Clavinova®

CLP-970
CLP-970M
CLP-970C

Reference Booklet

This booklet is available in English only.

GENERAL
MIDI

XG

◆YAMAHA

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Normal (Default) Setting List

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XG Voice List

These XG voices are used for GM/XG/DOC song playback. They are not used for your manual performance.

■ Bank Select MSB=00

Instrument Group	Pgm#	Bank 0 / Bank Select LSB=00	Bank 0	E	Bank 1 (KSP)	E	Bank 3 (Stereo)	E	Bank 6 (Single)	E	Bank 8 (Slow)	E	Bank 12 (Fast Decay)	E	Bank 14 (Double Attack)	E	Bank 16 (Bright)	E	Bank 17 (Bright)	E	Bank 18 (Dark)	E	Bank 19 (Dark)	E	Bank 20 (Resonant)	E	Bank 24 (Attack)	E
Piano	1	Acoustic Grand Piano	GrandPno	1	GrndPnoK	1															MelloGrP	1						
	2	Bright Acoustic Piano	BritePno	1	BritPnoK	1																						
	3	Electric Grand Piano	El.Grand	2	ElGrPnoK	2																						
	4	Honky-tonk Piano	HnkyTonk		HnkyTnkK	1																						
	5	Electric Piano 1	E.Piano1	1	El.Pno1K	1															MelloEP1	2						
	6	Electric Piano 2	E.Piano2	1	El.Pno2K	1																						
	7	Harpsichord	Harpsi.	1	Harpsi.K	1																						
	8	Clavi	Clavi.	2	Clav K	1																						
Chromatic Percussion	9	Celesta	Celesta	1																								
	10	Glockenspiel	Glocken	1																								
	11	Music Box	MusicBox	2																								
	12	Vibraphone	Vibes	1	Vibes K	1																						
	13	Marimba	Marimba	1	MarimbaK	1																						
	14	Xylophone	Xylophon	1																								
	15	Tubular Bells	TubulBel	1																								
	16	Dulcimer	Dulcimer	1																								
Organ	17	Drawbar Organ 1	DrawOrgn	1																								
	18	Percussive Organ	PercOrgn	1																							70sPcOr1	2
	19	Rock Organ	RockOrgn	2																								
	20	Church Organ 1	ChrchOrg	2																								
	21	Reed Organ	ReedOrgn	1																								
	22	Accordion	Acordion	2																								
	23	Harmonica	Harmnica	1																								
	24	Tango Accordion	TangoAcd	2																								
Guitar	25	Acoustic Guitar (nylon) 1	NylonGtr	1													NylonGt2	1										
	26	Acoustic Guitar (steel)	SteelGtr	1													SteelGt2	1										
	27	Electric Guitar (jazz)	Jazz Gtr	1																	MelloGtr	1						
	28	Electric Guitar (clean)	CleanGtr	1																								
	29	Electric Guitar (muted)	Mute.Gtr	1																								
	30	Overdriven Guitar	Ovrdrive	1																								
	31	Distortion Guitar	Dist.Gtr	1																								
	32	Guitar Harmonics	GtrHarmo	1																								
Bass	33	Acoustic Bass	Aco.Bass	1																								
	34	Electric Bass (finger)	FngrBass	1																	FingrDrk	2						
	35	Electric Bass (pick)	PickBass	1																								
	36	Fretless Bass	Fretless	1																								
	37	Slap Bass 1	SlapBas1	1																								
	38	Slap Bass 2	SlapBas2	1																								
	39	Synth Bass 1	SynBass1	1																	SynBa1Dk	1			FastResB	1	AcidBass	1
	40	Synth Bass 2	SynBass2	2					MelloSBa	1			Seq Bass	2							ClkSynBa	2	SynBa2Dk	1				
Strings	41	Violin	Violin	1							Slow Vln	1																
	42	Viola	Viola	1																								
	43	Cello	Cello	1																								
	44	Contrabass	Contrabs	1																								
	45	Tremolo Strings	Trem.Str	1							SlwTrStr	1																
	46	Pizzicato Strings	Pizz.Str	1																								
	47	Orchestral Harp	Harp	1																								
	48	Timpani	Timpani	1																								
Ensemble	49	String Ensemble 1	Strings1	1			S.Strngs	2			Slow Str	1															Arco Str	2
	50	String Ensemble 2	Strings2	1			S.SlwStr	2			LegatoSt	2																
	51	Synth Strings 1	Syn.Str1	2																								
	52	Synth Strings 2	Syn.Str2	2																								
	53	Choir Aahs	ChoirAah	1			S.Choir	2									Ch.Aahs2	2										
	54	Voice Oohs	VoiceOoh	1																								
	55	Synth Voice	SynVoice	1																								
	56	Orchestra Hit	Orch.Hit	2																								
Brass	57	Trumpet	Trumpet	1													Trumpet2	1	BriteTrp	2								
	58	Trombone	Trombone	1																	Trmbone2	2						
	59	Tuba	Tuba	1													Tuba 2	1										
	60	Muted Trumpet	Mute.Trp	1																								
	61	French Horn	Fr. Horn	1					FrHrSolo	1																		
	62	Brass Section 1	BrassSect	1																								
	63	Synth Brass 1	SynBrss1	1									Quack Br	2											RezSynBr	2	PolyBrss	2
	64	Synth Brass 2	SynBrss2	1																	Soft Brs	2						
Reed	65	Soprano Sax	SprnoSax	1																								
	66	Alto Sax	Alto Sax	1																								
	67	Tenor Sax	TenorSax	1																								
	68	Baritone Sax	Bari.Sax	1																								
	69	Oboe	Oboe	2																								
	70	English Horn	Eng.Horn	1																								
	71	Bassoon	Bassoon	1																								
	72	Clarinet	Clarinet	1																								
Pipe	73	Piccolo	Piccolo	1																								
	74	Flute	Flute	1																								
	75	Recorder	Recorder	1																								
	76	Pan Flute	PanFlute	1																								
	77	Blown Bottle	Bottle	2																								
	78	Shakuhachi	Shakhchi	2																								
	79	Whistle	Whistle	1																								
	80	Ocarina	Ocarina	1																								
Synth Lead	81	Lead 1 (square)	SquareLd	2					SquarLd2	1	LMSquare	2									Hollow	1	Shroud	2				
	82	Lead 2 (sawtooth)	Saw Ld	2					Saw Ld 2	1	ThickSaw	2									Dyna Saw	1	Digi Saw	2	Big Lead	2	HeavySyn	2
	83	Lead 3 (calliope)	CaliopLd	2																								
	84	Lead 4 (chiff)	Chiff Ld	1																								
	85	Lead 5 (charang)	CharanLd	2																								
	86	Lead 6 (voice)	Voice Ld	2																							SynthAah	2
	87	Lead 7 (fifths)	Fifth Ld	2																								
	88	Lead 8 (bass+lead)	Bass&Ld	2													Big&Low	2										
Synth Pad	89	Pad 1 (new age)	NewAgePd	2																								
	90	Pad 2 (warm)	Warm Pad	2													ThickPad	2	Soft Pad	2	Sine Pad	2						
	91	Pad 3 (polysynth)	PolySyPd	2																								
	92	Pad 4 (choir)	ChoirPad	2																								
	93	Pad 5 (bowed)	BowedPad	2																								
	94	Pad 6 (metallic)	MetalPad	2																								
	95	Pad 7 (halo)	Halo Pad	2																								
	96	Pad 8 (sweep)	SweepPad	2																					Shwimmer	2		
Synth Effects	97	FX 1 (rain)	Rain	2																								
	98	FX 2 (soundtrack)	SoundTrk	2																								
	99	FX 3 (crystal)	Crystal	2									SynDrCmp	2	Popcorn	2					TinyBell	2						
	100	FX 4 (atmosphere)	Atmosphr	2																	WarmAtms	2	HollwRls	2				
	101	FX 5 (brightness)	Bright	2																								
	102	FX 6 (goblins)	Goblins	2																								
	103	FX 7 (echoes)	Echoes	2							Echoes 2	2			Echo Pan	2												
	104	FX 8 (sci-fi)	Sci-Fi	2																								
Ethnic	105	Sitar	Sitar	1																								
	106	Banjo	Banjo	1																								
	107	Shamisen	Shamisen	1																								
	108	Koto	Koto	1																								
	109	Kalimba	Kalimba	1																								
	110	Bagpipe	Bagpipe	2																								
	111	Fiddle	Fiddle	1																								
	112	Shanai	Shanai	1																								
Percussive	113	Tinkle Bell	TnklBell	2																								
	114	Agogo	Agogo	2																								
	115	Steel Drums	SteelDrm	2																								
	116	Woodblock	Woodblok	1																								
	117	Taiko Drum	TaikoDrm	1																								
	118	Melodic Tom 1	MelodTom	2																								
	119	Synth Drum	Syn Drum	1																								
	120	Reverse Cymbal	RevCymbl	1																								
Sound Effects	121	Guitar Fret Noise	FretNoiz	2																								
	122	Breath Noise	BrthNoiz	2																								
	123	Seashore	Seashore	2																								
	124	Bird Tweet	Tweet	2																								
	125	Telephone Ring	Telphone	1																								
	126	Helicopter	Helicptr	1																								
	127	Applause	Applause	2																								
	128	Gunshot	Gunshot	1																								

▨ : Same as Bank 0   ▨ : No sound   E : Element number

Instrument Group	Pgm#	Bank 0 (Bank Select LSB=00)	Bank 0	E	Release Bank 25	E	Rezo Sweep Bank 27	E	Muted Bank 28	E	Detune 1 Bank 32	E	Detune 2 Bank 33	E	Detune 3 Bank 34	E	Octave 1 Bank 35	E	Octave 2 Bank 36	E	5th 1 Bank 37	E	5th 2 Bank 38	E	Bend Bank 39	E	Tutti Bank 40	E
Piano	1	Acoustic Grand Piano	GrandPno	1																							PianoStr	2
	2	Bright Acoustic Piano	BritePno	1																								
	3	Electric Grand Piano	El.Grand	2							Det.CP80	2															LayerCP1	2
	4	Honky-tonk Piano	HnkyTonk	2																								
	5	Electric Piano 1	E.Piano1	2							Chor.EP1	2															HardEl.P	2
	6	Electric Piano 2	E.Piano2	2							Chor.EP2	2	DX Hard	2	DXLegend	2											DX Phase	2
	7	Harpsichord	Harpsi.	2	Harpsi.2	2															Harpsi.3	2						
	8	Clavi	Clavi.	2			ClaviWah	2																				
Chromatic Percussion	9	Celesta	Celesta	1																								
	10	Glockenspiel	Glocken	1																								
	11	Music Box	MusicBox	2																								
	12	Vibraphone	Vibes	1																								
	13	Marimba	Marimba	1																								
	14	Xylophone	Xylophon	1																								
	15	Tubular Bells	TubulBel	1																								
	16	Dulcimer	Dulcimer	1													Dulcimr2	2										
Organ	17	Drawbar Organ 1	DrawOrgn	1							DetDrwOr	2	60sDrOr1	2	60sDrOr2	2	70sDrOr1	2	DrawOrg2	2	60sDrOr3	2	Even Bar	2			16+2"2/3	2
	18	Percussive Organ	PercOrgn	1							DetPrcOr	2	Lite Org	2							PercOrg2	2						
	19	Rock Organ	RockOrgn	2																								
	20	Church Organ 1	ChrchOrg	2							ChurOrg3	2					ChurOrg2	2									NotreDam	2
	21	Reed Organ	ReedOrgn	1																							Puff Org	2
	22	Accordion	Acordion	2							AccordIt	2																
	23	Harmonica	Harmnica	1							Harmo. 2	2																
	24	Tango Accordion	TangoAcd	2																								
Guitar	25	Acoustic Guitar (nylon) 1	NylonGtr	1	NylonGt3	2																					Nyln&Stl	2
	26	Acoustic Guitar (steel)	SteelGtr	1													12StrGtr	2										
	27	Electric Guitar (jazz)	Jazz Gtr	1							Jazz Amp	2																
	28	Electric Guitar (clean)	CleanGtr	1							ChorusGt	2																
	29	Electric Guitar (muted)	Mute.Gtr	1																							FunkGtr1	2
	30	Overdriven Guitar	Ovrdrive	1																								
	31	Distortion Guitar	Dist.Gtr	1																							FeedbkGt	2
	32	Guitar Harmonics	GtrHarmo	1																								
Bass	33	Acoustic Bass	Aco.Bass	1																							JazzRthm	2
	34	Electric Bass (finger)	FngrBass	1			FlangeBa	2																			Ba&DstEG	2
	35	Electric Bass (pick)	PickBass	1					MutePkBa	1																		
	36	Fretless Bass	Fretless	1							Fretless2	2	Fretless3	2	Fretles4	2												
	37	Slap Bass 1	SlapBas1	1			ResoSlap	1			PunchThm	2																
	38	Slap Bass 2	SlapBas2	1																								
	39	Synth Bass 1	SynBass1	1													Clv Bass	2									TechnoBa	2
	40	Synth Bass 2	SynBass2	2							SmthSynB	2															ModulrBa	2
Strings	41	Violin	Violin	1																								
	42	Viola	Viola	1																								
	43	Cello	Cello	1																								
	44	Contrabass	Contrabs	1																								
	45	Tremolo Strings	Trem.Str	1																							Susp.Str	2
	46	Pizzicato Strings	Pizz.Str	1																								
	47	Orchestral Harp	Harp	1																							YangChin	2
	48	Timpani	Timpani	1																								
Ensemble	49	String Ensemble 1	Strings1	1													60sStrng	2									Orchestr	2
	50	String Ensemble 2	Strings2	1																							Warm Str	2
	51	Synth Strings 1	Syn.Str1	2			Reso Str	2																				
	52	Synth Strings 2	Syn.Str2	2																								
	53	Choir Aahs	ChoirAah	1							MelChoir	2															ChoirStr	2
	54	Voice Oohs	VoiceOoh	1																								
	55	Synth Voice	SynVoice	1																							SyVoice2	2
	56	Orchestra Hit	Orch.Hit	2													OrchHit2	2										
Brass	57	Trumpet	Trumpet	1							Warm Trp	2																
	58	Trombone	Trombone	1																								
	59	Tuba	Tuba	1																								
	60	Muted Trumpet	Mute.Trp	1																								
	61	French Horn	Fr. Horn	2							FrHorn 2	1									HornOrch	2						
	62	Brass Section 1	BrasSect	1													Tp&TbSec	2									BrssSec2	2
	63	Synth Brass 1	SynBrss1	1			SynBrss3	2			JumpBrss	2																
	64	Synth Brass 2	SynBrss2	1																							SynBrss4	2
Reed	65	Soprano Sax	SprnoSax	1																								
	66	Alto Sax	Alto Sax	1																							Sax Sect	2
	67	Tenor Sax	TenorSax	1																							BrthTnSx	2
	68	Baritone Sax	Bari.Sax	1																								
	69	Oboe	Oboe	2																								
	70	English Horn	Eng.Horn	1																								
	71	Bassoon	Bassoon	1																								
	72	Clarinet	Clarinet	1																								
Pipe	73	Piccolo	Piccolo	1																								
	74	Flute	Flute	1																								
	75	Recorder	Recorder	1																								
	76	Pan Flute	PanFlute	1																								
	77	Blown Bottle	Bottle	2																								
	78	Shakuhachi	Shakhchi	2																								
	79	Whistle	Whistle	1																								
	80	Ocarina	Ocarina	1																								
Synth Lead	81	Lead 1 (square)	SquareLd	2																								
	82	Lead 2 (sawtooth)	Saw Ld	2	WaspySyn	2																					PulseSaw	2
	83	Lead 3 (calliope)	CaliopLd	2																								
	84	Lead 4 (chiff)	Chiff Ld	2																								
	85	Lead 5 (charang)	CharanLd	2																								
	86	Lead 6 (voice)	Voice Ld	2																								
	87	Lead 7 (fifths)	Fifth Ld	2													Big Five	2										
	88	Lead 8 (bass+lead)	Bass&Ld	2																								
Synth Pad	89	Pad 1 (new age)	NewAgePd	2																								
	90	Pad 2 (warm)	Warm Pad	2																								
	91	Pad 3 (polysynth)	PolySyPd	2																								
	92	Pad 4 (choir)	ChoirPad	2																								
	93	Pad 5 (bowed)	BowedPad	2																								
	94	Pad 6 (metallic)	MetalPad	2																								
	95	Pad 7 (halo)	Halo Pad	2																								
	96	Pad 8 (sweep)	SweepPad	2			Converge	2																				
Synth Effects	97	FX 1 (rain)	Rain	2																								
	98	FX 2 (soundtrack)	SoundTrk	2			Prologue	2																				
	99	FX 3 (crystal)	Crystal	2													RndGlock	2									GlockChi	2
	100	FX 4 (atmosphere)	Atmosphr	2																							Nylon EP	2
	101	FX 5 (brightness)	Bright	2																								
	102	FX 6 (goblins)	Goblins	2																								
	103	FX 7 (echoes)	Echoes	2																								
	104	FX 8 (sci-fi)	Sci-Fi	2																								
Ethnic	105	Sitar	Sitar	1							DetSitar	2					Sitar 2	2										
	106	Banjo	Banjo	1					MuteBnjo	1																		
	107	Shamisen	Shamisen	1																								
	108	Koto	Koto	1																								
	109	Kalimba	Kalimba	1																								
	110	Bagpipe	Bagpipe	2																								
	111	Fiddle	Fiddle	1																								
	112	Shanai	Shanai	1																								
Percussive	113	Tinkle Bell	TnklBell	2																								
	114	Agogo	Agogo	2																								
	115	Steel Drums	SteelDrm	2																								
	116	Woodblock	Woodblok	1																								
	117	Taiko Drum	TaikoDrm	1																								
	118	Melodic Tom 1	MelodTom	2																								
	119	Synth Drum	Syn Drum	1																								
	120	Reverse Cymbal	RevCymbl	1																								
Sound Effects	121	Guitar Fret Noise	FretNoiz	2																								
	122	Breath Noise	BrthNoiz	2																								
	123	Seashore	Seashore	2																								
	124	Bird Tweet	Tweet	2																								
	125	Telephone Ring	Telphone	2																								
	126	Helicopter	Helicptr	2																								
	127	Applause	Applause	2																								
	128	Gunshot	Gunshot	1																								

