-64..+63	
4C 70 27	1	00-7F	QED Decay Time	-64..+63	
4C 70 28	1	40	reserved		
4C 70 29	1	40	reserved		
4C 70 2A	1	40	reserved		
4C 70 2B	1	40	reserved		
4C 70 2C	1	40	reserved		
4C 70 2D	1	40	reserved		
4C 70 2E	1	00-7F	ASA	-64..+63	
4C 70 2F	1	00-7F	ASB	-64..+63	
4C 70 30	1	40	reserved		
4C 70 31	1	00-7F	EQ Low Gain	-64..+63	
4C 70 32	1	00-7F	EQ Low Mid Gain	-64..+63	
4C 70 33	1	00-7F	EQ High Mid Gain	-64..+63	
4C 70 34	1	00-7F	EQ High Gain	-64..+63	
4C 70 35	1	00-7F	Assign1	-64..+63	
4C 70 36	1	00-7F	Assign2	-64..+63	
4C 70 37	1	00-7F	Cutoff Frequency	-64..+63	
4C 70 38	1	00-7F	Resonance	-64..+63	
4C 70 39	1	00-7F	Attack Time	-64..+63	
4C 70 3A	1	00-7F	Release Time	-64..+63	
4C 70 3B	1	40	reserved		
4C 70 3C	1	40	reserved		
4C 70 3D	1	40	reserved		
4C 70 3E	1	40	reserved		
4C 70 3F	1	40	reserved		
4C 70 40	1	40	reserved		
4C 70 41	1	00	reserved		

TOTAL SIZE = 66 42 (HEX)

4C 00 00	1	00-7F	Volume	0 - 127	
4C 00 01	1		reserved		
4C 00 02	1	00-01	Same Note Number Key On Assign	single, multi	
4C 00 03	1	00-01	QED Mono/Poly Mode	mono, poly	
4C 00 04	1		reserved		
4C 00 05	1	28-58	QED Pitch Bend Range	-24 - +24[semitones]	
4C 00 06	1		reserved		
4C 00 07	1		reserved		
4C 00 08	1	00-01	QED Portamento Switch	off, on	
4C 00 09	1	00-7F	QED Portamento Time	0 - 127	
4C 00 0A	1	01-02	Insertion Connect Type	S - L, L - S	
4C 00 0B	1	00-7F	Reverb Send	-->dB ...0dB	
4C 00 0C	1	00-7F	Chorus Send	-->dB ...0dB	

TOTAL SIZE = 13 0D (HEX)



