

# Fantom-G MIDI Implementation

## 1. Receive Data (Sound Source Section)

### ■ Channel Voice Messages

\* Not received when the Receive Switch parameter is OFF.

#### ● Note off

Status	2nd byte	3rd byte
8nH	kkH	vvH
9nH	kkH	00H
n = MIDI channel number:	0H - FH (ch.1 - 16)	
kk = note number:	00H - 7FH (0 - 127)	
vv = note off velocity:	00H - 7FH (0 - 127)	

\* Not received when the Tone Env Mode parameter is NO-SUS.

#### ● Note on

Status	2nd byte	3rd byte
9nH	kkH	vvH
n = MIDI channel number:	0H - FH (ch.1 - 16)	
kk = note number:	00H - 7FH (0 - 127)	
vv = note on velocity:	01H - 7FH (1 - 127)	

#### ● Polyphonic Key Pressure

Status	2nd byte	3rd byte
AnH	kkH	vvH
n = MIDI channel number:	0H - FH (ch.1 - 16)	
kk = note number:	00H - 7FH (0 - 127)	
vv = Polyphonic Key Pressure:	00H - 7FH (0 - 127)	

\* Not received when the Receive Poly Key Pressure parameter is OFF.

#### ● Control Change

- \* If the corresponding Controller number is selected for the Patch Matrix Control Source 1-4 parameter (Patch Mtrx Ctrl1-4), the corresponding effect will occur.
- \* If a Controller number that corresponds to the System Control Source 1-4 parameter is selected, the specified effect will apply if Patch Matrix Control Source 1-4 parameter is set to SYS-CTRL1, SYS-CTRL2, SYS-CTRL3 or SYS-CTRL4.

#### ○ Bank Select (Controller number 0, 32)

Status	2nd byte	3rd byte
BnH	00H	mmH
BnH	20H	llH
n = MIDI channel number:	0H - FH (ch.1 - 16)	
mm, ll = Bank number:	00 00H - 7F 7FH (bank.1 - bank.16384)	

- \* Not received when the Receive Bank Select is OFF.
- \* The Live sets, Studio sets, Patches, Sample sets and Rhythm sets corresponding to each Bank Select are as follows.
- \* The ARX series corresponding to each Bank Select are to see the ARX series owner's manual.

BANK MSB	SELECT LSB	PROGRAM NUMBER	GROUP	NUMBER
000		001 - 128	GM Patch	001 - 256
:				
063		001 - 128	GM Patch	001 - 256
084	000	001 - 128	User Live Set	001 - 128
	001	001 - 128	User Live Set	129 - 256
	002	001 - 128	User Live Set	257 - 384
	003	001 - 128	User Live Set	385 - 512
	064	001 - 128	Preset Live Set	001 - 128
:				
085	000	001 - 128	User Studio Set	001 - 128
	064	001 - 008	Preset Studio Set	001 - 008
086	000	001 - 064	User Rhythm	001 - 064
	064	001 - 064	Preset Rhythm	001 - 064
087	000	001 - 128	User Patch	001 - 128
	001	001 - 128	User Patch	129 - 256
	002	001 - 128	User Patch	257 - 384
	003	001 - 128	User Patch	385 - 512
	064	001 - 128	Preset Patch A	001 - 128
	065	001 - 128	Preset Patch B	001 - 128
:				
120		001 - 057	GM Rhythm	001 - 009
121	000 -	001 - 128	GM Patch	001 - 256

#### ○ Modulation (Controller number 1)

Status	2nd byte	3rd byte
BnH	01H	vvH
n = MIDI channel number:	0H - FH (ch.1 - 16)	
vv = Modulation depth:	00H - 7FH (0 - 127)	

\* Not received when the Receive Modulation parameter is OFF.

#### ○ Portamento Time (Controller number 5)

Status	2nd byte	3rd byte
BnH	05H	vvH
n = MIDI channel number:	0H - FH (ch.1 - 16)	
vv = Portamento Time:	00H - 7FH (0 - 127)	

\* The Part Portamento Time parameter will change.