: Same as Bank 0   : No sound   E : Element number

Velo-Switch · Velo-Xfade · other wave

Instrument Group	Pgm#	Bank 0 / Bank Select LSB=00	Bank 0	E	Bank 41	E	Bank 42	E	Bank 43	E	Bank 45	E	Bank 64	E	Bank 65	E	Bank 66	E	Bank 67	E	Bank 68	E	Bank 69	E	Bank 70	E	Bank 71	E
Piano	1	Acoustic Grand Piano	GrandPno	1	Dream	2																						
	2	Bright Acoustic Piano	BritePno	1																								
	3	Electric Grand Piano	El.Grand	2	LayerCP2	2																						
	4	Honky-tonk Piano	HnkyTonk	2																								
	5	Electric Piano 1	E.Piano1	1							VX El.P1	2	60sEl.P1	1														
	6	Electric Piano 2	E.Piano2	1	DX+Analg	2	DXKotoEP	2			VX El.P2	2																
	7	Harpsichord	Harpsi.	1																								
	8	Clavi.	Clavi.	1									PulseClv	1	PierceCl	2												
Chromatic Percussion	9	Celesta	Celesta	1																								
	10	Glockenspiel	Glocken	1																								
	11	Music Box	MusicBox	2									Orgel	2														
	12	Vibraphone	Vibes	1							HardVibe	2																
	13	Marimba	Marimba	1									SineMrmb	2														
	14	Xylophone	Xylophon	1																								
	15	Tubular Bells	TubulBel	1																								
	16	Dulcimer	Dulcimer	1																								
Organ	17	Drawbar Organ 1	DrawOrgn	1									Organ Ba	1	70sDrOr2	2	CheezOrg	2	DrawOrg3	2								
	18	Percussive Organ	PercOrgn	1																								
	19	Rock Organ	RockOrgn	2									RotaryOr	2	SloRotar	2	FstRotar	2										
	20	Church Organ 1	ChrchOrg	2									OrgFlute	2	TrmOrgFl	2												
	21	Reed Organ	ReedOrgn	1																								
	22	Accordion	Acordion	1																								
	23	Harmonica	Harmnica	1																								
	24	Tango Accordion	TangoAcd	2									TngoAcd2	2														
Guitar	25	Acoustic Guitar (nylon) 1	NylonGtr	1					VelGtHrm	2																		
	26	Acoustic Guitar (steel)	SteelGtr	1	Stl&Body	2																						
	27	Electric Guitar (jazz)	Jazz Gtr	1																								
	28	Electric Guitar (clean)	CleanGtr	1																								
	29	Electric Guitar (muted)	Mute.Gtr	1	MuteStlG	2			FunkGtr2	2	Jazz Man	1																
	30	Overdriven Guitar	Ovrdrive	1					Gt.Pinch	2																		
	31	Distortion Guitar	Dist.Gtr	1	FeedbkG2	1																						
	32	Guitar Harmonics	GtrHarmo	1											GtFeedbk	1	GtrHrmo2	1										
Bass	33	Acoustic Bass	Aco.Bass	1							VXUprght	2																
	34	Electric Bass (finger)	FngrBass	1					FngrSlap	2	FngBass2	2					Mod.Bass	2										
	35	Electric Bass (pick)	PickBass	1																								
	36	Fretless Bass	Fretless	1																								
	37	Slap Bass 1	SlapBas1	1																								
	38	Slap Bass 2	SlapBas2	1					VeloSlap	2																		
	39	Synth Bass 1	SynBass1	1									Orbiter	2	Sqr.Bass	1	RubberBa	2										
	40	Synth Bass 2	SynBass2	1	DX Bass	2							X WireBa	2														
Strings	41	Violin	Violin	1																								
	42	Viola	Viola	1																								
	43	Cello	Cello	1																								
	44	Contrabass	Contrabs	1																								
	45	Tremolo Strings	Trem.Str	1																								
	46	Pizzicato Strings	Pizz.Str	1																								
	47	Orchestral Harp	Harp	1																								
	48	Timpani	Timpani	1																								
Ensemble	49	String Ensemble 1	Strings1	1	Orchstr2	2	TremOrch	2			Velo.Str	2																
	50	String Ensemble 2	Strings2	1	Kingdom	2							70s Str	1	Strings3	1												
	51	Synth Strings 1	Syn.Str1	2									Syn Str4	2	Syn Str5	2												
	52	Synth Strings 2	Syn.Str2	2																								
	53	Choir Aahs	ChoirAah	1																								
	54	Voice Oohs	VoiceOoh	1																								
	55	Synth Voice	SynVoice	1	Choral	2							AnaVoice	1														
	56	Orchestra Hit	Orch.Hit	2									Impact	2														
Brass	57	Trumpet	Trumpet	1																								
	58	Trombone	Trombone	1																								
	59	Tuba	Tuba	1																								
	60	Muted Trumpet	Mute.Trp	1																								
	61	French Horn	Fr. Horn	2																								
	62	Brass Section 1	BrasSect	1	Hi Brass	2	MelloBrs	2																				
	63	Synth Brass 1	SynBrss1	2							AnVelBr1	2	AnaBrss1	2														
	64	Synth Brass 2	SynBrss2	1	ChoirBrs	2					AnVelBr2	2	AnaBrss2	2														
Reed	65	Soprano Sax	SprnoSax	1																								
	66	Alto Sax	Alto Sax	1					HyprAlto	2																		
	67	Tenor Sax	TenorSax	1	SoftTenr	2							TnrSax 2	1														
	68	Baritone Sax	Bari.Sax	1																								
	69	Oboe	Oboe	1																								
	70	English Horn	Eng.Horn	1																								
	71	Bassoon	Bassoon	1																								
	72	Clarinet	Clarinet	1																								
Pipe	73	Piccolo	Piccolo	1																								
	74	Flute	Flute	1																								
	75	Recorder	Recorder	1																								
	76	Pan Flute	PanFlute	1																								
	77	Blown Bottle	Bottle	2																								
	78	Shakuhachi	Shakhchi	2																								
	79	Whistle	Whistle	1																								
	80	Ocarina	Ocarina	1																								
Synth Lead	81	Lead 1 (square)	SquareLd	2									Mellow	2	SoloSine	2	SineLead	1										
	82	Lead 2 (sawtooth)	Saw Ld	2	Dr. Lead	2					VeloLead	2																
	83	Lead 3 (calliope)	CaliopLd	2											PureLead	2												
	84	Lead 4 (chiff)	Chiff Ld	2									Rubby	2														
	85	Lead 5 (charang)	CharanLd	2									DistLead	2	WireLead	2												
	86	Lead 6 (voice)	Voice Ld	2									Vox Lead	2														
	87	Lead 7 (fifths)	Fifth Ld	2																								
	88	Lead 8 (bass+lead)	Bass&Ld	2									Fat&Prky	2	Soft Wrl	2												
Synth Pad	89	Pad 1 (new age)	NewAgePd	2									Fantasy	2														
	90	Pad 2 (warm)	Warm Pad	2									Horn Pad	2	RotarStr	2												
	91	Pad 3 (polysynth)	PolySyPd	2									PolyPd80	2	ClickPad	2	Ana. Pad	2	SquarPad	2								
	92	Pad 4 (choir)	ChoirPad	2									Heaven	2			Itopia	2	CC Pad	2								
	93	Pad 5 (bowed)	BowedPad	2									Glacier	2	GlassPad	2												
	94	Pad 6 (metallic)	MetalPad	2									Tine Pad	2	Pan Pad	2												
	95	Pad 7 (halo)	Halo Pad	2																								
	96	Pad 8 (sweep)	SweepPad	2									PolarPad	2			Celstial	2										
Synth Effects	97	FX 1 (rain)	Rain	2							ClaviPad	2	HrmoRain	2	AfrcnWnd	2	Carib	2										
	98	FX 2 (soundtrack)	SoundTrk	2									Ancestrl	2														
	99	FX 3 (crystal)	Crystal	2	ClearBel	2	ChorBell	2					SynMalet	2	SftCryst	2	LoudGlok	2	ChrstBel	2	VibeBell	2	DigiBell	2	AirBells	2	BellHarp	2
	100	FX 4 (atmosphere)	Atmosphr	2									NylnHarp	2	Harp Vox	2	AtmosPad	2	Planet	2								
	101	FX 5 (brightness)	Bright	2									FantaBel	2														
	102	FX 6 (goblins)	Goblins	2									GobSynth	2	Creeper	2	Ring Pad	2	Ritual	2	ToHeaven	2			Night	2	Glisten	2
	103	FX 7 (echoes)	Echoes	2									EchoBell	2	Big Pan	2	SynPiano	2	Creation	2	StarDust	2	Reso&Pan	2				
	104	FX 8 (sci-fi)	Sci-Fi	2									Starz	2														
Ethnic	105	Sitar	Sitar	1																								
	106	Banjo	Banjo	1																								
	107	Shamisen	Shamisen	1																								
	108	Koto	Koto	1																								
	109	Kalimba	Kalimba	1																								
	110	Bagpipe	Bagpipe	2																								
	111	Fiddle	Fiddle	1																								
	112	Shanai	Shanai	1									Shanai 2	1														
Percussive	113	Tinkle Bell	TnklBell	2																								
	114	Agogo	Agogo	2																								
	115	Steel Drums	SteelDrm	2																								
	116	Woodblock	Woodblok	1																								
	117	Taiko Drum	TaikoDrm	1																								
	118	Melodic Tom 1	MelodTom	2									Mel Tom2	1	Real Tom	2	Rock Tom	2										
	119	Synth Drum	Syn Drum	1									Ana Tom	1	ElecPerc	2												
	120	Reverse Cymbal	RevCymbl	1																								
Sound Effects	121	Guitar Fret Noise	FretNoiz	2																								
	122	Breath Noise	BrthNoiz	2																								
	123	Seashore	Seashore	2																								
	124	Bird Tweet	Tweet	2																								
	125	Telephone Ring	Telphone	1																								
	126	Helicopter	Helicptr	1																								
	127	Applause	Applause	1																								
	128	Gunshot	Gunshot	1																								

: Same as Bank 0   : No sound   E : Element number

■ **Bank Select MSB=64**

Instrument Group	Pgm#	Bank 0 / Bank Select LSB=00	Bank 0	E	Bank 72	E	Bank 96	E	Bank 97	E	Bank 98	E	Bank 99	E	Bank 100	E	Bank 101	E
Piano	1	Acoustic Grand Piano	GrandPno	1														
	2	Bright Acoustic Piano	BritePno	1														
	3	Electric Grand Piano	El.Grand	2														
	4	Honky-tonk Piano	HnkyTonk	2														
	5	Electric Piano 1	E.Piano1	2														
	6	Electric Piano 2	E.Piano2	2														
	7	Harpsichord	Harpsi.	1														
	8	Clavi	Clavi.	1														
Chromatic Percussion	9	Celesta	Celesta	1														
	10	Glockenspiel	Glocken	1														
	11	Music Box	MusicBox	2														
	12	Vibraphone	Vibes	1														
	13	Marimba	Marimba	1					Balimba	2	Log Drum	2						
	14	Xylophone	Xylophon	1														
	15	Tubular Bells	TubulBel	1			ChrchBel	2	Carillon	2								
	16	Dulcimer	Dulcimer	1			Cimbalom	2	Santur	2								
Organ	17	Drawbar Organ 1	DrawOrgn	1														
	18	Percussive Organ	PercOrgn	1														
	19	Rock Organ	RockOrgn	1														
	20	Church Organ 1	ChrchOrg	2														
	21	Reed Organ	ReedOrgn	1														
	22	Accordion	Acordion	2														
	23	Hamonica	Harmnica	1														
	24	Tango Accordion	TangoAcd	2														
Guitar	25	Acoustic Guitar (nylon) 1	NylonGtr	1			Ukulele	1										
	26	Acoustic Guitar (steel)	SteelGtr	1			Mandolin	1										
	27	Electric Guitar (jazz)	Jazz Gtr	1														
	28	Electric Guitar (clean)	CleanGtr	1														
	29	Electric Guitar (muted)	Mute.Gtr	1														
	30	Overdriven Guitar	Ovrdrive	1														
	31	Distortion Guitar	Dist.Gtr	1														
	32	Guitar Harmonics	GtrHarmo	1														
Bass	33	Acoustic Bass	Aco.Bass	1														
	34	Electric Bass (finger)	FngrBass	1														
	35	Electric Bass (pick)	PickBass	1														
	36	Fretless Bass	Fretless	1			SynFretl	2	SmthFrtl	2								
	37	Slap Bass 1	SlapBas1	1														
	38	Slap Bass 2	SlapBas2	1														
	39	Synth Bass 1	SynBass1	1			Hammer	2										
	40	Synth Bass 2	SynBass2	2														
Strings	41	Violin	Violin	1														
	42	Viola	Viola	1														
	43	Cello	Cello	1														
	44	Contrabass	Contrabs	1														
	45	Tremolo Strings	Trem.Str	1														
	46	Pizzicato Strings	Pizz.Str	1														
	47	Orchestral Harp	Harp	1														
	48	Timpani	Timpani	1														
Ensemble	49	String Ensemble 1	Strings1	1														
	50	String Ensemble 2	Strings2	1														
	51	Synth Strings 1	Syn.Str1	1														
	52	Synth Strings 2	Syn.Str2	2														
	53	Choir Aahs	ChoirAah	1														
	54	Voice Oohs	VoiceOoh	1														
	55	Synth Voice	SynVoice	1														
	56	Orchestra Hit	Orch.Hit	2														
Brass	57	Trumpet	Trumpet	1														
	58	Trombone	Trombone	1														
	59	Tuba	Tuba	1														
	60	Muted Trumpet	Mute.Trp	1														
	61	French Horn	Fr. Horn	2														
	62	Brass Section 1	BrasSect	1														
	63	Synth Brass 1	SynBrss1	1														
	64	Synth Brass 2	SynBrss2	1														
Reed	65	Soprano Sax	SprnoSax	1														
	66	Alto Sax	Alto Sax	1														
	67	Tenor Sax	TenorSax	1														
	68	Baritone Sax	Bari.Sax	1														
	69	Oboe	Oboe	2														
	70	English Horn	Eng.Horn	1														
	71	Bassoon	Bassoon	1														
	72	Clarinet	Clarinet	1														
Pipe	73	Piccolo	Piccolo	1														
	74	Flute	Flute	1														
	75	Recorder	Recorder	1														
	76	Pan Flute	PanFlute	1														
	77	Blown Bottle	Bottle	2														
	78	Shakuhachi	Shakhchi	2														
	79	Whistle	Whistle	1														
	80	Ocarina	Ocarina	1														
Synth Lead	81	Lead 1 (square)	SquareLd	2														
	82	Lead 2 (sawtooth)	Saw Ld	2			Seq Ana.	2										
	83	Lead 3 (calliope)	CaliopLd	2														
	84	Lead 4 (chiff)	Chiff Ld	2														
	85	Lead 5 (charang)	CharanLd	2														
	86	Lead 6 (voice)	Voice Ld	2														
	87	Lead 7 (fifths)	Fifth Ld	2														
	88	Lead 8 (bass+lead)	Bass&Ld	2														
Synth Pad	89	Pad 1 (new age)	NewAgePd	2														
	90	Pad 2 (warm)	Warm Pad	2														
	91	Pad 3 (polysynth)	PolySyPd	2														
	92	Pad 4 (choir)	ChoirPad	2														
	93	Pad 5 (bowed)	BowedPad	2														
	94	Pad 6 (metallic)	MetalPad	2														
	95	Pad 7 (halo)	Halo Pad	2														
	96	Pad 8 (sweep)	SweepPad	2														
Synth Effects	97	FX 1 (rain)	Rain	2														
	98	FX 2 (soundtrack)	SoundTrk	2	GamelImba	2												
	99	FX 3 (crystal)	Crystal	2														
	100	FX 4 (atmosphere)	Atmosphr	2														
	101	FX 5 (brightness)	Bright	2			Smokey	2										
	102	FX 6 (goblins)	Goblins	2			BelChoir	2										
	103	FX 7 (echoes)	Echoes	2														
	104	FX 8 (sci-fi)	Sci-Fi	2														
Ethnic	105	Sitar	Sitar	1			Tambra	2	Tamboura	2								
	106	Banjo	Banjo	1			Rabab	2	Gopichnt	2	Oud	2						
	107	Shamisen	Shamisen	1														
	108	Koto	Koto	1			Taisho-k	2	Kanoon	2								
	109	Kalimba	Kalimba	1														
	110	Bagpipe	Bagpipe	2														
	111	Fiddle	Fiddle	1														
	112	Shanai	Shanai	1			Pungi	1	Hichriki	2								
Percussive	113	Tinkle Bell	TnklBell	1			Bonang	2	Gamelan	2	S.Gamlan	2	Rama Cym	2	AsianBel	2		
	114	Agogo	Agogo	2														
	115	Steel Drums	SteelDrm	2					GlasPerc	2	ThaiBell	2						
	116	Woodblock	Woodblok	1			Castanet	1										
	117	Taiko Drum	TaikoDrm	1			Gr.Cassa	1										
	118	Melodic Tom 1	MelodTom	2														
	119	Synth Drum	Syn Drum	1														
	120	Reverse Cymbal	RevCymbl	1														
Sound Effects	121	Guitar Fret Noise	FretNoiz	2														
	122	Breath Noise	BrthNoiz	2														
	123	Seashore	Seashore	2														
	124	Bird Tweet	Tweet	2														
	125	Telephone Ring	Telephone	1														
	126	Helicopter	Helicptr	1														
	127	Applause	Applause	1														
	128	Gunshot	Gunshot	1														

SFX

Pch#	Bank 0	E
1	CutngNz	1
2	CttngNz2	2
3		
4	Str Slap	1
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17	Fl.KClik	1
18		
19		
20		
21		
22		
23		
24		
25		
26		
27		
28		
29		
30		
31		
32		
33	Shower	1
34	Thunder	1
35	Wind	1
36	Stream	2
37	Bubble	2
38	Feed	2
39		
40		
41		
42		
43		
44		
45		
46		
47		
48		
49	Dog	1
50	Horse	1
51	Tweet 2	1
52		
53		
54		
55	Ghost	2
56	Maou	2
57		
58		
59		
60		
61		
62		
63		
64		
65	PhonCall	1
66	DoorSqek	1
67	Door Slam	1
68	ScratchC	1
69	ScratchS	2
70	WindChim	1
71	Telphon2	1
72		
73		
74		
75		
76		
77		
78		
79		
80		
81	CarElgnt	1
82	CarTSqel	1
83	Car Pass	1
84	CarCrash	1
85	Siren	2
86	Train	1
87	JetPlane	2
88	Starship	2
89	Burst	2
90	Coaster	2
91	Submarin	2
92		
93		
94		
95		
96		
97	Laugh	1
98	Scream	1
99	Punch	1
100	Heart	1
101	Footstep	1
102		
103		
104		
105		
106		
107		
108		
109		
110		
111		
112		
113	MchinGun	1
114	LaserGun	2
115	Xplosion	2
116	Firework	2
117		
118		
119		
120		
121		
122		
123		
124		
125		
126		
127		
128		

 : Same as Bank 0   : No sound   E : Element number

XG Drum Kit List

These XG drum kit voices are used for GM/XG/DOC song playback. They are not used for your manual performance.

| Bank MSB# | | | | 127 | 127 | 127 | 127 | 127 | 127 |
| Program # | | | | 1 | 2 | 9 | 17 | 25 | 26 |
Note#	Note		Rcv Note off	Alternate Group	StandKit	StndKit2	Room Kit	Rock Kit	ElctrKit	AnalgKit
13	C#	-1		3	Surdo Mute					
14	D	-1		3	Surdo Open					
15	D#	-1			Hi Q					
16	E	-1			Whip Slap					
17	F	-1		4	Scratch H					
18	F#	-1		4	Scratch L					
19	G	-1			Finger Snap					
20	G#	-1			Click Noise					
21	A	-1			Mtrnm Click					
22	A#	-1			Mtrnm Bell					
23	B	-1			Seq Click L					
24	C	0			Seq Click H					
25	C#	0			Brush Tap					
26	D	0	O		Brush Swirl					
27	D#	0			Brush Slap					
28	E	0	O		BrushTapSwrl				ReversCymbal	ReversCymbal
29	F	0	O		Snare Roll	Snare Roll 2				
30	F#	0			Castanet				Hi Q 2	Hi Q 2
31	G	0			Snare Soft	Snare Soft 2		Snare Noisy	SnrSnpyElctr	SnareNoisy 4
32	G#	0			Sticks					
33	A	0			Kick Soft			Kick Tight 2	Kick 3	Kick Tight 2
34	A#	0			OpenRimShot	RimShotHShrt				
35	B	0			Kick Tight	KickTghtShrt		Kick 2	Kick Gate	KickAnlgShrt
36	C	1			Kick	Kick Short		Kick Gate	KckGateHeavy	Kick Analog
37	C#	1			Side Stick					SideStickAn
38	D	1			Snare	Snare Short	Snare Snappy	Snare Rock	SnareNoisy 2	SnareAnalog
39	D#	1			Hand Clap					
40	E	1			Snare Tight	SnareTight H	SnrTightSnpy	Snare Rock Rim	SnareNoisy 3	SnareAnalog2
41	F	1			Floor Tom L		Tom Room 1	Tom Rock 1	TomElectro 1	Tom Analog 1
42	F#	1		1	Hi-HatClosed					HatCloseAnlg
43	G	1			Floor Tom H		Tom Room 2	Tom Rock 2	TomElectro 2	Tom Analog 2
44	G#	1		1	Hi-Hat Pedal					HatCloseAn 2
45	A	1			Low Tom		Tom Room 3	Tom Rock 3	TomElectro 3	Tom Analog 3
46	A#	1		1	Hi-Hat Open					HatOpen Anlg
47	B	1			Mid Tom L		Tom Room 4	Tom Rock 4	TomElectro 4	Tom Analog 4
48	C	2			Mid Tom H		Tom Room 5	Tom Rock 5	TomElectro 5	Tom Analog 5
49	C#	2			CrashCymbal1					Crash Analog
50	D	2			High Tom		Tom Room 6	Tom Rock 6	TomElectro 6	Tom Analog 6
51	D#	2			RideCymbal 1					
52	E	2			Chinese Cym					
53	F	2			Ride Cym Cup					
54	F#	2			Tambourine					
55	G	2			SplashCymbal					
56	G#	2			Cowbell					Cowbell Anlg
57	A	2			CrashCymbal2					
58	A#	2			Vibraslap					
59	B	2			RideCymbal 2					
60	C	3			Bongo H					
61	C#	3			Bongo L					
62	D	3			Conga H Mute					Conga Anlg H
63	D#	3			Conga H Open					Conga Anlg M
64	E	3			Conga L					Conga Anlg L
65	F	3			Timbale H					
66	F#	3			Timbale L					
67	G	3			Agogo H					
68	G#	3			Agogo L					
69	A	3			Cabasa					
70	A#	3			Maracas					Maracas 2
71	B	3	O		SambaWhistlH					
72	C	4	O		SambaWhistlL					
73	C#	4			Guiro Short					
74	D	4	O		Guiro Long					
75	D#	4			Claves					Claves 2
76	E	4			Wood Block H					
77	F	4			Wood Block L					
78	F#	4			Cuica Mute				Scratch H 2	Scratch H 2
79	G	4			Cuica Open				Scratch L 2	Scratch L 2
80	G#	4		2	TriangleMute					
81	A	4		2	TriangleOpen					
82	A#	4			Shaker					
83	B	4			Jingle Bells					
84	C	5			Bell Tree					
85	C#	5								
86	D	5								
87	D#	5								
88	E	5								
89	F	5								
90	F#	5								
91	G	5								

 : Same as Standard Kit   : No sound

- Key Off: Keys marked "O" stop sounding the instant they are released.
- Alternate Assign: Playing any instrument within a numbered group will immediately stop the sound of any other instrument in the same group of the same number.

