



ML128

Version 2.00

Additional Functions Manual

About GM Level 2

The GM Level 2 Standard enhances the GM Standard, established in 1991, with improved and extended capabilities that offer greater compatibility with song data.

Some of the main features of this upgrade are as follows:

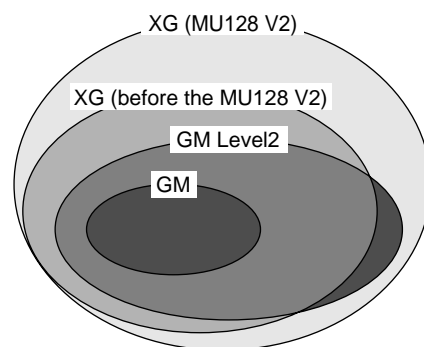
- Increased simultaneous production of voices.
- Increase the total number of voices.
- Provide more versatile voice parameter changes.
- Extend the rhythm channel.
- Add effects
- Expand controllers and improve their compatibility.

How does the YAMAHA XG Format Relate?

Yamaha established the XG format as a power format that expands upon the GM standard.

As the GM standard is upgraded to Level 2, the XG format expands to again provide a power format that fully covers the GM Level 2 standard.

Since most functions found in GM Level 2 were already included in XG, it was simply a matter of expanding upon that to allow XG to completely correspond with GM Level 2, making playback of song data based on GM Level 2 possible.



About this PDF data

This file explains how the MU128 corresponds to GM Level 2 and how XG is upgraded with additional voices and functions.

It does not explain how GM is upgraded to GM Level 2.

Caution

GM Level 2 parameters in Version 2.00 of the MU128 are set with external MIDI messages. However, editing data with an MU128 panel operation will result in the data being edited as an XG parameter. MSB Bank 120 and 121 voices cannot be selected from the MU128's front panel. So changing the voice from the front panel of the MU128 while an MSB Bank 120 or 121 voice is selected will result in the selection of a different bank. The data shown in this manual is the product of data found in the "Effect Data Assign Table" in the MU128 SOUND LIST & MIDI DATA that has been reformulated and calculated. Values shown in the GM level 2 manual may differ slightly.

MU128 Version 2.00 Version up points (for GM level2)

		Additions		Refer to	
Voice (normal)		New Voice Table (No new voices)		Table #1	
Voice (drum/SFX kit)		New Kits, 9 sets		Table #2	
Reverb		New Effects, 6 types		Table #3	
Chorus		New Effects, 6 types		Table #4	
Control Change		decay time		Table #5	
		vibrato rate			
		vibrato depth			
		vibrato delay			
	RPN	Modulation Depth Range			
Universal Sysex	Real Time	Master Fine Tuning		Table #6	
	Real Time	Master Coarse Tuning			
	Real Time	Global Parameter Control	Reverb Parameter		
			Chorus Parameter		
	Real Time	Controller Destination Setting	Channel Pressure (After Touch)		
			Controller (Control Change)		
	Real Time	Key-Based Instrument Controllers			
	Non-real Time	Scale/Octave Tuning			
Non-real Time	GM2 System On				
Non-real Time	GM System Off				

Voice List (Normal voices)