**<Table 11>  
MIDI PARAMETER CHANGE TABLE (MIX COMMON  
for Sequence Play)**

Address	Size	Data Range (HEX)	Parameter Name	Description	Notes
36 00 00 1	20	reserved			
36 00 01 1	20	reserved			
36 00 02 1	20	reserved			
36 00 03 1	20	reserved			
36 00 04 1	20	reserved			
36 00 05 1	20	reserved			
36 00 06 1	20	reserved			
36 00 07 1	20	reserved			
36 00 08 1	20	reserved			
36 00 09 1	20	reserved			
36 00 0A 1		reserved			
36 00 0B 1		reserved			
36 00 0C 1		reserved			
36 00 0D 1		reserved			
36 00 0E 1		reserved			
36 00 0F 1		reserved			
36 00 10 1	10	reserved			
36 00 11 1	00 - 01	ARP MIDI Out Switch	off, on		
36 00 12 1	00 - 10	ARP MIDI Out Channel	1..16, kbd-ch		
36 00 13 1	00 - 02	ARP Type Bank	pre1, pre2, user		
36 00 14 1	00 - 7F	ARP Type	UpOct1 - GateCut3		
36 00 15 1	00 - 01	ARP Switch	off, on		
36 00 16 1	00 - 02	ARP Hold	sync-off, off, on		
36 00 17 1	00 - 06	ARP Unit Multiply	50%, 66%, 75%, 100%, 133%, 150%, 200%		
36 00 18 1	00 - 7F	ARP Note Limit Low	C-2..G8		
36 00 19 1	00 - 7F	ARP Note Limit High	C-2..G8		
36 00 1A 1	01 - 7F	ARP Velocity Limit Low	1 - 127		
36 00 1B 1	01 - 7F	ARP Velocity Limit High	1 - 127		
36 00 1C 1	00 - 02	ARP Key Mode	sort, thru, direct		
36 00 1D 1	00 - 01	ARP Vel Mode	original, thru		
36 00 1E 2	0000 - 00C8	ARP Velocity Rate MSB ARP Velocity Rate LSB	0...200%		
36 00 20 2	0000 - 00C8	ARP Gate Time Rate MSB ARP Gate Time Rate LSB	0...200%		
36 00 22 2		reserved			
36 00 24 1	00 - 04	CS Function Select	0=Pan&Send, 1=Tone, 2=Assign, 3=MegOffset, 4=Volume		
36 00 25 1	40	reserved			
36 00 26 1	00 - 7F	Chorus Control	-64..+63		
36 00 27 1	40	reserved			
36 00 28 1	40	reserved			
36 00 29 1	40	reserved			
36 00 2A 1	40	reserved			
36 00 2B 1	40	reserved			
36 00 2C 1	40	reserved			
36 00 2D 1	40	reserved			
36 00 2E 1	00 - 7F	ASA	-64..+63		
36 00 2F 1	00 - 7F	ASB	-64..+63		
36 00 30 1	40	reserved			
36 00 31 1	00 - 7F	EQ Low Gain	-64..+63		
36 00 32 1	00 - 7F	EQ Low Mid Gain	-64..+63		
36 00 33 1	00 - 7F	EQ High Mid Gain	-64..+63		
36 00 34 1	00 - 7F	EQ High Gain	-64..+63		
36 00 35 1	00 - 7F	Scene 1 Assign1	-64..+63		
36 00 36 1	00 - 7F	Scene 1 Assign2	-64..+63		
36 00 37 1	40	reserved			
36 00 38 1	40	reserved			
36 00 39 1	40	reserved			
36 00 3A 1	40	reserved			
36 00 3B 1	40	reserved			
36 00 3C 1	40	reserved			
36 00 3D 1	40	reserved			
36 00 3E 1	40	reserved			
36 00 3F 1	40	reserved			
36 00 40 1	40	reserved			
36 00 41 1	00	reserved			
36 00 42 1	7F	reserved			
36 00 43 1	40	reserved			
36 00 44 1	00	reserved			
36 00 45 1	20	reserved			
36 00 46 1	00	reserved			
36 00 47 1	00	reserved			
36 00 48 1	00 - 5F	Assign1 Control Number	off, 1 - 95		
36 00 49 1	00 - 5F	Assign2 Control Number	off, 1 - 95		
36 00 4A 1	00 - 5F	BC Control Number	off, 1 - 95		
36 00 4B 1	00 - 5F	FC2 Control Number	off, 1 - 95		
36 00 4C 1	00 - 5F	FC1 Control Number	off, 1 - 95		
36 00 4D 1	00 - 7F	Voice Insertion Effect Part	0 - 15: Part1...16 96 - 98: PB Part1, 2, 3 127: off		
36 00 4E 1		reserved			
36 00 4F 1	00 - 7F	InsEF Plug-in Part	0 - 15: Part1 ...16 64: PartAD 97 - 98: PB Part2,3 127: off		
36 00 50 1	00 - 01	A/D Input Mode	L mono, R mono, L+R mono, stereo		Fixed at "mono" when using the Analog Input.

Address	Size	Data Range (HEX)	Parameter Name	Description	Notes
36 00 51 1	00 - 7F	A/D Part Volume	0 - 127		
36 00 52 1	01 - 7F	A/D Part Pan	L63 - C - R63		
36 00 53 1	00 - 7F	A/D Part Reverb Send	0 - 127		
36 00 54 1	00 - 7F	A/D Part Chorus Send	0 - 127		
36 00 55 1	00 - 7F	A/D Part Variation Send	0 - 127		
36 00 56 1	00 - 7F	A/D Part Dry Level	0 - 127		
36 00 57 1	00 - 71	A/D Part Output Select	0: L&R 8: asnL&R, 10: asn1&2, 11: asn3&4 64 - 65: asnL, asnR, 68 - 71 :asn1 - 4		