				127	127	127	127	127	126	126
		Bank MSB#								
		Program #		1	28	33	41	49	1	2
Note#	Note	Rcv Note off	Alternate Group	StandKit	DanceKit	Jazz Kit	BrushKit	SymphKit	SFXKit 1	SFXKit 2
13	C# -1		3	Surdo Mute						
14	D -1		3	Surdo Open						
15	D# -1			Hi Q						
16	E -1			Whip Slap						
17	F -1		4	Scratch H						
18	F# -1		4	Scratch L						
19	G -1			Finger Snap						
20	G# -1			Click Noise						
21	A -1			Mtrnm Click						
22	A# -1			Mtrnm Bell						
23	B -1			Seq Click L						
24	C 0			Seq Click H						
25	C# 0			Brush Tap						
26	D 0	O		Brush Swirl						
27	D# 0			Brush Slap						
28	E 0	O		BrushTapSwrl	ReversCymbal					
29	F 0	O		Snare Roll						
30	F# 0			Castanet	Hi Q 2					
31	G 0			Snare Soft	Snare Tchno 3		Brush Slap 2			
32	G# 0			Sticks						
33	A 0			Kick Soft	Kick Techno Q			Kick Soft 2		
34	A# 0			OpenRimShot	Rim Gate					
35	B 0			Kick Tight	Kick Techno L			Gran Cassa		
36	C 1			Kick	Kick Techno 2	Kick Jazz	Kick Small	GranCassa Mu	CuttingNoiz	Phone Call
37	C# 1			Side Stick	Side Stick Analog				CuttingNoiz	Door Squeak
38	D 1			Snare	Snare Clap		Brush Slap 3	Band Snare		Door Slam
39	D# 1			Hand Clap					String Slap	Scratch Cut
40	E 1			Snare Tight	Snare Dry 2		Brush Tap 2	Band Snare 2		Scratch H 3
41	F 1			Floor Tom L	Tom Analog 1	Tom Jazz 1	Tom Brush 1	Tom Jazz 1		Wind Chime
42	F# 1		1	Hi-HatClosed	Hi-Hat Closed 3					Telephone 2
43	G 1			Floor Tom H	Tom Analog 2	Tom Jazz 2	Tom Brush 2	Tom Jazz 2		
44	G# 1		1	Hi-Hat Pedal	HatCloseAn 2					
45	A 1			Low Tom	Tom Analog 3	Tom Jazz 3	Tom Brush 3	Tom Jazz 3		
46	A# 1		1	Hi-Hat Open	Hi-Hat Open 3					
47	B 1			Mid Tom L	Tom Analog 4	Tom Jazz 4	Tom Brush 4	Tom Jazz 4		
48	C 2			Mid Tom H	Tom Analog 5	Tom Jazz 5	Tom Brush 5	Tom Jazz 5		
49	C# 2			CrashCymbal1	Clash Analog			Hand Cymbal		
50	D 2			High Tom	Tom Analog 6	Tom Jazz 6	Tom Brush 6	Tom Jazz 6		
51	D# 2			RideCymbal 1				HandCymShort		
52	E 2			Chinese Cym					Fl.Key Click	CarEngnIgnit
53	F 2			Ride Cym Cup						CarTireSqeal
54	F# 2			Tambourine						Car Passing
55	G 2			SplashCymbal						Car Crash
56	G# 2			Cowbell	Cowbell Anlg					Siren
57	A 2			CrashCymbal2				HandCymbal 2		Train
58	A# 2			Vibraslap						Jet Plane
59	B 2			RideCymbal 2				HandCym2Shrt		Starship
60	C 3			Bongo H						Burst
61	C# 3			Bongo L						Coaster
62	D 3			Conga H Mute	Conga Anlg H					Submarine
63	D# 3			Conga H Open	Conga Anlg M					
64	E 3			Conga L	Conga Anlg L					
65	F 3			Timbale H						
66	F# 3			Timbale L						
67	G 3			Agogo H						
68	G# 3			Agogo L					Shower	Laugh
69	A 3			Cabasa					Thunder	Scream
70	A# 3			Maracas	Maracas 2				Wind	Punch
71	B 3	O		SambaWhistlH					Stream	Heartbeat
72	C 4	O		SambaWhistlL					Bubble	Footsteps
73	C# 4			Guiro Short					Feed	
74	D 4	O		Guiro Long						
75	D# 4			Claves	Claves 2					
76	E 4			Wood Block H						
77	F 4			Wood Block L						
78	F# 4			Cuica Mute	Scratch H 2					
79	G 4			Cuica Open	Scratch L 3					
80	G# 4		2	TriangleMute						
81	A 4		2	TriangleOpen						
82	A# 4			Shaker						
83	B 4			Jingle Bells						
84	C 5			Bell Tree					Dog	Machine Gun
85	C# 5								Horse	Laser Gun
86	D 5								Bird Tweet 2	Explosion
87	D# 5									FireWork
88	E 5									
89	F 5									
90	F# 5								Ghost	
91	G 5								Maou	

XG Effect Type List

REVERB

| Exclusive | | Effect Type | Description |
MSB	LSB		
00	00	NoEffect	Effect turned off.
01	00	Hall1	Reverb simulating the resonance of a hall.
01	01	Hall2	Reverb simulating the resonance of a hall.
02	00	Room1	Reverb simulating the resonance of a room.
02	01	Room2	Reverb simulating the resonance of a room.
02	02	Room3	Reverb simulating the resonance of a room.
03	00	Stage1	Reverb appropriate for a solo instrument.
03	01	Stage2	Reverb appropriate for a solo instrument.
04	00	Plate	Reverb simulating a metal plate reverb unit.
10	00	W-Room	A unique short reverb with a bit of initial delay.
11	00	Tunnel	Simulation of a tunnel space expanding to left and right.
13	00	Basement	A bit of initial delay followed by reverb with a unique resonance.

CHORUS

| Exclusive | | Effect Type | Description |
MSB	LSB		
00	00	NoEffect	Effect turned off.
41	00	Chorus1	Conventional chorus program that adds natural spaciousness.
41	01	Chorus2	Conventional chorus program that adds natural spaciousness.
41	02	Chorus3	Conventional chorus program that adds natural spaciousness.
41	08	Chorus4	Chorus with stereo input. The pan setting specified for the Part will also apply to the effect sound.
42	00	Celeste1	A 3-phase LFO adds modulation and spaciousness to the sound.
42	01	Celeste2	A 3-phase LFO adds modulation and spaciousness to the sound.
42	02	Celeste3	A 3-phase LFO adds modulation and spaciousness to the sound.
42	08	Celeste4	Celeste with stereo input. The pan setting specified for the Part will also apply to the effect sound.
43	00	Flanger1	Adds a jet-airplane effect to the sound.
43	01	Flanger2	Adds a jet-airplane effect to the sound.
43	08	Flanger3	Adds a jet-airplane effect to the sound.

VARIATION

| Exclusive | | Effect Type | Description |
MSB	LSB		
00	00	NoEffect	Effect turned off.
01	00	Hall1	Reverb simulating the resonance of a hall.
01	01	Hall2	Reverb simulating the resonance of a hall.
02	00	Room1	Reverb simulating the resonance of a room.
02	01	Room2	Reverb simulating the resonance of a room.
02	02	Room3	Reverb simulating the resonance of a room.
03	00	Stage1	Reverb appropriate for a solo instrument.
03	01	Stage2	Reverb appropriate for a solo instrument.
04	00	Plate	Reverb simulating a metal plate reverb unit.
05	00	DelayLCR	A program that creates three delay sounds; L, R, and C (center).
06	00	DelayLR	A program that creates two delay sounds; L and R. Two feedback delays are provided.
07	00	Echo	Two delays (L and R) and independent feedback delays for L and R.
08	00	CrsDelay	A program that crosses the feedback of two delays.
09	00	E-Ref1	An effect that produces only the early reflection component of reverb.
09	01	E-Ref2	An effect that produces only the early reflection component of reverb.
0A	00	GateRev	A simulation of gated reverb.
0B	00	RvsGate	A program that simulates gated reverb played backwards.
14	00	Karaoke1	A delay with feedback of the same types as used for karaoke reverb.
14	01	Karaoke2	A delay with feedback of the same types as used for karaoke reverb.
14	02	Karaoke3	A delay with feedback of the same types as used for karaoke reverb.
41	00	Chorus1	Conventional chorus program that adds natural spaciousness.
41	01	Chorus2	Conventional chorus program that adds natural spaciousness.
41	02	Chorus3	Conventional chorus program that adds natural spaciousness.
41	08	Chorus4	Chorus with stereo input.
42	00	Celeste1	A 3-phase LFO adds modulation and spaciousness to the sound.
42	01	Celeste2	A 3-phase LFO adds modulation and spaciousness to the sound.
42	02	Celeste3	A 3-phase LFO adds modulation and spaciousness to the sound.
42	08	Celeste4	Celeste with stereo input.
43	00	Flanger1	Adds a jet-airplane effect to the sound.
43	01	Flanger2	Adds a jet-airplane effect to the sound.
43	08	Flanger3	Adds a jet-airplane effect to the sound.
44	00	Symphnic	A multi-phase version of Celeste.
45	00	RotarySp	A simulation of a rotary speaker.
46	00	Tremolo	An effect that cyclically modulates the volume.
47	00	AutoPan	A program that cyclically moves that sound image to left and right, front and back.
48	00	Phaser1	Cyclically changes the phase to add modulation to the sound.
48	08	Phaser2	Phaser with stereo input.
49	00	Dist	Adds a sharp-edged distortion to the sound.
4A	00	OverDrv	Adds mild distortion to the sound.
4B	00	AmpSim	A simulation of a guitar amp.
4C	00	3BandEQ	A mono EQ with adjustable LOW, MID, and HIGH equalizing.
4D	00	2BandEQ	A stereo EQ with adjustable LOW and HIGH. Ideal for drum Parts.
4E	00	AutoWah	Cyclically modulates the center frequency of a wah filter. With an AC1 etc. this can function as a pedal wah.
50	00	PitchCng	This program changes the pitch of the input signal.
40	00	Thru	Bypass without applying an effect.

* MSB, LSB is represented in hexadecimal.   * LSB=0 is the basic effect type.

Effect Parameter List

HALL1,HALL2
ROOM1,ROOM2,ROOM3
STAGE1,STAGE2
PLATE (reverb, variation block)

No.	Parameter	Display	Value	See Table	Control
1	Reverb Time	0.3 - 30.0s	0 - 69	table#4	
2	Diffusion	0 - 10	0 - 10		
3	Initial Delay	0.1 - 99.3ms	0 - 63	table#5	
4	HPF Cutoff	Thru - 8.0kHz	0 - 52	table#3	
5	LPF Cutoff	1.0k - Thru	34 - 60	table#3	
6					
7					
8					
9					
10	Dry/Wet	D63>W - D=W - D<W63	1 - 127		●
11	Rev Delay	0 - 63	0 - 63	table#5	
12	Density	0 - 3	0 - 3		
13	Er/Rev Balance	E63>R - E=R - E<R63	1 - 127		
14					
15	Feedback Level	-63 - +63	1 - 127		
16					

WHITE ROOM
TUNNEL
BASEMENT (reverb block)

No.	Parameter	Display	Value	See Table	Control
1	Reverb Time	0.3 - 30.0s	0 - 69	table#4	
2	Diffusion	0 - 10	0 - 10		
3	Initial Delay	0.1 - 99.3ms	0 - 63	table#5	
4	HPF Cutoff	Thru - 8.0kHz	0 - 52	table#3	
5	LPF Cutoff	1.0k - Thru	34 - 60	table#3	
6	Width	0.5 - 10.2m	0 - 37	table#8	
7	Heigt	0.5 - 20.2m	0 - 73	table#8	
8	Depth	0.5 - 30.2m	0 - 104	table#8	
9	Wall Vary	0 - 30	0 - 30		
10					
11	Rev Delay	0 - 63	0 - 63	table#5	
12	Density	0 - 3	0 - 3		
13	Er/Rev Balance	E63>R - E=R - E<R63	1 - 127		
14					
15	Feedback Level	-63 - +63	1 - 127		
16					

DELAY L,C,R (variation block)

No.	Parameter	Display	Value	See Table	Control
1	Lch Delay	0.1 - 715.0ms (variation block)	1 - 7150		
2	Rch Delay	0.1 - 715.0ms (variation block)	1 - 7150		
3	Cch Delay	0.1 - 715.0ms (variation block)	1 - 7150		
4	Feedback Delay	0.1 - 715.0ms (variation block)	1 - 7150		
5	Feedback Level	-63 - +63	1 - 127		
6	Cch Level	0 - 127	0 - 127		
7	High Damp	0.1 - 1.0	1 - 10		
8					
9					
10	Dry/Wet	D63>W - D=W - D<W63	1 - 127		●
11					
12					
13	EQ Low Frequency	50Hz - 2.0kHz	8 - 40	table#3	
14	EQ Low Gain	-12 - +12dB	52 - 76		
15	EQ High Frequency	500Hz - 16.0kHz	28 - 58	table#3	
16	EQ High Gain	-12 - +12dB	52 - 76		

DELAY L,R (variation block)

No.	Parameter	Display	Value	See Table	Control
1	Lch Delay	0.1 - 715.0ms (variation block)	1 - 7150		
2	Rch Delay	0.1 - 715.0ms (variation block)	1 - 7150		
3	Feedback Delay 1	0.1 - 715.0ms (variation block)	1 - 7150		
4	Feedback Delay 2	0.1 - 715.0ms (variation block)	1 - 7150		
5	Feedback Level	-63 - +63	1 - 127		
6	High Damp	0.1 - 1.0	1 - 10		
7					
8					
9					
10	Dry/Wet	D63>W - D=W - D<W63	1 - 127		●
11					
12					
13	EQ Low Frequency	50Hz - 2.0kHz	8 - 40	table#3	
14	EQ Low Gain	-12 - +12dB	52 - 76		
15	EQ High Frequency	500Hz - 16.0kHz	28 - 58	table#3	
16	EQ High Gain	-12 - +12dB	52 - 76		

ECHO (variation block)

No.	Parameter	Display	Value	See Table	Control
1	Lch Delay1	0.1 - 355.0ms (variation block)	1 - 3550		
2	Lch Feedback Level	-63 - +63	1 - 127		
3	Rch Delay1	0.1 - 355.0ms (variation block)	1 - 3550		
4	Rch Feedback Level	-63 - +63	1 - 127		
5	High Damp	0.1 - 1.0	1 - 10		
6	Lch Delay2	0.1 - 355.0ms (variation block)	1 - 3550		
7	Rch Delay2	0.1 - 355.0ms (variation block)	1 - 3550		
8	Delay2 Level	0 - 127	0 - 127		
9					
10	Dry/Wet	D63>W - D=W - D<W63	1 - 127		●
11					
12					
13	EQ Low Frequency	50Hz - 2.0kHz	8 - 40	table#3	
14	EQ Low Gain	-12 - +12dB	52 - 76		
15	EQ High Frequency	500Hz - 16.0kHz	28 - 58	table#3	
16	EQ High Gain	-12 - +12dB	52 - 76		

CROSS DELAY (variation block)

No.	Parameter	Display	Value	See Table	Control
1	L->R Delay	0.1 - 355.0ms (variation block)	1 - 3550		
2	R->L Delay	0.1 - 355.0ms (variation block)	1 - 3550		
3	Feedback Level	-63 - +63	1 - 127		
4	Input Select	L,R,L&R	0 - 2		
5	High Damp	0.1 - 1.0	1 - 10		
6					
7					
8					
9					
10	Dry/Wet	D63>W - D=W - D<W63	1 - 127		●
11					
12					
13	EQ Low Frequency	50Hz - 2.0kHz	8 - 40	table#3	
14	EQ Low Gain	-12 - +12dB	52 - 76		
15	EQ High Frequency	500Hz - 16.0kHz	28 - 58	table#3	
16	EQ High Gain	-12 - +12dB	52 - 76		

EARLY REF1,EARLY REF2(variation block)

No.	Parameter	Display	Value	See Table	Control
1	Type	S-H, L-H, Rdm, Rvs, Plt, Spr	0 - 5		
2	Room Size	0.1 - 7.0	0 - 44	table#6	
3	Diffusion	0 - 10	0 - 10		
4	Initial Delay	0.1 - 99.3ms	0 - 63	table#5	
5	Feedback Level	-63 - +63	1 - 127		
6	HPF Cutoff	Thru - 8.0kHz	0 - 52	table#3	
7	LPF Cutoff	1.0k - Thru	34 - 60	table#3	
8					
9					
10	Dry/Wet	D63>W - D=W - D<W63	1 - 127		●
11	Liveness	0 - 10	0 - 10		
12	Density	0 - 3	0 - 3		
13	High Damp	0.1 - 1.0	1 - 10		
14					
15					
16					

GATE REVERB
REVERSE GATE (variation block)

No.	Parameter	Display	Value	See Table	Control
1	Type	TypeA,TypeB	0 - 1		
2	Room Size	0.1 - 7.0	0 - 44	table#6	
3	Diffusion	0 - 10	0 - 10		
4	Initial Delay	0.1 - 99.3ms	0 - 63	table#5	
5	Feedback Level	-63 - +63	1 - 127		
6	HPF Cutoff	Thru - 8.0kHz	0 - 52	table#3	
7	LPF Cutoff	1.0k - Thru	34 - 60	table#3	
8					
9					
10	Dry/Wet	D63>W - D=W - D<W63	1 - 127		●
11	Liveness	0 - 10	0 - 10		
12	Density	0 - 3	0 - 3		
13	High Damp	0.1 - 1.0	1 - 10		
14					
15					
16					

Effect Parameter List

KARAOKE1,2,3 (variation block)

No.	Parameter	Display	Value	See Table	Control
1	Delay Time	0.1 - 400ms	0 - 127	table#7	
2	Feedback Level	-63 - +63	1 - 127		
3	HPF Cutoff	Thru - 8.0kHz	0 - 52	table#3	
4	LPF Cutoff	1.0k - Thru	34 - 60	table#3	
5					
6					
7					
8					
9					
10	Dry/Wet	D63>W - D=W - D<W63	1 - 127		●
11					
12					
13					
14					
15					
16					

CHORUS1,2,3,4
CELESTE1,2,3,4 (chorus, variation block)

No.	Parameter	Display	Value	See Table	Control
1	LFO Frequency	0.00Hz - 39.7Hz	0 - 127	table#1	
2	LFO Depth	0 - 127	0 - 127		
3	Feedback Level	-63 - +63	1 - 127		
4	Delay Offset	0.0 - 50	0 - 127	table#2	
5					
6	EQ Low Frequency	50Hz - 2.0kHz	8 - 40	table#3	
7	EQ Low Gain	-12 - +12dB	52 - 76		
8	EQ High Frequency	500Hz - 16.0kHz	28 - 58	table#3	
9	EQ High Gain	-12 - +12dB	52 - 76		
10	Dry/Wet	D63>W - D=W - D<W63	1 - 127		●
11					
12					
13					
14					
15	Input Mode	mono/stereo	0 - 1		
16					

FLANGER1,2,3 (chorus, variation block)