#### ○ Data Entry (Controller number 6, 38)

Status	2nd byte	3rd byte
BnH	06H	mmH
BnH	26H	llH
n = MIDI channel number:	0H - FH (ch.1 - 16)	
mm, ll = the value of the parameter specified by RPN/NRPN		
mm = MSB, ll = LSB		

#### ○ Volume (Controller number 7)

Status	2nd byte	3rd byte
BnH	07H	vvH
n = MIDI channel number:	0H - FH (ch.1 - 16)	
vv = Volume:	00H - 7FH (0 - 127)	

- \* Not received when the Receive Volume parameter is OFF.
- \* The Part Level parameter will change.

#### ○ Panpot (Controller number 10)

Status	2nd byte	3rd byte
BnH	0AH	vvH
n = MIDI channel number:	0H - FH (ch.1 - 16)	
vv = Panpot:	00H - 40H - 7FH (Left - Center - Right)	

- \* Not received when the Receive Pan parameter is OFF.
- \* The Part Pan parameter will change.

#### ○ Expression (Controller number 11)

Status	2nd byte	3rd byte
BnH	0BH	vvH
n = MIDI channel number:	0H - FH (ch.1 - 16)	
vv = Expression:	00H - 7FH (0 - 127)	

- \* Not received when Tone Receive Expression parameter is OFF.
- \* Not received when Receive Expression parameter is OFF.

#### ○ Hold 1 (Controller number 64)

Status	2nd byte	3rd byte
BnH	40H	vvH
n = MIDI channel number:	0H - FH (ch.1 - 16)	
vv = Control value:	00H - 7FH (0 - 127) 0-63 = OFF, 64-127 = ON	

- \* Not received when Tone Receive Hold-1 parameter is OFF.
- \* Not received when Receive Hold-1 parameter is OFF.
- \* When the Tone Redamper Switch parameter is turned ON, 128 discrete steps are recognized for the value.

#### ○ Portamento (Controller number 65)

Status	2nd byte	3rd byte
BnH	41H	vvH
n = MIDI channel number:	0H - FH (ch.1 - 16)	
vv = Control value:	00H - 7FH (0 - 127) 0 - 63 = OFF, 64 - 127 = ON	

\* The Part Portamento Switch parameter will change.

#### ○ Sostenuto (Controller number 66)

Status	2nd byte	3rd byte
BnH	42H	vvH
n = MIDI channel number:	0H - FH (ch.1 - 16)	
vv = Control value:	00H - 7FH (0 - 127) 0 - 63 = OFF, 64 - 127 = ON	

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## ○Soft (Controller number 67)

Status	2nd byte	3rd byte
BnH	43H	vvH
n = MIDI channel number:	0H - FH (ch.1 - 16)	
vv = Control value:	00H - 7FH (0 - 127) 0 - 63 = OFF, 64 - 127 = ON	

## ○Legato Foot Switch (Controller number 68)

Status	2nd byte	3rd byte
BnH	44H	vvH
n = MIDI channel number:	0H - FH (ch.1 - 16)	
vv = Control value:	00H - 7FH (0 - 127) 0 - 63 = OFF, 64 - 127 = ON	

\* The Part Legato Switch parameter will change.

## ○Resonance (Controller number 71)

Status	2nd byte	3rd byte
BnH	47H	vvH
n = MIDI channel number:	0H - FH (ch.1 - 16)	
vv = Resonance value (relative change):	00H - 40H - 7FH (-64 - 0 - +63),	

\* The Part Resonance Offset parameter will change.

## ○Release Time (Controller number 72)

Status	2nd byte	3rd byte
BnH	48H	vvH
n = MIDI channel number:	0H - FH (ch.1 - 16)	
vv = Release Time value (relative change):	00H - 40H - 7FH (-64 - 0 - +63),	

\* The Part Release Time Offset parameter will change.

## ○Attack time (Controller number 73)

Status	2nd byte	3rd byte
BnH	49H	vvH
n = MIDI channel number:	0H - FH (ch.1 - 16)	
vv = Attack time value (relative change):	00H - 40H - 7FH (-64 - 0 - +63),	

\* The Part Attack Time Offset parameter will change.

## ○Cutoff (Controller number 74)

Status	2nd byte	3rd byte
BnH	4AH	vvH
n = MIDI channel number:	0H - FH (ch.1 - 16)	
vv = Cutoff value (relative change):	00H - 40H - 7FH (-64 - 0 - +63)	

\* The Part Cutoff Offset parameter will change.