TOTAL SIZE = 88 58 (HEX)

Address	Size	Data Range (HEX)	Parameter Name	Description	Notes
36 01 00 2	00 - 7F	Reverb Type MSB	Refer to Effect Parameter List		
	00 - 7F	Reverb Type LSB			
36 01 02 2	00 - 7F	Reverb Parameter 1 MSB			
	00 - 7F	Reverb Parameter 1 LSB			
36 01 04 2	00 - 7F	Reverb Parameter 2 MSB			
	00 - 7F	Reverb Parameter 2 LSB			
36 01 06 2	00 - 7F	Reverb Parameter 3 MSB			
	00 - 7F	Reverb Parameter 3 LSB			
36 01 08 2	00 - 7F	Reverb Parameter 4 MSB			
	00 - 7F	Reverb Parameter 4 LSB			
36 01 0A 2	00 - 7F	Reverb Parameter 5 MSB			
	00 - 7F	Reverb Parameter 5 LSB			
36 01 0C 2	00 - 7F	Reverb Parameter 6 MSB			
	00 - 7F	Reverb Parameter 6 LSB			
36 01 0E 2	00 - 7F	Reverb Parameter 7 MSB			
	00 - 7F	Reverb Parameter 7 LSB			
36 01 10 2	00 - 7F	Reverb Parameter 8 MSB			
	00 - 7F	Reverb Parameter 8 LSB			
36 01 12 2	00 - 7F	Reverb Parameter 9 MSB			
	00 - 7F	Reverb Parameter 9 LSB			
36 01 14 2	00 - 7F	Reverb Parameter 10 MSB			
	00 - 7F	Reverb Parameter 10 LSB			
36 01 16 1	00 - 7F	Reverb Return	-->dB...0dB...+6dB(...c96...127)		
36 01 17 1	01 - 7F	Reverb Pan	L63...C...R63		

TOTAL SIZE = 24 18 (HEX)

Address	Size	Data Range (HEX)	Parameter Name	Description	Notes
36 02 00 2	00 - 7F	Chorus Type MSB	Refer to Effect Parameter List		
	00 - 7F	Chorus Type LSB			
36 02 02 2	00 - 7F	Chorus Parameter 1 MSB			
	00 - 7F	Chorus Parameter 1 LSB			
36 02 04 2	00 - 7F	Chorus Parameter 2 MSB			
	00 - 7F	Chorus Parameter 2 LSB			
36 02 06 2	00 - 7F	Chorus Parameter 3 MSB			
	00 - 7F	Chorus Parameter 3 LSB			
36 02 08 2	00 - 7F	Chorus Parameter 4 MSB			
	00 - 7F	Chorus Parameter 4 LSB			
36 02 0A 2	00 - 7F	Chorus Parameter 5 MSB			
	00 - 7F	Chorus Parameter 5 LSB			
36 02 0C 2	00 - 7F	Chorus Parameter 6 MSB			
	00 - 7F	Chorus Parameter 6 LSB			
36 02 0E 2	00 - 7F	Chorus Parameter 7 MSB			
	00 - 7F	Chorus Parameter 7 LSB			
36 02 10 2	00 - 7F	Chorus Parameter 8 MSB			
	00 - 7F	Chorus Parameter 8 LSB			
36 02 12 2	00 - 7F	Chorus Parameter 9 MSB			
	00 - 7F	Chorus Parameter 9 LSB			
36 02 14 2	00 - 7F	Chorus Parameter 10 MSB			
	00 - 7F	Chorus Parameter 10 LSB			
36 02 16 1	00 - 7F	Chorus Return	-->dB...0dB...+6dB(...c96...127)		
36 02 17 1	01 - 7F	Chorus Pan	L63...C...R63		
36 02 18 1	00 - 7F	Send Chorus To Reverb	-->dB...0dB(0...127)		

TOTAL SIZE = 25 19 (HEX)