No.	Parameter	Display	Value	See Table	Control
1	LFO Frequency	0.00Hz - 39.7Hz	0 - 127	table#1	
2	LFO Depth	0 - 127	0 - 127		
3	Feedback Level	-63 - +63	1 - 127		
4	Delay Offset	0 - 63	0 - 63	table#2	
5					
6	EQ Low Frequency	50Hz - 2.0kHz	8 - 40	table#3	
7	EQ Low Gain	-12 - +12dB	52 - 76		
8	EQ High Frequency	500Hz - 16.0kHz	28 - 58	table#3	
9	EQ High Gain	-12 - +12dB	52 - 76		
10	Dry/Wet	D63>W - D=W - D<W63	1 - 127		●
11					
12					
13					
14	LFO Phase Difference	-180 - +180deg	4 - 124	resolution=3deg.	
15					
16					

SYMPHONIC (variation block)

No.	Parameter	Display	Value	See Table	Control
1	LFO Frequency	0.00Hz - 39.7Hz	0 - 127	table#1	
2	LFO Depth	0 - 127	0 - 127		
3	Delay Offset	0.0 - 50	0 - 127	table#2	
4					
5					
6	EQ Low Frequency	50Hz - 2.0kHz	8 - 40	table#3	
7	EQ Low Gain	-12 - +12dB	52 - 76		
8	EQ High Frequency	500Hz - 16.0kHz	28 - 58	table#3	
9	EQ High Gain	-12 - +12dB	52 - 76		
10	Dry/Wet	D63>W - D=W - D<W63	1 - 127		●
11					
12					
13					
14					
15					
16					

ROTARY SPEAKER (variation block)

No.	Parameter	Display	Value	See Table	Control
1	LFO Frequency	0.00Hz - 39.7Hz	0 - 127	table#1	●
2	LFO Depth	0 - 127	0 - 127		
3					
4					
5					
6	EQ Low Frequency	50Hz - 2.0kHz	8 - 40	table#3	
7	EQ Low Gain	-12 - +12dB	52 - 76		
8	EQ High Frequency	500Hz - 16.0kHz	28 - 58	table#3	
9	EQ High Gain	-12 - +12dB	52 - 76		
10	Dry/Wet	D63>W - D=W - D<W63	1 - 127		
11					
12					
13					
14					
15					
16					

TREMOLO (variation block)

No.	Parameter	Display	Value	See Table	Control
1	LFO Frequency	0.00Hz - 39.7Hz	0 - 127	table#1	●
2	AM Depth	0 - 127	0 - 127		
3	PM Depth	0 - 127	0 - 127		
4					
5					
6	EQ Low Frequency	50Hz - 2.0kHz	8 - 40	table#3	
7	EQ Low Gain	-12 - +12dB	52 - 76		
8	EQ High Frequency	500Hz - 16.0kHz	28 - 58	table#3	
9	EQ High Gain	-12 - +12dB	52 - 76		
10					
11					
12					
13					
14	LFO Phase Difference	-180 - +180deg	4 - 124	resolution=3deg.	
15	Input Mode	mono/stereo	0 - 1		
16					

AUTO PAN (variation block)

No.	Parameter	Display	Value	See Table	Control
1	LFO Frequency	0.00Hz - 39.7Hz	0 - 127	table#1	●
2	L/R Depth	0 - 127	0 - 127		
3	F/R Depth	0 - 127	0 - 127		
4	PAN Direction	L<->R,L->R,L<-R,Lturn,Rturn,L/R	0 - 5		
5					
6	EQ Low Frequency	50Hz - 2.0kHz	8 - 40	table#3	
7	EQ Low Gain	-12 - +12dB	52 - 76		
8	EQ High Frequency	500Hz - 16.0kHz	28 - 58	table#3	
9	EQ High Gain	-12 - +12dB	52 - 76		
10					
11					
12					
13					
14					
15					
16					

PHASER 1 (variation block)

No.	Parameter	Display	Value	See Table	Control
1	LFO Frequency	0.00Hz - 39.7Hz	0 - 127	table#1	
2	LFO Depth	0 - 127	0 - 127		
3	Phase Shift Offset	0 - 127	0 - 127		
4	Feedback Level	-63 - +63	1 - 127		
5					
6	EQ Low Frequency	50Hz - 2.0kHz	8 - 40	table#3	
7	EQ Low Gain	-12 - +12dB	52 - 76		
8	EQ High Frequency	500Hz - 16.0kHz	28 - 58	table#3	
9	EQ High Gain	-12 - +12dB	52 - 76		
10	Dry/Wet	D63>W - D=W - D<W63	1 - 127		●
11	Stage	6 - 10	6 - 10		
12					
13					
14					
15					
16					

PHASER 2 (variation block)

No.	Parameter	Display	Value	See Table	Control
1	LFO Frequency	0.00Hz - 39.7Hz	0 - 127	table#1	
2	LFO Depth	0 - 127	0 - 127		
3	Phase Shift Offset	0 - 127	0 - 127		
4	Feedback Level	-63 - +63	1 - 127		
5					
6	EQ Low Frequency	50Hz - 2.0kHz	8 - 40	table#3	
7	EQ Low Gain	-12 - +12dB	52 - 76		
8	EQ High Frequency	500Hz - 16.0kHz	28 - 58	table#3	
9	EQ High Gain	-12 - +12dB	52 - 76		
10	Dry/Wet	D63>W - D=W - D<W63	1 - 127		●
11	Stage	3 - 5	3 - 5		
12					
13	LFO Phase Difference	-180deg - +180deg	4 - 124	resolution=3deg.	
14					
15					
16					

2BAND EQ(STEREO) (variation block)

No.	Parameter	Display	Value	See Table	Control
1	EQ Low Frequency	50Hz - 2.0kHz	8 - 40	table#3	
2	EQ Low Gain	-12 - +12dB	52 - 76		
3	EQ High Frequency	500Hz - 16.0kHz	28 - 58	table#3	
4	EQ High Gain	-12 - +12dB	52 - 76		
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					

DISTORTION
OVERDRIVE (variation block)

No.	Parameter	Display	Value	See Table	Control
1	Drive	0 - 127	0 - 127		●
2	EQ Low Frequency	50Hz - 2.0kHz	8 - 40	table#3	
3	EQ Low Gain	-12 - +12dB	52 - 76		
4	LPF Cutoff	1.0k - Thru	34 - 60	table#3	
5	Output Level	0 - 127	0 - 127		
6					
7	EQ Mid Frequency	500Hz - 10.0kHz	28 - 54	table#3	
8	EQ Mid Gain	-12 - +12dB	52 - 76		
9	EQ Mid Width	1.0 - 12.0	10 - 120		
10	Dry/Wet	D63>W - D=W - D<W63	1 - 127		
11	Edge(Clip Curve)	0 - 127	0 - 127	mild - sharp	
12					
13					
14					
15					
16					

AUTO WAH (variation block)

No.	Parameter	Display	Value	See Table	Control
1	LFO Frequency	0.00Hz - 39.7Hz	0 - 127	table#1	
2	LFO Depth	0 - 127	0 - 127		
3	Cutoff Frequency Offset	0 - 127	0 - 127		●
4	Resonance	1.0 - 12.0	10 - 120		
5					
6	EQ Low Frequency	50Hz - 2.0kHz	8 - 40	table#3	
7	EQ Low Gain	-12 - +12dB	52 - 76		
8	EQ High Frequency	500Hz - 16.0kHz	28 - 58	table#3	
9	EQ High Gain	-12 - +12dB	52 - 76		
10	Dry/Wet	D63>W - D=W - D<W63	1 - 127		
11					
12					
13					
14					
15					
16					

AMP SIMULATOR (variation block)

No.	Parameter	Display	Value	See Table	Control
1	Drive	0 - 127	0 - 127		●
2	AMP Type	Off,Stack,Combo,Tube	0 - 3		
3	LPF Cutoff	1.0k - Thru	34 - 60	table#3	
4	Output Level	0 - 127	0 - 127		
5					
6					
7					
8					
9					
10	Dry/Wet	D63>W - D=W - D<W63	1 - 127		
11	Edge(Clip Curve)	0 - 127	0 - 127	mild - sharp	
12					
13					
14					
15					
16					

3BAND EQ(MONO) (variation block)

No.	Parameter	Display	Value	See Table	Control
1	EQ Low Gain	-12 - +12dB	52 - 76		
2	EQ Mid Frequency	500Hz - 10.0kHz	28 - 54	table#3	
3	EQ Mid Gain	-12 - +12dB	52 - 76		
4	EQ Mid Width	1.0 - 12.0	10 - 120		
5	EQ High Gain	-12 - +12dB	52 - 76		
6	EQ Low Frequency	50Hz - 2.0kHz	8 - 40	table#3	
7	EQ High Frequency	500Hz - 16.0kHz	28 - 58	table#3	
8					
9					
10					
11					
12					
13					
14					
15					
16					

Effect Data Assign Table

table#1
LFO Frequency

Data	Value	Data	Value
0	0.00	64	0.69
1	0.04	65	2.77
2	0.08	66	2.86
3	0.12	67	2.94
4	0.16	68	3.02
5	0.21	69	3.11
6	0.25	70	3.19
7	0.29	71	3.28
8	0.33	72	3.36
9	0.37	73	3.44
10	0.42	74	3.53
11	0.46	75	3.61
12	0.50	76	3.70
13	0.54	77	3.86
14	0.58	78	4.03
15	0.63	79	4.20
16	0.67	80	4.37
17	0.71	81	4.54
18	0.75	82	4.71
19	0.79	83	4.87
20	0.84	84	5.04
21	0.88	85	5.21
22	0.92	86	5.38
23	0.96	87	5.55
24	1.00	88	5.72
25	1.05	89	6.05
26	1.09	90	6.39
27	1.13	91	6.72
28	1.17	92	7.06
29	1.22	93	7.40
30	1.26	94	7.73
31	1.30	95	8.07
32	1.34	96	8.41
33	1.38	97	8.74
34	1.43	98	9.08
35	1.47	99	9.42
36	1.51	100	9.75
37	1.55	101	10.0
38	1.59	102	10.7
39	1.64	103	11.4
40	1.68	104	12.1
41	1.72	105	12.7
42	1.76	106	13.4
43	1.80	107	14.1
44	1.85	108	14.8
45	1.89	109	15.4
46	1.93	110	16.1
47	1.97	111	16.8
48	2.01	112	17.5
49	2.06	113	18.1
50	2.10	114	19.5
51	2.14	115	20.8
52	2.18	116	22.2
53	2.22	117	23.5
54	2.27	118	24.8
55	2.31	119	26.2
56	2.35	120	27.5
57	2.39	121	28.9
58	2.43	122	30.2
59	2.48	123	31.6
60	2.52	124	32.9
61	2.56	125	34.3
62	2.60	126	37.0
63	2.65	127	39.7

table#2
Modulation Delay Offset

Data	Value	Data	Value
0	0.0	64	6.4
1	0.1	65	6.5
2	0.2	66	6.6
3	0.3	67	6.7
4	0.4	68	6.8
5	0.5	69	6.9
6	0.6	70	7.0
7	0.7	71	7.1
8	0.8	72	7.2
9	0.9	73	7.3
10	1.0	74	7.4
11	1.1	75	7.5
12	1.2	76	7.6
13	1.3	77	7.7
14	1.4	78	7.8
15	1.5	79	7.9
16	1.6	80	8.0
17	1.7	81	8.1
18	1.8	82	8.2
19	1.9	83	8.3
20	2.0	84	8.4
21	2.1	85	8.5
22	2.2	86	8.6
23	2.3	87	8.7
24	2.4	88	8.8
25	2.5	89	8.9
26	2.6	90	9.0
27	2.7	91	9.1
28	2.8	92	9.2
29	2.9	93	9.3
30	3.0	94	9.4
31	3.1	95	9.5
32	3.2	96	9.6
33	3.3	97	9.7
34	3.4	98	9.8
35	3.5	99	9.9
36	3.6	100	10.0
37	3.7	101	11.1
38	3.8	102	12.2
39	3.9	103	13.3
40	4.0	104	14.4
41	4.1	105	15.5
42	4.2	106	17.1
43	4.3	107	18.6
44	4.4	108	20.2
45	4.5	109	21.8
46	4.6	110	23.3
47	4.7	111	24.9
48	4.8	112	26.5
49	4.9	113	28.0
50	5.0	114	29.6
51	5.1	115	31.2
52	5.2	116	32.8
53	5.3	117	34.3
54	5.4	118	35.9
55	5.5	119	37.5
56	5.6	120	39.0
57	5.7	121	40.6
58	5.8	122	42.2
59	5.9	123	43.7
60	6.0	124	45.3
61	6.1	125	46.9
62	6.2	126	48.4
63	6.3	127	50.0

table#3
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#4
Reverb time

Data	Value	Data	Value
0	0.3	64	17.0
1	0.4	65	18.0
2	0.5	66	19.0
3	0.6	67	20.0
4	0.7	68	25.0
5	0.8	69	30.0
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		

table#5
Delay Time(200.0ms)

Data	Value	Data	Value
0	0.1	64	100.8
1	1.7	65	102.4
2	3.2	66	104.0
3	4.8	67	105.6
4	6.4	68	107.1
5	8.0	69	108.7
6	9.5	70	110.3
7	11.1	71	111.9
8	12.7	72	113.4
9	14.3	73	115.0
10	15.8	74	116.6
11	17.4	75	118.2
12	19.0	76	119.7
13	20.6	77	121.3
14	22.1	78	122.9
15	23.7	79	124.4
16	25.3	80	126.0
17	26.9	81	127.6
18	28.4	82	129.2
19	30.0	83	130.7
20	31.6	84	132.3
21	33.2	85	133.9
22	34.7	86	135.5
23	36.3	87	137.0
24	37.9	88	138.6
25	39.5	89	140.2
26	41.0	90	141.8
27	42.6	91	143.3
28	44.2	92	144.9
29	45.7	93	146.5
30	47.3	94	148.1
31	48.9	95	149.6
32	50.5	96	151.2
33	52.0	97	152.8
34	53.6	98	154.4
35	55.2	99	155.9
36	56.8	100	157.5
37	58.3	101	159.1
38	59.9	102	160.6
39	61.5	103	162.2
40	63.1	104	163.8
41	64.6	105	165.4
42	66.2	106	166.9
43	67.8	107	168.5
44	69.4	108	170.1
45	70.9	109	171.7
46	72.5	110	173.2
47	74.1	111	174.8
48	75.7	112	176.4
49	77.2	113	178.0
50	78.8	114	179.5
51	80.4	115	181.1
52	81.9	116	182.7
53	83.5	117	184.3
54	85.1	118	185.8
55	86.7	119	187.4
56	88.2	120	189.0
57	89.8	121	190.6
58	91.4	122	192.1
59	93.0	123	193.7
60	94.5	124	195.3
61	96.1	125	196.9
62	97.7	126	198.4
63	99.3	127	200.0

table#6
Room Size

Data	Value
0	0.1
1	0.3
2	0.4
3	0.6
4	0.7
5	0.9
6	1.0
7	1.2
8	1.4
9	1.5
10	1.7
11	1.8
12	2.0
13	2.1
14	2.3
15	2.5
16	2.6
17	2.8
18	2.9
19	3.1
20	3.2
21	3.4
22	3.5
23	3.7
24	3.9
25	4.0
26	4.2
27	4.3
28	4.5
29	4.6
30	4.8
31	5.0
32	5.1
33	5.3
34	5.4
35	5.6
36	5.7
37	5.9
38	6.1
39	6.2
40	6.4
41	6.5
42	6.7
43	6.8
44	7.0

table#7
Delay Time(400.0ms)

Data	Value	Data	Value
0	0.1	64	201.6
1	3.2	65	204.8
2	6.4	66	207.9
3	9.5	67	211.1
4	12.7	68	214.2
5	15.8	69	217.4
6	19.0	70	220.5
7	22.1	71	223.7
8	25.3	72	226.8
9	28.4	73	230.0
10	31.6	74	233.1
11	34.7	75	236.3
12	37.9	76	239.4
13	41.0	77	242.6
14	44.2	78	245.7
15	47.3	79	248.9
16	50.5	80	252.0
17	53.6	81	255.2
18	56.8	82	258.3
19	59.9	83	261.5
20	63.1	84	264.6
21	66.2	85	267.7
22	69.4	86	270.9
23	72.5	87	274.0
24	75.7	88	277.2
25	78.8	89	280.3
26	82.0	90	283.5
27	85.1	91	286.6
28	88.3	92	289.8
29	91.4	93	292.9
30	94.6	94	296.1
31	97.7	95	299.2
32	100.9	96	302.4
33	104.0	97	305.5
34	107.2	98	308.7
35	110.3	99	311.8
36	113.5	100	315.0
37	116.6	101	318.1
38	119.8	102	321.3
39	122.9	103	324.4
40	126.1	104	327.6
41	129.2	105	330.7
42	132.4	106	333.9
43	135.5	107	337.0
44	138.6	108	340.2
45	141.8	109	343.3
46	144.9	110	346.5
47	148.1	111	349.6
48	151.2	112	352.8
49	154.4	113	355.9
50	157.5	114	359.1
51	160.7	115	362.2
52	163.8	116	365.4
53	167.0	117	368.5
54	170.1	118	371.7
55	173.3	119	374.8
56	176.4	120	378.0
57	179.6	121	381.1
58	182.7	122	384.3
59	185.9	123	387.4
60	189.0	124	390.6
61	192.2	125	393.7
62	195.3	126	396.9
63	198.5	127	400.0

table#8
Reverb Width;Depth;Height

Data	Value	Data	Value
0	0.5	64	17.6
1	0.8	65	17.9
2	1.0	66	18.2
3	1.3	67	18.5
4	1.5	68	18.8
5	1.8	69	19.1
6	2.0	70	19.4
7	2.3	71	19.7
8	2.6	72	20.0
9	2.8	73	20.2
10	3.1	74	20.5
11	3.3	75	20.8
12	3.6	76	21.1
13	3.9	77	21.4
14	4.1	78	21.7
15	4.4	79	22.0
16	4.6	80	22.4
17	4.9	81	22.7
18	5.2	82	23.0
19	5.4	83	23.3
20	5.7	84	23.6
21	5.9	85	23.9
22	6.2	86	24.2
23	6.5	87	24.5
24	6.7	88	24.9
25	7.0	89	25.2
26	7.2	90	25.5
27	7.5	91	25.8
28	7.8	92	26.1
29	8.0	93	26.5
30	8.3	94	26.8
31	8.6	95	27.1
32	8.8	96	27.5
33	9.1	97	27.8
34	9.4	98	28.1
35	9.6	99	28.5
36	9.9	100	28.8
37	10.2	101	29.2
38	10.4	102	29.5
39	10.7	103	29.9
40	11.0	104	30.2
41	11.2		
42	11.5		
43	11.8		
44	12.1		
45	12.3		
46	12.6		
47	12.9		
48	13.1		
49	13.4		
50	13.7		
51	14.0		
52	14.2		
53	14.5		
54	14.8		
55	15.1		
56	15.4		
57	15.6		
58	15.9		
59	16.2		
60	16.5		
61	16.8		
62	17.1		
63	17.3		

MIDI Data Format

"MIDI Data Format" lists data and values in decimal, binary, and hexadecimal. Hexadecimal values have "H (hexadecimal)" at the beginning of the data line or at the end of the values.