Table #1

MSB	121		121		121		121		121		121		121		121		121		121		121	
LSB	0		1		2		3		4		5		6		7		8		9			
Pgm#																						
1	GrandPno	1	GrndPnoK	1	MelloGrP	1																
2	BritePno	1	BritPnoK	1																		
3	EI.Grand	2	EIGrPnoK	2																		
4	HnkyTonk	2	HnkyTnkK	2																		
5	E.Piano1	2	Chor.EP1	2	VX EI.P1	2	60sEI.P1	1														
6	E.Piano2	2	Chor.EP2	2	VX EI.P2	2	DXLegend	2	DX Phase	2												
7	Harpsi.	1	Harpsi.3	2	Harpsi.K	1	Harpsi.2	2														
8	Clavi	2	PulseClv	1																		
9	Celesta	1																				
10	Glocken	1																				
11	MusicBox	2																				
12	Vibes	1	Vibes K	1																		
13	Marimba	1	MarimbaK	1																		
14	Xylophon	1																				
15	TubulBel	1	ChrChBel	2	Carillon	2																
16	Dulcimer	1																				
17	DrawOrgn	1	DetDrwOr	2	60sDrOr1	2	DrawOrg2	2														
18	PercOrgn	1	DetPrcOr	2	PercOrg2	2																
19	RockOrgn	2																				
20	ChrChOrg	2	ChurOrg2	2	ChurOrg3	2																
21	ReedOrgn	1	Puff Org	2																		
22	Acordion	2	AccordIt	2																		
23	Harmnica	1																				
24	TangoAcd	2																				
25	NylonGtr	1	Ukulele	1	NylonGt3	2	NylonGt2	1														
26	SteelGtr	1	12StrGtr	2	Mandolin	2	Stl&Body	2														
27	Jazz Gtr	1	PdlSteel	1																		
28	CleanGtr	1	ChorusGt	2	MidT.Gtr	1																
29	Mute Gtr	1	FunkGtr1	2	FunkGtr2	2	Jazz Man	2														
30	Ovrdrive	1	Gt.Pinch	2																		
31	Dist.Gtr	1	FeedbkGt	2	DstRthmG	2																
32	GtrHarmo	1	GtFeedbk	1																		
33	Aco.Bass	1																				
34	FngrBass	1	FngrSlap	2																		
35	PickBass	1																				
36	Fretless	1																				
37	SlapBas1	1																				
38	SlapBas2	1																				
39	SynBass1	1	SynBa1Dk	1	AcidBass	1	Civ Bass	2	Hammer	2												
40	SynBass2	2	DX Bass	2	RubberBa	2	AtkPulse	1														
41	Violin	1	Slow Vln	1																		
42	Viola	1																				
43	Cello	1																				
44	Contrabs	1																				
45	Trem.Str	1																				
46	Pizz.Str	1																				
47	Harp	1	YangChin	2																		
48	Timpani	1																				
49	Strings1	1	Orchestr	2	60sStrng	2																
50	Strings2	1																				
51	Syn Str1	2	Syn Str3	2																		
52	Syn Str2	2																				
53	ChoirAah	1	Ch.Aahs2	2																		
54	VoiceOoh	1	VoiceHmn	1																		
55	SynVoice	1	AnaVoice	1																		
56	Orch.Hit	2	BassHit+	2	6th Hit	1	Euro Hit	1														
57	Trumpet	1	DrkTpSft	1																		
58	Trombone	1	Trmbone2	2	BrghtTrb	1																
59	Tuba	1																				
60	Mute Trp	1	MuteTrp2	2																		
61	Fr. Horn	2	FrHorn 2	2																		
62	BrssSect	1	BrssSec2	2																		
63	SynBrss1	2	SynBrss3	2	AnaBrss1	2	JumpBrss	2														

☐ : Same as Bank LSB 0

Continued on next page

MSB	121		121		121		121		121		121		121		121		121		121		121	
LSB	0		1		2		3		4		5		6		7		8		9			
Pgm#																						
64	SynBrss2	1	SynBrss4	2	AnaBrss2	2																
65	SprnoSax	1																				
66	Alto Sax	1																				
67	TenorSax	1																				
68	Bari.Sax	1																				
69	Oboe	2																				
70	Eng.Horn	1																				
71	Bassoon	1																				
72	Clarinet	1																				
73	Piccolo	1																				
74	Flute	1																				
75	Recorder	1																				
76	PanFlute	1																				
77	Bottle	2																				
78	Shakhchi	2																				
79	Whistle	1																				
80	Ocarina	1																				
81	SquareLd	2	SquarLd2	1	SineLead	1																
82	Saw Ld	2	Saw Ld 2	1	Dr.Lead	2	DoublSaw	2	Seq Ana.	2												
83	CaliopLd	2																				
84	Chiff Ld	2																				
85	CharanLd	2	WireLead	2																		
86	Voice Ld	2																				
87	Fifth Ld	2																				
88	Bass&Ld	2	Soft Wrl	2																		
89	NewAgePd	2																				
90	Warm Pad	2	Sine Pad	2																		
91	PolySyPd	2																				
92	ChoirPad	2	Itopia	2																		
93	BowedPad	2																				
94	MetalPad	2																				
95	Halo Pad	2																				
96	SweepPad	2																				
97	Rain	2																				
98	SoundTrk	2																				
99	Crystal	2	SynMalet	1																		
100	Atmosphr	2																				
101	Bright	2																				
102	Goblins	2																				
103	Echoes	2	EchoBell	2	Echo Pan	2																
104	Sci-Fi	2																				
105	Sitar	1	Sitar 2	2																		
106	Banjo	1																				
107	Shamisen	1																				
108	Koto	1	Taisho-k	2																		
109	Kalimba	1																				
110	Bagpipe	2																				
111	Fiddle	1																				
112	Shanai	1																				
113	TnklBell	2																				
114	Agogo	2																				
115	SteelDrm	2																				
116	Woodblok	1	Castanet	1																		
117	TaikoDrm	1	Gr.Cassa	1																		
118	MelodTom	2	Mel Tom2	1																		
119	Syn Drum	1	Ana Tom	1	ElecPerc	2																
120	RevCymb1	1																				
121	FretNoiz	2	CuttngNz	1	Str Slap	1																
122	BrthNoiz	2	Fl.KClk	1																		
123	Seashore	2	Shower	1	Thunder	1	Wind	1	Stream	2	Bubble	2										
124	Tweet	2	Dog	1	Horse	1	Tweet 2	1														
125	Telephone	1	PhonCall	1	DoorSqek	1	DoorSlam	1	ScratchC	1	WindChim	1										
126	Helicptr	1	CarElgnt	1	CarTSqel	1	Car Pass	1	CarCrash	1	Siren	2	Train	1	JetPlane	2	Starship	2	Burst	2		
127	Applause	1	Laugh	1	Scream	1	Punch	1	Heart	1	Footstep	1										
128	Gunshot	1	MchinGun	1	LaserGun	2	Xplosion	2														