Address	Size	Data Range (HEX)	Parameter Name	Description	Notes
36 03 00 2	00 - 7F	Variation Type MSB (for Performance)	Refer to Effect Parameter List		
	00 - 7F	Variation Type LSB			
36 03 02 2	00 - 7F	Variation Parameter1 MSB			
	00 - 7F	Variation Parameter1 LSB			
36 03 04 2	00 - 7F	Variation Parameter2 MSB			
	00 - 7F	Variation Parameter2 LSB			
36 03 06 2	00 - 7F	Variation Parameter3 MSB			
	00 - 7F	Variation Parameter3 LSB			
36 03 08 2	00 - 7F	Variation Parameter4 MSB			
	00 - 7F	Variation Parameter4 LSB			
36 03 0A 2	00 - 7F	Variation Parameter5 MSB			
	00 - 7F	Variation Parameter5 LSB			
36 03 0C 2	00 - 7F	Variation Parameter6 MSB			
	00 - 7F	Variation Parameter6 LSB			
36 03 0E 2	00 - 7F	Variation Parameter7 MSB			
	00 - 7F	Variation Parameter7 LSB			
36 03 10 2	00 - 7F	Variation Parameter8 MSB			
	00 - 7F	Variation Parameter8 LSB			
36 03 12 2	00 - 7F	Variation Parameter9 MSB			
	00 - 7F	Variation Parameter9 LSB			
36 03 14 2	00 - 7F	Variation Parameter10 MSB			
	00 - 7F	Variation Parameter10 LSB			
36 03 16 2	00 - 7F	Variation Parameter11 MSB			
	00 - 7F	Variation Parameter11 LSB			
36 03 18 2	00 - 7F	Variation Parameter12 MSB			
	00 - 7F	Variation Parameter12 LSB			

Address	Size	Data Range (HEX)	Parameter Name	Description	Notes
		00 - 7F	Variation Parameter12 LSB		
36 03 1A 2		00 - 7F	Variation Parameter13 MSB		
		00 - 7F	Variation Parameter13 LSB		
36 03 1C 2		00 - 7F	Variation Parameter14 MSB	Refer to Effect Parameter List	
		00 - 7F	Variation Parameter14 LSB		
36 03 1E 2		00 - 7F	Variation Parameter15 MSB		
		00 - 7F	Variation Parameter15 LSB		
36 03 20 2		00 - 7F	Variation Parameter16 MSB		
		00 - 7F	Variation Parameter16 LSB		
36 03 22 1		00 - 7F	Variation Return	<<<dB...0dB...+6dB(...c96...127)	
36 03 23 1		01 - 7F	Variation Pan	L63...C...R63	
36 03 24 1		00 - 7F	Send Variation To Reverb	<<<dB...0dB(0...127)	
36 03 25 1		00 - 7F	Send Variation To Chorus	<<<dB...0dB(0...127)	

TOTAL SIZE = 38 26 (HEX)

36 10 00 1	34 - 4C	EQ Gain1	-12 - +12[dB]	
36 10 01 1	04 - 28	EQ Frequency1	32 - 2000[Hz]	
36 10 02 1	01 - 78	EQ Q1	0.1 - 12.0	
36 10 03 1	00 - 01	EQ Shape1	shelv, peak	
36 10 04 1	34 - 4C	EQ Gain2	-12 - +12[dB]	
36 10 05 1	0E - 36	EQ Frequency2	100 - 10.0[kHz]	
36 10 06 1	01 - 78	EQ Q2	0.1 - 12.0	
36 10 07 1	01	reserved		
36 10 08 1	34 - 4C	EQ Gain3	-12 - +12[dB]	
36 10 09 1	0E - 36	EQ Frequency3	100 - 10.0[kHz]	
36 10 0A 1	01 - 78	EQ Q3	0.1 - 12.0	
	1	Not Used		
36 10 0C 1	34 - 4C	EQ Gain4	-12 - +12[dB]	
36 10 0D 1	0E - 36	EQ Frequency4	100 - 10.0[kHz]	
36 10 0E 1	01 - 78	EQ Q4	0.1 - 12.0	
	1	Not Used		
36 10 10 1	34 - 4C	EQ Gain5	-12 - +12[dB]	
36 10 11 1	1C - 3A	EQ Frequency5	0.5 - 16.0[kHz]	
36 10 12 1	01 - 78	EQ Q5	0.1 - 12.0	
36 10 13 1	00 - 01	EQ Shape5	shelv, peak	