Refer to the following table when you enter data values.

decimal	hexadecimal	binary	decimal	hexadecimal	binary
0	00	0000 0000	64	40	0100 0000
1	01	0000 0001	65	41	0100 0001
2	02	0000 0010	66	42	0100 0010
3	03	0000 0011	67	43	0100 0011
4	04	0000 0100	68	44	0100 0100
5	05	0000 0101	69	45	0100 0101
6	06	0000 0110	70	46	0100 0110
7	07	0000 0111	71	47	0100 0111
8	08	0000 1000	72	48	0100 1000
9	09	0000 1001	73	49	0100 1001
10	0A	0000 1010	74	4A	0100 1010
11	0B	0000 1011	75	4B	0100 1011
12	0C	0000 1100	76	4C	0100 1100
13	0D	0000 1101	77	4D	0100 1101
14	0E	0000 1110	78	4E	0100 1110
15	0F	0000 1111	79	4F	0100 1111
16	10	0001 0000	80	50	0101 0000
17	11	0001 0001	81	51	0101 0001
18	12	0001 0010	82	52	0101 0010
19	13	0001 0011	83	53	0101 0011
20	14	0001 0100	84	54	0101 0100
21	15	0001 0101	85	55	0101 0101
22	16	0001 0110	86	56	0101 0110
23	17	0001 0111	87	57	0101 0111
24	18	0001 1000	88	58	0101 1000
25	19	0001 1001	89	59	0101 1001
26	1A	0001 1010	90	5A	0101 1010
27	1B	0001 1011	91	5B	0101 1011
28	1C	0001 1100	92	5C	0101 1100
29	1D	0001 1101	93	5D	0101 1101
30	1E	0001 1110	94	5E	0101 1110
31	1F	0001 1111	95	5F	0101 1111
32	20	0010 0000	96	60	0110 0000
33	21	0010 0001	97	61	0110 0001
34	22	0010 0010	98	62	0110 0010
35	23	0010 0011	99	63	0110 0011
36	24	0010 0100	100	64	0110 0100
37	25	0010 0101	101	65	0110 0101
38	26	0010 0110	102	66	0110 0110
39	27	0010 0111	103	67	0110 0111
40	28	0010 1000	104	68	0110 1000
41	29	0010 1001	105	69	0110 1001
42	2A	0010 1010	106	6A	0110 1010
43	2B	0010 1011	107	6B	0110 1011
44	2C	0010 1100	108	6C	0110 1100
45	2D	0010 1101	109	6D	0110 1101
46	2E	0010 1110	110	6E	0110 1110
47	2F	0010 1111	111	6F	0110 1111
48	30	0011 0000	112	70	0111 0000
49	31	0011 0001	113	71	0111 0001
50	32	0011 0010	114	72	0111 0010
51	33	0011 0011	115	73	0111 0011
52	34	0011 0100	116	74	0111 0100
53	35	0011 0101	117	75	0111 0101
54	36	0011 0110	118	76	0111 0110
55	37	0011 0111	119	77	0111 0111
56	38	0011 1000	120	78	0111 1000
57	39	0011 1001	121	79	0111 1001
58	3A	0011 1010	122	7A	0111 1010
59	3B	0011 1011	123	7B	0111 1011
60	3C	0011 1100	124	7C	0111 1100
61	3D	0011 1101	125	7D	0111 1101
62	3E	0011 1110	126	7E	0111 1110
63	3F	0011 1111	127	7F	0111 1111

Notes

- Besides the table listed above, for example, values 144 - 159 (decimal)/9nH/1001 0000 - 1001 1111 (binary) indicate Note On message for each channel (1-16). Values 175 - 191/BnH/1011 0000 - 1011 1111 indicate Control Change message for each channel (1-16). Values 192 - 207/CnH/1100 0000 - 1100 1111 indicate Program Change message for each channel (1-16). Values 240/F0H/1111 0000 indicate the beginning of System Exclusive message. Values 247/F7H/1111 0111 indicate the end of System Exclusive message.
- "aaH (hexadecimal)/0aaaaaaa (binary)" indicate data addresses that contain High, Mid, and Low.
- "bbH/0bbbbbbb" indicate byte count.
- "ccH/0ccccccc" indicate checksum

Panel sound source

(1) Transmission

```
IDI<----+---KEY ON/OFF        9nH
OUT  |        |
     |        +---CONTROL CHANGE                BnH
     |        |      BANK SELECT MSB             BnH,00H
     |        |      BANK SELECT LSB             BnH,20H
     |        |      VOLUME                      BnH,07H
     |        |      PANPOT                      BnH,0AH
     |        |      EXPRESSION                  BnH,0BH
     |        |      SUSTAIN                     BnH,40H
     |        |      SOSTENUTE                   BnH,42H
     |        |      SOFT PEDAL                  BnH,43H
     |        |      REVERB SEND LEVEL           BnH,5BH
     |        |      CHORUS SEND LEVEL           BnH,5DH
     |        |      VARIATION SEND LEVEL        BnH,5EH
     |        |      ALL SOUND OFF               BnH,78H
     |        |      RESET ALL CONTROLLERS       BnH,79H
     |        |      ALL NOTE OFF                BnH,7BH
     |        |
     |        |---PROGRAM CHANGE                 CnH
     |        +---PITCH BEND CHANGE              EnH
     +---+---SYSTEM EXCLUSIVE MESSAGE
     |   |        <YAMAHA MIDI FORMAT>
     |   |        <UNIVERSAL>
     |   |------- UNIVERSAL REALTIME            F0H 7FH.....F7H
     |   |------- UNIVERSAL NON-REALTIMEF0H     7EH.....F7H
     |   |        <XG STANDARD>
     |   |------- XG PARAMETER CHANGE           F0H 43H 1nH 4CH aaH aaH aaH
     |   |                                      ddH.....ddH F7H
     |   |
     |   |------- XG BULK DUMP                  F0H 43H 0nH 4CH bbH bbH
     |   |                                      aaH aaH aaH ddH.....ddH ccH F7H
     |   |        <CLAVINOVA MIDI COMPLIANCE>
     |   |        <SPECIAL OPERATORS>
     |
     +-------SYSTEM REALTIME MESSAGE
             MIDI CLOCK                         F8H
             START                              FAH
             STOP                               FCH
             ACTIVE SENSING                     FEH
```

(2) Reception

```
MIDI>----+---KEY OFF          8nH
IN    |   |
      |   +---KEY ON/OFF                        9nH
      |   |
      |   +---CONTROL CHANGE
      |   |      BANK SELECT MSB                BnH,00H
      |   |      BANK SELECT LSB                BnH,20H
      |   |      DATA ENTRY MSB                 BnH,06H
      |   |      DATA ENTRY LSB                 BnH,26H
      |   |      MAIN VOLUME                    BnH,07H
      |   |      PANPOT                         BnH,0AH
      |   |      EXPRESSION                     BnH,0BH
      |   |      SUSTAIN                        BnH,40H
      |   |      SOSTENUTO                      BnH,42H
      |   |      SOFT PEDAL                     BnH,43H
      |   |      REVERB SEND LEVEL              BnH,5BH
      |   |      CHORUS SEND LEVEL              BnH,5DH
      |   |      VARIATION SEND LEVEL           BnH,5EH
      |   |      DATA INCREMENT                 BnH,60H
      |   |      DATA DECREMENT                 BnH,61H
      |   |      RPN LSB                        BnH,64H
      |   |      RPN MSB                        BnH,65H
      |   |        PITCH BEND SENS.             BnH,65H,00H,64H,00H,06H,mmH
      |   |        FINE TUNING                  BnH,65H,00H,64H,01H,06H,mmH,
      |   |                                     26H,llH
      |   |        COARSE TUNING                BnH,65H,00H,64H,02H,06H,mmH
      |   |        NULL                         BnH,65H,7FH,64H,7FH
      |   |      ALL SOUND OFF                  BnH,78H,00H
      |   |      RESET ALL CONTROLLERS          BnH,79H,00H
      |   |      LOCAL CONTROL                  BnH,7AH,00H
      |   |      ALL NOTES OFF                  BnH,7BH,00H
      |   |      OMNI OFF                       BnH,7CH,00H
      |   |      OMNI ON                        BnH,7DH,00H
      |   |      MONO                           BnH,7EH
      |   |      POLY                           BnH,7FH
      |   |
      |   +---PROGRAM CHANGE                    CnH
      |   |
      |   +---PITCH BEND CHANGE                 EnH
      |   |
      +---+---SYSTEM EXCLUSIVE MESSAGE
      |   |      <YAMAHA MIDI FORMAT>
      |   |      <UNIVERSAL>
      |   |------ UNIVERSAL REALTIME            F0H 7FH.....F7H
      |   |------ UNIVERSAL NON-REALTIME        F0H 7EH.....F7H
      |   |      <XG STANDARD>
      |   |------ XG PARAMETER CHANGE           F0H 43H 1nH 4CH aaH aaH aaH
ddH.....ddH F7H
      |   |------ XG BULK DUMP                  F0H 43H 0nH 4CH bbH bbH aaH aaH
aaH ddH.....ddH ccH F7H
      |   |------ PARAMETER REQUEST             F0H 43H 3nH 4CH aaH aaH aaH F7H
      |   |------ DUMP REQUEST                  F0H 43H 2nH 4CH aaH aaH aaH F7H
      |   |      <CLAVINOVA MIDI COMPLIANCE>
      |   |      <SPECIAL OPERATORS>
      |   |      <Others>
      |   |
      +---+---SYSTEM REALTIME MESSAGE
      |        MIDI CLOCK                       F8H
      |        START                            FAH
      |        STOP                             FCH
      |        ACTIVE SENSING                   FEH
```

(3) Transmission/reception

(3-1) CHANNEL VOICE MESSAGES

(3-1-1) KEY OFF

STATUS	1000nnnn (8nH)	n = 0 - 15 VOICE CHANNEL NUMBER
NOTE NUMBER	0kkkkkkk	k = 0 (C-2) - 127 (G8)
VELOCITY	0vvvvvvv	"v" is ignored.

(3-1-2) KEY ON/OFF

STATUS	1001nnnn (9nH)	n = 0 - 15 VOICE CHANNEL NUMBER
NOTE NUMBER	0kkkkkkk	k = 0 (C-2) - 127 (G8)
VELOCITY	0vvvvvvv	(v≠0) NOTE ON
	00000000	(v=0) NOTE OFF

(3-1-3) PROGRAM CHANGE

STATUS	1100nnnn (CnH)	n = 0 - 15 VOICE CHANNEL NUMBER
PROGRAM NUMBER	0ppppppp	p = 0 - 127

Voice name	Bank MSB	Bank LSB	PROGRAM CHANGE
GrandPiano1	0	112	0
GrandPiano2	0	112	1
E.Piano1	0	112	5
E.Piano2	0	112	4
SynthPiano	0	112	88
WoodBass	0	112	32
ElectricBass	0	112	33
Bass&Cymbal	0	114	32
Harpsichord 8'	0	112	6
Harpsichord 8'+4'	0	113	6
ElectricClavichord	0	112	7
Vibraphone	0	112	11
Marimba	0	112	12
Celesta	0	112	8
PipeOrganPrincipal	0	113	19
PipeOrganFlute1	0	114	19
PipeOrganFlute2	0	115	19
PipeOrganTutti	0	112	19
JazzOrgan	0	112	16
Strings	0	113	48
SynthStrings	0	112	48
SlowStrings	0	113	49
Choir	0	112	52
SlowChoir	0	113	52
Scat	0	112	53

(3-1-4) PITCH BEND CHANGE (Only reception)

STATUS	1110nnnn (EnH)	n = 0 - 15 VOICE CHANNEL NUMBER
LSB	0vvvvvvv	PITCH BEND CHANGE LSB
MSB	0vvvvvvv	PITCH BEND CHANGE MSB

(3-1-5) CONTROL CHANGE

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

* Transmitted control numbers

c = 0	BANK SELECT MSB	; v = 0:PANEL VOICE
c = 32	BANK SELECT LSB	; v = 0 - 127
c = 11	EXPRESSION	; v = 0 - 127
c = 64	SUSTAIN	; v = 0 - 127
c = 66	SOSTENUTO	; v = 0:OFF , 127:ON
c = 67	SOFT PEDAL	; v = 0:OFF , 127:ON
c = 91	REVERB SEND LEVEL	; v = 0 - 127
c = 93	CHORUS SEND LEVEL	; v = 0 - 127
c = 94	VARIATION SEND LEVEL	; v = 0 - 127

MIDI Data Format

* Receiving control numbers

c = 0	BANK SELECT MSB	; v = 0:PANEL VOICE
c = 32	BANK SELECT LSB	; v = 0 - 127
c = 6	DATA ENTRY MSB	; v = 0 - 127*1
c = 38	DATA ENTRY LSB	; v = 0 - 127*1
c = 7	MAIN VOLUME	; v = 0 - 127
c = 10	PANPOT	; v = 0 - 127
c = 11	EXPRESSION	; v = 0 - 127
c = 64	SUSTAIN	; v = 0 - 127
c = 66	SOSTENUTO	; v = 0-63:OFF , 64-127:ON
c = 67	SOFT PEDAL	; v = 0-63:OFF , 64-127:ON
c = 91	REVERB SEND LEVEL	; v = 0 - 127
c = 93	CHORUS SEND LEVEL	; v = 0 - 127
c = 94	VARIATION SEND LEVEL	; v = 0 - 127
c = 96	DATA INCREMENT	; v = 127*1
c = 97	DATA DECREMENT	; v = 127*1

*1: Used only for setting the parameters with the specified RPN.

Processing the Bank Select message is deferred until the Program Change is received. To change the voices (including the voice banks), transmit Bank Select MSB, LSB, then Program Change in this order as a set.

(3-2) CHANNEL MODE MESSAGES
STATUS	1011nnnn(BnH)	n = 0- 15 VOICE CHANNEL NUMBER
CONTROL NUMBER	0ccccccc	c = CONTROL NUMBER
CONTROL VALUE	0vvvvvvv	v = DATA VALUE

(3-2-1) ALL SOUND OFF (Only reception)
(CONTROL NUMBER = 78H , DATA VALUE = 0)
All voicing sounds on the corresponding channel(s) are muted. Note On and Hold On Channel messages are also erased.

(3-2-2) RESET ALL CONTROLLERS (Only reception)
(CONTROL NUMBER = 79H , DATA VALUE = 0)
The following controller values are reset.

PITCH BEND CHANGE	0 (mid point)
EXPRESSION	127 (max)
SUSTAIN	0 (off)
SOSTENUTO	0 (off)
SOFT PEDAL	0 (off)
RPN	The number is not specified. The internal data does not change.

(3-2-3) ALL NOTES OFF (Only reception)
(CONTROL NUMBER = 7BH , DATA VALUE = 0)
All notes (that are on) are turned off. If sustain or sostenuto is on, the corresponding note does not stop voicing until sustain or sostenuto is turned off.

(3-2-4) OMNI OFF (Only reception)
(CONTROL NUMBER = 7CH , DATA VALUE = 0)
Same process as when All Notes Off message is received.

(3-2-5) OMNI ON (Only reception)
(CONTROL NUMBER = 7DH , DATA VALUE = 0)
Same process as when All Notes Off message is received.
It does not set OMNI On.

(3-2-6) MONO (Only reception)
(CONTROL NUMBER = 7EH , DATA VALUE = 0)
Same process as when All Sound Off message is received.

(3-2-7) POLY (Only reception)
(CONTROL NUMBER = 7FH , DATA VALUE = 0)
Same process as when All Notes Off message is received.

(3-3) REGISTERED PARAMETER NUMBER (RPN) (Only reception)
STATUS	1011nnnn (BnH)	n = 0 - 15 VOICE CHANNEL NUMBER
RPN LSB	01100100 (64H)	
RPN LSB NUMBER	0ppppppp	p = RPN LSB (Refer to below)
RPN MSB	01100101 (65H)	
RPN MSB NUMBER	0qqqqqqq	q = RPN MSB (Refer to below)
DATA ENTRY MSB	00000110 (06H)	
DATA VALUE	0mmmmmmm	m = Data Value
DATA ENTRY LSB	00100110 (26H)	
DATA VALUE	0lllllll	l = Data Value

Specify the parameter with RPN MSB/LSB, then set the parameter value with data entry MSB/LSB.

RPN LSB MSB	D.ENTRY MSB LSB	PARAMETER NAME	DATA RANGE
00H 00H	mmH ---	PITCH BEND SENSITIVITY	00H - 18H (0 - 24 semitone)
01H 00H	mmH llH	FINE TUNE {mmH,llH} = {00H,00H}-{40H,00H}-{7FH,7FH} (–8192*100/8192) - 0 - (+8192*100/8192)	
02H 00H	mmH ---	COARSE TUNE	28H - 40H - 58H (-24 - 0 - +24 semitone)
7FH 7FH	--- ---	NULL	The RPN number is not specified. It does not affect the internal settings.

(3-4) SYSTEM REALTIME MESSAGES (Only transmission)
(3-4-1) MIDI CLOCK
STATUS	11111000	(F8H)

Transmission: Transmitted in a 1/24 beat timing.

(3-4-2) START
STATUS	11111010	(FAH)

Transmission: The message is output when song playback on the instrument starts.
Reception: Song playback or song recording starts, depending on the state of the instrument.

(3-4-3) STOP
STATUS	11111100	(FCH)

Transmission: The message is output when song playback on the instrument stops.
Reception: Song playback or song recording stops, depending on the state of the instrument.

(3-4-4) ACTIVE SENSING
STATUS	11111110	(FEH)

This message is transmitted about every 200 msec.

When the instrument receives this code, it starts "sensing." If it does not receive any status information or other data, the instrument clears the MIDI reception buffer and forces off all voicing notes and sustain. All Control values are reset to their default settings.

(3-5) SYSTEM EXCLUSIVE MESSAGE
(3-5-1) UNIVERSAL SYSTEM EXCLUSIVE
(3-5-1-1) UNIVERSAL REALTIME MESSAGE
(3-5-1-1-1) MIDI MASTER VOLUME (Only reception)

binary	hexadecimal	
11110000	F0	Exclusive status
01111111	7F	Universal Realtime
01111111	7F	ID of target Device
00000100	04	Sub-ID #1=Device Control Message
00000001	01	Sub-ID #2=Master Volume
0sssssss	SS	Volume LSB
0ttttttt	TT	Volume MSB
11110111	F7	End of Exclusive
or		
11110000	F0	Exclusive status
01111110	7F	Universal Realtime
0xxxnnnn	XN	When N is received N=0-F, whichever is received. When N is transmitted N always=0. X = don't care
00000100	04	Sub-ID #1=Device Control Message
00000001	01	Sub-ID #2=Master Volume
0sssssss	SS	Volume LSB
0ttttttt	TT	Volume MSB
11110111	F7	End of Exclusive

All channel volume level is changed simultaneously.
Value "TT" is used as the master volume level. (Value "SS" is ignored.)

(3-5-1-2)UNIVERSAL NON REALTIME MESSAGE

(3-5-1-2-1) GENERAL MIDI SYSTEM ON

binary	hexadecimal	
11110000	F0	Exclusive status
01111110	7E	Universal Non-Realtime
01111111	7F	ID of target Device
00001001	09	Sub-ID #1=General MIDI Message
00000001	01	Sub-ID #2=General MIDI On
11110111	F7	End of Exclusive
or		
11110000	F0	Exclusive status
01111110	7E	Universal Non-Realtime
0xxxnnnn	XN	When N is received N=0-F, whichever is received. When N is transmitted N always=0. X = don't care
00001001	09	Sub-ID #1=General MIDI Message
00000001	01	Sub-ID #2=General MIDI On
11110111	F7	End of Exclusive

Upon receiving an "On" message, System Mode is changed to "XG." All Control data values except for the master tuning setting are reset to the default values.
Executing this message takes about 50ms. There should be a sufficient interval between this and the next message.

(3-5-2) XG STANDARD

(3-5-2-1)XG PARAMETER CHANGE

(3-5-2-1-1)XG SYSTEM ON

binary	hexadecimal	
11110000	F0	Exclusive status
01000011	43	YAMAHA ID
0001nnnn	1N	Device Number
01001100	4C	Model ID
00000000	00	Address High
00000000	00	Address Mid
01111110	7E	Address Low
00000000	00	Data
11110111	F7	End of Exclusive

Upon receiving an "On" message, System Mode is changed to "XG." All Controllers are reset, and all MultiPart data is shown in the table, and all "All System" data with (XG) mark is reset to the default values.
Executing this message takes about 50ms. There should be a sufficient interval between this and the next message.

(3-5-2-1-2) XG PARMETER CHANGE

binary	hexadecimal	
11110000	F0	Exclusive status
01000011	43	YAMAHA ID
0001nnnn	1N	Device Number
01001100	4C	Model ID
0aaaaaaa	AA	Address High
0aaaaaaa	AA	Address Mid
0aaaaaaa	AA	Address Low
0ddddddd	DD	Data
|	|	
11110111	F7	End of Exclusive

If the data size of the parameter is 2 or 4, the amount of data that corresponds to the size is transmitted.
Refer to the table on page 128 for more information on the address and parameters.

The following two types of data are transmitted and received. (The data is transmitted only when Parameter Change Request is received.)
XG System Data
Multi Part Data

(3-5-3) SPECIAL OPERATORS

(3-5-3-1) SPLIT POINT

binary	hexadecimal	
11110000	F0	Exclusive status
01000011	43	YAMAHA ID
01110011	73	Clavinova ID
00000001	01	Common
00010001	11	Sub ID
00000000	00	
00010100	14	Split Point
0ddddddd	DD	Split Key No.
11110111	F7	End of Exclusive

(3-5-3-2) VOLUME,EXPRESSION AND PAN REALTIME CONTROL OFF

binary	hexadecimal	
11110000	F0	Exclusive status
01000011	43	YAMAHA ID
01110011	73	Clavinova ID
00000001	01	Common
00010001	11	Sub ID
0000nnnn	0N	N = MIDI Channel
01001001	45	Volume and Expression Realtime Control Off
0vvvvvvv	VV	Value VV: On=7FH, off=OOH
11110111	F7	End of Exclusive

After this Exclusive On message is received, any change to Volume and Expression becomes effective only at the time of key on. When Exclusive Off message is received, the settings return to normal.