## ○Decay Time (Controller number 75)

Status	2nd byte	3rd byte
BnH	4BH	vvH
n = MIDI channel number:	0H - FH (ch.1 - 16)	
vv = Decay Time value (relative change):	00H - 40H - 7FH (-64 - 0 - +63)	

\* The Part Decay Time Offset parameter will change.

## ○Vibrato Rate (Controller number 76)

Status	2nd byte	3rd byte
BnH	4CH	vvH
n = MIDI channel number:	0H - FH (ch.1 - 16)	
vv = Vibrato Rate value (relative change):	00H - 40H - 7FH (-64 - 0 - +63)	

\* The Part Vibrato Rate parameter will change.

## ○Vibrato Depth (Controller number 77)

Status	2nd byte	3rd byte
BnH	4DH	vvH
n = MIDI channel number:	0H - FH (ch.1 - 16)	
vv = Vibrato Depth Value (relative change):	00H - 40H - 7FH (-64 - 0 - +63)	

\* The Part Vibrato Depth parameter will change.

## ○Vibrato Delay (Controller number 78)

Status	2nd byte	3rd byte
BnH	4EH	vvH
n = MIDI channel number:	0H - FH (ch.1 - 16)	
vv = Vibrato Delay value (relative change):	00H - 40H - 7FH (-64 - 0 - +63)	

\* The Part Vibrato Delay parameter will change.

## ○General Purpose Controller 5 (Controller number 80)

Status	2nd byte	3rd byte
BnH	50H	vvH
n = MIDI channel number:	0H - FH (ch.1 - 16)	
vv = Control value:	00H - 7FH (0 - 127)	

\* The Tone Level parameter of Tone 1 will change.

## ○General Purpose Controller 6 (Controller number 81)

Status	2nd byte	3rd byte
BnH	51H	vvH
n = MIDI channel number:	0H - FH (ch.1 - 16)	
vv = Control value:	00H - 7FH (0 - 127)	

\* The Tone Level parameter of Tone 2 will change.

## ○General Purpose Controller 7 (Controller number 82)

Status	2nd byte	3rd byte
BnH	52H	vvH
n = MIDI channel number:	0H - FH (ch.1 - 16)	
vv = Control value:	00H - 7FH (0 - 127)	

\* The Tone Level parameter of Tone 3 will change.

## ○General Purpose Controller 8 (Controller number 83)

Status	2nd byte	3rd byte
BnH	53H	vvH
n = MIDI channel number:	0H - FH (ch.1 - 16)	
vv = Control value:	00H - 7FH (0 - 127)	

\* The Tone Level parameter of Tone 4 will change.

## ○Portamento control (Controller number 84)

Status	2nd byte	3rd byte
BnH	54H	kkH
n = MIDI channel number:	0H - FH (ch.1 - 16)	
kk = source note number:	00H - 7FH (0 - 127)	

\* A Note-on received immediately after a Portamento Control message will change continuously in pitch, starting from the pitch of the Source Note Number.

\* If a voice is already sounding for a note number identical to the Source Note Number, this voice will continue sounding (i.e., legato) and will, when the next Note-on is received, smoothly change to the pitch of that Note-on.

\* The rate of the pitch change caused by Portamento Control is determined by the Portamento Time value.

## ○Effect 1 (Reverb Send Level) (Controller number 91)

Status	2nd byte	3rd byte
BnH	5BH	vvH
n = MIDI channel number:	0H - FH (ch.1 - 16)	
vv = Reverb Send Level:	00H - 7FH (0 - 127)	

\* The Part Reverb Send Level parameter will change.

## ○Effect 3 (Chorus Send Level) (Controller number 93)

Status	2nd byte	3rd byte
BnH	5DH	vvH
n = MIDI channel number:	0H - FH (ch.1 - 16)	
vv = Chorus Send Level:	00H - 7FH (0 - 127)	

\* The Part Chorus Send Level parameter will change.