 : Same as Bank LSB 0

Drum Map (SFX Kit)

Table #2

MSB	120	120	120	120	120	120	120	120	120	120	120	120	120		
LSB	0	0	0	0	0	0	0	0	0	0	0	0	0		
Pgm#	1	9	17	25	26	33	41	49	57						
Note#	GM Stand	GM Room	GM Power	GM Elctr	GM Analg	GM Jazz	GM Brush	GM Orche	GM SFX						
13															
14															
15															
16															
17															
18															
19															
20															
21															
22															
23															
24															
25															
26															
27	Hi Q	1									HatCloseOrch	1			
28	Whip Slap	1									HatPedalOrch	1			
29	Scratch Push	1									HatOpen Orch	1			
30	Scratch Pull	1									RideCym1Orch	1			
31	Sticks	1													
32	Click Noise	1													
33	Mtrnm Click	1													
34	Mtrnm Bell	1													
35	Kick Tight	1													
36	Kick	1		Kick Power	1	Kick El	1	Kick Analog	1	Kick Jazz	1	Kick Jazz	1	Kick Orch	1
37	Side Stick	1						SideStickAn	1					GranCassa Or	1
38	Snare	1		Snare Power	1	Snare El	1	SnareAnalog	1			Brush Tap GM	1	Band Snare	1
39	Hand Clap	1										BrushSlap GM	1	Castanet 2	1
40	Snare Tight	1				Snare EL 2	1					BrushSwirlGM	1	Band Snare	1
41	Floor Tom L	1	Tom Room 1	1	Tom Rock 1	1	TomElectro 1	1	Tom Analog 1	1				Timpani F	1
42	Hi-HatClosed	1							HatCloseAnlg	1				Timpani F#	1
43	Floor Tom H	1	Tom Room 2	1	Tom Rock 2	1	TomElectro 2	1	Tom Analog 2	1				Timpani G	1
44	Hi-Hat Pedal	1							HatCloseAn 2	1				Timpani G#	1
45	Low Tom	1	Tom Room 3	1	Tom Rock 3	1	TomElectro 3	1	Tom Analog 3	1				Timpani A	1
46	Hi-Hat Open	1							HatOpen Anlg	1				Timpani A#	1
47	Mid Tom L	1	Tom Room 4	1	Tom Rock 4	1	TomElectro 4	1	Tom Analog 4	1				Timpani B	1
48	Mid Tom H	1	Tom Room 5	1	Tom Rock 5	1	TomElectro 5	1	Tom Analog 5	1				Timpani C	1
49	CrashCymbal1	1							Crash Analog	1				Timpani C#	1
50	High Tom	1	Tom Room 6	1	Tom Rock 6	1	TomElectro 6	1	Tom Analog 6	1				Timpani D	1
51	RideCymbal 1	1												Timpani D#	1
52	Chinese Cym	1				ReversCymbal	1							Timpani E	1
53	Ride Cym Cup	1												Timpani F'	1
54	Tambourine	1													1
55	SplashCymbal	1													1
56	Cowbell	1						Cowbell Anlg	1						1
57	CrashCymbal2	1												ConcertCym 2	1
58	Vibraslap	1													1
59	RideCymbal 2	1												ConcertCym 1	1
60	Bongo H	1													1
61	Bongo L	1													1
62	Conga H Mute	1							Conga Anlg H	1					1
63	Conga H Open	1							Conga Anlg M	1					1
64	Conga L	1							Conga Anlg L	1					1
65	Timbale H	1													1
66	Timbale L	1													1
67	Agogo H	1													2
68	Agogo L	1													1
69	Cabasa	1													2
70	Maracas	1						Maracas 2	1						1
71	SambaWhstlSh	1													2
72	SambaWhstlLg	1													1
73	Guiro Short	1													1
74	Guiro Long	1													2
75	Claves	1						Claves 2	1						2
76	Wood Block H	1													1
77	Wood Block L	1													1
78	Cuica Mute	1													2
79	Cuica Open	1													1
80	TriangleMute	1													1
81	TriangleOpen	1													1
82	Shaker	1													2
83	Jingle Bells	1													2
84	Bell Tree	1													2
85	Castanet	1													1
86	Surdo Mute	1													1
87	Surdo Open	1													1
88														Applause	1
89															
90															
91															

