

AN1X



**CONTROL SYNTHESIZER
ANALOG PHYSICAL MODELING**

Data List

Daten-Liste
Liste de données



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YAMAHA



Factory-set Voice List

The following voices are preset at the factory. Each voice has different settings which you can change by moving the CONTROL knobs and other controllers. Each controller is assigned with its own unique settings. In general, AEG or FEG is assigned to knobs 1 and 2, VCF Cutoff to knob 5, Resonance to knob 6, and Effects-related parameters to knobs 7 and 8, respectively. Parameters assigned to other knobs were carefully selected for maximum effect. Depending on the settings for each parameter, changes you make may not be distinctive.

No.	Cat.	Voice Name	Description
1	Co	Relaxx	Combination of arpeggio synth & synthpad. Use [ASSIGN] knobs to control the arpeggio voice.
2	Sq	Terraform	Hard sequence voice with pattern select. Keys C#1 to B2 correspond to User Patterns No. 1 to 23.
3	Ba	Celluloid	Dual voice layered with full-bodied bass and metallic sounds. SINGLE mode is suitable for original tunes. Also try MONO and LEGATO. Also good for Synth lead in the upper register.
4	Br	MajorBrass	Powerful analog brass sound. Use [RIBBON] controller to change VCF Cutoff (horizontal) and Resonance (pressure).
5	Pd	Soar	Ethereal pad sound using arpeggiator.
6	Ba	Hardcore	Hard core acid sound. Use [RIBBON] controller for distortion control.
7	Ba	Uni-Bass	Fat bass sound using DUAL UNISON with Legato.
8	Ld	MegaDrone	Fat lead sound with moving filter.
9	Ld	SyncLead	Lead sound using "Sync." Try the [RIBBON] controller for effect.
10	St	Legato	Pad strings sound with slow attack.
11	Sq	Alan	Standard British progressive rock sound.
12	Ba	Mini	Classic analog synth bass with various sequence patterns. Keys C#1 to B2 are correspond to User Patterns No. 25 to 47.
13	Se	Chemical	Diving sweep sound. The rhythm in Scene 1 is created with the FreeEG. This is disabled for Scene 2.
14	Pd	SyncSweep	Use [RIBBON] or [MODULATION] wheel for sync pitch control.
15	Sc	Caner	Fat hook-line voice for dance & techno music. Try scene 2 with [MODULATION] wheel.
16	Pf	MorphEP	Continuously changes between electric piano sound and pad sound using "Sync" by Scene Control function.
17	Sq	Doves	Spacey sequence voice. Use [RIBBON] controller and [ASSIGN] knobs for effect.
18	Sq	BPF Morph	Sequence voice with band pass filter for special atmosphere.
19	Sq	Seismic	Step Sequencer plays a combination of analog drum and analog bass sounds. Free EG adds modulation for unique atmosphere.

No.	Cat.	Voice Name	Description
20	Fx	Earth	Sound effect layered with arpeggiated melody line and human voice-type pad.
21	Co	Vinnie	Nice Split of vintage arpeggio & synth lead.
22	Co	Detroit	Combination analog bass and analog effect sound.
23	Co	Plastik	Combination synth sound layered with analog drum sound and its perfect fourth. Step Sequencer plays only while you hold the keys since the Hold function is set to OFF.
24	Co	ChinaTech	Combination synth sound layered with analog drum sound and its perfect fourth. Step Sequencer plays only while you hold the keys since the Hold function is set to OFF.
25	Co	Silence	Combination analog pad and analog lead sound.
26	Ba	Dog Bass	Fat hip hop saw bass. Slide the edge back with the [MODULATION] wheel.
27	Ba	Slum	Heavy analog bass with a characteristic attack. Select Scene 2 for a variation.
28	Ba	Loud	Hybrid analog and FM bass sound.
29	Ba	MiniLow	Analog bass sound with short filter decay. Use [ASSIGN] knobs to change the envelope and filter settings.
30	Ba	Kickbass	Bass sound with a characteristic attack. Select Scene 2 to produce a sharp bass drum attack.
31	Ba	Sub Sub	Hollow sub bass sound.
32	Ba	Hardstep	Slippery drum and bass sound. Use the [RIBBON] to control the slip.
33	Ba	Wonder	Analog bass sound suitable for melodic riffs.
34	Ba	Duck Bass	Analog bass sound with wide dynamic range created by velocity.
35	Ba	Prophetic	Vintage analog style bass sound.
36	Ba	Harmosync	Contemporary acid sound. In Scene 2 the compressor drive is on the [RIBBON]. Try Scene1 for a more harmonic effect.
37	Ba	Kangaroo	Bouncey soft acid sound. Get happy with this one.
38	Ba	Acid 1	Hard acid sound number 1. Note that the feedback parameter (knob 7) interacts with the resonance (knob 6).

No.	Cat.	Voice Name	Description
39	Ba	Acid 2	Acid sound number 2. Twiddle those knobs for ultimate experience.
40	Ba	Acid 3	Harder acid sound. [RIBBON] controls distortion amount. Watch the resonance.
41	Br	Soft Brass	Soft analog brass sound. Try the [RIBBON] controller.
42	Br	Hard Brass	Bright & fat analog sawtooth synth sound. Scene 2 is a square wave variation.
43	Br	Bronze	Unison brass sound with short decay changes. Open filter brass with the [MODULATION] wheel. The same voice with the oscillators in octaves is in Scene 2.
44	Br	Fatty	Fat 70s style synth brass.
45	Br	Quincy	Gentle and cool synth brass sound. Use velocity to control brightness.
46	Br	CS80 Brass	Emulation of classic CS80 brass patch.
47	Br	Tangiers	Brass sound with fast attack. Great for house stabs.
48	Br	Brassmorph	[MODULATION] wheel gradually changes the sound between filtrated brass sound (Scene 1) and projected brass sound (Scene 2).
49	St	Analog	Bright analog synth strings. Use [MODULATION] wheel or [RIBBON] for dark strings.
50	St	Lush	Rich PWmod string pad. Use the [RIBBON] to control brightness. A slight variation, up an octave in pitch, is in Scene 2.
51	St	Chocolate	Orchestral sound layered with strings in different octaves.
52	St	Stringz	Analog PWmod synth string pad. Scene 2 is a square wave variation, with pulse width controlled by the [RIBBON].
53	St	String Pad	Soft pad great for backing.
54	Sc	Billy	70s style poly synth sound. Use [ASSIGN] knobs for neat sound variations.
55	Sc	Fetish	Wasp-like sound for soundtracks with the sweet pleasure of pain.
56	Sc	P-5 Compy	Emulation of the classic Prophet 5 sound.
57	Sc	Stakka	Voice stacked with a major third.
58	Sc	Dust	Pizzicato synth sound.
59	Sc	WarmPoly	70s style poly synth. Use [ASSIGN] knobs for sound variations.
60	Sc	Rhubarb	Fat portamento hook-voice for dance & techno.
61	Ld	Susy	Warm vintage "mini" synth lead voice.

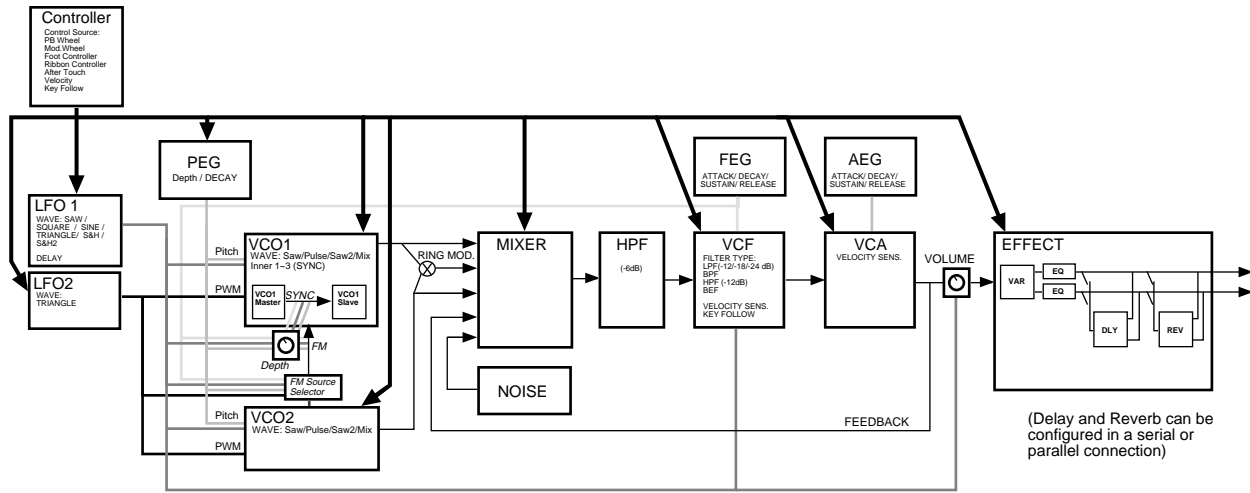
No.	Cat.	Voice Name	Description
62	Ld	OB-8	Thick detuned wave.
63	Ld	Lucky	Portamento lead sound created with a typical square wave. Turn knob 3 to change the pulse width.
64	Ld	Earth Lead	Sensitive synth lead voice. Use [RIBBON], [PITCH] wheel and [MODULATION] wheel.
65	Ld	HardSync	Fat synth lead sound with sync-envelope.
66	Ld	Chick	Dark analog synth lead. Turning knob 5 makes the sound brighter.
67	Ld	Stevie	Typical 80s Stevie Winwood type lead sound.
68	Ld	Floyd75	Stacked over 4 octaves! Pink Floyd's "Wish You Were Here" revisited.
69	Ld	Synchromes	Dangerous lead sound also great for percussive sequence lines.
70	Pd	High Sweep	Soft sweep with tons of resonance.
71	Pd	Ice Pad	Synth pad using Free EG for subtle trembles. A typical example of how easy it is to create a voice by using Edge and Ring Modulator.
72	Pd	Sprinkler	Layered sound with fast arpeggiated sound and soft pad. The soft pad can be changed drastically with [MODULATION] wheel and [RIBBON] controller.
73	Pd	GreatMorph	Powerful pad sound suitable for progressive rock. Check the drastic changes between Scene 1 and 2 using the [MODULATION] wheel.
74	Pd	Church Bel	Pad with arpeggiated bells on top. Use the [RIBBON] to control the volume of the bells.
75	Pd	Deep Blue	Synth pad sound with great sound projection.
76	Pd	Da Padd	Dark and thick analog synth pad sound. Scene 2 is an LFO sweep with BEF variation. The [RIBBON] controls LFO sweep speed in Scene 2 over a wider range than knob 3 for a "watery" effect.
77	Pd	Water Pad	Pad with upward BPF sweep. Use the [MODULATION] wheel to change between the original version of the pad and a variation. Use the [RIBBON] to control the brightness.
78	Pd	Night Sky	Modulated pluck sound with high string pad fading in over it. Use the [MODULATION] wheel to change the pitch of the pluck sound. Middle positions include great voice variations. Use the [RIBBON] to control volume of the strings.
79	Pd	Oberweich	Clear portamento pad sound.
80	Pd	PolyTen	Analog strings pad sound with chorus effect.
81	Pd	PortPad	Powerful synth pad sound.
82	Pd	Sacred	Vocal type pad sound.
83	Pd	Sweep&S/H	Sweep pad which can morph to Sample & Hold using the [MODULATION] wheel.
84	Pd	Slip	Thin pad which sits behind fat drums.

No.	Cat.	Voice Name	Description
85	Pd	Polyswell	Warm and wide poly synth sound with long filter attack.
86	Co	Padbells	Combination of bells with pad. Use [RIBBON] to fade the bells in or out.
87	Pf	DX E.Piano	Bright FM electric piano sound.
88	Pf	Condenser	Condenser piano sound.
89	Pf	WhitneyEP	Electric piano with clean Whitney Houston sound.
90	Or	DrawOrgans	Clean organ with 4 drawbars. Use [MODULATION] wheel for rotary speed and [ASSIGN] knobs for tone control.
91	Or	16+2.2/3	Many organ sounds available with controllers.
92	Or	Garage	Garage and ragga type small synth organ. Scene 2 has a more percussive version.
93	Or	House	House organ ideal for bouncy basslines.
94	Or	Pipes	Chiffer pipe organ sound that transforms into full organ when the [MODULATION] wheel is increased. The [RIBBON] controls the volume of the upper octave.
95	Pc	Hi Q Reso	The immortal Kraftwerk invention.
96	Pc	Koan	Ring modulation style wind chimes.
97	Pc	Woob	Ambient percussion effect by ring modulation.
98	Fx	WelcomBk	Great space pad sound. Use the [MODULATION] wheel to add pitch modulation effects. Hold note A4 to recreate the beginning of ELP's "Welcome Back My Friends" (Karn Evil 9).
99	Fx	Magic	Spacey pad with soft sync modulation.
100	Fx	Hypno	Notes in the bottom octave of the keyboard play a sequence and determine its pitch. Play single or double note melodies in the upper keyboard. The Free EG does the rest.
101	Fx	Soundtrack	Synth voice great for film music.
102	Fx	Morphyum	FX voice with pitch attack & sync.
103	Fx	WindString	FX pad sound expressing fast bowed sound of a violin using the Arpeggiator.
104	Fx	Vangelizm	Combination synth and analog pad sound using Arpeggiator.
105	Fx	Chandelier	Bright analog sound effect using Arpeggiator.
106	Fx	FreeEGRthm	Free EG and Arpeggiator extravaganza which procudes unusual rhythms.

No.	Cat.	Voice Name	Description
107	Fx	Heaven	Sound effect which creates rhythms by matching the delay length to the Arpeggiator tempo.
108	Fx	Mars	Typical vintage synth with high pass sweep.
109	Fx	Porpoise	Sound which creates animal squeakings using the Free EG.
110	Fx	Jack	Filter LFO sound effect great for trance music.
111	Fx	Microdot	Pointy strobe-ish techno sound.
112	Fx	Polaris	Thick pad sound with creamy effect. Adjust knobs 2 and 7 if it's too slow for ya.
113	Fx	RhythmCity	A sequenced voice is triggered from B2 and below. Try using single notes or octaves in the lower range of the keyboard. Play chords from C3 and above. Change chords in time. The [RIBBON] controls the brightness of the sequence.
114	Fx	CyberBag	Sound effect created with the FreeEG.
115	Se	CyberClock	Sound effect combined with Arpeggiator and PEG.
116	Se	Flutter	Soundd with special sweeping effect.
117	Se	Industrial	Use all controllers and go crazy!
118	Se	Moment	Sound effect producing completely different sounds in all pitches by applying FM modulation.
119	Se	We All Die	Whimsical special effect sound using sync to create vocal formants.
120	Sq	Cactus	Analog sequence with complex Free EG modulations. Hold the key for a long time.
121	Sq	Overdrive	Distorted analog sequence great for techno music. Use the [RIBBON] to control the filter.
122	Sq	Omega	Analog sequence with complex Free EG modulations. Hold the key for a long time.
123	Sq	Csus4	Automatically plays with C sus 4. Get into it!
124	Sq	TekkLine	Free EG adds radically changing long cycle to the sequences of typical phrases.
125	Sq	Highway	Spacey sequence with strong phasing effect.
126	Sq	Saturn	Typical percussive type analog synth great for arpeggios.
127	Sq	Poptart	Percussive chill-out effect. Be cool.
128	Sq	VirtlScene	Play a tune along with the typical sequence line while changing voices using the [MODULATION] wheel.

NOTE When Step Sequencer Keyboard Mode is set to "sel&norm" or "sel&shift", User Patterns can be played to the left of the Split point. User Patterns can also be selected by playing a note. In this case, when you press the C1 key, the current Voice Pattern will be accessed. (See page 86.)

Tone Generator And Effect Signal Flow



Arpeggiator Type List

No.	Param Name	Comments
1	UpOct1	The chord (or phrase) ascends up 1 Octave.
2	UpOct2	The chord (or phrase) ascends up 2 Octaves.
3	UpOct4	The chord (or phrase) ascends up 4 Octaves.
4	DwOct1	The chord (or phrase) descends down 1 Octave.
5	DwOct2	The chord (or phrase) descends down 2 Octaves.
6	DwOct4	The chord (or phrase) descends down 4 Octaves.
7	UpDwAOct1	The chord (or phrase) ascends up 1 Octave, then descends.
8	UpDwAOct2	The chord (or phrase) ascends up 2 Octaves, then descends.
9	UpDwAOct4	The chord (or phrase) ascends up 4 Octaves, then descends.
10	UpDwBOct1	The chord (or phrase) ascends up 1 Octave, then descends. (This is slightly different from type UpDwAOct1.)
11	UpDwBOct2	The chord (or phrase) ascends up 2 Octaves, then descends. (This is slightly different from type UpDwAOct2.)
12	UpDwBOct4	The chord (or phrase) ascends up 4 Octaves, then descends. (This is slightly different from type UpDwAOct4.)
13	RandmOct1	Plays up and down randomly over 1 Octave, based on the chord you play.
14	RandmOct2	Plays up and down randomly over 2 Octaves, based on the chord you play.
15	RandmOct4	Plays up and down randomly over 4 Octaves, based on the chord you play.
16	Techno-A	Typical techno sequence TYPE A. (Euro techno type.)
17	Techno-B	Typical techno sequence TYPE B. (UK type with Velocity.)
18	Techno-C	Typical techno sequence TYPE C. (Japan techno type.)
19	Techno-D	Typical techno sequence TYPE D. (German techno type.)
20	DAHouse	Backing sequence with House music feel. (Bass for left hand, Chord play for right hand.)
21	SyncopaA	Syncopation type sequence TYPE A.
22	SyncopaB	Syncopation type sequence TYPE B. (Octave moves considerably.)
23	SyncoEcho	Syncopated type echo.
24	TekkEchoA	Echo with moving filter A.
25	TekkEchoB	Echo with moving filter B.
26	PulseLine	Sequence mixed with bass line and sequence line.
27	BassLineA	Arpeggio phrase TYPE A for bass.
28	BassLineB	Arpeggio phrase TYPE B for bass. (With Velocity.)
29	BassLineC	Arpeggio phrase TYPE C for bass.
30	BassLineD	Arpeggio phrase TYPE D for bass.