## ○RPN MSB/LSB (Controller number 100, 101)

Status	2nd byte	3rd byte
BnH	65H	mmH
BnH	64H	llH
n = MIDI channel number:	0H - FH (ch.1 - 16)	
mm = upper byte (MSB) of parameter number specified by RPN		
ll = lower byte (LSB) of parameter number specified by RPN		

<<< RPN >>>

Control Changes include RPN (Registered Parameter Numbers), which are extended. When using RPNs, first RPN (Controller numbers 100 and 101; they can be sent in any order) should be sent in order to select the parameter, then

Data Entry (Controller numbers 6 and 38) should be sent to set the value. Once RPN messages are received, Data Entry messages that is received at the same MIDI channel after that are recognized as changing toward the value of the RPN messages. In order not to make any mistakes, transmitting RPN Null is recommended after setting parameters you need.

This device receives the following RPNs.

RPN	Data entry	Notes
<u>MSB, LSB</u>	<u>MSB, LSB</u>	
00H, 00H	mmH, llH	Pitch Bend Sensitivity mm: 00H - 18H (0 - 24 semitones) ll: ignored (processed as 00H) Up to 2 octave can be specified in semitone steps.

\* The Part Bend Range parameter will change.

00H, 01H	mmH, llH	Channel Fine Tuning mm, ll: 20 00H - 40 00H - 60 00H (-4096 x 100 / 8192 - 0 - +4096 x 100 / 8192 cent)
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\* The Part Fine Tune parameter will change.

00H, 02H	mmH, llH	Channel Coarse Tuning mm: 10H - 40H - 70H (-48 - 0 - +48 semitones) ll: ignored (processed as 00H)
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\* The Part Coarse Tune parameter will change.

00H, 05H	mmH, llH	Modulation Depth Range mm, ll: 00 00H - 06 00H (0 - 16384*600 / 16384 cent)
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7FH, 7FH	---, ---	RPN null RPN and NRPN will be set as "unspecified." Once this setting has been made, subsequent Parameter values that were previously set will not change. mm, ll: ignored
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## ○General Controller

Status	2nd byte	3rd byte
BnH	kkH	vvH
n = MIDI channel number:	0H - FH (ch.1 - 16)	
kk = Controller number:	00H - 77H (0 - 31, 33 - 95)	
vv = Modulation depth:	00H - 7FH (0 - 127)	

## ●Program Change

Status	2nd byte
CnH	ppH
n = MIDI channel number:	0H - FH (ch.1 - 16)
pp = Program number:	00H - 7FH (prog.1 - prog.128)

\* Not received when the Receive Program Change parameter is OFF.

## ●Channel Pressure

Status	2nd byte
DnH	vvH
n = MIDI channel number:	0H - FH (ch.1 - 16)
vv = Channel Pressure:	00H - 7FH (0 - 127)

\* Not received when the Receive Channel Pressure parameter is OFF.

## ●Pitch Bend Change

Status	2nd byte	3rd byte
EnH	llH	mmH
n = MIDI channel number:	0H - FH (ch.1 - 16)	
mm, ll = Pitch Bend value:	00 00H - 40 00H - 7F 7FH (-8192 - 0 - +8191)	

\* Not received when the Tone Receive Bender parameter is OFF.

\* Not received when the Receive Pitch Bend parameter is OFF.

## ■Channel Mode Messages

\* Not received when the Receive Switch parameter is OFF.

### ●All Sounds Off (Controller number 120)

Status	2nd byte	3rd byte
BnH	78H	00H

n = MIDI channel number: 0H - FH (ch.1 - 16)

\* When this message is received, all notes currently sounding on the corresponding channel will be turned off.

### ●Reset All Controllers (Controller number 121)

Status	2nd byte	3rd byte
BnH	79H	00H

n = MIDI channel number: 0H - FH (ch.1 - 16)

\* When this message is received, the following controllers will be set to their reset values.

Controller	Reset value
Pitch Bend Change	+/-0 (center)
Polyphonic Key Pressure	0 (off)
Channel Pressure	0 (off)
Modulation	0 (off)
Breath Type	0 (min)
Expression	127 (max)
	However the controller will be at minimum.
Hold 1	0 (off)
Sostenuto	0 (off)
Soft	0 (off)
Hold 2	0 (off)
RPN	unset; previously set data will not change
NRPN	unset; previously set data will not change

### ●All Notes Off (Controller number 123)

Status	2nd byte	3rd byte
BnH	7BH	00H

n = MIDI channel number: 0H - FH (ch.1 - 16)

\* When All Notes Off is received, all notes on the corresponding channel will be turned off. However, if Hold 1 or Sostenuto is ON, the sound will be continued until these are turned off.