: No sound
 : Same as GM Stand
 E: Number of elements

Effect LSB/MSB List

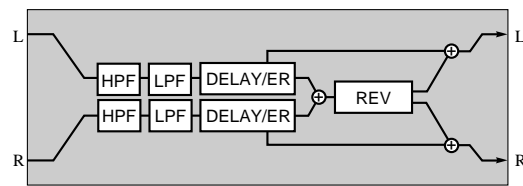
● Reverb Type List

Reverb	Type LSB								
Type MSB	0	1	2	3	4	5	6	7	8
0	No Effect								
1	Hall1	Hall2					Hall M	Hall L	
2	Room 1	Room 2	Room 3			Room S	Room M	Room L	
3	Stage 1	Stage 2							
4	Plate							GM Plate	

Effect Parameter List

● Hall M, Hall L, Room S, Room M, Room L, GM Plate

No.	Parameter	Display	Value	See Table	Control
1	Reverb Time	0.3~30.0s	0-63	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	0~4 (reverb, variation block) 0~2 (insertion1,2 block)	0-4 0-2		
13	Er/Rev Balance	E63>R ~ E=R ~ E<R63	1-127		
14	High Damp	0.1~1.0	1-10		
15	Feedback Level	-63~+63	1-127		
16					



Refer to the MU128 SOUND LIST & MIDI DATA for information on Table #.

Effect LSB/MSB List

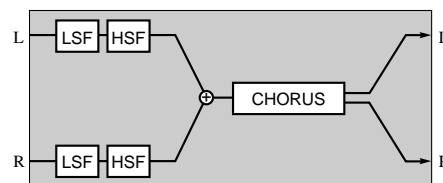
● Chorus Type List

Chorus	Type LSB								
Type MSB	0	1	2	3	4	5	6	7	8
65	Chorus1	Chorus2	Chorus3	GM Chorus1	GM Chorus2	GM Chorus3	GM Chorus4	FB Chorus	Chorus4
66	Celeste1	Celeste2	Celeste3						Celeste4
67	Flanger1	Flanger2						GM Flanger	Flanger3

Effect Parameter List

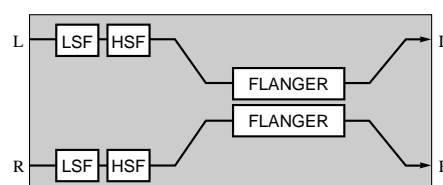
● GM Chorus1, GM Chorus2, GM Chorus3, GM Chorus4, FB Chorus

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	0-127	table#2	
5					
6	EQ Low Frequency	32Hz~2.0kHz	4-40	table#3	
7	EQ Low Gain	-12~+12dB	52-76	table#3	
8	EQ High Frequency	500Hz~16.0kHz	28-58	table#3	
9	EQ High Gain	-12~+12dB	52-76	table#3	
10	Dry/Wet	D63>W ~ D=W ~ D<W63	1-127		●
11	EQ Mid Frequency	100Hz~10.0kHz (variation block)	14-54	table#3	
12	EQ Mid Gain	-12~+12dB (variation block)	52-76		
13	EQ Mid Width	1.0~12.0 (variation block)	10-120		
14					
15	Input Mode	mono/stereo	0-1		
16					



● GM Flanger

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	0-127	table#2	
5					
6	EQ Low Frequency	32Hz~2.0kHz	4-40	table#3	
7	EQ Low Gain	-12~+12dB	52-76	table#3	
8	EQ High Frequency	500Hz~16.0kHz	28-58	table#3	
9	EQ High Gain	-12~+12dB	52-76	table#3	
10	Dry/Wet	D63>W ~ D=W ~ D<W63	1-127		●
11	EQ Mid Frequency	100Hz~10.0kHz (variation block)	14-54	table#3	
12	EQ Mid Gain	-12~+12dB (variation block)	52-76		
13	EQ Mid Width	1.0~12.0 (variation block)	10-120		
14	LFO Phase Difference	-180~+180deg	4-124	resolution=3deg.	
15					
16					



Refer to the MU128 SOUND LIST & MIDI DATA for information on Table #.

1. Channel messages

1.2 Control changes

Version 2.0 adds the following Control changes to the MU128.

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.

1.2.24 Decay Time

This message adjusts the EG decay time that is specified by the sound data.

Control#	Parameter	Data Range
75	Decay Time	0...64...127 (-64...0...+63)

Since this is a relative change parameter, it specifies an increase or decrease relative to 64.

Larger values result in a longer sustain after the key is pressed.

1.2.25 Vibrato Rate

This message adjusts the vibrato rate (speed) that is specified by the sound data.

Control#	Parameter	Data Range
76	Vibrato Rate	0...64...127 (-64...0...+63)

Since this is a relative change parameter, it specifies an increase or decrease relative to 64.