Effect Type List

VARIATION EFFECT		Wet:Dry	3-BAND EQUALIZER	
1	Chorus 1	D63>W ~ D=W ~ D<W63	3-Band EQ	
2	Chorus 2	D63>W ~ D=W ~ D<W63	DELAY EFFECT	
3	Flanger	D63>W ~ D=W ~ D<W63	1	Delay L,C,R
4	Symphonic	D63>W ~ D=W ~ D<W63	2	Delay L,R
5	Phaser	D63>W ~ D=W ~ D<W63	3	Echo
6	Auto PAN	D63>W ~ D=W ~ D<W63	4	Cross Delay
7	Rotary Sp.	D63>W ~ D=W ~ D<W63	5	Tempo Delay
8	Pitch Change	D63>W ~ D=W ~ D<W63	REVERB EFFECT	
9	Aural Exc	Dry (1-63), Wet (64-127)	1	Hall1
10	Comp	Dry (1-63), Wet (64-127)	2	Hall2
11	Wah	D63>W ~ D=W ~ D<W63	3	Hall3
12	Distortion	Dry (1-63), Both (64), Wet (65-127)	4	Room1
13	Over Drive	Dry (1-63), Both (64), Wet (65-127)	5	Room2
14	Amp Sim.	Dry (1-63), Both (64), Wet (65-127)	6	Stage1
			7	Stage2
			8	Plate

Effect Parameter List

Variation Effect

CHORUS1, 2

No.	Parameter	Display	Ctrl Matrix	Value	Table
1	Mod Freq	0.00-41.70Hz	Common	0-159	table#1
2	PM Depth	0-100		0-100	
3	AM Type	off-RndHrd		0-15	table#4
4	Dly Offset	0-50.0ms		0-500	
elm	Dry:Wet	D63>W ~ D=W ~ D<W63	Scene	1-127	

FLANGER1

No.	Parameter	Display	Ctrl Matrix	Value	Table
1	Mod Freq	0.00-41.70Hz	Common	0-159	table#1
2	Mod Depth	0-100		0-100	
3	Dly Offset	0-15.5ms		0-155	
4	FB Level	-99-+99		0-198	
elm	Dry:Wet	D63>W ~ D=W ~ D<W63	Scene	1-127	

SYMPHONIC

No.	Parameter	Display	Ctrl Matrix	Value	Table
1	Mod Freq	0.00-41.70Hz	Common	0-159	table#1
2	Mod Depth	0-100		0-100	
3	Dly Offset	0-45.0ms		0-450	
elm	Dry:Wet	D63>W ~ D=W ~ D<W63	Scene	1-127	

PHASER

No.	Parameter	Display	Ctrl Matrix	Value	Table
1	Mod Freq	0.00-41.70Hz	Common	0-159	table#1
2	Mod Depth	0-100		0-100	
3	Phase Shift Offset	0-100		0-100	
4	FB Level	-99-+99		0-198	
5	Stage	4, 6, 8		0-2	
6	Diffusion	stereo, mono		0-1	
elm	Dry:Wet	D63>W ~ D=W ~ D<W63	Scene	1-127	

AUTO PAN

No.	Parameter	Display	Ctrl Matrix	Value	Table
1	Speed	0.00-41.70Hz	Common	0-159	table#1
2	L/R Depth	0-100		0-100	
3	F/R Depth	0-100		0-100	
4	PAN Direction	L->R, L<-R, L<->R, Lturn, Rturn		0-4	
elm	Dry:Wet	D63>W ~ D=W ~ D<W63	Scene	1-127	

ROTARY SPEAKER

No.	Parameter	Display	Ctrl Matrix	Value	Table
1	Speed	0.00-41.70Hz	Common	0-159	table#1
2	Depth	0-100		0-100	
3	HPP	Thru-8.0kHz		0-52	table#2
4	LPF	1.0k-Thru		34-60	table#2
elm	Dry:Wet	D63>W ~ D=W ~ D<W63	Scene	1-127	

PITCH CHANGE

No.	Parameter	Display	Ctrl Matrix	Value	Table
1	Pitch	-24-+24	Common	0-48	
2	Fine 1	-50-+50		0-100	
3	Pan 1	L63-R63		1-127	
4	Fine 2	-50-+50		0-100	
5	Pan 2	L63-R63		1-127	
elm	Dry:Wet	D63>W ~ D=W ~ D<W63	Scene	1-127	

AURAL EXCITER

No.	Parameter	Display	Ctrl Matrix	Value	Table
1	HPF	500Hz-16.0kHz		28-58	
2	Drive	0-100	Comn	0-100	
3	Mix Level	0-100		0-100	
elm	Dry:Wet	dry(1), wet(127)	---		

*Limit -63:dry(1), 64--:wet(127)

COMPRESSOR

No.	Parameter	Display	Ctrl Matrix	Value	Table
1	Attack	1-40ms		0-19	table#5
2	Release	10-680ms		0-15	table#6
3	Threshold	-48--6dB	Comn	0-42	
4	Ratio	1.0-20.0		0-7	table#7
5	Out Level	0-100		0-100	
elm	Dry:Wet	dry(1), wet(127)	---		

*Limit -63:dry(1), 64--:wet(127)

WAH

No.	Parameter	Display	Ctrl Matrix	Value	Table
1	Sensitivity	0-100		0-100	
2	Cutoff Freq Offset	20Hz-14.0kHz	Comn	0-39	table#8
3	Resonance	1.0-10.0		0-90	
elm	Dry:Wet	D63>W ~ D=W ~ D<W63	Scene	1-127	

DISTORTION, OVERDRIVE

No.	Parameter	Display	Ctrl Matrix	Value	Table
1	Drive	0-100	Comn	0-100	
2	Mid Freq	100Hz-10.0kHz		14-54	table#2
3	Mid Gain	-12-+12dB		52-76	
4	High Freq	500Hz-16.0kHz		28-58	table#2
5	High Gain	-12-+12dB		52-76	
6	Out Level	0-100		0-100	
elm	Dry:Wet	dry(1), both(64), wet(127)	---	1-127	

*Limit -63:dry(1), 65--:wet(127)

GUITAR AMP SIMULATOR

No.	Parameter	Display	Ctrl Matrix	Value	Table
1	Drive	0-100	Comn	0-100	
2	AMP Type	Off, Stack, Combo, Tube		0-3	
3	LPF	1.0k-Thru		34-60	table#2
4	Out Level	0-100		0-100	
elm	Dry:Wet	dry(1), both(64), wet(127)	---	1-127	

*Limit -63:dry(1), 65--:wet(127)

3-BAND EQ

No.	Parameter	Display	Ctrl Matrix	Value	Table
1	Low Freq	32Hz~2.0kHz		4-40	table#2
2	Low Gain	-12~+12dB		52-76	
3	Mid Freq	100Hz~10.0kHz		14-54	table#2
4	Mid Gain	-12~+12dB		52-76	
5	Mid Reso	1.0-12.0		10-120	
6	High Freq	500Hz~16.0kHz		28-58	table#2
7	High Gain	-12~+12dB		52-76	

DELAY EFFECT

DELAY L,C,R

No.	Parameter	Display	Ctrl Matrix	Value	Table
1	Lch Dly	0.1~660.0ms / 0.1~1360.0ms		0-6599	
2	Rch Dly	0.1~660.0ms / 0.1~1360.0ms		0-6599	
3	Cch Dly	0.1~660.0ms / 0.1~1360.0ms		0-6599	
4	Cch Level	0~100		0-100	
5	FB Level	-99~+99		0-198	
6	HPF	Thru~8.0kHz		0-52	table#2
7	LPF	1.0k~Thru		34-60	table#2
	Return	0~127	Comn		

DELAY L,R

No.	Parameter	Display	Ctrl Matrix	Value	Table
1	Lch Dly	0.1~660.0ms / 0.1~1360.0ms		0-6599	
2	Rch Dly	0.1~660.0ms / 0.1~1360.0ms		0-6599	
3	FB Dly 1	0.1~660.0ms / 0.1~1360.0ms		0-6599	
4	FB Dly 2	0.1~660.0ms / 0.1~1360.0ms		0-6599	
5	FB Level	-99~+99		0-198	
6	HPF	Thru~8.0kHz		0-52	table#2
7	LPF	1.0k~Thru		34-60	table#2
	Return	0~127	Comn		

ECHO

No.	Parameter	Display	Ctrl Matrix	Value	Table
1	Lch Dly	0.1~330.0ms / 0.1~680.0ms		0-3299	
2	Lch FB Level	-99~+99		0-198	
3	Rch Dly	0.1~330.0ms / 0.1~680.0ms		0-3299	
4	Rch FB Level	-99~+99		0-198	
5	HPF	Thru~8.0kHz		0-52	table#2
6	LPF	1.0k~Thru		34-60	table#2
	Return	0~127	Comn		

CROSS DELAY

No.	Parameter	Display	Ctrl Matrix	Value	Table
1	L->R Dly	0.1~330.0ms / 0.1~680.0ms		0-3299	
2	L->R FB Level	-99~+99		0-198	
3	R->L Dly	0.1~330.0ms / 0.1~680.0ms		0-3299	
4	R->L FB Level	-99~+99		0-198	
5	Input Select	L,R,L&R		0-2	
6	HPF	Thru~8.0kHz		0-52	table#2
7	LPF	1.0k~Thru		34-60	table#2
	Return	0~127	Comn		

TEMPO DELAY

No.	Parameter	Display	Ctrl Matrix	Value	Table
1	Reference Dly	specified: 1/2, 3/8, 1/4, 3/16, 1/6, 1/8, 3/32, 1/12, 1/16, 1/24, 1/32			
2	Lch Diffusion	-20 - 20%		44-84	
3	Rch Diffusion	-20 - 20%		44-84	
4	FB Level	-99~+99		0-198	
5	HPF	Thru~8.0kHz		0-52	table#2
6	LPF	1.0k~Thru		34-60	table#2
	Return	0~127	Comn		

REVERB EFFECT

HALL1, HALL2, ROOM1, ROOM2, ROOM3, STAGE1, STAGE2, PLATE

No.	Parameter	Display	Ctrl Matrix	Value	Table
1	Reverb Time	0.3~30.0s		0-69	table#3
2	High Damp	0.1~1.5		0-14	
3	Diffusion	0~10		0-10	
4	Initial Dly	0.1~100.0ms		0-999	
5	Er:Rev	E63>R ~ E=R ~ E<R63		1-127	
6	HPF	Thru~8.0kHz		0-52	table#2
7	LPF	1.0k~Thru		34-60	table#2
	Return	0~127	Comn		

Effect Parameter Tables

Table#1
LFO Frequency

Data	Value	Data	Value	Data	Value
0	0	64	5.39	128	20.85
1	0.08	65	5.47	129	21.52
2	0.17	66	5.56	130	22.2
3	0.25	67	5.64	131	22.87
4	0.34	68	5.72	132	23.54
5	0.42	69	5.81	133	24.21
6	0.51	70	5.89	134	24.89
7	0.59	71	5.98	135	25.56
8	0.67	72	6.06	136	26.23
9	0.76	73	6.15	137	26.9
10	0.84	74	6.23	138	27.58
11	0.93	75	6.31	139	28.25
12	1.01	76	6.4	140	28.92
13	1.09	77	6.48	141	29.59
14	1.18	78	6.57	142	30.27
15	1.26	79	6.65	143	30.94
16	1.35	80	6.74	144	31.61
17	1.43	81	6.82	145	32.28
18	1.52	82	6.9	146	32.96
19	1.6	83	6.99	147	33.63
20	1.68	84	7.07	148	34.3
21	1.77	85	7.16	149	34.97
22	1.85	86	7.24	150	35.65
23	1.94	87	7.32	151	36.32
24	2.02	88	7.41	152	36.99
25	2.1	89	7.49	153	37.67
26	2.19	90	7.58	154	38.34
27	2.27	91	7.66	155	39.01
28	2.36	92	7.75	156	39.68
29	2.44	93	7.83	157	40.36
30	2.53	94	7.91	158	41.03
31	2.61	95	8	159	41.7
32	2.69	96	8.08		
33	2.78	97	8.17		
34	2.86	98	8.25		
35	2.95	99	8.33		
36	3.03	100	8.42		
37	3.12	101	8.5		
38	3.2	102	8.59		
39	3.28	103	8.67		
40	3.37	104	8.76		
41	3.45	105	8.84		
42	3.54	106	8.92		
43	3.62	107	9.01		
44	3.7	108	9.09		
45	3.79	109	9.18		
46	3.87	110	9.26		
47	3.96	111	9.68		
48	4.04	112	10.11		
49	4.13	113	10.61		
50	4.21	114	11.44		
51	4.29	115	12.11		
52	4.38	116	12.78		
53	4.46	117	13.45		
54	4.55	118	14.13		
55	4.63	119	14.8		
56	4.71	120	15.47		
57	4.8	121	16.14		
58	4.88	122	16.82		
59	4.97	123	17.49		
60	5.05	124	18.16		
61	5.14	125	18.83		
62	5.22	126	19.51		
63	5.3	127	20.18		

Table#2
EQ Frequency

Data	Value
0	THRU(20)
1	22
2	25
3	28
4	32
5	36
6	40
7	45
8	50
9	56
10	63
11	70
12	80
13	90
14	100
15	110
16	125
17	140
18	160
19	180
20	200
21	225
22	250
23	280
24	315
25	355
26	400
27	450
28	500
29	560
30	630
31	700
32	800
33	900
34	1.0k
35	1.1k
36	1.2k
37	1.4k
38	1.6k
39	1.8k
40	2.0k
41	2.2k
42	2.5k
43	2.8k
44	3.2k
45	3.6k
46	4.0k
47	4.5k
48	5.0k
49	5.6k
50	6.3k
51	7.0k
52	8.0k
53	9.0k
54	10.0k
55	11.0k
56	12.0k
57	14.0k
58	16.0k
59	18.0k
60	THRU(20.0k)

Table#3
Reverb time

Data	Value
0	0.3
1	0.4
2	0.5
3	0.6
4	0.7
5	0.8
6	0.9
7	1.0
8	1.1
9	1.2
10	1.3
11	1.4
12	1.5
13	1.6
14	1.7
15	1.8
16	1.9
17	2.0
18	2.1
19	2.2
20	2.3
21	2.4
22	2.5
23	2.6
24	2.7
25	2.8
26	2.9
27	3.0
28	3.1
29	3.2
30	3.3
31	3.4
32	3.5
33	3.6
34	3.7
35	3.8
36	3.9
37	4.0
38	4.1
39	4.2
40	4.3
41	4.4
42	4.5
43	4.6
44	4.7
45	4.8
46	4.9
47	5.0
48	5.5
49	6.0
50	6.5
51	7.0
52	7.5
53	8.0
54	8.5
55	9.0
56	9.5
57	10.0
58	11.0
59	12.0
60	13.0
61	14.0
62	15.0
63	16.0
64	17.0
65	18.0
66	19.0
67	20.0
68	25.0
69	30.0

Table#4
AM Type
(Chorus)

Data	Value
0	off
1	1xSft
2	1xMid
3	1xHrd
4	2xSft
5	2xMid
6	2xHrd
7	4xSft
8	4xMid
9	4xHrd
10	8xSft
11	8xMid
12	8xHrd
13	RdSft
14	RdMid
15	RdHrd

Table#5
Compressor
Attack Time

Data	Value
0	1
1	2
2	3
3	4
4	5
5	6
6	7
7	8
8	9
9	10
10	12
11	14
12	16
13	18
14	20
15	23
16	26
17	30
18	35
19	40

Table#6
Compressor
Release Time

Data	Value
0	10
1	15
2	25
3	35
4	45
5	55
6	65
7	75
8	85
9	100
10	115
11	140
12	170
13	230
14	340
15	680

Table#7
Compressor
Ratio

Data	Value
0	1.0
1	1.5
2	2.0
3	3.0
4	5.0
5	7.0
6	10.0
7	20.0

Table#8
Wah Cutoff
Freq.