### ●OMNI OFF (Controller number 124)

Status	2nd byte	3rd byte
BnH	7CH	00H

n = MIDI channel number: 0H - FH (ch.1 - 16)

\* The same processing will be carried out as when All Notes Off is received.

### ●OMNI ON (Controller number 125)

Status	2nd byte	3rd byte
BnH	7DH	00H

n = MIDI channel number: 0H - FH (ch.1 - 16)

\* The same processing will be carried out as when All Notes Off is received. OMNI ON will not be turned on.

### ●MONO (Controller number 126)

Status	2nd byte	3rd byte
BnH	7EH	mmH

n = MIDI channel number: 0H - FH (ch.1 - 16)

mm = mono number: 00H - 10H (0 - 16)

\* The same processing will be carried out as when All Notes Off is received.

\* The Part Mono/Poly parameter will change.

### ●POLY (Controller number 127)

Status	2nd byte	3rd byte
BnH	7FH	00H

n = MIDI channel number: 0H - FH (ch.1 - 16)

\* The same processing will be carried out as when All Notes Off is received.

\* The Part Mono/Poly parameter will change.

# Fantom-G MIDI Implementation

## ■ System Realtime Message

### ● Timing Clock

Status  
F8H

Received when Sync Mode parameter is set to MIDI.

### ● Active Sensing

Status  
FEH

\* When Active Sensing is received, the unit will begin monitoring the intervals of all further messages. While monitoring, if the interval between messages exceeds 420 ms, the same processing will be carried out as when All Sounds Off, All Notes Off and Reset All Controllers are received, and message interval monitoring will be halted.

## ■ System Exclusive Message

Status	Data byte	Status
F0H	iiH, ddH, ....., eeH	F7H

F0H: System Exclusive Message status  
 ii = ID number: an ID number (manufacturer ID) to indicate the manufacturer whose Exclusive message this is. Roland's manufacturer ID is 41H. ID numbers 7EH and 7FH are extensions of the MIDI standard; Universal Non-realtime Messages (7EH) and Universal Realtime Messages (7FH).  
 dd, ..., ee = data: 00H - 7FH (0 - 127)  
 F7H: EOX (End Of Exclusive)

Of the System Exclusive messages received by this device, the Universal Non-realtime messages and the Universal Realtime messages and the Data Request (RQ1) messages and the Data Set (DT1) messages will be set automatically.

## ● Universal Non-realtime System Exclusive Messages

### ○ Identity Request Message

Status	Data byte	Status
F0H	7EH, dev, 06H, 01H	F7H

Byte	Explanation
F0H	Exclusive status
7EH	ID number (Universal Non-realtime Message)
dev	Device ID (dev: 10H - 1FH, 7FH)
06H	Sub ID#1 (General Information)
01H	Sub ID#2 (Identity Request)
F7H	EOX (End Of Exclusive)

\* When this message is received, Identity Reply message (P.9) will be transmitted.

### ○ GM1 System On

Status	Data byte	Status
F0H	7EH, 7FH, 09H, 01H	F7H

Byte	Explanation
F0H	Exclusive status
7EH	ID number (Universal Non-realtime Message)
7FH	Device ID (Broadcast)
09H	Sub ID#1 (General MIDI Message)
01H	Sub ID#2 (General MIDI 1 On)
F7H	EOX (End Of Exclusive)

\* When this messages is received, this instrument will turn to the Studio mode.  
 \* Not received when the Receive GM System On parameter is OFF.

### ○ GM2 System On

Status	Data byte	Status
F0H	7EH 7FH 09H 03H	F7H

Byte	Explanation
F0H	Exclusive status
7EH	ID number (Universal Non-realtime Message)
7FH	Device ID (Broadcast)
09H	Sub ID#1 (General MIDI Message)
03H	Sub ID#2 (General MIDI 2 On)
F7H	EOX (End Of Exclusive)

\* When this messages is received, this instrument will turn to the Studio mode.  
 \* Not received when the Receive GM2 System On parameter is OFF.

### ○ GM System Off

Status	Data byte	Status
F0H	7EH, 7F, 09H, 02H	F7H

Byte	Explanation
F0H	Exclusive status
7EH	ID number (Universal Non-realtime Message)
7FH	Device ID (Broadcast)
09H	Sub ID#1 (General MIDI Message)
02H	Sub ID#2 (General MIDI Off)
F7H	EOX (End Of Exclusive)

\* When this messages is received, this instrument will return to the Studio mode.