Smaller values result in a slower vibrato rate and higher values result in a faster vibrato rate.

1.2.26 Vibrato Depth

This message adjusts the vibrato depth (the intensity of the effect) that is specified by the sound data.

Control#	Parameter	Data Range
77	Vibrato Depth	0...64...127 (-64...0...+63)

Since this is a relative change parameter, it specifies an increase or decrease relative to 64.

Smaller values result in a weaker, less pronounced vibrato sound and higher values result in a stronger, more pronounced vibrato sound.

1.2.27 Vibrato Delay

This message adjusts the vibrato delay (the time it takes until the effect is produced) that is specified by the sound data.

Control#	Parameter	Data Range
78	Vibrato Delay	0...64...127 (-64...0...+63)

Since this is a relative change parameter, it specifies an increase or decrease relative to 64.

Smaller values result in a shorter time until the effect is produced and larger values result in a longer time until the effect is produced.

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 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.

Version 2.0 adds the following RPN to the MU128.

RPN		Data Entry *1		Parameter name and value range
MSB	LSB	MSB	LSB	
00H	05H	mm	ll	Modulation Sensitivity
		mm		Set in increments of a semitone
		ll		Set in increments of 100/128 cent
		mm ll: 01H 00H		+/-1 semitone pitch modulation depth
		mm ll: 00H 08H		+/-6.25 cent pitch modulation depth

* Refer to pg. 28 1.2.4 in the MU128 SOUND LIST & MIDI DATA.

2. System exclusive messages

2.1 Parameter changes

Version 2.0 adds the following Parameter changes to the MU128.

[UNIVERSAL REALTIME MESSAGE]

- 2) Master Fine Tuning
- 3) Master Coarse Tuning
- 4) Global Parameter Control
 - 1) Reverb Parameter
 - 2) Chorus Parameter
- 5) Controller Destination Setting
 - 1) Channel Pressure (After Touch)
 - 2) Control Change
- 6) Key-Based Instrument Controllers

[UNIVERSAL NON REALTIME MESSAGE]

- 4) General MIDI 2 System On
- 5) General MIDI Off
- 6) Scale/Octave Tuning

2.1.1 Universal realtime messages

2.1.1.2 Master Fine Tuning

This message determines the fine tuning (controls the minute pitch) of the overall pitch.

```

11110000 F0H = Exclusive status
01111111 7FH = Universal Real Time
0nnnnnnn NNH = ID of target device [suggest using 7F:all]
00000100 04H = Sub-ID #1=Device Control Message
00000011 03H = Sub-ID #2=Master Fine Tuning
* 0sssssss SSH = Fine Tuning LSB
0ttttttt TTH = Fine Tuning MSB
11110111 F7H = End of Exclusive

```

Added with the RPN's Fine Tuning and set against a standard of 440Hz.

Fine Tuning value

LSB (SS)	MSB (TT)	
00H	00H	$100/8192 * (-8192)$ cents
00H	40H	$100/8192 * 0$ cents
7FH	7FH	$100/8192 * (+8192)$ cents

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

2.1.1.3 Master Coarse Tuning

This message determines the coarse tuning (controls the pitch in half-step increments) of the overall pitch.

```
11110000 F0H = Exclusive status
01111111 7FH = Universal Real Time
0nnnnnnn NNH = ID of target device [suggest using 7F:all]
00000100 04H = Sub-ID #1=Device Control Message
00000100 04H = Sub-ID #2=Master Coarse Tuning
00000000 00H = Coarse Tuning LSB
0ttttttt TTH = Coarse Tuning MSB
11110111 F7H = End of Exclusive
```

Added with the RPN's Coarse Tuning and set against a standard of 440Hz.

```
Coarse Tuning value
LSB      MSB(TT)
00H      00H  100*(-64) cents
00H      40H  100*0      cents
00H      7FH  100*(+64) cents
```

2.1.1.4 Global Parameter Control

2.1.1.4.1 Reverb Parameter

Sets the Reverb Parameter.

```
11110000 F0H = Exclusive status
01111111 7FH = Universal Real Time
0nnnnnnn NNH = ID of target device [suggest using 7F:all]
00000100 04H = Sub-ID #1=Device Control Message
00000101 05H = Sub-ID #2=Global Parameter Control
00000001 01H = Slot path length = 1
00000001 01H = Parameter ID width = 1
00000001 01H = Value width = 1
00000001 01H = Slot path LSB = 1 (Effect 0101: Reverb)
00000001 01H = Slot path MSB = 1
0pppppppp PPH = Parameter to be controlled.
0vvvvvvvv VVH = Value for the Parameter.
11110111 F7H = End of Exclusive
```