Data	Value
0	20
1	32
2	45
3	63
4	80
5	100
6	125
7	160
8	200
9	250
10	280
11	315
12	350
13	400
14	500
15	560
16	630
17	700
18	800
19	1.0k
20	1.2k
21	1.4k
22	1.6k
23	1.8k
24	2.0k
25	2.2k
26	2.5k
27	2.8k
28	3.2k
29	3.6k
30	4.0k
31	5.0k
32	5.6k
33	6.3k
34	7.0k
35	8.0k
36	9.0k
37	10.0k
38	12.0k
39	14.0k

Common Control Matrix

Parameter Name		Ctrl Matrix : Param	Ctrl Matrix : Calc	Ctrl Matrix : Source					
Group	Param Name	Data Value	Multiplyor Add	CC AT	Data Range	Vel KeyRnd	Data Range	KeyTrk	Data Range
---	off	0	---	---		---		---	
	ComnVolume	1	add	O	(-64) - (+63)	O	(-64) - (+63)	O	(-64) - (+63)
	Comn Pan	2	add	O	(-64) - (+63)	O	(-64) - (+63)	O	(-64) - (+63)
	Vari Param	3	add	O	(-64) - (+63)	O	(-64) - (+63)	O	(-64) - (+63)
	Dly Return	4	add	O	(-64) - (+63)	O	(-64) - (+63)	O	(-64) - (+63)
	Rev Return	5	add	O	(-64) - (+63)	O	(-64) - (+63)	O	(-64) - (+63)

Control Change Modes

CC	MODE1	MODE2
1	MODULATION	MODULATION
2		
3		SCENE SELECT
4	FOOT CONTROLLER	FOOT CONTROLLER
5	PORTAMENTO TIME	PORTAMENTO TIME
6	DATA ENTRY MSB	DATA ENTRY MSB
7	MAIN VOLUME	MAIN VOLUME
8		LAYER MODE
9		POLY/MONO MODE
10	PANPOT	PANPOT
11	EXPRESSION	EXPRESSION
12	RIBBON Z CONTROLLER	RIBBON Z CONTROLLER
13	RIBBON X CONTROLLER	RIBBON X CONTROLLER
14		LFO RESET MODE
15		LFO1 WAVE
16		LFO1 SPEED
17		LFO2 SPEED
18		VCO1 PITCH MOD DEPTH
19		VCF FILTER MOD DEPTH
20		LFO1 DELAY
21		VCO1 PITCH COARSE TUNE
22		VCO SYNC PITCH
23		VCO SYNC PITCH DEPTH
24		VCO SYNC PITCH SOURCE
25		PEG DEPTH
26		PEG SWITCH
27		PEG DECAY
28		PEG SUSTAIN LEVEL
29		FEG RELEASE
30		VCF CUTOFF KBD TRACK
31		AMP EG SUSTAIN LEVEL
32		
33		VCO ALGORITHM
34		VCO SYNC PITCH MOD SW
35		FM DEPTH
36		FM SOURCE1
37		FM SOURCE2
38	DATA ENTRY LSB	DATA ENTRY LSB
39		MIXER NOISE LEVEL
40		
41		
42		
43		
44		
45		
46		
47		
48		
49		
50		VCO1 WAVE TYPE
51		VCO2 WAVE TYPE
52		VCO2 PITCH COARSE TUNE
53		VCO2 PITCH FINE TUNE
54		VCO2 EDGE
55		VCO2 PULSE WIDTH
56		VCO2 PWM DEPTH
57		VCO2 PITCH MOD DEPTH
58		VCF HPF CUTOFF
59		VCF FILTER TYPE
60		FILTER EG VELOCITY SENS
61		AMP EG VELOCITY SENS
62		VCA VOLUME
63		VCA FEEDBACK LEVEL
64	SUSTAIN SWITCH	SUSTAIN SWITCH
65	PORTAMENTO SWITCH	PORTAMENTO SWITCH
66		
67		
68		MIXER VCO1 LEVEL
69		MIXER VCO2 LEVEL
70		RING MODULATOR LEVEL
71	HARMONIC CONTENT (VCF FILTER RESONANCE)	HARMONIC CONTENT (VCF FILTER RESONANCE)
72	RELEASE TIME (AMP EG RELEASE TIME)	RELEASE TIME (AMP EG RELEASE TIME)
73	ATTACK TIME (AMP EG ATTACK TIME)	ATTACK TIME (AMP EG ATTACK TIME)
74	BRIGHTNESS (VCF FILTER CUTOFF)	BRIGHTNESS (VCF FILTER CUTOFF)
75	DECAY TIME (AMP EG DECAY TIME)	DECAY TIME (AMP EG DECAY TIME)
76		VCO1 EDGE
77		VCO1 PITCH FINE TUNE
78		VCO1 PULSE WIDTH
79		VCO1 PWM DEPTH
80		VCA AMP MOD DEPTH
81		FILTER EG DEPTH
82		FILTER EG ATTACK
83		FILTER EG DECAY
84		
85		PORTAMENTO MODE
86		VCO1 PWM SOURCE
87		VCO2 PWM SOURCE
88		
89		
90		ARPEGGIO/STEP SEQ SW
91	REVERB DEPTH	REVERB DEPTH
92		
93	CHORUS (VARIATION) DEPTH	CHORUS (VARIATION) DEPTH
94	DELAY DEPTH	DELAY DEPTH
95		
96	DATA ENTRY INC	DATA ENTRY INC
97	DATA ENTRY DEC	DATA ENTRY DEC
00.95	ASSIGNABLE CONTROLLER	ASSIGNABLE CONTROLLER

Free EG Track Parameter List

Param (LCD)	Param (LCD)
off	FM Source1
VCF Type	FM Source2
VCF Cutoff	LFO1 Wave
Resonance	LFO1 Speed
FEG Depth	LFO1 Delay
FEG Attack	LFO2 Speed
FEG Decay	Scene Tune
FEG Sustin	PEG Decay
FEG Releas	PEG Depth
VCF Mod Dp	PEG Sw
FEG VelSns	Port Time
VCF KeyTrk	VCO1 Wave
HPF Cutoff	VCO1 Pitch
AEG Attack	VCO1 Fine
AEG Decay	VCO1 Edge
AEG Sustin	VCO1 PW
AEG Releas	VCO1PWM Dp
VCA Mod Dp	VCO1PWMSrc
AEG VelSns	VCO1PmodDp
VCA Feedbk	VCO2 Wave
VCA Volume	VCO2 Pitch
VCO1 Level	VCO2 Fine
VCO2 Level	VCO2 Edge
Ring Mod	VCO2 PW
NoiseLevel	VCO2PWM Dp
Algorithm	VCO2PWMSrc
Sync Pitch	VCO2PmodDp
SyncPit Dp	VarEF D:W
SyncPitSrc	Pitch Up
SyncPmodSw	Pitch Down
FM Depth	

Control Matrix List And Free EG Track Parameter List

Parameter Name		Ctrl Matrix : Param	Ctrl Matrix : Calc	Ctrl Matrix : Source						Free EG : Trk Param
Group	Param Name	Data Value	Multiply or Add *1	CC AT	Data Range	Vel KeyRnd	Data Range	KeyTrk	Data Range	Data Value
---	off	0	---	---		---		---		0
---	Scene Tune	1	add	x		O	(-64) - (+63)	x		
	Pitch Up	2	add	O	(-24) - (+24)	x		x		
	Pitch Down	3	add	O	(-24) - (+24)	x		x		
PEG	PEG Decay	4	add *2	O	(-64) - (+63)	O	(-64) - (+63)	O	(-64) - (+63)	1
	PEG Depth	5	mul	O	(-64) - (+63)	O	(-64) - (+63)	O	(-64) - (+63)	2
	PEG Sw			x		x		x		3
	Port Time	6	add	O	(-64) - (+63)	O	(-64) - (+63)	O	(-64) - (+63)	4
LFO	LFO1 Wave			x		x		x		5
	LFO1 Speed	7	add	O	(-64) - (+63)	O	(-64) - (+63)	O	(-64) - (+63)	6
	LFO1 Delay	8	add	O	(-64) - (+63)	O	(-64) - (+63)	O	(-64) - (+63)	7
	LFO2 Speed	9	add	O	(-64) - (+63)	O	(-64) - (+63)	O	(-64) - (+63)	8
SYNC/FM	Algorithm			x		x		x		9
	Sync Pitch	10	add	O	(-64) - (+63)	O	(-64) - (+63)	O	(-32) - (+32)	10
	SyncPit Dp	11	mul	O	(-64) - (+63)	O	(-64) - (+63)	O	(-64) - (+63)	11
	SyncPitSrc			x		x		x		12
	SyncPmodSw			x		x		x		13
	FM Depth	12	mul	O	(-64) - (+63)	O	(-64) - (+63)	O	(-64) - (+63)	14
	FM Source1			x		x		x		15
	FM Source2			x		x		x		16
VCO1	VCO1 Wave			x		x		x		17
	VCO1 Pitch	13	add	x		x		O	(-64) - (+63)	18
	VCO1 Fine	14	add	x		x		O	(-64) - (+63)	19
	VCO1 Edge	15	add	O	(-64) - (+63)	O	(-64) - (+63)	O	(-64) - (+63)	20
	VCO1 PW	16	add	O	(-64) - (+63)	x		x		21
	VCO1PWM Dp	17	mul	O	(-64) - (+63)	O	(-64) - (+63)	O	(-64) - (+63)	22
	VCO1PWMSrc			x		x		x		23
	VCO1PmodDp	18	add	O	(-63) - (+63)	x		x		24
VCO2	VCO2 Wave			x		x		x		25
	VCO2 Pitch	19	add	x		x		O	(-64) - (+63)	26
	VCO2 Fine	20	add	x		x		O	(-64) - (+63)	27
	VCO2 Edge	21	add	O	(-64) - (+63)	O	(-64) - (+63)	O	(-64) - (+63)	28
	VCO2 PW	22	add	O	(-64) - (+63)	x		x		29
	VCO2PWM Dp	23	mul	O	(-64) - (+63)	O	(-64) - (+63)	O	(-64) - (+63)	30
	VCO2PWMSrc			x		x		x		31
	VCO2PmodDp	24	add	O	(-63) - (+63)	x		x		32
MIX	VCO1 Level	25	mul	O	(-64) - (+63)	O	(-64) - (+63)	O	(-64) - (+63)	33
	VCO2 Level	26	mul	O	(-64) - (+63)	O	(-64) - (+63)	O	(-64) - (+63)	34
	Ring Mod	27	mul	O	(-64) - (+63)	O	(-64) - (+63)	O	(-64) - (+63)	35
	NoiseLevel	28	mul	O	(-64) - (+63)	O	(-64) - (+63)	O	(-64) - (+63)	36
VCF	FEG Attack	29	add *2	O	(-64) - (+63)	O	(-64) - (+63)	O	(-64) - (+63)	37
	FEG Decay	30	add *2	O	(-64) - (+63)	O	(-64) - (+63)	O	(-64) - (+63)	38
	FEG Sustin	31	add	O	(-64) - (+63)	x		x		39
	FEG Releas	32	add *2	O	(-64) - (+63)	O	(-64) - (+63)	O	(-64) - (+63)	40
	HPF Cutoff	33	add	O	(-64) - (+63)	O	(-64) - (+63)	O	(-64) - (+63)	41
	VCF Type			x		x		x		42
	VCF Cutoff	34	add	O	(-64) - (+63)	O	(-64) - (+63)	(x)	VCF KeyTrk	43
	Resonance	35	add	O	(-64) - (+63)	O	(-64) - (+63)	O	(-64) - (+63)	44
	FEG Depth	36	mul	O	(-64) - (+63)	(Vel x) KeyRnd	FEG VelSns (-64) - (+63)	O	(-64) - (+63)	45
	FEG VelSns			x		x		x		46
	VCF KeyTrk			x		x		x		47
	VCF Mod Dp	37	add	O	(-64) - (+63)	x		x		48
VCA	AEG Attack	38	add *2	O	(-64) - (+63)	O	(-64) - (+63)	O	(-64) - (+63)	49
	AEG Decay	39	add *2	O	(-64) - (+63)	O	(-64) - (+63)	O	(-64) - (+63)	50
	AEG Sustin	40	add	O	(-64) - (+63)	x		x		51
	AEG Releas	41	add *2	O	(-64) - (+63)	O	(-64) - (+63)	O	(-64) - (+63)	52
	VCA Feedbk	42	mul	O	(-64) - (+63)	x		x		53
	VCA Volume	43	mul	O	(-64) - (+63)	(Vel x) KeyRnd	AEG VelSns (-64) - (+63)	O	(-64) - (+63)	54
	AEG VelSns			x		x		x		55
	VCA Mod Dp	44	add	O	(-64) - (+63)	x		x		56
EF	VarEF D:W *3	45	add	O	(-64) - (+63)	O	(-64) - (+63)	O	(-64) - (+63)	---

*1. Adds or multiplies Control Matrix setting. Also does so when the same parameter is selected for multiple Control Matrix setting.

*2. Adds the value calculated in "Rate"(positive setting makes the EG faster), while the value is calculated in "Time" for the Knob parameters.

*3. No effect for the Aural Exciter, Compressor, Distortion, Over Drive and Guitar Amp Simulator. However, Direct Control functions even for these effects.

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.

Decimal	Hexadecimal	Binary
0	00	0000 0000
1	01	0000 0001
2	02	0000 0010
3	03	0000 0011
4	04	0000 0100
5	05	0000 0101
6	06	0000 0110
7	07	0000 0111
8	08	0000 1000
9	09	0000 1001
10	0A	0000 1010
11	0B	0000 1011
12	0C	0000 1100
13	0D	0000 1101
14	0E	0000 1110
15	0F	0000 1111
16	10	0001 0000
17	11	0001 0001
18	12	0001 0010
19	13	0001 0011
20	14	0001 0100
21	15	0001 0101
22	16	0001 0110
23	17	0001 0111
24	18	0001 1000
25	19	0001 1001
26	1A	0001 1010
27	1B	0001 1011
28	1C	0001 1100
29	1D	0001 1101
30	1E	0001 1110
31	1F	0001 1111
32	20	0010 0000
33	21	0010 0001
34	22	0010 0010
35	23	0010 0011
36	24	0010 0100
37	25	0010 0101
38	26	0010 0110
39	27	0010 0111
40	28	0010 1000
41	29	0010 1001
42	2A	0010 1010
43	2B	0010 1011
44	2C	0010 1100
45	2D	0010 1101
46	2E	0010 1110
47	2F	0010 1111
48	30	0011 0000
49	31	0011 0001
50	32	0011 0010
51	33	0011 0011
52	34	0011 0100
53	35	0011 0101
54	36	0011 0110
55	37	0011 0111
56	38	0011 1000
57	39	0011 1001
58	3A	0011 1010
59	3B	0011 1011
60	3C	0011 1100
61	3D	0011 1101
62	3E	0011 1110
63	3F	0011 1111

Decimal	Hexadecimal	Binary
64	40	0100 0000
65	41	0100 0001
66	42	0100 0010
67	43	0100 0011
68	44	0100 0100
69	45	0100 0101
70	46	0100 0110
71	47	0100 0111
72	48	0100 1000
73	49	0100 1001
74	4A	0100 1010
75	4B	0100 1011
76	4C	0100 1100
77	4D	0100 1101
78	4E	0100 1110
79	4F	0100 1111
80	50	0101 0000
81	51	0101 0001
82	52	0101 0010
83	53	0101 0011
84	54	0101 0100
85	55	0101 0101
86	56	0101 0110
87	57	0101 0111
88	58	0101 1000
89	59	0101 1001
90	5A	0101 1010
91	5B	0101 1011
92	5C	0101 1100
93	5D	0101 1101
94	5E	0101 1110
95	5F	0101 1111
96	60	0110 0000
97	61	0110 0001
98	62	0110 0010
99	63	0110 0011
100	64	0110 0100
101	65	0110 0101
102	66	0110 0110
103	67	0110 0111
104	68	0110 1000
105	69	0110 1001
106	6A	0110 1010
107	6B	0110 1011
108	6C	0110 1100
109	6D	0110 1101
110	6E	0110 1110
111	6F	0110 1111
112	70	0111 0000
113	71	0111 0001
114	72	0111 0010
115	73	0111 0011
116	74	0111 0100
117	75	0111 0101
118	76	0111 0110
119	77	0111 0111
120	78	0111 1000
121	79	0111 1001
122	7A	0111 1010
123	7B	0111 1011
124	7C	0111 1100
125	7D	0111 1101
126	7E	0111 1110
127	7F	0111 1111

Additional Notes

- For example, 144 - 159(Decimal)/9nH/1001 0000 - 1001 1111(Binary) indicate the note-on messages for the channels 1 through 16 respectively. 176 - 191(BnH/1011 0000 - 1011 1111) indicate the control change messages for the channels 1 through 16 respectively. 192 - 207(CnH/1100 0000 - 1100 1111) indicate the program change messages for the channels 1 through 16 respectively. 240/FOH/1111 0000 is positioned at the beginning of data to indicate a system exclusive message. 247/F7H/1111 0111 is positioned at the end of the system exclusive message.
- aaH(Hexadecimal)/0aaaaaa(Binary) indicates the data addresses. The data address consists of High, Mid and Low.
- bbH/0bbbbbb indicates byte counts.
- ccH/0cccccc indicates tcheck sums.
- ddH/0dddddd indicates data/value.

Synthesizer Section

(1) TRANSMIT FLOW

SW1	MIDI<-[]N->NN-NOTE ON/OFF	9nH
OUT	+NN-NOTE ON/OFF	9nH
	+NN-CONTROL CHANGE	*1
	MODULATION	BnH,01H
	FOOT CONTROLLER	BnH,04H
	MAIN VOLUME	BnH,07H
	SUSTAIN SWITCH	BnH,40H
	RIBBON Z CONTROLLER	BnH,0CH
	RIBBON X CONTROLLER	BnH,0DH
	HARMONIC CONTENT	BnH,47H
	RELEASE TIME	BnH,48H
	ATTACK TIME	BnH,49H
	BRIGHTNESS	BnH,4AH
	DECAY TIME	BnH,4BH
	ASSIGNABLE	BnH,00H...5FH
	+NN-PROGRAM CHANGE	CnH
	+NN-CHANNEL AFTER TOUCH	DnH
	+NN-PITCH BEND CHANGE	EnH
SW2	+[]->NN-NOTE ON/OFF	9nH
	+[]->NN-CONTROL CHANGE	*1
	+[]->NN-ASSIGNABLE	BnH,00H...5FH
	+[]->NN-CHANNEL AFTER TOUCH	DnH
SW3	+[]->NN-SYSTEM EXCLUSIV MESSAGE	<BULK DUMP>
	+[]->NN-SYSTEM	FOH 43H 0nH 5CH bBH bBH 00H 00H dDH...dDH cCH F7H
	+[]->NN-USER SEQ	FOH 43H 0nH 5CH bBH bBH 01H aAH 00H dDH...dDH cCH F7H
	+[]->NN-CURRENT VOICE	FOH 43H 0nH 5CH bBH bBH 10H 0EH 00H dDH...dDH cCH F7H
	+[]->NN-CURRENT SEQ	FOH 43H 0nH 5CH bBH bBH 10H 0EH 00H dDH...dDH cCH F7H
	+[]->NN-CURRENT SCENE1	FOH 43H 0nH 5CH bBH bBH 10H 10H 00H dDH...dDH cCH F7H
	+[]->NN-CURRENT SCENE2	FOH 43H 0nH 5CH bBH bBH 10H 11H 00H dDH...dDH cCH F7H
	+[]->NN-CURRENT SCENE_CTRL	FOH 43H 0nH 5CH bBH bBH 10H 12H 00H dDH...dDH cCH F7H
	+[]->NN-USER VOICE	FOH 43H 0nH 5CH bBH bBH 11H aAH 00H dDH...dDH cCH F7H
	+[]->NN-PARAMETER CHANGE	<PARAMETER CHANGE>
	+[]->NN-SYSTEM	FOH 43H 1nH 5CH 00H 00H aAH dDH...dDH F7H
	+[]->NN-CURRENT VOICE	FOH 43H 1nH 5CH 10H 00H aAH dDH...dDH F7H
	+[]->NN-CURRENT SEQ	FOH 43H 1nH 5CH 10H 0EH aAH dDH...dDH F7H
	+[]->NN-CURRENT SCENE1	FOH 43H 1nH 5CH 10H 10H aAH dDH...dDH F7H
	+[]->NN-CURRENT SCENE2	FOH 43H 1nH 5CH 10H 11H aAH dDH...dDH F7H
	+[]->NN-CURRENT SCENE_CTRL	FOH 43H 1nH 5CH 10H 12H aAH dDH...dDH F7H
N->NN-N-SYSTEM EXCLUSIV MESSAGE	IDENTITY REPLY	FOH 7EH 7FH 06H 02H 43H 00H 41H dDH dDH
NNNN-N-N	ACTIVE SENSING	FEH

- SW1 [] MIDI Transmit Channel
Depends on Keyboard Transmit Channel Set in System Data
- SW2 [] MIDI Transmit Channel (ARPEGGIO/STEP SEQ)
Depends on Arpeggio/Step SEQ Transmit Channel in System Data
- SW3 [] MIDI Device Number
If Device Number=all, then transmit Device Number=1
- SW4 [] ARPEGGIO/STEP SEQ SELECT
Available only when Step Sequencer is selected.
- SW5 [] SCENE SELECT
Available only when Scene Select is set to "Scene Control".