(3-5-3-3) Panel Reverb Type

binary	hexadecimal	
11110000	F0	Exclusive status
01000011	43	YAMAHA ID
01110011	73	Clavinova ID
01101000	68	CLP970
00110001	31	Sub ID
00000000	OO	don't care
00000000	00	Panel Reverb Type
0ddddddd	DD	DD: 0 (Room), 1(Hall1), 2(Hall2), 3(Stage), 4(Plate)
11110111	F7	End of Exclusive

(3-5-3-4) Panel Chorus Type

binary	hexadecimal	
11110000	F0	Exclusive status
01000011	43	YAMAHA ID
01110011	73	Clavinova ID
01101000	68	CLP970
00110001	31	Sub ID
00000000	OO	don't care
00000001	01	Panel Chorus Type
0ddddddd	DD	DD: 0(Chorus), 1(Celeste), 2(Flanger)
11110111	F7	End of Exclusive

(3-5-3-5) Panel Variation Type

binary	hexadecimal	
11110000	F0	Exclusive status
01000011	43	YAMAHA ID
01110011	73	Clavinova ID
01101000	68	CLP970
00110001	31	Sub ID
00000000	OO	don't care
00000010	02	Panel Variation Type
0ddddddd	DD	DD: 0(DelayLCR), 1(DelayLR), 2(Echo), 3(CrossDelay), 4(Symphonic), 5(RotarySpeaker) 6(Tremolo), 7(VibeRotor), 8(AutoPan), 9(Phaser), 10(AutoWah), 11(SoundBoardRev), 12(Off)
11110111	F7	End of Exclusive

(3-5-3-6) Vibe Rotor Control

binary	hexadecimal	
11110000	F0	Exclusive status
01000011	43	YAMAHA ID
01110011	73	Clavinova ID
01101000	68	CLP970
00110001	31	Sub ID
00000000	00	donÅft care
00001000	08	Vibe Rotor Control
0ddddddd	DD	DD: On=7FH, Off=00H
11110111	F7	End of Exclusive

(3-5-3-7) Velocity Sense Depth

binary	hexadecimal	
11110000	F0	Exclusive status
01000011	43	YAMAHA ID
01110011	73	Clavinova ID
01101000	68	CLP970
00110001	31	Sub ID
00000000	00	don't care
00001001	09	Velocity Sense Depth
0ddddddd	DD	DD: 00H - 7FH
11110111	F7	End of Exclusive

MIDI Data Format

(3-5-3-8) Velocity Sense Offset

binary	hexadecimal	
11110000	F0	Exclusive status
01000011	43	YAMAHA ID
01110011	73	Clavinova ID
01101000	68	CLP970
00110001	31	Sub ID
00000000	00	don't care
00001010	0A	Velocity Sense Offset
0ddddddd	DD	DD: 00H - 7FH
11110111	F7	End of Exclusive

(3-5-3-9) Rotary Speed Control

binary	hexadecimal	
11110000	F0	Exclusive status
01000011	43	YAMAHA ID
01110011	73	Clavinova ID
01101000	68	CLP970
00110001	31	Sub ID
00000000	00	don't care
00001110	0E	Rotary Speed Control
0ddddddd	DD	DD: On=7FH, Off=00H
11110111	F7	End of Exclusive

(3-5-4) Others
(3-5-4-1) MIDI MASTER TUNING (Only reception)

binary	hexadecimal	
11110000	F0	Exclusive status
01000011	43	YAMAHA ID
0001nnnn	1N	When N is received N=0-F, whichever is received. When N is transmitted N always=0.
00100111	27	Model ID
00110000	30	Sub ID
00000000	00	
00000000	00	
0mmmmmmm	MM	Master Tune MSB
01111111	LL	Master Tune LSB
0ccccccc	CC	don't care
11110111	F7	End of Exclusive

Tuning of all channels is changed simultaneously.
Values MM and LL are used as the MIDI master tuning value. (Values N and CC are ignored.)

T=M-128

T: Actual tuning value (–99 cents - +99 cents)
M: 0-3 bits of value MM are regarded as MSB, and 0-3 bits of value LL are regarded as LSB.: Byte value (28 - 228)

This setting cannot be reset by GM System On or XG System On.

< Table 1-1 >
Parameter Basic Address

	Parameter Change Address			
	(H)	(M)	(L)	Description
SYSTEM	00	00	00	System
	00	00	7E	XG System On
	00	00	7F	All Parameter Reset
MULTI PART	08	00	00	Multi Part 1
				:
	08	0F	00	Multi Part 16
	08	10	00	Reserved
	:	:	:	:

< Table 1-2 >
MIDI Parameter Change table (SYSTEM)

Address (H)	Size	Data (H)	Parameter Name (H)		Description	Default Value(H)
00	00	00	4	0000 Master Tune	-102.4..+102.3[cent]	00 04 00 00
		01		..07FF	1st bit3-0 -> bit15-12	(0400)
		02			2nd bit3-0 -> bit11-8	(Not reset by XG/GM On.)
		03			3rd bit3-0 -> bit7-4	
					4th bit3-0 -> bit3-0	
		04	1	00..7F Master Volume	0..127	7F
		05	1	Not Used		
		06	1	28..58 Transpose	-24..+24[semitones]	40
		7D		n		
		7E		00 XG System On	00=XG Sytem on	
		7F		00 All Parameter Reset	00=on (receive only)	

TOTAL SIZE 6

< Table 1-3 >
MIDI Parameter Change table (MULTI PART)

Address (H)	Size	Data (H)	Prameter Name (H)		Description	Default Value (H)
08	nn	01	1	00..7F Bank Select MSB	0..127	7F (Part10), 00 (Others)
	nn	02	1	00..7F Bank Select LSB	0..127	00
	nn	03	1	00..7F Program Number	1..128	00
					1..3:drum thru,drum1..2	01 (Part10)
	nn	08	1	28..58 Note Shift	-24..+24[semitones]	40
	nn	09	2	00..FF Detune	-12.8..+12.7[Hz]	08 00
	nn	0A			1st bit3..0 -> bit7..4	(80)
					2nd bit3..0 -> bit3..0	
	nn	0B	1	00..7F Volume	0..127	64
	nn	0C	1	00..7F Velocity Sense Depth	0..127	40
	nn	0D	1	00..7F Velocity Sense Offset	0..127	40
	nn	0E	1	00..7F Pan	L64..C..R63 (0..64..127)	
	nn	11	1	00..7F Dry Level	0..127	7F
	nn	12	1	00..7F Chorus Send	0..127	00
	nn	13	1	00..7F Reverb Send	0..127	28
	nn	14	1	00..7F Variation Send	0..127	00
	nn	23	1	28..58 Bend Pitch Control	-24..+24[semitones]	42
	nn	35	1	00..01 Rev Note Message	0:OFF 1:ON	01

XG sound source

1. Channel messages

1.1 Note on/note off

These messages convey keyboard performance data.

> Range of note numbers received = 0 (C-2)...60 (C3)...127 (G8)
> Velocity range = 1...127 (Velocity is received only for note-on)

When the Multi Part parameter "Rcv NOTE MESSAGE" = OFF, that part will not receive these messages.
For a drum part*, key-off is not received if the DrumSetup parameter Rcv NOTE OFF = OFF.
For a drum part, key-on is not received if the DrumSetup parameter Rcv NOTE ON = OFF.

> * Drum Part indicates that the Multi Part parameter PART MODE is "set to DRUM, DRUMS1, DRUMS2."

1.2 Control changes

These messages control volume or pan etc.
Their functions are differentiated by the control number (Ctrl#).
If the Multi Part parameter Rcv CONTROL CHANGE = OFF, that part will not receive control changes.

1.2.1 Bank Select

This message selects the voice bank.

Control#	Parameter	Data Range
0	Bank Select MSB	0, 64, 126, 127 (Normal voice, SFX voice, SFX kit, Drum kit)
32	Bank Select LSB	0...127

The Bank Select data will be processed only after a Program Change is received, and then voice bank will change at that time.
If you wish to change the voice bank as well as the voice, you must transmit Bank Select and Program Change messages as a set, in the order of Bank Select MSB, LSB, and Program Change.

1.2.2 Modulation

This message is used primarily to control the depth of vibrato, but the depth of the following 7 types of effect can be controlled.
The effect of this message can be changed by the following parameters.

- Multi Part Parameter
  1. MW PITCH CONTROL
  2. MW FILTER CONTROL
  3. MW AMPLITUDE CONTROL
  4. MW LFO PMOD DEPTH
  5. MW LFO FMOD DEPTH
  6. MW LFO AMOD DEPTH

- Effect1 Parameter
  7. MW VARIATION CONTROL DEPTH
     (Valid when Variation Effect is assigned to a part as Insertion)

By default, an LFO Pitch Modulation (PMOD) effect will apply.

Control#	Parameter	Data Range
1	Modulation	0...127

If the Multi Part parameter Rcv MODULATION = OFF, that part will not receive Modulation.

1.2.3 Portamento Time

This message controls the degree of Portamento (refer to 1.2.9).

Control#	Parameter	Data Range
5	Portamento Time	0...127

When Portamento (control number 065) is ON, this regulates the speed of the pitch change.
A value of 0 is the shortest portamento time, and 127 is the longest portamento time.
If the receive channel is a drum part, Portamento Time is not received.

1.2.4 Data Entry

This message sets the value of the parameter which was specified by RPN MSB/LSB (see 1.2.22) and NRPN MSB/LSB (see 1.2.21).

Control#	Parameter	Data Range
6	Data Entry MSB	0...127
38	Data Entry LSB	0...127

1.2.5 Main Volume

This message controls the volume of each part.
This is used to adjust the volume balance between parts.

Control#	Parameter	Data Range
7	Main Volume	0...127

When the Multi Part parameter Rcv VOLUME = OFF, that part will not receive Main Volume.
With a value of 0 there will be no sound, and a value of 127 will be the maximum volume.

1.2.6 Panpot

This message control the panning (stereo location) of each part.

Control#	Parameter	Data Range
10	Pan	0...64...127

When the Multi Part parameter Rcv PAN = OFF, that part will not receive Panpot.
0 is left, 64 is center, and 127 is right.

1.2.7 Expression

This message controls expression (dynamics within a musical line) for each part.
It is used to create volume changes during a song.

Control#	Parameter	Data Range
11	Expression	0...127

If the Multi Part parameter Rcv EXPRESSION = OFF, that part will not receive Expression.

1.2.8 Hold1

This message controls sustain pedal on/off.

Control#	Parameter	Data Range
64	Hold1	0...63,64...127 (OFF, ON)

When this is ON, currently-sounding notes will continue to sound even if note-off messages are received.
If the Multi Part parameter Rcv HOLD1 = OFF, that part will not receive Hold1.

1.2.9 Portamento

This message controls portamento on/off.

Control#	Parameter	Data Range
65	Portamento	0...63, 64...127 (OFF, ON)

When this is ON, the pitch will change smoothly between notes. The time over which the pitch changes is adjusted by Portamento Time (see 1.2.3). Also, when the Multi Part parameter MONO/POLY MODE = MONO, the tone will also change smoothly (legato) if Portamento = ON.
If any of the following Multi Part parameter settings apply, that part will not receive Portamento.

- Rcv PORTAMENTO = OFF
- PART MODE = DRUM, DRUMS1, DRUMS2

1.2.10 Sostenuto

This message controls sostenuto pedal on/off.

Control#	Parameter	Data Range
66	Sostenuto	0...63,64...127 (OFF, ON)

If sostenuto is turned on while a note is sounding, that note will be sustained until sostenuto is turned OFF.
If the Multi Part parameter Rcv SOSTENUTO = OFF, that part will not receive Sostenuto.

1.2.11 Soft Pedal

This message controls soft pedal on/off.

Control#	Parameter	Data Range
67	Soft Pedal	0...63, 64...127 (OFF, ON)

The sound will become mellower when Soft Pedal is ON.
If any of the following Multi Part parameter settings apply, that part will not receive the Soft Pedal.

- Rcv SOFT PEDAL = OFF
- PART MODE = DRUM, DRUMS1, DRUMS2

1.2.12 Harmonic Content

This message adjusts the resonance of the filter that is specified for the sound.

Control#	Parameter	Data Range
71	Harmonic Content	0...64...127 (-64...0...+63)

Since this is a relative change parameter, it specifies a boost or cut relative to 64.
Higher values will produce a more distinctive sound.
For some sounds, the effective range may be less than the possible range of settings.

1.2.13 Release Time

This message adjusts the EG release time that was specified by the sound data.

Control#	Parameter	Data Range
72	Release Time	0...64...127 (-64...0...+63)

Since this is a relative change parameter, it specifies an increase or decrease relative to 64.
Increasing this value will lengthen the release that follows a note-off.

1.2.14 Attack Time

This message adjusts the EG attack time that was specified by the sound data.

Control#	Parameter	Data Range
73	Attack Time	0...64...127 (-64...0...+63)

Since this a relative change parameter, it specifies an increase or decrease relative to 64. Increasing this value will make the attack more gradual, and decreasing this value will make the attack sharper.

1.2.15 Brightness

This message adjusts the cutoff frequency of the low pass filter specified by the sound data.

Control#	Parameter	Data Range
74	Brightness	0...64...127 (-64...0...+63)

Since this is a relative change parameter, it specifies an increase or decrease relative to 64.
Lower values will produce a more mellow sound.
For some sounds, the effective range may be less than the possible range of settings.

1.2.16 Portamento Control

This message specifies the portamento source key number (the key number at which portamento will begin).
Data of 0...127 specifies the portamento source key.
When Portamento Control is received, the currently-sounding pitch will change at a Portamento Time of 0 to the key of the next-received note-on of the same channel.

Control#	Parameter	Data Range
84	Portamento Control	0...127 (C-2...G8)

This is received even if Rcv PORTAMENTO = OFF.

1.2.17 Effect1 Depth(Reverb Send Level)

This message specifies the send level for the reverb effect.

Control#	Parameter	Data Range
91	Effect1 Depth	0...127

Increasing this value will produce a richer reverb. The effect of the value will depend on the state of the reverb effect.

1.2.18 Effect3 Depth(Chorus Send Level)

This message specifies the send level for the chorus effect.

Control#	Parameter	Data Range
93	Effect3 Depth	0...127

Raising this value will increase the modulation or spaciousness. The effect of the value will depend on the state of the chorus effect.

1.2.19 Effect4 Depth (Variation Effect Send Level)

This message specifies the send level for the variation effect.

Control#	Parameter	Data Range
94	Effect4 Depth	0...127

However, this is not received if the Variation Effect parameter Variation Connection = 0 (Insertion).

1.2.20 Data Increment/Decrement (for RPN)

This message increases or decreases the parameter value specified for RPN (see 1.2.22), by increments of 1.

Control#	Parameter	Data Range
96	RPN Increment	--
97	RPN Decrement	--

The data byte is ignored.

1.2.21 NRPN (Non-registered parameter number)

This message is used to specify a sound parameter (such as vibrato, filter, EG, drum setup etc.) as an offset value.
Use NRPN MSB and NRPN LSB to specify the parameter that you wish to modify, and then use Data Entry (see 1.2.4) to set the value for the specified parameter.

Control#	Parameter	Data Range
98	NRPN LSB	0...127
99	NRPN MSB	0...127

If the Multi Part parameter Rcv NRPN = OFF, that part will not receive NRPN.

The following NRPN messages can be received.

NRPN MSB	LSB	Data Entry *1 MSB	LSB	Parameter name and value range
01	08	mm	-- *2	Vibrato rate mm: 00 - 64 - 127 (-64...0...+63)
01	09	mm	--	Vibrato depth mm: 00 - 64 - 127 (-64...0...+63)
01	10	mm	--	Vibrato delay mm: 00 - 64 - 127 (-64...0...+63)
01	32	mm	--	Low pass filter cutof f frequency mm: 00 - 64 - 127 (-64...0...+63)
01	33	mm	--	Low pass filter resonance mm : 00 - 64 - 127 (-64...0...+63)
01	99	mm	--	EG attack time mm: 00 - 64 - 127 (-64...0...+63)
01	100	mm	--	EG decay time mm: 00 - 64 - 127 (-64...0...+63)
01	102	mm	--	EG release time mm: 00 - 64 - 127 (-64...0...+63)
20	rr	mm	--	Drum low pass filter cutoff frequency rr: drum instrument note number mm: 00 - 64 - 127 (-64...0...+63)
21	rr	mm	--	Drum low pass filter resonance rr: drum instrument note number mm: 00 - 64 - 127 (-64...0...+63)
22	rr	mm	--	Drum EG attack rate rr: drum instrument note number mm: 00 - 64 - 127 (-64...0...+63)
23	rr	mm	--	Drum EG decay rate rr: drum instrument note number mm: 00 - 64 - 127 (-64...0...+63) The effect will apply both to Decay 1 and 2.
24	rr	mm	--	Drum instrument pitch coarse rr: drum instrument note number mm: 00 - 64 - 127 (-64...0...+63)
25	rr	mm	--	Drum instrument pitch fine rr: drum instrument note number mm: 00 - 64 - 127 (-64...0...+63)
26	rr	mm	--	Drum instrument level rr: drum instrument note number mm: 00 - 127(0...maximum)
28	rr	mm	--	Drum instrument panpot rr: drum instrument note number mm: 00, 01-64-127(RND, L63...C...R63)
29	rr	mm	--	Drum instrument reverb send level rr: drum instrument note number mm: 00 - 127(0...maximum)
30	rr	mm	--	Drum instrument chorus send level rr: drum instrument note number mm: 00 - 127(0...maximum)
31	rr	mm	--	Drum instrument variation send level rr: drum instrument note number mm: 00 - 127(0...maximum) (when Variation Connection = SYSTEM) mm: 00, 01-127 (OFF,ON) (when Variation Connection = INSERTION)

MSB 20-31 (for drums) is received when Multi Part parameter PART MODE = DRUMS1, 2.

*1 Refer to 1.2.4
*2 '--' indicates that the setting value is ignored.

1.2.22 RPN (Registered parameter number)

This message is used to specify part parameters such as Pitch Bend Sensitivity or Tuning etc. as an offset value.
Use RPN MSB and RPN LSB to specify the parameter that you wish to modify, and then use Data Entry (see 1.2.4) to set the value of the specified parameter.

Control#	Parameter	Data Range
100	RPN LSB	0...127
101	RPN MSB	0...127

If the Multi Part parameter Rcv RPN = OFF, that part will not receive this message.

The following RPN messages can be received.

RPN MSB LSB	Data Entry *1 MSB LSB	Parameter name and value range
00 00	mm -- *2	Pitch bend sensitivity mm: 00-24 (0...+24 semitones) Specify up to 2 octaves in semitone steps
00 01	mm ll	Fine tuning mm ll:0000-100 cents : : mm ll:64000 cents : : mm ll:127127+100 cents [Note]mm ll: 00 127 (=-87.5) cents is followed by 01 00 (=-87.4) cents.
00 02	mm --	Coarse tuning mm: 40 - 64 - 88 (-24...0...+24 semitones)
127 127	-- --	RPN Null This sets RPN and NRPN numbers to an unset state. Internal data is not affected.

*1 Refer to 1.2.4
*2 '--' indicates that the setting value is ignored.

1.2.23 Assignable controller

By assigning a control change number of 0...95 to a part, the specified effect can be controlled.
This device allows two control change numbers (AC1 and AC2) to be specified for each part.
The following parameters specify the effect of AC1 and AC2.

- Multi Part Parameter
  1. AC1, AC2 PITCH CONTROL
  2. AC1, AC2 FILTER CONTROL
  3. AC1, AC2 AMPLITUDE CONTROL
  4. AC1, AC2 LFO PMOD DEPTH
  5. AC1, AC2 LFO FMOD DEPTH
  6. AC1, AC2 LFO AMOD DEPTH

- Effect1 Parameter
  7. AC1, AC2 VARIATION CONTROL DEPTH
     (Valid if Variation Effect is assigned to a part as Insertion)

The AC1 control change number is specified by the Multi Part parameter AC1 CONTROLLER NUMBER, and the AC2 control change number is specified by the Multi Part parameter AC2 CONTROLLER NUMBER.