Parameter (pp)	Value (vv)	Display
pp=0 Reverb Type	0..8	0:Room S 1:Room M 2:Room L 3:Hall M 4:Hall L (default) 8:GM Plate
pp=1 Reverb Time	0..127	0...11.0 s Refer to Table #12

2.1.1.4.2 Chorus Parameter

Sets the Chorus Parameter.

```

11110000 F0H = Exclusive status
01111111 7FH = Universal Real Time
0nnnnnnn NNH = ID of target device [suggest using 7F:all]
00000100 04H = Sub-ID #1=Device Control Message
00000101 05H = Sub-ID #2=Global Parameter Control
00000001 01H = Slot path length = 1
00000001 01H = Parameter ID width = 1
00000001 01H = Value width = 1
00000001 01H = Slot path LSB = 1 (Effect 0102: Chorus)
00000010 02H = Slot path MSB = 2
0ppppppp PPH = Parameter to be controlled.
0vvvvvvv VVH = Value for the Parameter.
11110111 F7H = End of Exclusive

```

Parameter(pp)	Value (vv)	Display
pp=0 Chorus Type	0...5	0:GM Chorus1 1:GM Chorus2 2:GM Chorus3 (default) 3:GM Chorus4 4:FB Chorus 5:GM Flanger
pp=1 Mod Rate (LFO Frequency)	0...127	0...15.5 Hz Refer to Table #13
pp=2 Mod Depth (Modulation Depth)	0...127	0...127
pp=3 Feedback (Feedback Level)	0...127	0...63
pp=4 Send to Reverb (Send Level from Chorus to Reverb)	0...127	0...127

2.1.1.5 Controller Destination Setting

2.1.1.5.1 Channel Pressure (Aftertouch)

Sets the Channel Pressure (Aftertouch) for each channel.

```

11110000 F0H = Exclusive status
01111111 7FH = Universal Real Time
0nnnnnnn NNH = ID of target device [suggest using 7F:all]
00001001 09H = Sub-ID #1=Controller Destination Setting
00000001 01H = Sub-ID #2=Controller Type:
                01(Channel Pressure)
0000mmmm 0MH = MIDI Channel (00 - 0F)
0ppppppp PPH = Controlled Parameter
0rrrrrrr RRH = Data
:         :
11110111 F7H = End of Exclusive

```

The Controlled Parameter and Data are recognized as a pair and set. Parameters that are not set will revert to their default settings.

Control Parameter (pp)	Data (RR)	Description	Default
pp=00 Pitch Control	28H - 58H	-24...0...+24 semitones	40H
pp=01 Filter Cutoff Control	00H - 7FH	-9600...0...+9450 cents	40H
pp=02 Amplitude Control	00H - 7FH	-100...0...+100 %	40H
pp=03 LFO Pitch Depth	00H - 7FH	0...127	00H
pp=04 LFO Filter Depth	00H - 7FH	0...127	00H
pp=05 LFO Amplitude Depth	00H - 7FH	0...127	00H

2.1.1.5.2 Controller (Control Change)

Sets the Control Change for each channel.

```

11110000 F0H = Exclusive status
01111111 7FH = Universal Real Time
0nnnnnnn NNH = ID of target device [suggest using 7F:all]
00001001 09H = Sub-ID #1=Controller Destination Setting
00000011 03H = Sub-ID #2=Controller Type:
                03 (Control Change)
0000mmmm 0MH = MIDI Channel (00 - 0F)
0ccccccc CCH = Controller number (01 - 1F, 40 - 5F)
0pppppppp PPH = Controlled Parameter
0rrrrrrrr RRH = Range
:           :
11110111 F7H = End of Exclusive

```

The Controlled Parameter and Range are recognized as a pair and set.

Parameters that are not set will revert to their default settings.

Control Parameter(pp)	Data(RR)	Description	Default
pp=00 Pitch Control	28H - 58H	-24...0...+24 semitones	40H
pp=01 Filter Cutoff Control	00H - 7FH	-9600...0...+9450 cents	40H
pp=02 Amplitude Control	00H - 7FH	-100...0...+100 %	40H
pp=03 LFO Pitch Depth	00H - 7FH	0...127	00H
pp=04 LFO Filter Depth	00H - 7FH	0...127	00H
pp=05 LFO Amplitude Depth	00H - 7FH	0...127	00H

2.1.1.6 Key-Based Instrument Control

Sets the Volume, Pan, etc. for each key for the drum kit.

```

11110000 F0H = Exclusive status
01111111 7FH = Universal Real Time
0nnnnnnn NNH = ID of target device [suggest using 7F:all]
00001010 0AH = Sub-ID #1=Key-Based Instrument Control
00000001 01H = Sub-ID #2=Controller
0000mmmm 0MH = MIDI Channel (00 - 0F)
0kkkkkkkk KKH = Key number
0ccccccc CCH = Controller Number
0vvvvvvvv VVH = Value
:           :
11110111 F7H = End of Exclusive

```

The Controller Number and Value are recognized as a pair and set.