*1 If Control Change Mode is "mode2", then additional Control Change numbers are transmitted. (See 3-1-6).

(2) RECEIVE FLOW

MIDI ->N->NNNN	
IN	+N->NNNN
	+NNNN-NOTE OFF
	+[]->NN-NOTE OFF
	+[]->NN-NOTE ON/OFF
	+NN-CONTROL CHANGE
	MODULATION
	FOOT CONTROLLER
	PORTAMENTO TIME
	DATA ENTRY MSB
	DATA ENTRY LSB
	MAIN VOLUME
	PANPOT
	EXPRESSION
	SUSTAIN SWITCH
	PORTAMENTO SWITCH
	HARMONIC CONTENT
	RELEASE TIME
	ATTACK TIME
	BRIGHTNESS
	PORTAMENTO CONTROL
	REVERB DEPTH
	CHORUS(VARIATION) DEPTH
	DELAY DEPTH
	DATA ENTRY INC
	DATA ENTRY DEC
	ASSIGNABLE CONTROLLER
	RPN
	PITCH BEND SENS
	RPN RESET
	ALL SOUND OFF
	RESET ALL CONTROLLERS
	ALL NOTE OFF
	OMNI MODE OFF
	OMNI MODE ON
	MONO MODE
	POLY MODE
	+NN-PROGRAM CHANGE
	+NN-CHANNEL AFTER TOUCH
	+NN-PITCH BEND CHANGE
SW3	+[]->NN-SYSTEM EXCLUSIV MESSAGE
	+[]->NN-SYSTEM
	+[]->NN-SYSTEM

```

| | | USER SEQ          FOH 43H 0nH 5CH bbH bbH 01H aaH 00H ddH....ddH cch F7H
| | | CURRENT VOICE     FOH 43H 0nH 5CH bbH bbH 10H 00H ddH....ddH cch F7H
| | | CURRENT SEQ      FOH 43H 0nH 5CH bbH bbH 10H 00H ddH....ddH cch F7H
| | | CURRENT SCENE1   FOH 43H 0nH 5CH bbH bbH 10H 00H ddH....ddH cch F7H
| | | CURRENT SCENE2   FOH 43H 0nH 5CH bbH bbH 10H 11H 00H ddH....ddH cch F7H
| | | [SMS]-CURRENT_SCENE_CTRL FOH 43H 0nH 5CH bbH bbH 10H 12H 00H ddH....ddH cch F7H
| | | USER VOICE       FOH 43H 0nH 5CH bbH bbH 11H aaH 00H ddH....ddH cch F7H
| | |
| | | <-PARAMETER CHANGE>
| | | NXX1 MASTER TUNING FOH 43H 1nH 04H 40H ddH F7H
| | | NXXSYSTEM          FOH 43H 1nH 5CH 00H 00H aaH ddH....ddH F7H
| | | NXXCURRENT VOICE   FOH 43H 1nH 5CH 10H 00H aaH ddH....ddH F7H
| | | NXXCURRENT VOICE_SEQ FOH 43H 1nH 5CH 10H 00H aaH ddH....ddH F7H
| | | NXXCURRENT SCENE1   FOH 43H 1nH 5CH 10H 10H aaH ddH....ddH F7H
| | | NXXCURRENT SCENE2   FOH 43H 1nH 5CH 10H 11H aaH ddH....ddH F7H
| | | [SMS]-CURRENT_SCENE_CTRL FOH 43H 1nH 5CH 10H 12H aaH ddH....ddH F7H
| | |
| | | <-BULK DUMP REQUEST>
| | | NXXSYSTEM          FOH 43H 2nH 5CH 00H 00H 00H F7H
| | | NXXUSER SEQ        FOH 43H 2nH 5CH 01H aaH 00H F7H
| | | NXXCURRENT VOICE   FOH 43H 2nH 5CH 10H 00H 00H F7H
| | | NXXCURRENT VOICE_SEQ FOH 43H 2nH 5CH 10H 00H 00H F7H
| | | NXXCURRENT SCENE1   FOH 43H 2nH 5CH 10H 10H 00H F7H
| | | NXXCURRENT SCENE2   FOH 43H 2nH 5CH 10H 11H 00H F7H
| | | [SMS]-CURRENT_SCENE_CTRL FOH 43H 2nH 5CH 10H 12H 00H F7H
| | | NXXUSER VOICE       FOH 43H 2nH 5CH 11H aaH 00H F7H
| | |
| | | NXXSYSTEM EXCLUSIV MESSAGE
| | | MIDI MASTER VOLUME FOH 7FH 7FH 04H 01H 11H mmH F7H
| | | IDENTITY REQUEST   FOH 7EH 0nH 06H 01H F7H
| | |
| | | NXXSYSTEM EXCLUSIV MESSAGE
| | | TEST ENTRY         FOH 43H 10H 18H 5AH 00H F7H
| | | LCD HARD COPY      FOH 43H 10H 18H 5AH 01H F7H
| | |
| | | NXXTIMING CLOCK    FBH
| | | NXXACTIVE SENSING  FBH

```

```

SW3 [ ] MIDI Device Number
SW4 [ ] ARPEGGIO/STEP SEQ SELECT
        Available only when Step Sequencer is selected.
SW5 [ ] SCENE SELECT
        Available only when Scene Select is set to "Scene Control".
SW6 [ ] MIDI Receive Channel
        Depends on Receive Channel set in System Data.

```

*1 If Control Change Mode is "mode2", then additional Control Change numbers are received. (See (3-1-6).)

(3) TRANSMIT/RECEIVE DATA

(3-1) CHANNEL VOICE MESSAGES

(3-1-1) NOTE OFF

```

STATUS      1000nnnn(8nH)   n = 0 ~ 15: MIDI TRANSMIT/RECEIVE CHANNEL
NOTE NUMBER 0kkkkkkk       k = 0(C-2)-127(g8)
VELOCITY    0vvvvvvv       ignores 0,0

```

Reception only.

(3-1-2) NOTE ON/OFF

```

STATUS      1001nnnn(9nH)   n = 0 ~ 15: MIDI TRANSMIT/RECEIVE CHANNEL
NOTE NUMBER 0kkkkkkk       k = 0(C-2)-127(g8): when receiving
                                k = 36(CL)-96(C6): when transmitting
                                k = 0(C-2)-127(g8): selectable when transposed
VELOCITY    0vvvvvvv       (v>0) NOTE ON
                                (v=0) NOTE OFF

```

(3-1-3) PROGRAM CHANGE

```

STATUS      1100nnnn(CnH)   n = 0 ~ 15: MIDI TRANSMIT/RECEIVE CHANNEL
PROGRAM NUMBER 0ppppppp     p = 0 ~ 127

```

(3-1-4) CHANNEL AFTER TOUCH

```

STATUS      1101nnnn(DnH)   n = 0 ~ 15: MIDI TRANSMIT/RECEIVE CHANNEL
VALUE       0vvvvvvv       v = 0 ~ 127 AFTER TOUCH VALUE

```

(3-1-5) PITCH BEND CHANGE

```

STATUS      1110nnnn(EnH)   n = 0 ~ 15: MIDI TRANSMIT/RECEIVE CHANNEL
LSB         0vvvvvvv       PITCH BEND CHANGE LSB
MSB         0vvvvvvv       PITCH BEND CHANGE MSB

```

Transmitted with a resolution of 7 bits.

(3-1-6) CONTROL CHANGE

```

STATUS      1011nnnn(BnH)   n = 0 ~ 15: MIDI TRANSMIT/RECEIVE CHANNEL
CONTROL NUMBER 0ccccccc     c = CONTROL NUMBER
CONTROL VALUE 0vvvvvvv     v = DATA VALUE

```

* TRANSMITTED CONTROL NUMBERS

```

c = 1  MODULATION           ; v = 0 - 127      *1
c = 4  FOOT CONTROLLER      ; v = 0 - 127      *1
c = 7  MAIN VOLUME          ; v = 0 - 127      *1
c = 12 RIBBON Z CONTROLLER  ; v = 0 - 127      *1
c = 13 RIBBON X CONTROLLER  ; v = 01-64 - 64:0 - 127:+63 *1
c = 64 SUSTAIN SWITCH       ; v = 0-63:OFF, 64-127:ON  *1
c = 71 HARMONIC CONTENT     ; v = 0 - 127
c = 72 RELEASE TIME        ; v = 0 - 127
c = 73 ATTACK TIME          ; v = 0 - 127
c = 74 BRIGHTNESS           ; v = 0 - 127
c = 75 DECAY TIME           ; v = 0 - 127
c = 00..95 ASSIGNABLE CONT  ; v = 0 - 127

```

* RECEIVED CONTROL NUMBER

```

c = 1  MODULATION           ; v = 0 - 127
c = 4  FOOT CONTROLLER      ; v = 0 - 127      *1
c = 5  PORTAMENTO TIME       ; v = 0 - 127
c = 6  DATA ENTRY MSB      ; v = 0 - 127      *2
c = 38 DATA ENTRY LSB      ; v = 0 - 127      *2
c = 7  MAIN VOLUME          ; v = 0 - 127
c = 10 EXPRESSION            ; v = 0 - 127
c = 12 RIBBON Z CONTROLLER  ; v = 0 - 127
c = 13 RIBBON X CONTROLLER  ; v = 01-64 - 64:0 - 127:+63 *1
c = 64 SUSTAIN SWITCH       ; v = 0-63:OFF, 64-127:ON
c = 65 PORTAMENTO SWITCH     ; v = 0-63:OFF, 64-127:ON
c = 71 HARMONIC CONTENT     ; v = 0 - 127

```

```

(VCF FILTER RESONANCE)
c = 72 RELEASE TIME           ; v = 0 - 127
      (AMP EG RELEASE TIME)
c = 73 ATTACK TIME          ; v = 0 - 127
      (AMP EG ATTACK TIME)
c = 74 BRIGHTNESS           ; v = 0 - 127
      (VCF FILTER CUTOFF)
c = 75 DECAY TIME           ; v = 0 - 127
c = 91 REVERB DEPTH         ; v = 0 - 127
c = 93 CHORUS(VARIATION) DEPTH ; v = 0 - 127
c = 94 DELAY DEPTH          ; v = 0 - 127
c = 96 DATA ENTRY INC      ; v = 127      *2
c = 97 DATA ENTRY DEC      ; v = 127      *2
c = 00..95 ASSIGNABLE CONTROLLER ; v = 0 - 127

```

*1 Preset CONTROL CHANGE NUMBER at the factory. Can be changed.
*2 Used only when assigning the parameter with RPN numbers.

In addition, the following CONTROL NUMBERS will be transmitted/received when Control Change Mode 2 is selected. (These are unique to the AN1x and therefore not in accordance with the MIDI 1.0 standard.)

```

c = 3  SCENE SELECT         ; v = 0 - 127
c = 8  LAYER MODE          ; v = 0 - 127
c = 9  POLY/MONO MODE      ; v = 0 - 127
c = 14 LFO RESET MODE      ; v = 0 - 127
c = 15 LFO1 WAVE           ; v = 0 - 127
c = 16 LFO1 SPEED          ; v = 0 - 127
c = 17 LFO2 SPEED          ; v = 0 - 127
c = 18 VCO1 PITCH MOD DEPTH ; v = 0 - 127
c = 19 VCF FILTER MOD DEPTH ; v = 0 - 127
c = 20 LFO1 DELAY          ; v = 0 - 127
c = 21 VCO1 PITCH COARSE TUNE ; v = 0 - 127
c = 22 VCO SYNC PITCH      ; v = 0 - 127
c = 23 VCO SYNC PITCH DEPTH ; v = 0 - 127
c = 24 VCO SYNC PITCH SOURCE ; v = 0 - 127
c = 25 PEG DEPTH           ; v = 0 - 127
c = 26 PEG SWITCH          ; v = 0 - 127
c = 27 PEG DECAY           ; v = 0 - 127
c = 28 PEG SUSTAIN LEVEL    ; v = 0 - 127
c = 29 PEG RELEASE         ; v = 0 - 127
c = 30 VCF CUTOFF KBD TRACK ; v = 0 - 127
c = 31 AMP EG SUSTAIN LEVEL ; v = 0 - 127
c = 33 VCO ALGORITHM        ; v = 0 - 127
c = 34 VCO SYNC PITCH MOD SW ; v = 0 - 127
c = 35 FM DEPTH            ; v = 0 - 127
c = 36 FM SOURCE1          ; v = 0 - 127
c = 37 FM SOURCE2          ; v = 0 - 127
c = 39 MIXER NOISE LEVEL    ; v = 0 - 127
c = 50 VCO1 WAVE TYPE       ; v = 0 - 127
c = 51 VCO2 WAVE TYPE       ; v = 0 - 127
c = 52 VCO2 PITCH COARSE TUNE ; v = 0 - 127
c = 53 VCO2 PITCH FINE TUNE ; v = 0 - 127
c = 54 VCO2 EDGE           ; v = 0 - 127
c = 55 VCO2 PULSE WIDTH    ; v = 0 - 127
c = 56 VCO2 PWM DEPTH      ; v = 0 - 127
c = 57 VCO2 PITCH MOD DEPTH ; v = 0 - 127
c = 58 VCF HPF CUTOFF       ; v = 0 - 127
c = 59 VCF FILTER TYPE      ; v = 0 - 127
c = 60 FILTER EG VELOCITY SENS ; v = 0 - 127
c = 61 AMP EG VELOCITY SENS ; v = 0 - 127
c = 62 VCA VOLUME           ; v = 0 - 127
c = 63 VCA FEED BACK LEVEL  ; v = 0 - 127
c = 68 MIXER VCO1 LEVEL     ; v = 0 - 127
c = 69 MIXER VCO2 LEVEL     ; v = 0 - 127
c = 70 RING MODULATOR LEVEL ; v = 0 - 127
c = 76 VCO1 EDGE           ; v = 0 - 127
c = 77 VCO1 PITCH FINE TUNE ; v = 0 - 127
c = 78 VCO1 PULSE WIDTH    ; v = 0 - 127
c = 79 VCO1 PWM DEPTH      ; v = 0 - 127
c = 80 VCA AMP MOD DEPTH    ; v = 0 - 127
c = 81 FILTER EG DEPTH      ; v = 0 - 127
c = 82 FILTER EG ATTACK     ; v = 0 - 127
c = 83 FILTER EG DECAY      ; v = 0 - 127
c = 85 PORTAMENTO MODE       ; v = 0 - 127
c = 86 VCO1 PWM SOURCE      ; v = 0 - 127
c = 87 VCO2 PWM SOURCE      ; v = 0 - 127
c = 90 ARPEGGIO/STEP SEQ SW ; v = 0 - 127

```

MODULATION is used to control vibrato depth.

PORTAMENTO TIME sets the time it takes for the pitch to reach the next note played when PORTAMENTO SWITCH (CONTROL #65) is set to on. 0 is the minimum time and 127 is the maximum.

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

REVERB DEPTH controls reverb send level.
CHORUS DEPTH overwrites the Dry: Wet value of the Variation Effect directly for each voice.
DELAY DEPTH controls delay 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. Higher values produce more resonance. The effective range may be narrower than the range you can designate depending on the selected voice.

RELEASE TIME adjusts the envelop release time preset for each voice. Setting a value adds to or subtracts from the center value 64 since it is an offset parameter.

ATTACK TIME adjusts the envelop attack time preset for each voice. Setting a value adds to or subtracts from the center value 64 since it is an offset parameter.

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. Lower values produce a warmer sound. The effective range may be narrower than the range you can designate depending on the selected voice.

(3-2) CHANNEL MODE MESSAGES

```

STATUS      1011nnnn(BnH)   n = 0 ~ 15 :MIDI RECEIVE CHANNEL
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 canceled 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)
AFTER TOUCH            0 (Minimum)
MODULATION              0 (Minimum)
EXPRESSION              127 (Maximum)
SUSTAIN SWITCH          0 (Off)

```

RPN Not assigned; no change

PORTAMENTO SWITCH	0 (Off)
FOOT CONTROLLER	0 (Minimum)
RIBBON X CONTROLLER	64 (No effect)
RIBBON Z CONTROLLER	0 (Minimum)
VOLUME	127 (Maximum)
PAN	64 (No effect)
REVERB DEPTH	127 (Maximum)
CHORUS (VARIATION) DEPTH	No change
DELAY DEPTH	127 (Maximum)

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

All the notes currently set to on in a certain channel are muted when receiving this message. However, if Hold 1 or Sostenute 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.

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

Performs the same function as when receiving ALL NOTES OFF. Not to change to OMNI ON.

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

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).

(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.

(3-3) REGISTERED PARAMETER NUMBER

STATUS	1011nnnn(BnH)	n = 0 ~ 15; MIDI RECEIVE CHANNEL
LSB	01100100(64H)	
RPN LSB	0ppppppp	p = RPN LSB(See chart below)
MSB	01100101(65H)	
RPN MSB	0qqqqqqq	q = RPN MSB(See chart 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	D. ENTRY	PARAMETER NAME	DATA RANGE
LSB MSB MSB LSB		PITCH BEND SENSITIVITY	00H - 1BH (0 - 24 semitones)
00H 00H mmH ---		PITCH BEND SENSITIVITY	Cancel RPN numbers
7FH 7FH --- ---		RPN RESET	The internal value is not affected.

(3-4) SYSTEM REAL TIME MESSAGES

(3-4-1) ACTIVE SENSING

STATUS 11111110 (FBH)

Transmitted every 260 msec.

Once this code is received, the AN1x starts sensing. When no status data is received for over approximately 360 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.

(3-4-2) TIMING CLOCK(Receive only)

STATUS 11111000 (FBH)

Selects whether the tempo clock of the Arpeggiator, Step Sequencer and FreeEG is controlled by internal clock or the timing clock of an external device via MIDI.