1.3 Channel mode messages

These messages specify the basic operation of a part.

1.3.1 All Sound Off

This message silences all currently-sounding notes on the corresponding channel.
However, the settings of channel messages such as Hold 1 and Sostenuto will be maintained.

Control#	Parameter	Data Range
120	All Sound Off	0

1.3.2 Reset All Controllers

This message resets the following controllers to their default values.

Controller	Value
Pitch bend change	±0 (center)
Channel pressure	0 (off)
Polyphonic key pressure	0 (off)
Modulation	0 (off)
Expression	127 (maximum)
Hold	0 (off)
Portamento	0 (off)
Sostenuto	0 (off)
Soft pedal	0 (off)
Portamento control	Reset the portamento source note number that was received
RPN	Number unset, internal data is not affected.
NRPN	Number unset, internal data is not affected.

The following data is not changed
Parameter values specified by program change, bank select MSB/LSB, volume, pan, effect send levels 1, 3, 4, RPN and NRPN.

Control#	Parameter	Data Range
121	Reset All Controllers	0

1.3.3 All Note Off

This message turns off all notes which are currently on for the corresponding part.
However, if Hold 1 or Sostenuto are on, notes will continue to sound until these are turned off.

Control#	Parameter	Data Range
123	All Note Off	0

1.3.4 Omni Off

Perform the same processing as when All Note Off is received.

Control#	Parameter	Data Range
124	Omni Off	0

1.3.5 Omni On

Perform the same processing as when All Note Off is received.

Control#	Parameter	Data Range
125	Omni On	0

1.3.6 Mono

Perform the same processing as when All Sound Off is received, and if the value (mono number) is in the range of 0...16, set the corresponding channel to Mode4* (m = 1).

Control#	Parameter	Data Range
126	Mono	0...16

  * Mode4 is a state in which only channel messages on the specified channel will be received, and notes will be sounded individually (monophonically).

1.3.7 Poly

Perform the same processing as when All Sound Off is received, and set the corresponding channel to Mode3*.

Control#	Parameter	Data Range
127	Poly	0

  * Mode3 is when channel messages will be received only on the specified channel, and will be sounded polyphonically.

1.4 Program change

This message reports sound selection changes and changes the program number of the receiving channel.
In order to include changes to the voice bank, Program Change and Bank Select messages must be sent as a set (see 1.2.1).
When RevPROGRAM CHANGE=OFF for Multi Part Parameter, the program change for that part is not received.

1.5 Pitch bend

This message conveys movements of the pitch bender.
This message is generally used to modify the pitch of a part, but the depth of the following seven effects can be controlled.
The effect of this message can be modified by the following parameters.

- Multi Part Parameter
  1. BEND PITCH CONTROL
  2. BEND FILTER CONTROL
  3. BEND AMPLITUDE CONTROL
  4. BEND LFO PMOD DEPTH
  5. BEND LFO FMOD DEPTH
  6. BEND LFO AMOD DEPTH

- Effect1 Parameter
  7. BEND VARIATION CONTROL DEPTH
     (Valid when Variation Effect is assigned to a part as Insertion)

By default, the Pitch Control effect is applied.
If the Multi Part parameter Rcv PITCH BEND CHANGE = OFF, that part will not receive pitch bend messages.

1.6 Channel aftertouch

This message conveys the pressure which is applied to the keyboard after playing a note in order to create tonal changes (for an entire MIDI channel). The pressure can be controlled for each part. This message will affect the currently-sounding notes.
The effect of this message will be determined by the settings of the following parameters.

- Multi Part Parameter
  1. CAT PITCH CONTROL
  2. CAT FILTER CONTROL
  3. CAT AMPLITUDE CONTROL
  4. CAT LFO PMOD DEPTH
  5. CAT LFO FMOD DEPTH
  6. CAT LFO AMOD DEPTH

- Effect1 Parameter
  7. CAT VARIATION CONTROL DEPTH
     (Valid when the Variation Effect is assigned to a part as Insertion)

By default, there will be no effect.
If the Multi Part parameter Rcv CHANNEL AFTER TOUCH = OFF, that part will not receive Channel Aftertouch.

1.7 Polyphonic aftertouch

This message conveys the pressure that is applied to the keyboard after playing a note (for individual note numbers).

The pressure can be controlled independently for each note. This message will affect currently-sounding notes.

The effect of this message is determined by the following Multi Part parameters.

1. PAT PITCH CONTROL
2. PAT FILTER CONTROL
3. PAT AMPLITUDE CONTROL
4. PAT LFO PMOD DEPTH
5. PAT LFO FMOD DEPTH
6. PAT LFO AMOD DEPTH

By default, there will be no effect.

The effect will apply to note numbers 36...97.

In the case of either of the following Multi Part parameter settings, that part will not receive Polyphonic Aftertouch.

- Rcv CHANNEL AFTER TOUCH = OFF
- PART MODE = DRUM, DRUMS1...4

2. System exclusive messages

2.1 Parameter changes

This devices uses the following parameter changes.

[UNIVERSAL REALTIME MESSAGE]
1) Master Volume

[UNIVERSAL NON REALTIME MESSAGE]
1) General MIDI System On

[XG PARAMETER CHANGE]
1) XG System on
2) XG System parameter change
3) Multi Effect1 parameter change
4) Multi Part parameter change
5) Drums Setup parameter change

[MU128 NATIVE PARAMETER CHANGE 2]
1) Current Performance parameter change

[Others]
1) Master tuning

2.1.1 Universal realtime messages

2.1.1.1 Master Volume

```
11110000    F0H    = Exclusive status
01111111    7FH    = Universal Real Time
01111111    7FH    = ID of target device
00000100    04H    = Sub-ID #1 = Device Control Message
00000001    01H    = Sub-ID #2 = Master Volume
* 0sssssss   SSH    = Volume LSB
0ttttttt    TTH    = Volume MSB
11110111    F7H    = End of Exclusive
   or,
11110000    F0H    = Exclusive status
01111111    7FH    = Universal Real Time
0xxxnnnn    XNH    = Device Number, xxx = don't care
00000100    04H    = Sub-ID #1 = Device Control Message
00000001    01H    = Sub-ID #2 = Master Volume
0sssssss    SSH    = Volume LSB
0ttttttt    TTH    = Volume MSB
11110111    F7H    = End of Exclusive
```

When this is received, the Volume MSB will be reflected by the System parameter MASTER VOLUME.

* The binary expression 0sssssss is expressed in hexadecimal as SSH. The same applies elsewhere.

2.1.2 Universal non-realtime messages

2.1.2.1 General MIDI System On

```
11110000    F0H    = Exclusive status
01111110    7EH    = Universal Non-Real Time
01111111    7FH    = ID of target device
00001001    09H    = Sub-ID #1 = General MIDI Message
00000001    01H    = Sub-ID #2 = General MIDI On
11110111    F7H    = End of Exclusive
   or,
11110000    F0H    = Exclusive status
01111110    7EH    = Universal Non-Real Time
0xxxnnnn    XNH    = N:Device Number, X:don't care
00001001    09H    = Sub-ID #1 = General MIDI Message
00000001    01H    = Sub-ID #2 = General MIDI On
11110111    F7H    = End of Exclusive
```

When this message is received, the SOUND MODULE MODE is set to XG, and all MIDI messages defined by GM will be received.

All data except for MIDI Master Tuning will be restored to the default value.

However this message will not be received in any of the following cases.

Since approximately 50[ms] is required in order to process this message, be sure to allow an appropriate interval before sending the next message.

2.1.3 XG parameter change

This message sets XG-related parameters. Each message can set a single parameter. The message format is as follows.

```
11110000    F0H    Exclusive status
01000011    43H    YAMAHA ID
0001nnnn    1NH    N:device Number
01001100    4CH    Model ID
0ggggggg    GGH    Address High
0mmmmmmm    MMH    Address Mid
01111111    LLH    Address Low
0sssssss    SSH    Data
   :         :
11110111    F7H    End of Exclusive
```

For parameters whose Data Size is 2 or 4, the appropriate amount of data will be transmitted as indicated by Size.

2.1.3.1 XG System On

```
11110000    F0H    Exclusive status
01000011    43H    YAMAHA ID
0001nnnn    1NH    N:device Number
01001100    4CH    Model ID
00000000    00H    Address High
00000000    00H    Address Mid
01111110    7EH    Address Low
00000000    00H    Data
11110111    F7H    End of Exclusive
```

When On is received, the SOUND MODULE MODE will be set to XG.

Since approximately 50[ms] are required in order to execute this message, please allow an appropriate interval before transmitting the next message.

2.1.3.2 XG System parameter change

This message sets the XG SYSTEM block (refer to tables <1 -1>, <1 - 2>).

2.1.3.3 Multi Effect1 parameter change

This message sets the MULTI EFFECT1 block (refer to tables <1 - 1>, <1 - 3>).

2.1.3.4 Multi Part parameter change

This message sets the MULTI PART block (refer to tables <1 - 1>, <1 - 4>).

2.1.3.5 Drums Setup parameter change

This message sets the DRUMS SETUP block (refer to tables <1 - 1> , <1 - 5>).

2.1.4 Other parameter changes

2.1.4.1 Master tuning

This message simultaneously modifies the tuning of all channels.

```
11110000    F0H    Exclusive status
01000011    43H    YAMAHA ID
0001nnnn    1NH    N:device Number
00100111    27H    Model ID
00110000    30H    Address High
00000000    00H    Address Mid
00000000    00H    Address Low
0000mmmm    0MH    Master Tune MSB
00001111    0LH    Master Tune LSB
0xxxxxxx    XXH    don't care
11110111    F7H    End of Exclusive
```

Normally, the XG SYSTEM message MASTER TUNE should be used (refer to table <1-2>).

2.2 Bulk dump

This device uses the following bulk dump messages.

[XG BULK DUMP]
1) XG System bulk dump
2) Multi Effect1 bulk dump
3) Multi Part bulk dump
4) Drums Setup bulk dump

2.2.1 XG bulk dump

This message sets XG-related parameters. Unlike parameter change messages, a single message can modify multiple parameters. The message format is as follows.

11110000	F0H	Exclusive status
01000011	43H	YAMAHA ID
0000nnnn	0NH	N:Device Number
01001100	4CH	Model ID
0sssssss	SSH	ByteCountMSB
0ttttttt	TTH	ByteCountLSB
0ggggggg	GGH	Address High
0mmmmmmm	MMH	Address Mid
01111111	LLH	Address Low
0vvvvvvv	VVH	Data
:	:	
0kkkkkkk	KKH	Check-sum
11110111	F7H	End of Exclusive

Address and Byte Count are given in tables 1-n. Byte Count is indicated by the total size of the Data in tables 1-n.
Bulk dump and dump request messages are received when the beginning of the block is specified as the 'Address'.
'Block' indicates the unit of the data string that is indicated in tables 1-n as 'Total size'.
Check sum is the value that produces a lower 7 bits of 0 when the Start Address, Byte Count, Data, and the Check-sum itself are added.

2.2.1.1 XG System bulk dump

This message sets the XG SYSTEM block (refer to tables <1 -1>, <1 - 2>).

2.2.1.2 Multi Effect1 bulk dump

This message sets the MULTI EFFECT1 block (refer to tables <1 - 1>, <1 - 3>).

2.2.1.3 Multi Part bulk dump

This message sets the MULTI PART block (refer to tables <1 - 1>, <1 - 4>).

2.2.1.4 Drums Setup bulk dump

This message sets the DRUMS SETUP block (refer to tables <1 - 1>, <1 - 5>).

3. Realtime messages

3.1 Active sensing

a) Transmission
   not transmitted.

b) Receive
   Once FE has been received, failure to receive any MIDI message for an interval longer than approximately 300 msec will cause processing to be performed as if ALL SOUND OFF, ALL NOTE OFF, and RESET ALL CONTROLLERS messages were received, and the unit will reset to a condition in which FE was never received.

< Table 1-1 >

Parameter Base Address
MODEL ID = 4C

Parameter	Address (H)	(M)	(L)	Description
XG SYSTEM	00	00	00	System
	00	00	7D	Drum setup Reset
	00	00	7E	XG System On
	00	00	7F	All Parameter Reset
EFFECT 1	02	01	00	Effect1(Reverb,Chorus,Variation)
MULTI PART	08	00	00	Multi Part 1
:	:	:	:	:
	08	0F	00	Multi Part 16
DRUM	30	0D	00	Drum Setup 1
	31	0D	00	Drum Setup 2

Address			Parameter
3n	0D	00	note number 13
3n	0E	00	note number 14
:			:
3n	5B	00	note number 91

< Table 1-2 >

MIDI Parameter Change table (XG SYSTEM)

Address (H)			Size (H)	Data (H)	Parameter	Description	Default value (H)
00 00 00			4	00 - 0F	MASTER TUNE	-102.4...0...+102.3[cent]	00 04 00 00
	01			00 - 0F		1st bit3-0→bit15-12	
	02			00 - 0F		2nd bit3-0→bit11-8	
	03			00 - 0F		3rd bit3-0→bit7-4	
						4th bit3-0→bit3-0	
	04		1	00 - 7F	MASTER VOLUME	0...127	7F
	05		1		not used		
	06		1	28 - 58	TRANSPOSE	-24...0...+24[semitones]	40
	7D		1	N	DRUM SETUP RESET	N: Drum setup number(0,1)	--
	7E		1	00	XG SYSTEM ON	00=XG system ON (receive only)	--
	7F		1	00	ALL PARAMETER RESET	00=ON (receive only)	--
TOTAL SIZE			07				

MIDI Data Format

< Table 1-3 >
MIDI Parameter Change table (EFFECT 1)

Address (H)			Size (H)	Data (H)	Parameter	Description	Default value (H)
02	01	00	2	00 - 7F	REVERB TYPE MSB	refer to Effect Program List	01(=HALL1)
				00 - 7F	REVERB TYPE LSB	refer to Effect Program List	0
		02	1	00 - 7F	REVERB PARAMETER 1	refer to Effect Program List	12(depends on reverb type)
		03	1	00 - 7F	REVERB PARAMETER 2	refer to Effect Program List	0A(depends on reverb type)
		04	1	00 - 7F	REVERB PARAMETER 3	refer to Effect Program List	08(depends on reverb type)
		05	1	00 - 7F	REVERB PARAMETER 4	refer to Effect Program List	0D(depends on reverb type)
		06	1	00 - 7F	REVERB PARAMETER 5	refer to Effect Program List	31(depends on reverb type)
		07	1	00 - 7F	REVERB PARAMETER 6	refer to Effect Program List	00(depends on reverb type)
		08	1	00 - 7F	REVERB PARAMETER 7	refer to Effect Program List	00(depends on reverb type)
		09	1	00 - 7F	REVERB PARAMETER 8	refer to Effect Program List	00(depends on reverb type)
		0A	1	00 - 7F	REVERB PARAMETER 9	refer to Effect Program List	00(depends on reverb type)
		0B	1	00 - 7F	REVERB PARAMETER 10	refer to Effect Program List	00(depends on reverb type)
		0C	1	00 - 7F	REVERB RETURN	-∞dB...0dB...+6dB(0...96...127)	40
		0D	1	01 - 7F	REVERB PAN	L63...C...R63	40
TOTAL SIZE		0E					
02	01	10	1	00 - 7F	REVERB PARAMETER 11	refer to Effect Parameter List	00(depends on reverb type)
		11	1	00 - 7F	REVERB PARAMETER 12	refer to Effect Parameter List	04(depends on reverb type)
		12	1	00 - 7F	REVERB PARAMETER 13	refer to Effect Parameter List	32(depends on reverb type)
		13	1	00 - 7F	REVERB PARAMETER 14	refer to Effect Parameter List	08(depends on reverb type)
		14	1	00 - 7F	REVERB PARAMETER 15	refer to Effect Parameter List	40(depends on reverb type)
		15	1	00 - 7F	REVERB PARAMETER 16	refer to Effect Parameter List	00(depends on reverb type)
TOTAL SIZE		6					
02	01	20	2	00 - 7F	CHORUS TYPE MSB	refer to Effect Program List	41(=CHORUS1)
				00 - 7F	CHORUS TYPE LSB	refer to Effect Program List	0
		22	1	00 - 7F	CHORUS PARAMETER 1	refer to Effect Program List	06(depends on chorus type)
		23	1	00 - 7F	CHORUS PARAMETER 2	refer to Effect Program List	36(depends on chorus type)
		24	1	00 - 7F	CHORUS PARAMETER 3	refer to Effect Program List	4D(depends on chorus type)
		25	1	00 - 7F	CHORUS PARAMETER 4	refer to Effect Program List	6A(depends on chorus type)
		26	1	00 - 7F	CHORUS PARAMETER 5	refer to Effect Program List	00(depends on chorus type)
		27	1	00 - 7F	CHORUS PARAMETER 6	refer to Effect Program List	1C(depends on chorus type)
		28	1	00 - 7F	CHORUS PARAMETER 7	refer to Effect Program List	40(depends on chorus type)
		29	1	00 - 7F	CHORUS PARAMETER 8	refer to Effect Program List	2E(depends on chorus type)
		2A	1	00 - 7F	CHORUS PARAMETER 9	refer to Effect Program List	40(depends on chorus type)
		2B	1	00 - 7F	CHORUS PARAMETER 10	refer to Effect Program List	40(depends on chorus type)
		2C	1	00 - 7F	CHORUS RETURN	-∞dB...0dB...+6dB(0...96...127)	40
		2D	1	01 - 7F	CHORUS PAN	L63...C...R63(1...64...127)	40
		2E	1	00 - 7F	SEND CHORUS TO REVERB	-∞dB...0dB...+6dB(0...96...127)	0
TOTAL SIZE		0F					
02	01	30	1	00 - 7F	CHORUS PARAMETER 11	refer to Effect Parameter List	2E(depends on chorus type)
		31	1	00 - 7F	CHORUS PARAMETER 12	refer to Effect Parameter List	40(depends on chorus type)
		32	1	00 - 7F	CHORUS PARAMETER 13	refer to Effect Parameter List	0A(depends on chorus type)
		33	1	00 - 7F	CHORUS PARAMETER 14	refer to Effect Parameter List	00(depends on chorus type)
		34	1	00 - 7F	CHORUS PARAMETER 15	refer to Effect Parameter List	00(depends on chorus type)
		35	1	00 - 7F	CHORUS PARAMETER 16	refer to Effect Parameter List	00(depends on chorus type)
TOTAL SIZE		6					
02	01	40	2	00 - 7F	VARIATION TYPE MSB	refer to Effect Program List	05(=DELAY L,C,R)
				00 - 7F	VARIATION TYPE LSB	refer to Effect Program List	0
		42	2	00 - 7F	VARIATION PARAMETER 1 MSB	refer to Effect Program List	1A(depends on variation type)
				00 - 7F	VARIATION PARAMETER 1 LSB	refer to Effect Program List	05(depends on variation type)
		44	2	00 - 7F	VARIATION PARAMETER 2 MSB	refer to Effect Program List	0D(depends on variation type)
				00 - 7F	VARIATION PARAMETER 2 LSB	refer to Effect Program List	03(depends on variation type)
		46	2	00 - 7F	VARIATION PARAMETER 3 MSB	refer to Effect Program List	27(depends on variation type)
				00 - 7F	VARIATION PARAMETER 3 LSB	refer to Effect Program List	08(depends on variation type)
		48	2	00 - 7F	VARIATION PARAMETER 4 MSB	refer to Effect Program List	27(depends on variation type)
				00 - 7F	VARIATION PARAMETER 4 LSB	refer to Effect Program List	08(depends on variation type)
		4A	2	00 - 7F	VARIATION PARAMETER 5 MSB	refer to Effect Program List	00(depends on variation type)
				00 - 7F	VARIATION PARAMETER 5 LSB	refer to Effect Program List	4A(depends on variation type)
		4C	2	00 - 7F	VARIATION PARAMETER 6 MSB	refer to Effect Program List	00(depends on variation type)
				00 - 7F	VARIATION PARAMETER 6 LSB	refer to Effect Program List	64(depends on variation type)
		4E	2	00 - 7F	VARIATION PARAMETER 7 MSB	refer to Effect Program List	00(depends on variation type)
				00 - 7F	VARIATION PARAMETER 7 LSB	refer to Effect Program List	0A(depends on variation type)
		50	2	00 - 7F	VARIATION PARAMETER 8 MSB	refer to Effect Program List	00(depends on variation type)
				00 - 7F	VARIATION PARAMETER 8 LSB	refer to Effect Program List	00(depends on variation type)
		52	2	00 - 7F	VARIATION PARAMETER 9 MSB	refer to Effect Program List	00(depends on variation type)
				00 - 7F	VARIATION PARAMETER 9 LSB	refer to Effect Program List	00(depends on variation type)
		54	2	00 - 7F	VARIATION PARAMETER 10 MSB	refer to Effect Program List	00(depends on variation type)
				00 - 7F	VARIATION PARAMETER 10 LSB	refer to Effect Program List	20(depends on variation type)
		56	1	00 - 7F	VARIATION RETURN	-∞dB...0dB...+6dB(0...96...127)	40
		57	1	01 - 7F	VARIATION PAN	L63...C...R63(1...64...127)	40
		58	1	00 - 7F	SEND VARIATION TO REVERB	-∞dB...0dB...+6dB(0...96...127)	0
		59	1	00 - 7F	SEND VARIATION TO CHORUS	-∞dB...0dB...+6dB(0...96...127)	0
		5A	1	00 - 01	VARIATION CONNECTION	INSERTION , SYSTEM	0
		5B	1	00 - 7F	VARIATION PART NUMBER	Part1 OFF(127)	7F
		5C	1	00 - 7F	MW VARIATION CONTROL DEPTH	-64...0...+63	40
		5D	1	00 - 7F	BEND VARIATION CONTROL DEPTH	-64...0...+63	40
		5E	1	00 - 7F	CAT VARIATION CONTROL DEPTH	-64...0...+63	40
		5F	1	00 - 7F	AC1 VARIATION CONTROL DEPTH	-64...0...+63	40
		60	1	00 - 7F	AC2 VARIATION CONTROL DEPTH	-64...0...+63	40
TOTAL SIZE		21					
02	01	70	1	00 - 7F	VARIATION PARAMETER 11	refer to Effect Parameter List	00(depends on variation type)
		71	1	00 - 7F	VARIATION PARAMETER 12	refer to Effect Parameter List	3C(depends on variation type)
		72	1	00 - 7F	VARIATION PARAMETER 13	refer to Effect Parameter List	1C(depends on variation type)
		73	1	00 - 7F	VARIATION PARAMETER 14	refer to Effect Parameter List	40(depends on variation type)
		74	1	00 - 7F	VARIATION PARAMETER 15	refer to Effect Parameter List	2E(depends on variation type)
		75	1	00 - 7F	VARIATION PARAMETER 16	refer to Effect Parameter List	40(depends on variation type)
TOTAL SIZE		6					