Control Number (CC)	Value (vv)	Description	Default
CC=07H Volume	00H - 7FH	-100...0...+100 %	40H
CC=0AH Pan	00H - 7FH(absolute)	L63 C R63	(Preset value)
CC=5BH Reverb Send Level	00H - 7FH(absolute)	0 Max	(Preset value)
CC=5DH Chorus Send Level	00H - 7FH(absolute)	0 Max	(Preset value)

2.1.2 Universal non-realtime messages

2.1.2.4 GM2 System On

Sets the device to GM Level 2 Mode Defaults.

```

11110000 F0H = Exclusive status
01111110 7EH = Universal Non-Real Time
0nnnnnnn NNH = ID of target device [suggest using 7F:all]
00001001 09H = Sub-ID #1=General MIDI Message
00000011 03H = Sub-ID #2=General MIDI 2 On
11110111 F7H = End of Exclusive

```

When this message is received, the SOUND MODULE MODE will be changed to XG and all data setting values except MIDI Master Tuning will be returned to the GM Level 2 default values.

However, this message is not received in the following cases.

- The Rcv GM EXCLUSIVE MESSAGE in the MU128 System Parameter (see table 2-2 in the SOUND LIST & MIDI DATA) is set to OFF.

2.1.2.5 GM System Off

Returns the device to a default mode other than GM and GM Level 2 Modes.

```

11110000 F0H = Exclusive status
01111110 7EH = Universal Non-Real Time
0nnnnnnn NNH = ID of target device [suggest using 7F:all]
00001001 09H = Sub-ID #1=General MIDI Message
00000010 02H = Sub-ID #2=General MIDI Off
11110111 F7H = End of Exclusive

```

When this message is received, the SOUND MODULE MODE will be changed to XG and all data setting values except MIDI Master Tuning will be returned to the XG default values.

However, this message is not received in the following cases.

- The Rcv GM EXCLUSIVE MESSAGE in the MU128 System Parameter (see table 2-2 in the SOUND LIST & MIDI DATA) is set to OFF.

2.1.2.6 Scale/Octave Tuning

Sets the Micro Tuning.

```

11110000 F0H = Exclusive status
01111110 7EH = Universal Non-Real Time
0nnnnnnn NNH = ID of target device [suggest using 7F:all]
00001000 08H = Sub-ID #1=MIDI Tuning Standard
00001000 08H = Sub-ID #2=scale/octave tuning 1-byte form

```

```

0jjjjjjj JJH = Channel /option byte 1
                bits 0 to 1 = channel 15 to 16
                bit 2 to 6 = reserved
Oggggggg GGH = Channel byte 2 - bits 0 to 6 = channel 8 to 14
Ommmmmmm MMH = Channel byte 3 - bits 0 to 6 = channel 1 to 7
Osssssss SSH = 12 byte tuning offset of 12 semitones from C to B
                00H means -64 cents
                40H means  0 cents
                7FH means +63 cents

:           :
11110111 F7H = End of Exclusive

```

Effect Data Assign Table

Table #12
Reverb Parameter (Reverb Time)

Data	Time [s]	Data	Time [s]	Data	Time [s]	Data	Time [s]
0	0.6	32	1.1	64	2.1	96	4.4
1	0.7	33	1.1	65	2.2	97	4.5
2	0.7	34	1.2	66	2.2	98	4.6
3	0.7	35	1.2	67	2.3	99	4.7
4	0.7	36	1.2	68	2.3	100	4.8
5	0.7	37	1.2	69	2.4	101	4.9
6	0.7	38	1.3	70	2.4	102	5.0
7	0.7	39	1.3	71	2.5	103	5.5
8	0.8	40	1.3	72	2.5	104	6.5
9	0.8	41	1.3	73	2.6	105	6.5
10	0.8	42	1.4	74	2.6	106	6.5
11	0.8	43	1.4	75	2.7	107	7.0
12	0.8	44	1.4	76	2.8	108	7.0
13	0.8	45	1.4	77	2.8	109	7.0
14	0.8	46	1.5	78	2.9	110	7.5
15	0.8	47	1.5	79	3.0	111	7.5
16	0.9	48	1.5	80	3.0	112	7.5
17	0.9	49	1.6	81	3.1	113	7.5
18	0.9	50	1.6	82	3.2	114	8.0
19	0.9	51	1.6	83	3.2	115	8.0
20	0.9	52	1.7	84	3.3	116	8.0
21	0.9	53	1.7	85	3.4	117	8.5
22	0.9	54	1.7	86	3.5	118	8.5
23	1.0	55	1.8	87	3.5	119	8.5
24	1.0	56	1.8	88	3.6	120	9.0
25	1.0	57	1.8	89	3.7	121	9.0
26	1.0	58	1.9	90	3.8	122	9.5
27	1.0	59	1.9	91	3.9	123	9.5
28	1.0	60	2.0	92	4.0	124	9.5
29	1.1	61	2.0	93	4.1	125	10.0
30	1.1	62	2.0	94	4.2	126	10.0
31	1.1	63	2.1	95	4.3	127	11.0

Caution

The data shown in this manual is the product of data found in the "Effect Data Assign Table" in the MU128 SOUND LIST & MIDI DATA that has been reformulated and calculated. Values shown in the GM level 2 manual may differ slightly. This corresponds to the table used when GM Level 2 Universal System Exclusive Global Parameters Controls are set.