(3-5) SYSTEM EXCLUSIVE MESSAGE

(3-5-1) UNIVERSAL NON REALTIME MESSAGE

(3-5-1-1) IDENTITY REQUEST (Receive only)

F0H 7EH 0nH 06H 01H F7H

(3-5-1-2) IDENTITY REPLY (Transmit only)

F0H 7EH 7FH 06H 02H 43H 00H 41H ddH ddH 00H 00H 00H vvH F7H
 dd:Device Number Code @AN1x: 1A 02
 vv:TG Support Level AN1x: 7E

(3-5-2) UNIVERSAL REALTIME MESSAGE

(3-5-2-1) MIDI MASTER VOLUME

F0H 7FH 7FH 04H 01H 11H mmH F7H
 Sets the MASTER VOLUME value.
 The value 0mm0 is used to set the master volume (the value 0110 will be ignored).

(3-5-3) PARAMETER CHANGE

(3-5-3-1) DX1 MASTER TUNING

F0H 43H 1nH 04H 40H ddH F7H

When AN1x receives the DX1 compatible format, MASTER TUNE in the System Data will be changed. The value "dd" is used to set the master tuning.

dd = -64(00H) ~ 0(40H) ~ +63(7FH)

(3-5-3-2) PARAMETER CHANGE

11110000	F0	Exclusive status
01000011	43	YAMAHA ID
0001nnnn	ln	device Number
01011100	5C	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, transmit the appropriate number of data bytes. See MIDI Data Table for Address and Byte Count.

The following six types of data are transmitted/received.

System Data
 Current Voice Common Data
 Current Voice Scenel Data
 Current Voice Scene2 Data
 Current Voice Scene Ctrl Data
 Current Step SEQ Data

(3-5-4) BULK DUMP

11110000	F0	Exclusive status
01000011	43	YAMAHA ID
0001nnnn	ln	device Number
01011100	5C	Model ID
0bbbbbbb	bbbbbbb	ByteCount
0bbbbbbb	bbbbbbb	ByteCount
0aaaaaaa	aaaaaaa	Address High
0aaaaaaa	aaaaaaa	Address Mid
0aaaaaaa	aaaaaaa	Address Low
00000000	00	Data
0ccccccc	ccccccc	Check-sum
11110111	F7	End of Exclusive

See 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.

The following eight types of data are transmitted/received.

System Data
 Current Voice Common Data
 Current Voice Scenel Data
 Current Voice Scene2 Data
 Current Voice Scene Ctrl Data
 Current Step SEQ Data
 User Voice Data
 User Step SEQ Data

(3-5-5) DUMP REQUEST

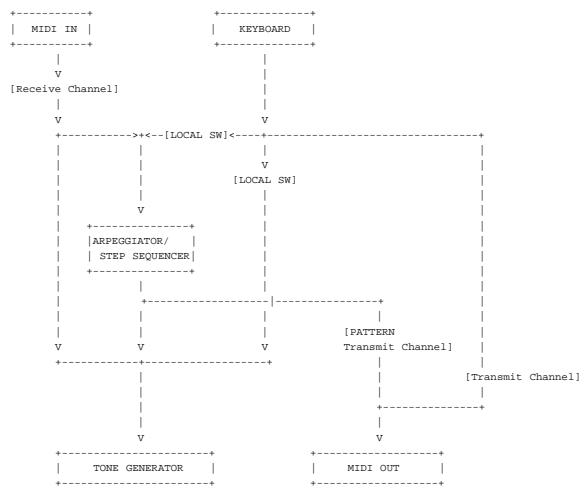
11110000	F0	Exclusive status
01000011	43	YAMAHA ID
0010nnnn	2n	device Number
01011100	5C	Model ID
0aaaaaaa	aaaaaaa	Address High
0aaaaaaa	aaaaaaa	Address Mid
0aaaaaaa	aaaaaaa	Address Low
11110111	F7	End of Exclusive

See MIDI Data Table for Address and Byte Count.

The following eight types of data are received.

System Data
 Current Voice Common Data
 Current Voice Scenel Data
 Current Voice Scene2 Data
 Current Voice Scene Ctrl Data
 Current Step SEQ Data
 User Voice Data
 User Step SEQ Data

(4) CONFIGURATION OF KEYBOARD, ARPEGGIATOR AND TONE GENERATOR



The tone generator will respond to both note data received via MIDI and the data generated by the AN1x such as note data and control data.

ALL SOUNDS OFF clears all the sounds in the specific channel played by both the keyboard and the data via MIDI.

MIDI Data Table <1-1>

Parameter Change	Address (H) (M) (L)	Description
SYSTEM	00 00 00	System
USER PATTERN	01 00 00	User Pattern 1 (only Bulk Dump)
	:	
	01 7F 00	User Pattern 128 (only Bulk Dump)
CURRENT VOICE	10 00 00	Current Voice Common Buffer
	10 10 00	Current Voice Scene 1 Buffer
	10 11 00	Current Voice Scene 2 Buffer

CURRENT PATTERN 10 12 00 Current Voice Scene Ctrl Buffer
USER VOICE 11 00 00 Current Pattern Buffer
User Voice 1 (only Bulk Dump)
11 7F 00 User Voice 128 (only Bulk Dump)

MIDI Data Table <1-2>

MIDI Parameter Change Table (System)

Table with columns: Address (H), Size Data (H), Parameter Name, Description, Default value(H). Contains parameters for Master tune, Keyboard Transpose, Keyboard Velocity Curve, and various channel/scene controls.

MIDI Data Table <1-3>

MIDI Parameter Change Table (Current Voice Common Buffer)

Table with columns: Address (H), Size Data (H), Parameter Name, Description, Default value(H). Contains parameters for Voice Name 1-10, Common Scene Select, Layer Mode, and various common control parameters.

Table with columns: Address (H), Size Data (H), Parameter Name, Description, Default Value(H). Contains parameters for Vari-Ef Type, Vari-Ef Param 1-6, and various EQ and connection settings.

Table with columns: Address (H), Size Data (H), Parameter Name, Description, Default Value(H). Contains parameters for Dly-Ef Param 7, Arpeggio/Step Seq, and various EG (Envelope Generator) parameters.

Table with columns: Address (H), Size Data (H), Parameter Name, Description, Default Value(H). Contains parameters for Free EG Trk 1-4, Scene 1-2, and various track scene switch settings.

TOTAL SIZE 668

- *1: see other table (Ctrl Matrix Parameter List)
*2: see other table (Arpeggio Type List)
*3: become available only when Step Seq is selected and Kbd Mode = 'ptn-sel&norm' or 'ptn-sel¬e-shift'
*4: only when Arpeggio is selected
*5: only when Step Seq is selected
*6: except *7
*7: only when Step Seq is selected and Kbd Mode = 'ptn-sel&norm' or 'ptn-sel¬e-shift'
*8: become available only when Step Seq is selected
*9: see other table (Free EG Track Parameter List)
*10: see only Bulk Dump (not transmitted and received as parameter change)

MIDI Data Table <1-4>

MIDI Parameter Change Table (Current Voice Scene Buffer)

Table with columns: Address (H), Size Data (H), Parameter Name, Description, Default Value(H). Contains parameters for Poly Mode, Pitch Up/Down, PEG Decay, Portamento Mode, and various LFO and algorithm settings.

10 1 00...7F Sync Pitch -64...+63 40(+0)
11 1 00...7F Sync Pitch Depth -64...+63 40(+0)
12 1 00...04 Sync Pitch Source fixed(0),PEG(1),FEG(2),LFO1(3), LFO2(4) 00(fixed)
13 1 01...03 Sync Pitch Mod Switch master(1),slave(2),both(3) 03(both)
14 1 00...7F FM Depth -64...+63 40(+0)
15 1 00...04 FM Source 1 fixed(0),PEG(1),FEG(2),LFO1(3), LFO2(4) 00(fixed)
16 1 00...06 FM Source 2 VCO2(0),VCO1(1),VCO1-sub(2), FEG(3),FEG(4),LFO1(5),LFO2(6) 00(VCO2)
17 1 00...03 VCO1 Wave saw(0),pulse(1),saw2(2),mix(3) *4 00(saw)
18 1 00...04 VCO1 Wave saw(0),pulse(1),inner1(2), *5 inner2(3),inner3(4) 40(+0)
19 1 0E...72 VCO1 Pitch Coarse -64...+63 semitone 40(+0)
20 1 0E...72 VCO1 Pitch Fine -50...+50 cent 40(+0)
21 1a 1 00...7F VCO1 Edge 0...127 127
22 1b 1 00...7F VCO1 Pulse Width 08(0)...508(40)...998(7F) 40(508)
23 1c 1 00...7F VCO1 PWM Depth -64...+63 40(+0)
24 1d 1 00...06 VCO1 PWM Source fixed(0),PEG(1),FEG(2), LFO1(3),LFO2(4),LFO2-phase(5), LFO2-fast(6) 00(fixed)
25 1e 2 01...FF VCO1 Pitch Mod Depth -127...+127 80(+0)
26 1 00...03 VCO2 Wave saw(0),pulse(1),saw2(2),mix(3) 00(saw)
27 21 1 00...7F VCO2 Pitch Coarse -64...+63 semitone 40(+0)
28 22 1 0E...72 VCO2 Pitch Fine -50(0E)...+50 cent(72) 40(+0)
29 23 1 00...7F VCO2 Edge 0...127 127
30 24 1 00...7F VCO2 Pulse Width 08(0)...508(40)...998(7F) 40(508)
31 25 1 00...7F VCO2 PWM Depth -64...+63 40(+0)
32 26 1 00...06 VCO2 PWM Source fixed(0),PEG(1),FEG(2), LFO1(3),LFO2(4),LFO2-phase(5), LFO2-fast(6) 00(fixed)
33 27 2 01...FF VCO2 Pitch Mod Depth -127...+127 80(+0)
34 29 1 00...7F Mixer VCO1 Level 0...127 7F
35 2a 1 00...7F Mixer VCO2 Level 0...127 00
36 2b 1 00...7F Mixer Ring Mod Level 0...127 00
37 2c 1 00...7F Mixer Noise Level 0...127 00
38 2d 1 00...7F FilterEG Attack Time 0...127 00
39 2e 1 00...7F FilterEG Decay Time 0...127 40
40 2f 1 00...7F FilterEG Sustain Level 0...127 7F
41 30 1 00...7F FilterEG Release Time 0...127 7F
42 31 1 00...7F VCF HPF Cutoff Freq 0...127 00
43 32 1 00...05 VCF Filter Type LFP-24dB(0),LFP-18dB(1), LFP-12dB(2),BPF(3),HPF-12dB(4), BEF(5) 00(LFP-24dB)
44 33 1 00...7F VCF Filter Cutoff 0...127 7F
45 34 1 00...7F VCF Filter Resonance -12(0D)...0(19)...+102(7F) 19(+0)
46 35 2 00...FF FilterEG Depth -128...+127 94(+20)
47 37 1 00...7F FilterEG Velocity Sens -64...+63 40(+0)
48 38 1 20...7F VCF Keyboard Track -32...+63 40(+0)
49 39 1 00...7F VCF Filter Mod Depth -64...+63 40(+0)
50 3a 1 00...7F AmpEG Attack Time 0...127 00
51 3b 1 00...7F AmpEG Decay Time 0...127 40
52 3c 1 00...7F AmpEG Sustain Level 0...127 7F
53 3d 1 00...7F AmpEG Release Time 0...127 00
54 3e 1 00...7F VCA Feedback Level 0...127 00
55 3f 1 00...7F VCA Volume 0...127 00
56 40 1 00...7F AmpEG Velocity Sens -64...+63 40(+0)
57 41 1 00...7F VCA Amp Mod Depth -64...+63 40(+0)
58 42 1 01...7F Vari-Ef Dry-Wet dBsw(1)...D=W(40)...D=W63(7F) *6 01(D63+W)
59 dry(0-3F),wet(40-7F) *7
60 dry(0-3F),both(40),wet(41-7F) *8
61 0...0 00
62 43 1 00...00 Reserve
63 44 1 00...72 Ctrl Matrix Source1 off(0)...Assign Knob8(72) *9 00
64 45 1 00...24 Ctrl Matrix Param 1 off(0)...Vari-Ef Dry:Wet(24) *9 00
65 46 1 00...7F Ctrl Matrix Depth 1 Depends on Ctrl Matrix Param 1 *9 40(+0)
66 47 1 00...72 Ctrl Matrix Source2 off(0)...Assign Knob8(72) *9 00
67 48 1 00...24 Ctrl Matrix Param 2 off(0)...Vari-Ef Dry:Wet(24) *9 00
68 49 1 00...7F Ctrl Matrix Depth 2 Depends on Ctrl Matrix Param 2 *9 40(+0)
69 4a 1 00...72 Ctrl Matrix Source3 off(0)...Assign Knob8(72) *9 00
70 4b 1 00...24 Ctrl Matrix Param 3 off(0)...Vari-Ef Dry:Wet(24) *9 00
71 4c 1 00...7F Ctrl Matrix Depth 3 Depends on Ctrl Matrix Param 3 *9 40(+0)
72 4d 1 00...72 Ctrl Matrix Source4 off(0)...Assign Knob8(72) *9 00
73 4e 1 00...24 Ctrl Matrix Param 4 off(0)...Vari-Ef Dry:Wet(24) *9 00
74 4f 1 00...7F Ctrl Matrix Depth 4 Depends on Ctrl Matrix Param 4 *9 40(+0)
75 50 1 00...72 Ctrl Matrix Source5 off(0)...Assign Knob8(72) *9 00
76 51 1 00...24 Ctrl Matrix Param 5 off(0)...Vari-Ef Dry:Wet(24) *9 00
77 52 1 00...7F Ctrl Matrix Depth 5 Depends on Ctrl Matrix Param 5 *9 40(+0)
78 53 1 00...72 Ctrl Matrix Source6 off(0)...Assign Knob8(72) *9 00
79 54 1 00...24 Ctrl Matrix Param 6 off(0)...Vari-Ef Dry:Wet(24) *9 00
80 55 1 00...7F Ctrl Matrix Depth 6 Depends on Ctrl Matrix Param 6 *9 40(+0)
81 56 1 00...72 Ctrl Matrix Source7 off(0)...Assign Knob8(72) *9 00
82 57 1 00...24 Ctrl Matrix Param 7 off(0)...Vari-Ef Dry:Wet(24) *9 00
83 58 1 00...7F Ctrl Matrix Depth 7 Depends on Ctrl Matrix Param 7 *9 40(+0)
84 59 1 00...72 Ctrl Matrix Source8 off(0)...Assign Knob8(72) *9 00
85 5a 1 00...24 Ctrl Matrix Param 8 off(0)...Vari-Ef Dry:Wet(24) *9 00
86 5b 1 00...7F Ctrl Matrix Depth 8 Depends on Ctrl Matrix Param 8 *9 40(+0)
87 5c 1 00...72 Ctrl Matrix Source9 off(0)...Assign Knob8(72) *9 00
88 5d 1 00...24 Ctrl Matrix Param 9 off(0)...Vari-Ef Dry:Wet(24) *9 00
89 5e 1 00...7F Ctrl Matrix Depth 9 Depends on Ctrl Matrix Param 9 *9 40(+0)
90 5f 1 00...72 Ctrl Matrix Source10 off(0)...Assign Knob8(72) *9 00
91 60 1 00...24 Ctrl Matrix Param 10 off(0)...Vari-Ef Dry:Wet(24) *9 00
92 61 1 00...7F Ctrl Matrix Depth 10 Depends on Ctrl Matrix Param 10 *9 40(+0)
93 62 1 00...72 Ctrl Matrix Source11 off(0)...Assign Knob8(72) *9 00
94 63 1 00...24 Ctrl Matrix Param 11 off(0)...Vari-Ef Dry:Wet(24) *9 00
95 64 1 00...7F Ctrl Matrix Depth 11 Depends on Ctrl Matrix Param 11 *9 40(+0)
96 65 1 00...72 Ctrl Matrix Source12 off(0)...Assign Knob8(72) *9 00
97 66 1 00...24 Ctrl Matrix Param 12 off(0)...Vari-Ef Dry:Wet(24) *9 00
98 67 1 00...7F Ctrl Matrix Depth 12 Depends on Ctrl Matrix Param 12 *9 40(+0)
99 68 1 00...72 Ctrl Matrix Source13 off(0)...Assign Knob8(72) *9 00
100 69 1 00...24 Ctrl Matrix Param 13 off(0)...Vari-Ef Dry:Wet(24) *9 00
101 6a 1 00...7F Ctrl Matrix Depth 13 Depends on Ctrl Matrix Param 13 *9 40(+0)
102 6b 1 00...72 Ctrl Matrix Source14 off(0)...Assign Knob8(72) *9 00
103 6c 1 00...24 Ctrl Matrix Param 14 off(0)...Vari-Ef Dry:Wet(24) *9 00
104 6d 1 00...7F Ctrl Matrix Depth 14 Depends on Ctrl Matrix Param 14 *9 40(+0)
105 6e 1 00...72 Ctrl Matrix Source15 off(0)...Assign Knob8(72) *9 00
106 6f 1 00...24 Ctrl Matrix Param 15 off(0)...Vari-Ef Dry:Wet(24) *9 00
107 70 1 00...7F Ctrl Matrix Depth 15 Depends on Ctrl Matrix Param 15 *9 40(+0)
108 71 1 00...72 Ctrl Matrix Source16 off(0)...Assign Knob8(72) *9 00
109 72 1 00...24 Ctrl Matrix Param 16 off(0)...Vari-Ef Dry:Wet(24) *9 00
110 73 1 00...7F Ctrl Matrix Depth 16 Depends on Ctrl Matrix Param 16 *9 40(+0)
Total size 74 : Scene 1, 2 Edit Buffer
Total size 44 : Scene Ctrl Buffer
S#0 : Scene 1 Edit Buffer
1 : Scene 2 Edit Buffer
2 : Scene Ctrl Buffer (* effective only when Scene Ctrl is active)
*1 : Poly Mode = poly
*2 : Poly Mode = mono/legato
*3 : see other table (LFO1 Wave Type List)