TOTAL SIZE = 20 14 (HEX)

36 20 00 16	00 - 7F	Plug-in Board Native System Parameter	(for InsEF Plug-in)	
36 20 10 48	00 - 7F	Plug-in Board Native Parameter	(for InsEF Plug-in)	
36 20 40 3	00 - 7F	Plug-in Board Type MSB	(for InsEF Plug-in)	
	00 - 7F	Plug-in Board Type LSB		
	00 - 7F	Plug-in Board Version Number		
	43 1	reserved		

TOTAL SIZE = 68 44 (HEX)

## MIDI PARAMETER CHANGE TABLE (MIX PART for Sequence Play)

Address	Size	Data Range (HEX)	Parameter Name	Description	Notes
37 pp 00 1	00 - 7F	Bank Select MSB	0 - 127		
37 pp 01 1	00 - 7F	Bank Select LSB	0 - 127		
37 pp 02 1	00 - 7F	Program Number	1 - 128		
37 pp 03 1	00 - 0F, 7F	Receive Channel	1..16, off(7F)		
37 pp 04 1	00 - 01	Part Mode	mono, poly		
37 pp 05 1	01 - 7F	Velocity Limit Low	1 - 127		
37 pp 06 1	01 - 7F	Velocity Limit High	1 - 127		
37 pp 07 1	00 - 7F	Note Limit Low	C-2 - G8		
37 pp 08 1	00 - 7F	Note Limit High	C-2 - G8		
37 pp 09 1	10 - 58	Pitch Bend Range Upper	-48 - +24 (PB Part: -24 - +24)		
37 pp 0A 1	10 - 58	Pitch Bend Range Lower	-48 - +24		
37 pp 0B 1	00 - 7F	Velocity Sense Depth	0 - 127		
37 pp 0C 1	00 - 7F	Velocity Send Offset	0 - 127		
37 pp 0D 1	00 - 7F	Volume	0 - 127		
37 pp 0E 1	01 - 7F	Pan	L63 - C - R63		
37 pp 0F 1		reserved			
37 pp 10 2	00 - 0F, 00 - 0F	Detune MSB Detune LSB	-12.8 - +12.7[Hz] 1st bit3-0 → bit7-4 2nd bit3-0 → bit3-0		
37 pp 12 1	00 - 7F	Reverb Send	0 - 127		
37 pp 13 1	00 - 7F	Chorus Send	0 - 127		
37 pp 14 1	00 - 7F	Variation Send	0 - 127		
37 pp 15 1	00 - 7F	Dry Level	0 - 127		
37 pp 16 1	28 - 58	Note Shift	-24 - +24[semitones]		
37 pp 17 1	00 - 7F	Filter Cutoff Frequency	-64 - +63		
37 pp 18 1	00 - 7F	Filter Resonance/Width	-64 - +63		
37 pp 19 1		reserved			
37 pp 1A 1	00 - 01	Portamento Switch	off, on		
37 pp 1B 1	00 - 7F	Portamento Time	0 - 127		
37 pp 1C 1	00 - 01	Portamento Mode	fingered, fulltime		
37 pp 1D 1		reserved			
37 pp 1E 1	00 - 7F	Output Select	0: L&R 8: asnL&R, 10: asn1&2, 11: asn3&4 64 - 65: asnL, asnR, 68 - 71: asn1 - 4 127: drum(or L&R)	L&R on parts 17-32	
37 pp 1F 1	00 - 7F	reserved Arpeggio Sw Receive Control Change Receive Bank Select Receive Program Change Receive AT Receive PB	bit0: reserved bit1: Arpeggio Sw off, on bit2: off, on Control Change bit3: off, on Bank Select bit4: off, on Program Change bit5: off, on AT bit6: off, on PB		
37 pp 20 1	00 - 7F	Receive Volume/Expression Receive Pan  Receive Sustain/Sostenute  Receive MW	bit0: off, on Volume/Expression bit1: off, on Pan bit2: reserved bit3: off, on Sustain/Sostenute bit4: reserved bit5: off, on MW bit6: reserved		
37 pp 21 1	00 - 7F	Receive FC2 Receive FS Receive FC1 Receive BC Receive AS1 Receive AS2	bit0: off, on FC2 bit1: off, on FS bit2: off, on FC1 bit3: off, on BC bit4: off, on AS1 bit5: off, on AS2 bit6: reserved		
37 pp 22 1	00 - 7F	AEG Decay2 Level (EG Sustain Level)	-64 - +63		
37 pp 23 1	00 - 7F	AEG Attack Time (EG Attack Time)	-64 - +63		
37 pp 24 1	00 - 01	Voice Pan on/off	off, on		
37 pp 25 1	00 - 7F	AEG Decay2 Time (EG Decay Time)	-64 - +63		
37 pp 26 1	00 - 7F	AEG Release Time (EG Release Time)	-64 - +63		
37 pp 27 1	00 - 7F	FEG Decay2 Level (EG Sustain Level)	-64 - +63		
37 pp 28 1	00 - 7F	FEG Attack Time (EG Attack Time)	-64 - +63		
37 pp 29 1		reserved			
37 pp 2A 1	00 - 7F	FEG Decay2 Time (EG Decay Time)	-64 - +63		
37 pp 2B 1	00 - 7F	FEG Release Time (EG Release Time)	-64 - +63		
37 pp 2C 1	00 - 7F	FEG DEPTH	-64 - +63		