Table #13
Chorus Parameter (LFO Frequency)

Data	frequency [Hz]	Data	frequency [Hz]	Data	frequency [Hz]	Data	frequency [Hz]
0	0.00	32	3.87	64	7.74	96	11.4
1	0.13	33	4.04	65	8.08	97	12.1
2	0.25	34	4.21	66	8.08	98	12.1
3	0.38	35	4.21	67	8.08	99	12.1
4	0.51	36	4.37	68	8.41	100	12.1
5	0.59	37	4.54	69	8.41	101	12.1
6	0.72	38	4.71	70	8.41	102	12.1
7	0.84	39	4.71	71	8.75	103	12.8
8	0.97	40	4.88	72	8.75	104	12.8
9	1.09	41	5.05	73	8.75	105	12.8
10	1.22	42	5.05	74	9.08	106	12.8
11	1.35	43	5.22	75	9.08	107	12.8
12	1.47	44	5.38	76	9.42	108	13.5
13	1.60	45	5.55	77	9.42	109	13.5
14	1.72	46	5.55	78	9.42	110	13.5
15	1.85	47	5.72	79	9.76	111	13.5
16	1.94	48	5.72	80	9.76	112	13.5
17	2.06	49	6.06	81	9.76	113	13.5
18	2.19	50	6.06	82	10.1	114	14.1
19	2.31	51	6.06	83	10.1	115	14.1
20	2.44	52	6.39	84	10.1	116	14.1
21	2.57	53	6.39	85	10.1	117	14.1
22	2.69	54	6.73	86	10.8	118	14.1
23	2.78	55	6.73	87	10.8	119	14.8
24	2.94	56	6.73	88	10.8	120	14.8
25	3.03	57	7.07	89	10.8	121	14.8
26	3.20	58	7.07	90	10.8	122	14.8
27	3.28	59	7.07	91	10.8	123	14.8
28	3.45	60	7.40	92	11.4	124	14.8
29	3.53	61	7.40	93	11.4	125	15.5
30	3.70	62	7.40	94	11.4	126	15.5
31	3.70	63	7.74	95	11.4	127	15.5

Caution

The data shown in this manual is the product of data found in the "Effect Data Assign Table" in the MU128 SOUND LIST & MIDI DATA that has been reformulated and calculated. Values shown in the GM level 2 manual may differ slightly. This corresponds to the table used when GM Level 2 Universal System Exclusive Global Parameters Controls are set.

Function ...	Transmitted	Recognized	Remarks
Basic Default Channel Changed	x x	1 - 16 1 - 16	
Mode Default Messages Altered	x x *****	3 3,4(m=1) *2 x	
Note Number : True voice	x *****	0 - 127 0 - 127	
Velocity Note ON Note OFF	x x	o 9nH,v=1-127 x	
After Key's Touch Ch's	x x	o *1 o *1	
Pitch Bender	x	o 0-24 semi *1	
Control Change	0,32 x 1,5,7,10,11 x 6,38 x 64-67 x 71-78 x 84 x 91,93,94 x 96-97 x 98-99 x 100-101 x	o *1 o *1 o *1 o *1 o *1 o *1 o *1 o *1 o *1 o *1	Bank Select Data Entry Sound Controller Portamento Cntrl Effect Depth RPN Inc,Dec NRPN LSB,MSB RPN LSB,MSB
Prog Change : True #	x *****	o 0 - 127	
System Exclusive	o *3	o *3	
: Song Pos Common : Song Sel : Tune	x x x	x x x	
System :Clock Real Time :Commands	x x	x x	
Aux :All Sound Off :Reset All Cntrls Mes- :Local ON/OFF sages:All Notes OFF :Active Sense :Reset	x x x x x x	o(120,126,127) o(121) x o(123-125) o x	
Notes: *1 receive if switch is on. *2 m is always treated as "1" regardless of its value. *3 transmit/receive if exclusive switch is on.			

Mode 1 : OMNI ON, POLY Mode 2 : OMNI ON, MONO o : Yes
 Mode 3 : OMNI OFF, POLY Mode 4 : OMNI OFF, MONO x : No