*4 : Oscillator Sync = off
*5 : Oscillator Sync = on
*6 : Vari-Ef Type = except *7,*8
*7 : Vari-Ef Type = Analog Exciter, Compressor
*8 : Vari-Ef Type = Distortion, Over Drive, Amp.Simulator
*9 : see other table (Ctrl Matrix Parameter List) and not exist in scene-ctrl buffer
MIDI Data Table <1-5>
MIDI Parameter Change Table (Current Step SEQ Buffer)
Address Size Data Parameter Name Description Default value(H)
(H) (H) (H)
10 0e 00 1 00...09 Step Seq Base Unit 3/8(0)...1/32(9)
01 1 01...10 Step Seq Length lstep(1)...16step(10) 08
02 1 00...03 Step Seq Loop Type fwd(0),backwd(1),alternateA(2), alternateB(3) 00(fwd)
03 1 00...60 Step Seq Ctrl Change No off(0)...95.At(60) 00(off)
04 1 00...00 reserved 00
05 1 00...00 reserved 00
06 1 00...7F Step Seq Note No 1 C-2(0)...G8(7F) C3(3C)
07 1 00...7F Step Seq Note No 2 C-2(0)...G8(7F) C3(3C)
08 1 00...7F Step Seq Note No 3 C-2(0)...G8(7F) C3(3C)
09 1 00...7F Step Seq Note No 4 C-2(0)...G8(7F) C3(3C)
0a 1 00...7F Step Seq Note No 5 C-2(0)...G8(7F) C3(3C)
0b 1 00...7F Step Seq Note No 6 C-2(0)...G8(7F) C3(3C)
0c 1 00...7F Step Seq Note No 7 C-2(0)...G8(7F) C3(3C)
0d 1 00...7F Step Seq Note No 8 C-2(0)...G8(7F) C3(3C)
0e 1 00...7F Step Seq Note No 9 C-2(0)...G8(7F) C3(3C)
0f 1 00...7F Step Seq Note No 10 C-2(0)...G8(7F) C3(3C)
10 1 00...7F Step Seq Note No 11 C-2(0)...G8(7F) C3(3C)
11 1 00...7F Step Seq Note No 12 C-2(0)...G8(7F) C3(3C)
12 1 00...7F Step Seq Note No 13 C-2(0)...G8(7F) C3(3C)
13 1 00...7F Step Seq Note No 14 C-2(0)...G8(7F) C3(3C)
14 1 00...7F Step Seq Note No 15 C-2(0)...G8(7F) C3(3C)
15 1 00...7F Step Seq Note No 16 C-2(0)...G8(7F) C3(3C)
16 1 00...7F Step Seq Velocity 1 rest(0),1...127 100(64)
17 1 00...7F Step Seq Velocity 2 rest(0),1...127 100(64)
18 1 00...7F Step Seq Velocity 3 rest(0),1...127 100(64)
19 1 00...7F Step Seq Velocity 4 rest(0),1...127 100(64)
1a 1 00...7F Step Seq Velocity 5 rest(0),1...127 100(64)
1b 1 00...7F Step Seq Velocity 6 rest(0),1...127 100(64)
1c 1 00...7F Step Seq Velocity 7 rest(0),1...127 100(64)
1d 1 00...7F Step Seq Velocity 8 rest(0),1...127 100(64)
1e 1 00...7F Step Seq Velocity 9 rest(0),1...127 100(64)
1f 1 00...7F Step Seq Velocity 10 rest(0),1...127 100(64)
20 1 00...7F Step Seq Velocity 11 rest(0),1...127 100(64)
21 1 00...7F Step Seq Velocity 12 rest(0),1...127 100(64)
22 1 00...7F Step Seq Velocity 13 rest(0),1...127 100(64)
23 1 00...7F Step Seq Velocity 14 rest(0),1...127 100(64)
24 1 00...7F Step Seq Velocity 15 rest(0),1...127 100(64)
25 1 00...7F Step Seq Velocity 16 rest(0),1...127 100(64)
26 1 00...7F Step Seq Gate Time 1 18(0)...1008(40)...2008(7F) 948(3C)
27 1 00...7F Step Seq Gate Time 2 18(0)...1008(40)...2008(7F) 948(3C)
28 1 00...7F Step Seq Gate Time 3 18(0)...1008(40)...2008(7F) 948(3C)
29 1 00...7F Step Seq Gate Time 4 18(0)...1008(40)...2008(7F) 948(3C)
2a 1 00...7F Step Seq Gate Time 5 18(0)...1008(40)...2008(7F) 948(3C)
2b 1 00...7F Step Seq Gate Time 6 18(0)...1008(40)...2008(7F) 948(3C)
2c 1 00...7F Step Seq Gate Time 7 18(0)...1008(40)...2008(7F) 948(3C)
2d 1 00...7F Step Seq Gate Time 8 18(0)...1008(40)...2008(7F) 948(3C)
2e 1 00...7F Step Seq Gate Time 9 18(0)...1008(40)...2008(7F) 948(3C)
2f 1 00...7F Step Seq Gate Time 10 18(0)...1008(40)...2008(7F) 948(3C)
30 1 00...7F Step Seq Gate Time 11 18(0)...1008(40)...2008(7F) 948(3C)
31 1 00...7F Step Seq Gate Time 12 18(0)...1008(40)...2008(7F) 948(3C)
32 1 00...7F Step Seq Gate Time 13 18(0)...1008(40)...2008(7F) 948(3C)
33 1 00...7F Step Seq Gate Time 14 18(0)...1008(40)...2008(7F) 948(3C)
34 1 00...7F Step Seq Gate Time 15 18(0)...1008(40)...2008(7F) 948(3C)
35 1 00...7F Step Seq Gate Time 16 18(0)...1008(40)...2008(7F) 948(3C)
36 1 00...7F Step Seq Ctrl Change Value 1 0...127 0(00)
37 1 00...7F Step Seq Ctrl Change Value 2 0...127 0(00)
38 1 00...7F Step Seq Ctrl Change Value 3 0...127 0(00)
39 1 00...7F Step Seq Ctrl Change Value 4 0...127 0(00)
3a 1 00...7F Step Seq Ctrl Change Value 5 0...127 0(00)
3b 1 00...7F Step Seq Ctrl Change Value 6 0...127 0(00)
3c 1 00...7F Step Seq Ctrl Change Value 7 0...127 0(00)
3d 1 00...7F Step Seq Ctrl Change Value 8 0...127 0(00)
3e 1 00...7F Step Seq Ctrl Change Value 9 0...127 0(00)
3f 1 00...7F Step Seq Ctrl Change Value 10 0...127 0(00)
40 1 00...7F Step Seq Ctrl Change Value 11 0...127 0(00)
41 1 00...7F Step Seq Ctrl Change Value 12 0...127 0(00)
42 1 00...7F Step Seq Ctrl Change Value 13 0...127 0(00)
43 1 00...7F Step Seq Ctrl Change Value 14 0...127 0(00)
44 1 00...7F Step Seq Ctrl Change Value 15 0...127 0(00)
45 1 00...7F Step Seq Ctrl Change Value 16 0...127 0(00)
TOTAL SIZE 46
MIDI Data Table <1-6>
MIDI Parameter Change Table (User Voice: Only Bulk Dump)
Address Size Data Parameter Name Description Default value(H)
(H) (H) (H)
11 mm 00 1 20...7F Voice Name 1 Ascii Code I
1 20...7F Voice Name 2 Ascii Code n
1 20...7F Voice Name 3 Ascii Code i
1 20...7F Voice Name 4 Ascii Code t
1 20...7F Voice Name 5 Ascii Code N
1 20...7F Voice Name 6 Ascii Code o
1 20...7F Voice Name 7 Ascii Code r
1 20...7F Voice Name 8 Ascii Code a
1 20...7F Voice Name 9 Ascii Code e
1 00...54 Voice Category N,pr...vv N
1 01...03 Common Scene Select Scene1(1),Scene2(2), Scene Ctrl(3) 40(+0)
1 00...05 Layer Mode single(0),unison(1),dual(2), dual-unison(3),split(4), split-unison(5) 00(single)
1 00...02 Layer Pan off(0),alternate(1),random(2) 00(off)
1 00...32 Layer Separation 0...32 00
1 00...32 Unison Detune 0...32 06
2 27...F0 Common Tempo midi(27),40(28)...240(F0) 78(120)
1 00...7F Common Split Point C-2(0)...G8(7F) 3C(3C)
1 00...01 Common Portamento Switch off(0)...on(1) 00(off)
1 00...72 Common Ctrl Matrix Source1 off(0)...Assign Knob8(72) *1 00
1 00...05 Common Ctrl Matrix Param 1 off(0)...Rev Return(5) *1 00
1 00...7F Common Ctrl Matrix Depth 1 -64...+63 *1 40(+0)
1 00...72 Common Ctrl Matrix Source2 off(0)...Assign Knob8(72) *1 00
1 00...05 Common Ctrl Matrix Param 2 off(0)...Rev Return(5) *1 00
1 00...7F Common Ctrl Matrix Depth 2 -64...+63 *1 40(+0)
1 00...0D Vari-Ef Type See Effect Type List 00(+Chorus 1)

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1 00..00 reserved 00 00 00
2 00..7F Vari-Ef Param 1 MSB See Effect Parameter List Depends On Vari-Ef Type
2 00..7F Vari-Ef Param 1 LSB See Effect Parameter List Depends On Vari-Ef Type
2 00..7F Vari-Ef Param 2 MSB See Effect Parameter List Depends On Vari-Ef Type
2 00..7F Vari-Ef Param 2 LSB See Effect Parameter List Depends On Vari-Ef Type
2 00..7F Vari-Ef Param 3 MSB See Effect Parameter List Depends On Vari-Ef Type
2 00..7F Vari-Ef Param 3 LSB See Effect Parameter List Depends On Vari-Ef Type
2 00..7F Vari-Ef Param 4 MSB See Effect Parameter List Depends On Vari-Ef Type
2 00..7F Vari-Ef Param 4 LSB See Effect Parameter List Depends On Vari-Ef Type
2 00..7F Vari-Ef Param 5 MSB See Effect Parameter List Depends On Vari-Ef Type
2 00..7F Vari-Ef Param 5 LSB See Effect Parameter List Depends On Vari-Ef Type
2 00..7F Vari-Ef Param 6 MSB See Effect Parameter List Depends On Vari-Ef Type
2 00..7F Vari-Ef Param 6 LSB See Effect Parameter List Depends On Vari-Ef Type
2 00..7F Vari-Ef Param 7 MSB See Effect Parameter List Depends On Vari-Ef Type
2 00..7F Vari-Ef Param 7 LSB See Effect Parameter List Depends On Vari-Ef Type
1 00..0D Dly-Rev Type See Effect Type List 00
1 00..00 Dly-Rev Connection 00
1 00..00 Dly-Rev Return 00
1 00..7F Dly-Ef Param 1 MSB See Effect Parameter List Depends On Dly-Ef Type
2 00..7F Dly-Ef Param 1 LSB See Effect Parameter List Depends On Dly-Ef Type
2 00..7F Dly-Ef Param 2 MSB See Effect Parameter List Depends On Dly-Ef Type
2 00..7F Dly-Ef Param 2 LSB See Effect Parameter List Depends On Dly-Ef Type
2 00..7F Dly-Ef Param 3 MSB See Effect Parameter List Depends On Dly-Ef Type
2 00..7F Dly-Ef Param 3 LSB See Effect Parameter List Depends On Dly-Ef Type
2 00..7F Dly-Ef Param 4 MSB See Effect Parameter List Depends On Dly-Ef Type
2 00..7F Dly-Ef Param 4 LSB See Effect Parameter List Depends On Dly-Ef Type
2 00..7F Dly-Ef Param 5 MSB See Effect Parameter List Depends On Dly-Ef Type
2 00..7F Dly-Ef Param 5 LSB See Effect Parameter List Depends On Dly-Ef Type
2 00..7F Dly-Ef Param 6 MSB See Effect Parameter List Depends On Dly-Ef Type
2 00..7F Dly-Ef Param 6 LSB See Effect Parameter List Depends On Dly-Ef Type
2 00..7F Dly-Ef Param 7 MSB See Effect Parameter List Depends On Dly-Ef Type
2 00..7F Dly-Ef Param 7 LSB See Effect Parameter List Depends On Dly-Ef Type
1 00..0D Rev-Ef Type See Effect Type List 00
1 00..7F Rev-Ef Return 00
2 00..7F Rev-Ef Param 1 MSB See Effect Parameter List Depends On Rev-Ef Type
2 00..7F Rev-Ef Param 1 LSB See Effect Parameter List Depends On Rev-Ef Type
2 00..7F Rev-Ef Param 2 MSB See Effect Parameter List Depends On Rev-Ef Type
2 00..7F Rev-Ef Param 2 LSB See Effect Parameter List Depends On Rev-Ef Type
2 00..7F Rev-Ef Param 3 MSB See Effect Parameter List Depends On Rev-Ef Type
2 00..7F Rev-Ef Param 3 LSB See Effect Parameter List Depends On Rev-Ef Type
2 00..7F Rev-Ef Param 4 MSB See Effect Parameter List Depends On Rev-Ef Type
2 00..7F Rev-Ef Param 4 LSB See Effect Parameter List Depends On Rev-Ef Type
2 00..7F Rev-Ef Param 5 MSB See Effect Parameter List Depends On Rev-Ef Type
2 00..7F Rev-Ef Param 5 LSB See Effect Parameter List Depends On Rev-Ef Type
2 00..7F Rev-Ef Param 6 MSB See Effect Parameter List Depends On Rev-Ef Type
2 00..7F Rev-Ef Param 6 LSB See Effect Parameter List Depends On Rev-Ef Type
2 00..7F Rev-Ef Param 7 MSB See Effect Parameter List Depends On Rev-Ef Type
2 00..7F Rev-Ef Param 7 LSB See Effect Parameter List Depends On Rev-Ef Type
1 00..01 Arpeggio/Step Seq on/off off(0),on(1) 00(off)
1 00..01 Arpeggio/Step Seq Select Arpeggio(0),Step Seq(1) 00(Arpeggio)
1 00..1D Arpeggio Type/ Step Seq Ptn No UpDwnl(0)..BassLineD(1D) *2 00(UpDwnl)
00..7F Arpeggio/Step Seq Kbd Mode CH1:User01(0)..User128(7F) *3
00..03 Arpeggio/Step Seq Kbd Mode chord(0),chordNormal(1) *4 00(chord)
normal(0),note-shift&normal(1), *5
ptn-selectNormal(2),
pt-select-note-shift(3) *6
1 01..03 Arpeggio/Step Hold off(0),mode(1),mode2(2) *7 00(off)
00..02
1 00..02 Arpeggio/Step Seq Scene Sw Scene(1),Scene2(2),both(3) 03(both)
1 00..09 Arpeggio Subdivide 3/8(0)..1/32(9) 04(1/8)
1 32..53 Play Effect Swing 508(32)..838(53) *8 32(50%)
2 00..C8 Play Effect Velocity realtime(0),18(1)..200%(C8) 64(100%)
2 01..C8 Play Effect Gate Time 18(1)..200%(C8) *8 64(100%)
1 00..02 Free EG Trigger free(0),keyboard&midi(1),all(2) 01(kbd&midi)
1 00..04 Free EG Loop Type off(0),fdw(1),fdw-half(2), alternate(3),alternate-half(4) 01(fdw)
1 02..60 Free EG Length 1/2bar(2),lbar(3),3/2bar(4), 28(4.0sec)
2bar(5),3bar(6),4bar(7),6bar(8), 8bar(9),1.0sec(OA)..8.0sec(50) ..16.0sec(60)
1 00..7F Free EG Keyboard Track -64...+63 40(+0)
1 00..38 Free EG Trk Param 1 off(0)...VCA Mod Depth(38) *9 00(off)
1 00..38 Free EG Trk Scene Switch 1 bit2..3-track swO back up off(0),Scene(1),Scene2(2),both(3) 00(off)
1 00..38 Free EG Trk Param 2 off(0)...VCA Mod Depth(38) *9 00(off)
1 00..0F Free EG Trk Scene Switch 2 bit2..3-track swO back up off(0),Scene(1),Scene2(2),both(3) 00(off)
1 00..38 Free EG Trk Param 3 off(0)...VCA Mod Depth(38) *9 00(off)
1 00..0F Free EG Trk Scene Switch 3 bit2..3-track swO back up off(0),Scene(1),Scene2(2),both(3) 00(off)
1 00..38 Free EG Trk Param 4 off(0)...VCA Mod Depth(38) *9 00(off)
1 00..0F Free EG Trk Scene Switch 4 bit2..3-track swO back up off(0),Scene(1),Scene2(2),both(3) 00(off)
2 00..01 Free EG Trk1 Data1 MSB 0..1 *10 01
00..7F Free EG Trk1 Data1 LSB 0..127 *10 00
2 00..01 Free EG Trk1 Data2 MSB 0..1 *10 01
00..7F Free EG Trk1 Data2 LSB 0..127 *10 00
: : : :
2 00..01 Free EG Trk1 Data192 MSB 0..1 *10 01
00..7F Free EG Trk1 Data192 LSB 0..127 *10 00
2 00..01 Free EG Trk2 Data1 MSB 0..1 *10 01
00..7F Free EG Trk2 Data1 LSB 0..127 *10 00
2 00..01 Free EG Trk2 Data2 MSB 0..1 *10 01
00..7F Free EG Trk2 Data2 LSB 0..127 *10 00
: : : :
2 00..01 Free EG Trk2 Data192 MSB 0..1 *10 01
00..7F Free EG Trk2 Data192 LSB 0..127 *10 00
2 00..01 Free EG Trk3 Data1 MSB 0..1 *10 01
00..7F Free EG Trk3 Data1 LSB 0..127 *10 00
2 00..01 Free EG Trk3 Data2 MSB 0..1 *10 01
00..7F Free EG Trk3 Data2 LSB 0..127 *10 00
: : : :
2 00..01 Free EG Trk3 Data128 MSB 0..1 *10 01
00..7F Free EG Trk3 Data128 LSB 0..127 *10 00
2 00..01 Free EG Trk4 Data1 MSB 0..1 *10 01
00..7F Free EG Trk4 Data1 LSB 0..127 *10 00
2 00..01 Free EG Trk4 Data2 MSB 0..1 *10 01
00..7F Free EG Trk4 Data2 LSB 0..127 *10 00
: : : :
2 00..01 Free EG Trk4 Data128 MSB 0..1 *10 01
00..7F Free EG Trk4 Data128 LSB 0..127 *10 00
(from Here: Scene's Data)
1 00..02 Poly Mode poly(0),mono(1),legato(2) 00(poly)
1 2C..54 Pitch Up (PB Range +) -24(2C)..+24(54) 42(+2)
1 2C..54 Pitch Down (PB Range -) -24(2C)..+24(54) 3E(-2)
1 00..7F PEG Decay -64...+63 40(+0)
1 00..7F PEG Depth -64...+63 semitones 40(+0)
1 01..03 PEG Switch VC01(1),VC02(2),both(3) 03(both)
1 00..01 Portamento Mode normal(0),sustain-Key(1) *11 00(normal)
fill-time(0),finger(1) *12
1 00..7F Portamento Time 0...127 20(32)
1 00..01 LFO Reset Mode off(0),key-on(1) 00(off)
1 00..14 LFO1 Wave sine(0)...offset-s/2(14) *13 00(sine)
2 00..FF LFO1 Speed 1(0)...256(F) 1F(32)
1 00..7F LFO1 Speed 0...127 00
2 00..FF LFO2 Speed 1(0)...256(F) 1F(32)
1 00..03 VCO Algorithm Sync-off&FM-on(0), Sync-on&FM-both(1), Sync-on&FM-master(2), Sync-on&FM-slave(3) 00(Sync-off&FM-both)
(Oscillator Sync & FM)
1 00..7F Sync Pitch -64...+63 40(+0)
1 00..7F Sync Pitch Depth -64...+63 40(+0)
1 00..04 Sync Pitch Source fixed(0),PEG(1),FEG(2),LFO1(3) LFO2(4) 00(fixed)
1 01..03 Sync Pitch Mod Switch master(1),slave(2),both(3) 03(both)
1 00..7F FM Depth -64...+63 40(+0)
1 00..04 FM Source 1 fixed(0),PEG(1),FEG(2),LFO1(3), LFO2(4) 00(fixed)
1 00..06 FM Source 2 VC02(0),VC01(1),VC01-sub(2), FEG(3),FEG(4),LFO1(5),LFO2(6) 00(VC02)
1 00..03 VC01 Wave saw(0),pulse(1),saw2(2),mix(3) *14 00(saw)
00..04 VC01 Wave saw(0),pulse(1),inner1(2), inner2(3),inner3(4) *15
1 00..7F VC01 Pitch Coarse -64...+63 semitones 40(+0)
1 0E..72 VC01 Pitch Fine -50..+50 cent 40(+0)
1 00..7F VC01 Edge 0...127 127
1 00..7F VC01 Pulse Width 0%(0)...50%(40)...99%(7F) 40(50%)
1 01..7F VC01 PWM Depth -64...+63 40(+0)
1 00..06 VC01 PWM Source fixed(0),PEG(1),FEG(2), LFO1(3),LFO2(4),LFO2-phase(5), LFO2-fast(6) 00(fixed)
2 01..FF VC01 Pitch Mod Depth -127...+127 80(+0)
1 00..03 VC02 Wave saw(0),pulse(1),saw2(2),mix(3) 00(saw)
1 00..7F VC02 Pitch Coarse -64...+63 semitone 40(+0)
1 0E..72 VC02 Pitch Fine -50(0E)..+50 cent(72) 40(+0)
1 00..7F VC02 Edge 0...127 127
1 00..7F VC02 Pulse Width 0%(0)...50%(40)...99%(7F) 40(50%)
1 00..7F VC02 PWM Depth -64...+63 40(+0)
1 00..06 VC02 PWM Source fixed(0),PEG(1),FEG(2), LFO1(3),LFO2(4),LFO2-phase(5), LFO2-fast(6) 00(fixed)
2 01..FF VC02 Pitch Mod Depth -127...+127 80(+0)
1 00..7F Mixer VC01 Level 0...127 7F
1 00..7F Mixer VC02 Level 0...127 00
1 00..7F Mixer Ring Mod Level 0...127 00
1 00..7F Mixer Noise Level 0...127 00
1 00..7F FilterEG Attack Time 0...127 00
1 00..7F FilterEG Decay Time 0...127 40
1 00..7F FilterEG Sustain Level 0...127 7F
1 00..7F FilterEG Release Time 0...127 7F
1 00..7F VCF HPF Cutoff Freq 0...127 00
1 00..05 VCF Filter Type LFF-24dB(0),LFF-18dB(1), LFF-12dB(2),BPF(3),HPF-12dB(4), BPF(5) 00(LFF-24dB)
1 00..7F VCF Filter Cutoff 0...127 7F
1 00..7F VCF Filter Resonance -12(0D)..0(19)..+102(7F) 19(+0)
2 00..FF FilterEG Depth -128...+127 94(+20)
1 00..7F FilterEG Velocity Sens -64...+63 40(+0)
1 20..7F VCF Keyboard Track -32...+63 40(+0)
1 00..7F VCF Filter Mod Depth -64...+63 40(+0)
1 00..7F AmpEG Attack Time 0...127 00
1 00..7F AmpEG Decay Time 0...127 40
1 00..7F AmpEG Sustain Level 0...127 7F
1 00..7F AmpEG Release Time 0...127 00
1 00..7F VCA Feedback Level 0...127 00
1 00..7F VCA Volume 0...127 00
1 00..7F AmpEG Velocity Sens -64...+63 40(+0)
1 00..7F VCA Amp Mod Depth -64...+63 40(+0)
1 01..7F Vari-Ef Dry:Wet D63>W(1)...D=W(40)...D<W63(7F) *17 01(D63>W)
dry(0-3F),wet(40-7F) *16
dry(0-3F),both(40),wet(41-7F) *18
0...0 00
1 00..72 Ctrl Matrix Source1 off(0)...Assign Knob8(72) *19 00
1 00..24 Ctrl Matrix Param 1 off(0)...Vari-Ef Dry:Wet(24) *19 00
1 00..7F Ctrl Matrix Depth 1 Depends on Ctrl Matrix Param 19 40(+0)
1 00..72 Ctrl Matrix Source2 off(0)...Assign Knob8(72) *19 00
1 00..24 Ctrl Matrix Param 2 off(0)...Vari-Ef Dry:Wet(24) *19 00
1 00..7F Ctrl Matrix Depth 2 Depends on Ctrl Matrix Param 19 40(+0)
1 00..72 Ctrl Matrix Source3 off(0)...Assign Knob8(72) *19 00
1 00..24 Ctrl Matrix Param 3 off(0)...Vari-Ef Dry:Wet(24) *19 00
1 00..7F Ctrl Matrix Depth 3 Depends on Ctrl Matrix Param 19 40(+0)
1 00..72 Ctrl Matrix Source4 off(0)...Assign Knob8(72) *19 00
1 00..24 Ctrl Matrix Param 4 off(0)...Vari-Ef Dry:Wet(24) *19 00
1 00..7F Ctrl Matrix Depth 4 Depends on Ctrl Matrix Param 19 40(+0)
1 00..72 Ctrl Matrix Source5 off(0)...Assign Knob8(72) *19 00
1 00..24 Ctrl Matrix Param 5 off(0)...Vari-Ef Dry:Wet(24) *19 00
1 00..7F Ctrl Matrix Depth 5 Depends on Ctrl Matrix Param 19 40(+0)
1 00..72 Ctrl Matrix Source6 off(0)...Assign Knob8(72) *19 00
1 00..24 Ctrl Matrix Param 6 off(0)...Vari-Ef Dry:Wet(24) *19 00
1 00..7F Ctrl Matrix Depth 6 Depends on Ctrl Matrix Param 19 40(+0)
1 00..72 Ctrl Matrix Source7 off(0)...Assign Knob8(72) *19 00
1 00..24 Ctrl Matrix Param 7 off(0)...Vari-Ef Dry:Wet(24) *19 00
1 00..7F Ctrl Matrix Depth 7 Depends on Ctrl Matrix Param 19 40(+0)
1 00..72 Ctrl Matrix Source8 off(0)...Assign Knob8(72) *19 00
1 00..24 Ctrl Matrix Param 8 off(0)...Vari-Ef Dry:Wet(24) *19 00
1 00..7F Ctrl Matrix Depth 8 Depends on Ctrl Matrix Param 19 40(+0)
1 00..72 Ctrl Matrix Source9 off(0)...Assign Knob8(72) *19 00
1 00..24 Ctrl Matrix Param 9 off(0)...Vari-Ef Dry:Wet(24) *19 00
1 00..7F Ctrl Matrix Depth 9 Depends on Ctrl Matrix Param 19 40(+0)
1 00..72 Ctrl Matrix Source10 off(0)...Assign Knob8(72) *19 00
1 00..24 Ctrl Matrix Param 10 off(0)...Vari-Ef Dry:Wet(24) *19 00
1 00..7F Ctrl Matrix Depth 10 Depends on Ctrl Matrix Param 19 40(+0)
1 00..72 Ctrl Matrix Source11 off(0)...Assign Knob8(72) *19 00
1 00..24 Ctrl Matrix Param 11 off(0)...Vari-Ef Dry:Wet(24) *19 00
1 00..7F Ctrl Matrix Depth 11 Depends on Ctrl Matrix Param 19 40(+0)
1 00..72 Ctrl Matrix Source12 off(0)...Assign Knob8(72) *19 00
1 00..24 Ctrl Matrix Param 12 off(0)...Vari-Ef Dry:Wet(24) *19 00
1 00..7F Ctrl Matrix Depth 12 Depends on Ctrl Matrix Param 19 40(+0)
1 00..72 Ctrl Matrix Source13 off(0)...Assign Knob8(72) *19 00
1 00..24 Ctrl Matrix Param 13 off(0)...Vari-Ef Dry:Wet(24) *19 00
1 00..7F Ctrl Matrix Depth 13 Depends on Ctrl Matrix Param 19 40(+0)
1 00..72 Ctrl Matrix Source14 off(0)...Assign Knob8(72) *19 00
1 00..24 Ctrl Matrix Param 14 off(0)...Vari-Ef Dry:Wet(24) *19 00
1 00..7F Ctrl Matrix Depth 14 Depends on Ctrl Matrix Param 19 40(+0)
1 00..72 Ctrl Matrix Source15 off(0)...Assign Knob8(72) *19 00
1 00..24 Ctrl Matrix Param 15 off(0)...Assign Knob8(72) *19 00