## ● Universal Realtime System Exclusive Messages

### ○ Master Volume

Status	Data byte	Status
F0H	7FH, 7FH, 04H, 01H, llH, mmH	F7H

Byte	Explanation
F0H	Exclusive status
7FH	ID number (universal realtime message)
7FH	Device ID (Broadcast)
04H	Sub ID#1 (Device Control)
01H	Sub ID#2 (Master Volume)
llH	Master Volume lower byte
mmH	Master Volume upper byte
F7H	EOX (End Of Exclusive)

\* The lower byte (llH) of Master Volume will be handled as 00H.  
 \* The Master Level parameter will change.

### ○ Master Fine Tuning

Status	Data byte	Status
F0H	7FH, 7FH, 04H, 03H, llH, mmH	F7H

Byte	Explanation
F0H	Exclusive status
7FH	ID number (universal realtime message)
7FH	Device ID (Broadcast)
04H	Sub ID#1 (Device Control)
03H	Sub ID#2 (Master Fine Tuning)
llH	Master Fine Tuning LSB
mmH	Master Fine Tuning MSB
F7H	EOX (End Of Exclusive)

mm, ll: 00 00H - 40 00H - 7F 7FH (-100 - 0 - +99.9 [cents])

\* The Master Tune parameter will change.

## ○Master Coarse Tuning

Status	Data byte	Status
F0H	7FH, 7FH, 04H, 04H, 11H, mmH	F7

Byte	Explanation
F0H	Exclusive status
7FH	ID number (universal realtime message)
7FH	Device ID (Broadcast)
04H	Sub ID#1 (Device Control)
04H	Sub ID#2 (Master Coarse Tuning)
11H	Master Coarse Tuning LSB
mmH	Master Coarse Tuning MSB
F7H	EOX (End Of Exclusive)

11H: ignored (processed as 00H)  
mmH: 28H - 40H - 58H (-24 - 0 - +24 [semitones])

\* The Master Key Shift parameter will change.

## ●Global Parameter Control

\* Not received in Patch mode.

### ○Reverb Parameters

Status	Data byte	Status
F0H	7FH, 7FH, 04H, 05H, 01H, 01H, 01H, 01H, 01H, ppH, vvH	F7H

Byte	Explanation
F0H	Exclusive status
7FH	ID number (universal realtime message)
7FH	Device ID (Broadcast)
04H	Sub ID#1 (Device Control)
05H	Sub ID#2 (Global Parameter Control)
01H	Slot path length
01H	Parameter ID width
01H	Value width
01H	Slot path MSB
01H	Slot path LSB (Effect 0101: Reverb)
ppH	Parameter to be controlled.
vvH	Value for the parameter.
	pp=0 Reverb Type
	vv = 00H Small Room
	vv = 01H Medium Room
	vv = 02H Large Room
	vv = 03H Medium Hall
	vv = 04H Large Hall
	vv = 08H Plate
	pp=1 Reverb Time
	vv = 00H - 7FH 0 - 127
F7H	EOX (End Of Exclusive)

### ○Chorus Parameters

Status	Data byte	Status
F0H	7FH, 7FH, 04H, 05H, 01H, 01H, 01H, 01H, 02H, ppH, vvH	F7H

Byte	Explanation
F0H	Exclusive status
7FH	ID number (universal realtime message)
7FH	Device ID (Broadcast)
04H	Sub ID#1 (Device Control)
05H	Sub ID#2 (Global Parameter Control)
01H	Slot path length
01H	Parameter ID width
01H	Value width
01H	Slot path MSB
02H	Slot path LSB (Effect 0102: Chorus)
ppH	Parameter to be controlled.

vvH	Value for the parameter.
	pp=0 Chorus Type
	vv=0 Chorus1
	vv=1 Chorus2
	vv=2 Chorus3
	vv=3 Chorus4
	vv=4 FB Chorus
	vv=5 Flanger
	pp=1 Mod Rate
	vv = 00H - 7FH 0 - 127
	pp=2 Mod Depth
	vv = 00H - 7FH 0 - 127
	pp=3 Feedback
	vv = 00H - 7FH 0 - 127
	pp=4 Send To Reverb
	vv = 00H - 7FH 0 - 127
F7H	EOX (End Of Exclusive)