TOTAL SIZE = 45 2D (HEX)

pp = part number

- 00 - 0F Part 1 - 16 (Normal, Drum)
- 60 Part Plug-in 1 (User, Preset, Direct)
- 61 Part Plug-in 2 (User, Preset, Direct)
- 62 Part Plug-in 3 (User, Preset, Direct)
- 10 - 1F Multi Plug-in Board Part (Not included in the Mixing setup)

Function...	Transmitted	Recognized	Remarks
Basic Channel      Default Changed	1 - 16 X	X X	Memorized
Mode              Default Messages Altered	X X *****	X X X	
Note Number : True voice	0 - 127 *****	X X	
Velocity          Note ON Note OFF	O 9nH,v=1-127 X 9nH,v=0	X X	
After Touch      Key's Ch's	O O	X X	
Pitch Bend	O	X	
Control Change      0-121	O	X	
Prog Change : True #	O 0 - 127 *****	X	
System Exclusive	O	X	
Common : Song Pos. : Song Sel. : Tune	X X X	X X X	
System : Clock Real Time : Commands	O            *2 O            *2	O            *1, *2 O            *2	
Aux : All Sound Off : Reset All Cntrls : Local ON/OFF Mes- : All Notes OFF sages: Active Sense : Reset	O O O O X X	X X X X X X	

Notes:            \*1 if MIDI Sync is midi  
                   \*2 if MIDI Control is on

Function...	Transmitted	Recognized	Remarks
Basic Channel Default Changed	1 - 16 1 - 16	1 - 16 1 - 16	Memorized
Mode Default Messages Altered	3 X *****	1 1 - 4(m=1) *2 X	Memorized
Note Number : True voice	0 - 127 *****	0 - 127 0 - 127	Transpose
Velocity Note ON Note OFF	O 9nH,v=1-127 X 9nH,v=0	O v=1-127 X	
After Touch Key's Ch's	X O	X O	*1
Pitch Bend	O	O	*1
Control Change 0,32 1,7,10,11 6,38 64 65 66 71-75 91,93 96-97 100-101 1-95	O O X O X X O O X X O	O O O O O O O O O O O	*1 *1 *1 *1 *1 *1 *1 *1 *1 *1 *1 *1
Prog Change : True #	O 0 - 127 *****	O 0 - 127 0 - 127	
System Exclusive	O	O	
Common : Song Pos. : Song Sel. : Tune	X X X	X X X	
System : Clock Real Time : Commands	X X	O X	
Aux : All Sound Off : Reset All Cntrls : Local ON/OFF Mes- : All Notes OFF sages: Active Sense : Reset	X X X X O X	O (120,126,127) O (121) X O (123-125) O X	

Notes: \*1 receive if switch is on.  
 \*2 m is always treated as "1" regardless of its value.