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1 00...24 Ctrl Matrix Param 15 off(0)...Vari-Ef Dry:Wet(24) *19 00
1 00...7F Ctrl Matrix Depth 15 Depends on Ctrl Matrix Param *19 40(+0)
1 00...72 Ctrl Matrix Source16 off(0)...Assign Knob8(72) *19 00
1 00...24 Ctrl Matrix Param 16 off(0)...Vari-Ef Dry:Wet(24) *19 00
1 00...7F Ctrl Matrix Depth 16 Depends on Ctrl Matrix Param *19 40(+0)

(from Here : Scene2's Data)
1 00...02 Poly Mode poly(0),mono(1),legato(2) 00(poly)
1 2C...54 Pich Up (PB Range +) -24(2C)...+24(54) 42(+2)
1 2C...54 Pich Down (PB Range -) -24(2C)...+24(54) 3E(+2)
1 00...7F PEG Decay -64...+63 40(+0)
1 00...7F PEG Depth -64...+63 semitones 40(+0)
1 01...03 PEG Switch VCO1(1),VCO2(2),both(3) 03(both)
1 00...01 Portamento Mode normal(0),sustain-key(1) *11 00(normal)
1 00...7F Portamento Time full-time(0),finger(1) *12 20(32)
1 00...01 LFO Reset Mode off(0),key-on(1) 00(off)
1 00...14 LFO1 Wave sine(0)...offset-s/h2(14) *13 00(sine)
2 00...FF LFO1 Speed 1(0)...256(FF) 1F(32)
1 00...7F LFO1 Speed 0...127 00
2 00...FF LFO2 Speed 1(0)...256(FF) 1F(32)
1 00...3 VCO Algorithm Sync-off&FM-on(0), Sync-on&FM-both(1), Sync-on&FM-master(2), Sync-on&FM-slave(3) 00(sync-off&FM-both)
(Oscillator Sync & FM)
1 00...7F Sync Pitch -64...+63 40(+0)
1 00...7F Sync Pitch Depth -64...+63 40(+0)
1 00...04 Sync Pitch Source fixed(0),PEG(1),FEG(2),LFO1(3), LFO2(4) 00(fixed)
1 01...03 Sync Pitch Mod Switch master(1),slave(2),both(3) 03(both)
1 00...7F PM Depth -64...+63 40(+0)
1 00...04 PM Source 1 fixed(0),PEG(1),FEG(2),LFO1(3), LFO2(4) 00(fixed)
1 00...06 PM Source 2 VCO2(0),VCO1(1),VCO1-sub(2), PEG(3),FEG(4),LFO1(5),LFO2(6) 00(VCO2)
1 00...03 VCO1 Wave saw(0),pulse(1),saw2(2),mix(3) *14 00(saw)
1 00...04 VCO1 Wave saw(0),pulse(1),inner1(2), inner2(3),inner3(4) *15 40(+0)
1 00...7F VCO1 Pitch Coarse -64...+63 semitones 40(+0)
1 0E...72 VCO1 Pitch Fine -50...+50 cent 40(+0)
1 00...7F VCO1 Edge 0...127 127
1 00...7F VCO1 Pulse Width 08(0)...508(40)...998(7F) 40(508)
1 01...7F VCO1 PWM Depth -64...+63 40(+0)
1 00...06 VCO1 PWM Source fixed(0),PEG(1),FEG(2), LFO1(3),LFO2(4),LFO2-phase(5), LFO2-fast(6) 00(fixed)
2 01...FF VCO1 Pitch Mod Depth -127...+127 80(+0)
1 00...03 VCO2 Wave saw(0),pulse(1),saw2(2),mix(3) 00(saw)
1 00...7F VCO2 Pitch Coarse -64...+63 semitones 40(+0)
1 0E...72 VCO2 Pitch Fine -50(0E)...+50 cent(72) 40(+0)
1 00...7F VCO2 Edge 0...127 127
1 00...7F VCO2 Pulse Width 08(0)...508(40)...998(7F) 40(508)
1 01...7F VCO2 PWM Depth -64...+63 40(+0)
1 00...06 VCO2 PWM Source fixed(0),PEG(1),FEG(2), LFO1(3),LFO2(4),LFO2-phase(5), LFO2-fast(6) 00(fixed)
2 01...FF VCO2 Pitch Mod Depth -127...+127 80(+0)
1 00...7F Mixer VCO1 Level 0...127 7F
1 00...7F Mixer VCO2 Level 0...127 00
1 00...7F Mixer Ring Mod Level 0...127 00
1 00...7F Mixer Noise Level 0...127 00
1 00...7F FilterEG Attack Time 0...127 00
1 00...7F FilterEG Decay Time 0...127 40
1 00...7F FilterEG Sustain Level 0...127 7F
1 00...7F FilterEG Release Time 0...127 7F
1 00...7F VCF HPF Cutoff Freq 0...127 00
1 00...05 VCF Filter Type LFF-24dB(0),LFF-18dB(1), LFF-12dB(2),BPF(3),HPF-12dB(4), BPF(5) 00(LFF-24dB)
1 00...7F VCF Filter Cutoff 0...127 7F
1 0D...7F VCF Filter Resonance -12(0D)...0(19)...+102(7F) 19(+0)
2 00...FF FilterEG Depth -128...+127 94(+20)
1 00...7F FilterEG Velocity Sens -64...+63 40(+0)
1 20...7F VCF Keyboard Track -32...+63 40(+0)
1 00...7F VCF Filter Mod Depth -64...+63 40(+0)
1 00...7F AmpEG Attack Time 0...127 00
1 00...7F AmpEG Decay Time 0...127 7F
1 00...7F AmpEG Sustain Level 0...127 00
1 00...7F AmpEG Release Time 0...127 00
1 00...7F VCA Feedback Level 0...127 00
1 00...7F VCA Volume 0...127 00
1 00...7F AmpEG Velocity Sens -64...+63 40(+0)
1 00...7F VCA Amp Mod Depth -64...+63 40(+0)
1 01...7F Vari-Ef Dry:Wet D63>M(1)...D>W(40)...D<W63(7F) *16 01(D63>M)
dry(0-3F),wet(40-7F) *17
dry(0-3F),both(40),wet(41-7F) *18
0...0 00
1 00...00 Reserve
1 00...72 Ctrl Matrix Source1 off(0)...Assign Knob8(72) *19 00
1 00...24 Ctrl Matrix Param 1 off(0)...Vari-Ef Dry:Wet(24) *19 00
1 00...7F Ctrl Matrix Depth 1 Depends on Ctrl Matrix Param *19 40(+0)
1 00...72 Ctrl Matrix Source2 off(0)...Assign Knob8(72) *19 00
1 00...24 Ctrl Matrix Param 2 off(0)...Vari-Ef Dry:Wet(24) *19 00
1 00...7F Ctrl Matrix Depth 2 Depends on Ctrl Matrix Param *19 40(+0)
1 00...72 Ctrl Matrix Source3 off(0)...Assign Knob8(72) *19 00
1 00...24 Ctrl Matrix Param 3 off(0)...Vari-Ef Dry:Wet(24) *19 00
1 00...7F Ctrl Matrix Depth 3 Depends on Ctrl Matrix Param *19 40(+0)
1 00...72 Ctrl Matrix Source4 off(0)...Assign Knob8(72) *19 00
1 00...24 Ctrl Matrix Param 4 off(0)...Vari-Ef Dry:Wet(24) *19 00
1 00...7F Ctrl Matrix Depth 4 Depends on Ctrl Matrix Param *19 40(+0)
1 00...72 Ctrl Matrix Source5 off(0)...Assign Knob8(72) *19 00
1 00...24 Ctrl Matrix Param 5 off(0)...Vari-Ef Dry:Wet(24) *19 00
1 00...7F Ctrl Matrix Depth 5 Depends on Ctrl Matrix Param *19 40(+0)
1 00...72 Ctrl Matrix Source6 off(0)...Assign Knob8(72) *19 00
1 00...24 Ctrl Matrix Param 6 off(0)...Vari-Ef Dry:Wet(24) *19 00
1 00...7F Ctrl Matrix Depth 6 Depends on Ctrl Matrix Param *19 40(+0)
1 00...72 Ctrl Matrix Source7 off(0)...Assign Knob8(72) *19 00
1 00...24 Ctrl Matrix Param 7 off(0)...Vari-Ef Dry:Wet(24) *19 00
1 00...7F Ctrl Matrix Depth 7 Depends on Ctrl Matrix Param *19 40(+0)
1 00...72 Ctrl Matrix Source8 off(0)...Assign Knob8(72) *19 00
1 00...24 Ctrl Matrix Param 8 off(0)...Vari-Ef Dry:Wet(24) *19 00
1 00...7F Ctrl Matrix Depth 8 Depends on Ctrl Matrix Param *19 40(+0)
1 00...72 Ctrl Matrix Source9 off(0)...Assign Knob8(72) *19 00
1 00...24 Ctrl Matrix Param 9 off(0)...Vari-Ef Dry:Wet(24) *19 00
1 00...7F Ctrl Matrix Depth 9 Depends on Ctrl Matrix Param *19 40(+0)
1 00...72 Ctrl Matrix Source10 off(0)...Assign Knob8(72) *19 00
1 00...24 Ctrl Matrix Param 10 off(0)...Vari-Ef Dry:Wet(24) *19 00
1 00...7F Ctrl Matrix Depth 10 Depends on Ctrl Matrix Param *19 40(+0)
1 00...72 Ctrl Matrix Source11 off(0)...Assign Knob8(72) *19 00
1 00...24 Ctrl Matrix Param 11 off(0)...Vari-Ef Dry:Wet(24) *19 00