< Table 1-4 >
MIDI Parameter Change table (MULTI PART)

Address (H)	Size (H)	Data (H)	Parameter	Description	Default value (H)
08 nn 00	1	00 - 20	ELEMENT RESERVE	0	part10 = 0
					other parts =2
nn 01	1	00 - 7F	BANK SELECT MSB	0...127	part10 = 7F
					other parts=0
nn 02	1	00 - 7F	BANK SELECT LSB	0...127	00
nn 03	1	00 - 7F	PROGRAM NUMBER	1...128	00
nn 04	1	00-0F,7F	Rcv CHANNEL	A1...A16, OFF	Part No.
nn 05	1	00 - 01	MONO/POLY MODE	MONO , POLY	01
nn 06	1	00 - 02	SAME NOTE NUMBER KEY ON ASSIGN	SINGLE, MULTI, INST(for DRUM)	01
nn 07	1	00 - 03	PART MODE	NORMAL, DRUM, DRUMS1, 2	Part10=2
					other parts=0
nn 08	1	28 - 58	NOTE SHIFT	-24...0...+24[semitones]	40
nn 09	2	00 - 0F	DETUNE	-12.8...0...+12.7[Hz]	08 00
nn 0A		00 - 0F		1st bit3-0→bit7-4	
				2nd bit3-0→bit3-0	
nn 0B	1	00 - 7F	VOLUME	0...127	64
nn 0C	1	00 - 7F	VELOCITY SENSE DEPTH	0...127	40
nn 0D	1	00 - 7F	VELOCITY SENSE OFFSET	0...127	40
nn 0E	1	00 - 7F	PAN	RND, L63...C...R63	40
nn 0F	1	00 - 7F	NOTE LIMIT LOW	C-2...G8	00
nn 10	1	00 - 7F	NOTE LIMIT HIGH	C-2...G8	7F
nn 11	1	00 - 7F	DRY LEVEL	0...127	7F
nn 12	1	00 - 7F	CHORUS SEND	0...127	00
nn 13	1	00 - 7F	REVERB SEND	0...127	28
nn 14	1	00 - 7F	VARIATION SEND	0...127	00
nn 15	1	00 - 7F	VIBRATO RATE	-64...0...+63	40
nn 16	1	00 - 7F	VIBRATO DEPTH	-64...0...+63	40(drum part ignores)
nn 17	1	00 - 7F	VIBRATO DELAY	-64...0...+63	40(drum part ignores)
nn 18	1	00 - 7F	LOW PASS FILTER CUTOFF FREQUENCY	-64...0...+63	40
nn 19	1	00 - 7F	LOW PASS FILTER RESONANCE	-64...0...+63	40
nn 1A	1	00 - 7F	EG ATTACK TIME	-64...0...+63	40
nn 1B	1	00 - 7F	EG DECAY TIME	-64...0...+63	40
nn 1C	1	00 - 7F	EG RELEASE TIME	-64...0...+63	40
nn 1D	1	28 - 58	MW PITCH CONTROL	-24...0...+24[semitones]	40
nn 1E	1	00 - 7F	MW LOW PASS FILTER CONTROL	-9600...0...+9450[cent]	40
nn 1F	1	00 - 7F	MW AMPLITUDE CONTROL	-100...0...+100[%]	40
nn 20	1	00 - 7F	MW LFO PMOD DEPTH	0...127	0A
nn 21	1	00 - 7F	MW LFO FMOD DEPTH	0...127	00
nn 22	1	00 - 7F	MW LFO AMOD DEPTH	0...127	00
nn 23	1	28 - 58	BEND PITCH CONTROL	-24...0...+24[semitones]	42
nn 24	1	00 - 7F	BEND LOW PASS FILTER CONTROL	-9600...0...+9450[cent]	40
nn 25	1	00 - 7F	BEND AMPLITUDE CONTROL	-100...0...+100[%]	40
nn 26	1	00 - 7F	BEND LFO PMOD DEPTH	0...127	00
nn 27	1	00 - 7F	BEND LFO FMOD DEPTH	0...127	00
nn 28	1	00 - 7F	BEND LFO AMOD DEPTH	0...127	00
TOTAL SIZE	29				
nn 30	1	00 - 01	Rcv PITCH BEND	OFF, ON	01
nn 31	1	00 - 01	Rcv CH AFTER TOUCH(CAT)	OFF, ON	01
nn 32	1	00 - 01	Rcv PROGRAM CHANGE	OFF, ON	01
nn 33	1	00 - 01	Rcv CONTROL CHANGE	OFF, ON	01
nn 34	1	00 - 01	Rcv POLY AFTER TOUCH(PAT)	OFF, ON	01
nn 35	1	00 - 01	Rcv NOTE MESSAGE	OFF, ON	01
nn 36	1	00 - 01	Rcv RPN	OFF, ON	01
nn 37	1	00 - 01	Rcv NRPN	OFF, ON	XGmode=01, GMmode=00
nn 38	1	00 - 01	Rcv MODURATION	OFF, ON	01
nn 39	1	00 - 01	Rcv VOLUME	OFF, ON	01
nn 3A	1	00 - 01	Rcv PAN	OFF, ON	01
nn 3B	1	00 - 01	Rcv EXPRESSION	OFF, ON	01
nn 3C	1	00 - 01	Rcv HOLD1	OFF, ON	01
nn 3D	1	00 - 01	Rcv PORTAMENTO	OFF, ON	01
nn 3E	1	00 - 01	Rcv SOSTENUTO	OFF, ON	01
nn 3F	1	00 - 01	Rcv SOFT PEDAL	OFF, ON	01
nn 40	1	00 - 01	Rcv BANK SELECT	OFF, ON	XGmode=01, GMmode=00
nn 41	1	00 - 7F	SCALE TUNING C	-64...0...+63[cent]	40
nn 42	1	00 - 7F	SCALE TUNING C#	-64...0...+63[cent]	40
nn 43	1	00 - 7F	SCALE TUNING D	-64...0...+63[cent]	40
nn 44	1	00 - 7F	SCALE TUNING D#	-64...0...+63[cent]	40
nn 45	1	00 - 7F	SCALE TUNING E	-64...0...+63[cent]	40
nn 46	1	00 - 7F	SCALE TUNING F	-64...0...+63[cent]	40
nn 47	1	00 - 7F	SCALE TUNING F#	-64...0...+63[cent]	40
nn 48	1	00 - 7F	SCALE TUNING G	-64...0...+63[cent]	40
nn 49	1	00 - 7F	SCALE TUNING G#	-64...0...+63[cent]	40
nn 4A	1	00 - 7F	SCALE TUNING A	-64...0...+63[cent]	40
nn 4B	1	00 - 7F	SCALE TUNING A#	-64...0...+63[cent]	40
nn 4C	1	00 - 7F	SCALE TUNING B	-64...0...+63[cent]	40
nn 4D	1	28 - 58	CAT PITCH CONTROL	-24...0...+24[semitones]	40
nn 4E	1	00 - 7F	CAT LOW PASS FILTER CONTROL	-9600...0...+9450[cent]	40
nn 4F	1	00 - 7F	CAT AMPLITUDE CONTROL	-100...0...+100[%]	40
nn 50	1	00 - 7F	CAT LFO PMOD DEPTH	0...127	00
nn 51	1	00 - 7F	CAT LFO FMOD DEPTH	0...127	00
nn 52	1	00 - 7F	CAT LFO AMOD DEPTH	0...127	00
nn 53	1	28 - 58	PAT PITCH CONTROL	-24...0...+24[semitones]	40
nn 54	1	00 - 7F	PAT LOW PASS FILTER CONTROL	-9600...0...+9450[cent]	40
nn 55	1	00 - 7F	PAT AMPLITUDE CONTROL	-100...0...+100[%]	40
nn 56	1	00 - 7F	PAT LFO PMOD DEPTH	0...127	00
nn 57	1	00 - 7F	PAT LFO FMOD DEPTH	0...127	00
nn 58	1	00 - 7F	PAT LFO AMOD DEPTH	0...127	00
nn 59	1	00 - 5F	AC1 CONTROLLER NUMBER	0...95	10

MIDI Data Format

Address (H)	Size (H)	Data (H)	Parameter	Description	Default value (H)
nn 5A	1	28 - 58	AC1 PITCH CONTROL	-24...0...+24[semitones]	40
nn 5B	1	00 - 7F	AC1 LOW PASS FILTER CONTROL	-9600...0...+9450[cent]	40
nn 5C	1	00 - 7F	AC1 AMPLITUDE CONTROL	-100...0...+100[%]	40
nn 5D	1	00 - 7F	AC1 LFO PMOD DEPTH	0...127	00
nn 5E	1	00 - 7F	AC1 LFO FMOD DEPTH	0...127	00
nn 5F	1	00 - 7F	AC1 LFO AMOD DEPTH	0...127	00
nn 60	1	00 - 5F	AC2 CONTROLLER NUMBER	0...95	11
nn 61	1	28 - 58	AC2 PITCH CONTROL	-24...0...+24[semitones]	40
nn 62	1	00 - 7F	AC2 LOW PASS FILTER CONTROL	-9600...0...+9450[cent]	40
nn 63	1	00 - 7F	AC2 AMPLITUDE CONTROL	-100...0...+100[%]	40
nn 64	1	00 - 7F	AC2 LFO PMOD DEPTH	0...127	00
nn 65	1	00 - 7F	AC2 LFO FMOD DEPTH	0...127	00
nn 66	1	00 - 7F	AC2 LFO AMOD DEPTH	0...127	00
nn 67	1	00 - 01	PORTAMENTO SWITCH	OFF, ON	00
nn 68	1	00 - 7F	PORTAMENTO TIME	0...127	00
nn 69	1	00 - 7F	PITCH EG INITIAL LEVEL	-64...0...+63	40
nn 6A	1	00 - 7F	PITCH EG ATTACK TIME	-64...0...+63	40
nn 6B	1	00 - 7F	PITCH EG RELEASE LEVEL	-64...0...+63	40
nn 6C	1	00 - 7F	PITCH EG RELEASE TIME	-64...0...+63	40
nn 6D	1	01 - 7F	VELOCITY LIMIT LOW	1...127	01
nn 6E	1	01 - 7F	VELOCITY LIMIT HIGH	1...127	7F
TOTAL SIZE	3F				

nn = PART NUMBER

In the case of a DRUM PART, the following parameters will have no effect.
- BANK SELECT LSB
- MONO/POLY MODE
- SCALE TUNING
- PORTAMENTO
- PITCH EG

< Table 1-5 >
MIDI Parameter Change table (DRUM SETUP)

Address (H)	Size (H)	Data (H)	Parameter	Description	Default value (H)
3n rr 00	1	00 - 7F	PITCH COARSE	-64...0...+63	40
01	1	00 - 7F	PITCH FINE	-64...0...+63[cent]	40
02	1	00 - 7F	LEVEL	0...127	depend on the note
03	1	00 - 7F	ALTERNATE GROUP	OFF,1...127	depend on the note
04	1	00 - 7F	PAN	RND,L63...C...R63	depend on the note
05	1	00 - 7F	REVERB SEND	0...127	depend on the note
06	1	00 - 7F	CHORUS SEND	0...127	depend on the note
07	1	00 - 7F	VARIATION SEND	0...127	7F
08	1	00 - 01	KEY ASSIGN	SINGLE , MULTI	00
09	1	00 - 01	Rcv NOTE OFF	OFF , ON	depend on the note
0A	1	00 - 01	Rcv NOTE ON	OFF , ON	01
0B	1	00 - 7F	LOW PASS FILTER CUTOFF FREQUENCY	-64...0...63	40
0C	1	00 - 7F	LOW PASS FILTER RESONANCE	-64...0...63	40
0D	1	00 - 7F	EG ATTACK RATE	-64...0...63	40
0E	1	00 - 7F	EG DECAY1 RATE	-64...0...63	40
0F	1	00 - 7F	EG DECAY2 RATE	-64...0...63	40
TOTAL SIZE	10				

n:Drum Setup Number(0 - 1)
rr:note number(0D - 5B)

In the following cases, all Drum Setups will be initialized.
    XG SYSTEM ON received
    GM SYSTEM ON received
    DRUM SETUP RESET received (only setup applies)

[Note]
When a part to which a Drum Setup is assigned receives a program change, the assigned Drum Setup will be initialized.
If the same Drum Setup is assigned to two or more parts, changes in Drum Setup parameters (including program changes)will apply to all parts to which it is assigned.

MIDI Implementation Chart

YAMAHA [Clavinova]
Model: CLP-970/970M/970C

MIDI Implementation Chart
[Preset sound source]

Date: 20 April, 2000
Version: 1.0

Function		Transmitted	Recognized	Remarks
Basic Channel	Default	1 – 16	1 – 16	Memorized
	Changed	1 – 16 *1	1 – 16 *1	
Mode	Default	3	1	Poly Mode only
	Messages	X	X	
	Altered	****************	X	
Note Number		0 – 127	0 – 127	
	: True voice	****************	0 – 127	
Velocity	Note on	O 9nH, v=1 – 127	O v=1 – 127	
	Note off	X 8nH, v=1 – 127	O	
After Touch	key's	X	X	
	Ch's	X	O	
Pitch Bender		X	O 0 – 24 semi	
Control Change	0, 32	O	O	Bank Select
	1	X	X	Modulation
	5	X	X	Portamento Time
	7, 10, 11	O	O	
	6, 38	O	O	Data Entry
	64, 66, 67	O	O	
	65	X	X	Portamento
	71 – 74	X	X	Sound Controller
	84	X	X	Portamento Cntrl
	91, 93, 94	O	O	Effect Depth
	96, 97	X	O	RPN Inc, Dec
	98, 99	X	X	NRPN LSB, MSB
	100, 101	O	O	RPN LSB, MSB
	120	X	O	All sounds off
	121	X	O	Reset All Controllers
Program Change		O	O	
	: True #	****************		
System Exclusive		O	O	
System Common	: Song Position	X	X	
	: Song Select	X	X	
	: Tune	X	X	
System Real Time	: Clock	O	X	
	: Commands	O	O	
Aux Messages	: Local ON/OFF	X	X	
	: All Notes Off	X	O (123 – 127)	
	: Active Sense	O	O	
	: Reset	X	X	

Notes : *1 = You can select the part transmit/receive channels from the panel.

Mode 1: OMNI ON, POLY   Mode 2: OMNI ON, MONO   O: Yes
Mode 3: OMNI OFF, POLY   Mode 4: OMNI OFF, MONO   X: No

YAMAHA [Clavinova]   MIDI Implementation Chart   Date: 20 April, 2000
Model: CLP-970/970M/970C   [XG sound source]   Version: 1.0

Function		Transmitted	Recognized	Remarks
Basic Channel	Default	X	1 – 16	
	Changed	X	1 – 16	
Mode	Default	X	3	
	Messages	X	3.4 (m=1) *2	
	Altered	*****************	X	
Note Number		X	0 – 127	
	: True voice	*****************	0 – 127	
Velocity	Note on	X	O 9nH, v=1 – 127	
	Note off	X	X	
After Touch	key's	X	O *1	
	Ch's	X	O *1	
Pitch Bender		X	O 0 – 24 semi *1	
Control Change	0, 32	X	O *1	Bank Select
	1, 5, 7, 10, 11	X	O *1	
	6, 38	X	O *1	Data Entry
	64 – 67	X	O *1	
	71 – 74	X	O *1	Sound Controller
	84	X	O *1	Portamento Cntrl
	91, 93, 94	X	O *1	Effect Depth
	96, 97	X	O *1	RPN Inc, Dec
	98, 99	X	O *1	NRPN LSB, MSB
	100, 101	X	O *1	RPN LSB, MSB
Program Change		X	O 0 – 127	
	: True #	*****************		
System Exclusive		X	O	
System Common	: Song Position	X	X	
	: Song Select	X	X	
	: Tune	X	X	
System Real Time	: Clock	X	X	
	: Commands	X	X	
Aux Messages	: All Sound Off	X	O (120, 126 – 127)	
	: Reset Al Cntrls	X	O (121)	
	: Local ON/OFF	X	X	
	: All Notes Off	X	O (123 – 125)	
	: Active Sense	X	O	
	: Reset	X	X	

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

Mode 1: OMNI ON, POLY   Mode 2: OMNI ON, MONO   O: Yes
Mode 3: OMNI OFF, POLY   Mode 4: OMNI OFF, MONO   X: No

Specifications

Item	CLP-970 / CLP-970M / CLP-970C
Keyboard	88 keys (A1 - C7)
Sound source	AWM Dynamic Stereo Sampling
Polyphony	[Panel presets] max. 128 voices + [XG] max 32 voices
Voice selection	Panel preset for manual performance: 25 voices XG voices for XG/GM/DOC song playback: 480 voices + 12 drum kits
Effect	Reverb, chorus, brilliance, variation effect
Controls	Dual, split, metronome, transpose, various settings (voice, song, MIDI file, other)
Display	LCD
Recording/playback	16-track recording/playback, tempo adjustment
Disk drive	3.5-inch floppy disk drive (2DD and 2HD compatible)
Pedal	Damper, sostenuto, soft
Demo songs	6 voice demo songs, 50 piano songs (preset songs)
Jacks/connectors	AUX out (R, L/L+R): Output impedance 600Ω AUX in (R, L/L+R): Input impedance 10kΩ/Input sensitivity 0.26V Headphone jacks x 2, TO HOST connector, MIDI connectors (IN, OUT, THRU), pedal jack, AUX PEDAL jack
Main amplifiers	60W x2
Speakers	16cm x2, 2.5cm (dome) x 2
Dimensions (W x D x H) (with music stand)	1384mm x 570mm x 981mm (1384mm x 570mm x 1023mm) 54-1/2" x 22-7/16" x 38-5/8" (54-1/2" x 22-7/16" x 40-1/4")
Weight	74kg, 163lbs., 2 oz
Attachment	Keyboard cover, music stand

*   Specifications and description in this owner's manual are for information purposes only.
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