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1 00...7F Ctrl Matrix Depth 11 Depends on Ctrl Matrix Param *19 40(+0)
1 00...72 Ctrl Matrix Source12 off(0)...Assign Knob8(72) *19 00
1 00...24 Ctrl Matrix Param 12 off(0)...Vari-Ef Dry:Wet(24) *19 00
1 00...7F Ctrl Matrix Depth 12 Depends on Ctrl Matrix Param *19 40(+0)
1 00...72 Ctrl Matrix Source13 off(0)...Assign Knob8(72) *19 00
1 00...24 Ctrl Matrix Param 13 off(0)...Vari-Ef Dry:Wet(24) *19 00
1 00...7F Ctrl Matrix Depth 13 Depends on Ctrl Matrix Param *19 40(+0)
1 00...72 Ctrl Matrix Source14 off(0)...Assign Knob8(72) *19 00
1 00...24 Ctrl Matrix Param 14 off(0)...Vari-Ef Dry:Wet(24) *19 00
1 00...7F Ctrl Matrix Depth 14 Depends on Ctrl Matrix Param *19 40(+0)
1 00...72 Ctrl Matrix Source15 off(0)...Assign Knob8(72) *19 00
1 00...24 Ctrl Matrix Param 15 off(0)...Vari-Ef Dry:Wet(24) *19 00
1 00...7F Ctrl Matrix Depth 15 Depends on Ctrl Matrix Param *19 40(+0)
1 00...72 Ctrl Matrix Source16 off(0)...Assign Knob8(72) *19 00
1 00...24 Ctrl Matrix Param 16 off(0)...Vari-Ef Dry:Wet(24) *19 00
1 00...7F Ctrl Matrix Depth 16 Depends on Ctrl Matrix Param *19 40(+0)

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(from Here : Step Seq Pattern Data)
1 00...09 Step Seq Base Unit 3/8(0)...1/32(9) 04(1/8)
1 01...10 Step Seq Length lsteps(1)...16steps(10) 08
1 00...03 Step Seq Loop Type fwd(0),backwd(1),alternateA(2), alternateB(3) 00(fwd)
1 00...00 reserved off(0)...95,AT(60) 00(off)
1 00...00 reserved 00 00
1 00...00 reserved 00 00
1 00...7F Step Seq Note No 1 C-2(0)...G8(7F) C3(3C)
1 00...7F Step Seq Note No 2 C-2(0)...G8(7F) C3(3C)
1 00...7F Step Seq Note No 3 C-2(0)...G8(7F) C3(3C)
1 00...7F Step Seq Note No 4 C-2(0)...G8(7F) C3(3C)
1 00...7F Step Seq Note No 5 C-2(0)...G8(7F) C3(3C)
1 00...7F Step Seq Note No 6 C-2(0)...G8(7F) C3(3C)
1 00...7F Step Seq Note No 7 C-2(0)...G8(7F) C3(3C)
1 00...7F Step Seq Note No 8 C-2(0)...G8(7F) C3(3C)
1 00...7F Step Seq Note No 9 C-2(0)...G8(7F) C3(3C)
1 00...7F Step Seq Note No 10 C-2(0)...G8(7F) C3(3C)
1 00...7F Step Seq Note No 11 C-2(0)...G8(7F) C3(3C)
1 00...7F Step Seq Note No 12 C-2(0)...G8(7F) C3(3C)
1 00...7F Step Seq Note No 13 C-2(0)...G8(7F) C3(3C)
1 00...7F Step Seq Note No 14 C-2(0)...G8(7F) C3(3C)
1 00...7F Step Seq Note No 15 C-2(0)...G8(7F) C3(3C)
1 00...7F Step Seq Note No 16 C-2(0)...G8(7F) C3(3C)
1 00...7F Step Seq Velocity 1 rest(0)...1...127 100(64)
1 00...7F Step Seq Velocity 2 rest(0)...1...127 100(64)
1 00...7F Step Seq Velocity 3 rest(0)...1...127 100(64)
1 00...7F Step Seq Velocity 4 rest(0)...1...127 100(64)
1 00...7F Step Seq Velocity 5 rest(0)...1...127 100(64)
1 00...7F Step Seq Velocity 6 rest(0)...1...127 100(64)
1 00...7F Step Seq Velocity 7 rest(0)...1...127 100(64)
1 00...7F Step Seq Velocity 8 rest(0)...1...127 100(64)
1 00...7F Step Seq Velocity 9 rest(0)...1...127 100(64)
1 00...7F Step Seq Velocity 10 rest(0)...1...127 100(64)
1 00...7F Step Seq Velocity 11 rest(0)...1...127 100(64)
1 00...7F Step Seq Velocity 12 rest(0)...1...127 100(64)
1 00...7F Step Seq Velocity 13 rest(0)...1...127 100(64)
1 00...7F Step Seq Velocity 14 rest(0)...1...127 100(64)
1 00...7F Step Seq Velocity 15 rest(0)...1...127 100(64)
1 00...7F Step Seq Velocity 16 rest(0)...1...127 100(64)
1 00...7F Step Seq Gate Time 1 18(0)...1008(40)...2008(7F) 948(3C)
1 00...7F Step Seq Gate Time 2 18(0)...1008(40)...2008(7F) 948(3C)
1 00...7F Step Seq Gate Time 3 18(0)...1008(40)...2008(7F) 948(3C)
1 00...7F Step Seq Gate Time 4 18(0)...1008(40)...2008(7F) 948(3C)
1 00...7F Step Seq Gate Time 5 18(0)...1008(40)...2008(7F) 948(3C)
1 00...7F Step Seq Gate Time 6 18(0)...1008(40)...2008(7F) 948(3C)
1 00...7F Step Seq Gate Time 7 18(0)...1008(40)...2008(7F) 948(3C)
1 00...7F Step Seq Gate Time 8 18(0)...1008(40)...2008(7F) 948(3C)
1 00...7F Step Seq Gate Time 9 18(0)...1008(40)...2008(7F) 948(3C)
1 00...7F Step Seq Gate Time 10 18(0)...1008(40)...2008(7F) 948(3C)
1 00...7F Step Seq Gate Time 11 18(0)...1008(40)...2008(7F) 948(3C)
1 00...7F Step Seq Gate Time 12 18(0)...1008(40)...2008(7F) 948(3C)
1 00...7F Step Seq Gate Time 13 18(0)...1008(40)...2008(7F) 948(3C)
1 00...7F Step Seq Gate Time 14 18(0)...1008(40)...2008(7F) 948(3C)
1 00...7F Step Seq Gate Time 15 18(0)...11008(40)...2008(7F) 948(3C)
1 00...7F Step Seq Gate Time 16 18(0)...11008(40)...2008(7F) 948(3C)
1 00...7F Step Seq Ctrl Change Value 1 0...127 0(00)
1 00...7F Step Seq Ctrl Change Value 2 0...127 0(00)
1 00...7F Step Seq Ctrl Change Value 3 0...127 0(00)
1 00...7F Step Seq Ctrl Change Value 4 0...127 0(00)
1 00...7F Step Seq Ctrl Change Value 5 0...127 0(00)
1 00...7F Step Seq Ctrl Change Value 6 0...127 0(00)
1 00...7F Step Seq Ctrl Change Value 7 0...127 0(00)
1 00...7F Step Seq Ctrl Change Value 8 0...127 0(00)
1 00...7F Step Seq Ctrl Change Value 9 0...127 0(00)
1 00...7F Step Seq Ctrl Change Value 10 0...127 0(00)
1 00...7F Step Seq Ctrl Change Value 11 0...127 0(00)
1 00...7F Step Seq Ctrl Change Value 12 0...127 0(00)
1 00...7F Step Seq Ctrl Change Value 13 0...127 0(00)
1 00...7F Step Seq Ctrl Change Value 14 0...127 0(00)
1 00...7F Step Seq Ctrl Change Value 15 0...127 0(00)
1 00...7F Step Seq Ctrl Change Value 16 0...127 0(00)
TOTAL SIZE 796

```

```

mm = 00 ~ 7F : User Voice 1 ~ User Voice 128
*1 : see other table (Ctrl Matrix Paramter List)
*2 : see other table (Arpeggio Type List)
*3 : become available only when Step Seq is selected and Kbd Mode = 'pfn-sel&nomr' or 'pfn-sel&note-shift'
*4 : only when Arpeggio is selected
*5 : only when Step Seq is selected
*6 : except *7
*7 : only when Step Seq is selected and Kbd Mode = 'pfn-sel&nomr' or 'pfn-sel&note-shift'
*8 : become available only when Step Seq is selected
*9 : see other table (Free EG Track Parameter List)
*10 : only Bulk Dump (not transmitted and received as parameter change)
*11 : Poly Mode = poly
*12 : Poly Mode = mono,legato
*13 : see other table (LFO1 Wave Type List)
*14 : Oscillator Sync = off
*15 : Oscillator Sync = on
*16 : Vari-Ef Type = except *7,*8
*17 : Vari-Ef Type = Aural Exciter, Compressor
*18 : Vari-Ef Type = Distortion, Over Drive, Amp.Simulator
*19 : see other table (Ctrl Matrix Paramter List) and not exist in scene-ctrl buffer

```

MIDI Data Table <1-7>

MIDI Parameter Change Table (User Step SEQ Pattern : Only Bulk Dump)

Address	Size Data	Parameter Name	Description	Default value(H)
(H)	(H)	(H)		
01	mm 00	00...09	Step Seq Base Unit	3/8(0)...1/32(9)
01	1	01...10	Step Seq Length	lsteps(1)...16steps(10)
02	1	00...03	Step Seq Loop Type	fwd(0),backwd(1),alternateA(2), alternateB(3)
03	1	00...60	Step Seq Ctrl Change No	off(0)...95,AT(60)
04	1	00...00	reserved	00

05	1	00...00	reserved	00	00
06	1	00...7F	Step Seq Note No 1	C-2(0)...G8(7F)	C3(3C)
07	1	00...7F	Step Seq Note No 2	C-2(0)...G8(7F)	C3(3C)
08	1	00...7F	Step Seq Note No 3	C-2(0)...G8(7F)	C3(3C)
09	1	00...7F	Step Seq Note No 4	C-2(0)...G8(7F)	C3(3C)
0a	1	00...7F	Step Seq Note No 5	C-2(0)...G8(7F)	C3(3C)
0b	1	00...7F	Step Seq Note No 6	C-2(0)...G8(7F)	C3(3C)
0c	1	00...7F	Step Seq Note No 7	C-2(0)...G8(7F)	C3(3C)
0d	1	00...7F	Step Seq Note No 8	C-2(0)...G8(7F)	C3(3C)
0e	1	00...7F	Step Seq Note No 9	C-2(0)...G8(7F)	C3(3C)
0f	1	00...7F	Step Seq Note No 10	C-2(0)...G8(7F)	C3(3C)
10	1	00...7F	Step Seq Note No 11	C-2(0)...G8(7F)	C3(3C)
11	1	00...7F	Step Seq Note No 12	C-2(0)...G8(7F)	C3(3C)
12	1	00...7F	Step Seq Note No 13	C-2(0)...G8(7F)	C3(3C)
13	1	00...7F	Step Seq Note No 14	C-2(0)...G8(7F)	C3(3C)
14	1	00...7F	Step Seq Note No 15	C-2(0)...G8(7F)	C3(3C)
15	1	00...7F	Step Seq Note No 16	C-2(0)...G8(7F)	C3(3C)
16	1	00...7F	Step Seq Velocity 1	rest(0),1...127	100(64)
17	1	00...7F	Step Seq Velocity 2	rest(0),1...127	100(64)
18	1	00...7F	Step Seq Velocity 3	rest(0),1...127	100(64)
19	1	00...7F	Step Seq Velocity 4	rest(0),1...127	100(64)
1a	1	00...7F	Step Seq Velocity 5	rest(0),1...127	100(64)
1b	1	00...7F	Step Seq Velocity 6	rest(0),1...127	100(64)
1c	1	00...7F	Step Seq Velocity 7	rest(0),1...127	100(64)
1d	1	00...7F	Step Seq Velocity 8	rest(0),1...127	100(64)
1e	1	00...7F	Step Seq Velocity 9	rest(0),1...127	100(64)
1f	1	00...7F	Step Seq Velocity 10	rest(0),1...127	100(64)
20	1	00...7F	Step Seq Velocity 11	rest(0),1...127	100(64)
21	1	00...7F	Step Seq Velocity 12	rest(0),1...127	100(64)
22	1	00...7F	Step Seq Velocity 13	rest(0),1...127	100(64)
23	1	00...7F	Step Seq Velocity 14	rest(0),1...127	100(64)
24	1	00...7F	Step Seq Velocity 15	rest(0),1...127	100(64)
25	1	00...7F	Step Seq Velocity 16	rest(0),1...127	100(64)
26	1	00...7F	Step Seq Gate Time 1	1%(0)...100%(40)...200%(7F)	94%(3C)
27	1	00...7F	Step Seq Gate Time 2	1%(0)...100%(40)...200%(7F)	94%(3C)
28	1	00...7F	Step Seq Gate Time 3	1%(0)...100%(40)...200%(7F)	94%(3C)
29	1	00...7F	Step Seq Gate Time 4	1%(0)...100%(40)...200%(7F)	94%(3C)
2a	1	00...7F	Step Seq Gate Time 5	1%(0)...100%(40)...200%(7F)	94%(3C)
2b	1	00...7F	Step Seq Gate Time 6	1%(0)...100%(40)...200%(7F)	94%(3C)
2c	1	00...7F	Step Seq Gate Time 7	1%(0)...100%(40)...200%(7F)	94%(3C)
1d	1	00...7F	Step Seq Gate Time 8	1%(0)...100%(40)...200%(7F)	94%(3C)
2e	1	00...7F	Step Seq Gate Time 9	1%(0)...100%(40)...200%(7F)	94%(3C)
2f	1	00...7F	Step Seq Gate Time 10	1%(0)...100%(40)...200%(7F)	94%(3C)
30	1	00...7F	Step Seq Gate Time 11	1%(0)...100%(40)...200%(7F)	94%(3C)
31	1	00...7F	Step Seq Gate Time 12	1%(0)...100%(40)...200%(7F)	94%(3C)
32	1	00...7F	Step Seq Gate Time 13	1%(0)...100%(40)...200%(7F)	94%(3C)
33	1	00...7F	Step Seq Gate Time 14	1%(0)...100%(40)...200%(7F)	94%(3C)
34	1	00...7F	Step Seq Gate Time 15	1%(0)...100%(40)...200%(7F)	94%(3C)
35	1	00...7F	Step Seq Gate Time 16	1%(0)...100%(40)...200%(7F)	94%(3C)
36	1	00...7F	Step Seq Ctrl Change Value 1	0...127	0(00)
37	1	00...7F	Step Seq Ctrl Change Value 2	0...127	0(00)
38	1	00...7F	Step Seq Ctrl Change Value 3	0...127	0(00)
39	1	00...7F	Step Seq Ctrl Change Value 4	0...127	0(00)
3a	1	00...7F	Step Seq Ctrl Change Value 5	0...127	0(00)
3b	1	00...7F	Step Seq Ctrl Change Value 6	0...127	0(00)
3c	1	00...7F	Step Seq Ctrl Change Value 7	0...127	0(00)
3d	1	00...7F	Step Seq Ctrl Change Value 8	0...127	0(00)
3e	1	00...7F	Step Seq Ctrl Change Value 9	0...127	0(00)
3f	1	00...7F	Step Seq Ctrl Change Value 10	0...127	0(00)
40	1	00...7F	Step Seq Ctrl Change Value 11	0...127	0(00)
41	1	00...7F	Step Seq Ctrl Change Value 12	0...127	0(00)
42	1	00...7F	Step Seq Ctrl Change Value 13	0...127	0(00)
43	1	00...7F	Step Seq Ctrl Change Value 14	0...127	0(00)
44	1	00...7F	Step Seq Ctrl Change Value 15	0...127	0(00)
45	1	00...7F	Step Seq Ctrl Change Value 16	0...127	0(00)

TOTAL SIZE 46

mm = 00 - 7F : User Pattern 1 - User Pattern

Function...	Transmitted	Recognized	Remarks
Basic Channel Default Changed	1 - 16 1 - 16	1 - 16 1 - 16	Memorizd
Mode Messages Default Altered	3 X * * * * *	3 - 4(m=1) *1 3 - 4(m=1) X	Memorizd
Note Number : True voice	0 - 127 * * * * *	0 - 127 0 - 127	Transpose
Velocity Note on Note off	○ 9nH,v=1-127 X 9nH,v=0	○ v=1-127 ○	
After Touch Key's Ch's	X ○	X ○	
Pitch Bend	○	○ 0-24 semi	
Control Change	0,32 X 1,4,7,12,13,64 ○ 5,10,11,65 X 6,38 X 66,67,84 X 71-74 ○ 0-95 ○ 91,93,94 X 96-97 X 98-99 X 100-101 X 120 X 121 X	X ○ ○ ○ X ○ ○ ○ ○ X ○ ○ ○	Bank Select Data Entry Sound Controller Assignable Control Effect Send Level Data Inc, Dec NRPN LSB,MSB RPN LSB,MSB All Sounds Off Reset All Controls
Program Change : True number	○ 0 - 127 * * * * *	○ 0 - 127 0 - 127	
System Exclusive	○	○	
System Common : Song Position : Song Select : Tune	X X X	X X X	
System Real Time : Clock : Commands	X X	○ ○	
Aux Messages : Local On/Off : All Notes Off : Active Sense : Reset	X X ○ X	X ○ (123 - 127) ○ X	

Notes : *1: m is always treated as "1" regardless of its value.

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