### ○Channel Pressure

Status	Data byte	Status
F0H	7FH, 7FH, 09H, 01H, 0nH, ppH, rrH	F7H

Byte	Explanation
F0H	Exclusive status
7FH	ID number (universal realtime message)
7FH	Device ID (Broadcast)
09H	Sub ID#1 (Controller Destination Setting)
01H	Sub ID#2 (Channel Pressure)
0nH	MIDI Channel (00 - 0F)
ppH	Controlled parameter
rrH	Controlled range
	pp=0 Pitch Control
	rr = 28H - 58H -24 - +24 [semitones]
	pp=1 Filter Cutoff Control
	rr = 00H - 7FH -9600 - +9450 [cents]
	pp=2 Amplitude Control
	rr = 00H - 7FH 0 - 200%
	pp=3 LFO Pitch Depth
	rr = 00H - 7FH 0 - 600 [cents]
	pp=4 LFO Filter Depth
	rr = 00H - 7FH 0 - 2400 [cents]
	pp=5 LFO Amplitude Depth
	rr = 00H - 7FH 0 - 100%
F7H	EOX (End Of Exclusive)

### ○Controller

Status	Data byte	Status
F0H	7FH, 7FH, 09H, 03H, 0nH, ccH, ppH, rrH	F7H

Byte	Explanation
F0H	Exclusive status
7FH	ID number (universal realtime message)
7FH	Device ID (Broadcast)
09H	Sub ID#1 (Controller Destination Setting)
03H	Sub ID#2 (Control Change)
0nH	MIDI Channel (00 - 0F)
ccH	Controller number (01 - 1F, 40 - 5F)
ppH	Controlled parameter
rrH	Controlled range
	pp=0 Pitch Control
	rr = 28H - 58H -24 - +24 [semitones]
	pp=1 Filter Cutoff Control
	rr = 00H - 7FH -9600 - +9450 [cents]
	pp=2 Amplitude Control
	rr = 00H - 7FH 0 - 200%
	pp=3 LFO Pitch Depth
	rr = 00H - 7FH 0 - 600 [cents]
	pp=4 LFO Filter Depth
	rr = 00H - 7FH 0 - 2400 [cents]
	pp=5 LFO Amplitude Depth
	rr = 00H - 7FH 0 - 100%
F7H	EOX (End Of Exclusive)

# Fantom-G MIDI Implementation

## ○Scale/Octave Tuning Adjust

Status	Data byte	Status
F0H	7EH, 7FH, 08H, 08H, ffH, ggH, hhH, ssH... F7	

Byte	Explanation
F0H	Exclusive status
7EH	ID number (Universal Non-realtime Message)
7FH	Device ID (Broadcast)
08H	Sub ID#1 (MIDI Tuning Standard)
08H	Sub ID#2 (scale/octave tuning 1-byte form)
ffH	Channel/Option byte 1 bits 0 to 1 = channel 15 to 16 bit 2 to 6 = Undefined
ggH	Channel byte 2 bits 0 to 6 = channel 8 to 14
hhH	Channel byte 3 bits 0 to 6 = channel 1 to 7
ssH	12 byte tuning offset of 12 semitones from C to B 00H = -64 [cents] 40H = 0 [cents] (equal temperament) 7FH = +63 [cents]
F7H	EOX (End Of Exclusive)

## ○Key-based Instrument Controllers

Status	Data byte	Status
F0H	7FH, 7FH, 0AH, 01H, 0nH, kkH, nnH, vvH	F7H

Byte	Explanation
F0H	Exclusive status
7FH	ID number (universal realtime message)
7FH	Device ID (Broadcast)
0AH	Sub ID#1 (Key-Based Instrument Control)
01H	Sub ID#2 (Controller)
0nH	MIDI Channel (00 - 0FH)
kkH	Key Number
nnH	Control Number
vvH	Value
nn=07H	Level
vv = 00H - 7FH	0 - 200% (Relative)
nn=0AH	Pan
vv = 00H - 7FH	Left - Right (Absolute)
nn=5BH	Reverb Send
vv = 00H - 7FH	0 - 127 (Absolute)
nn=5D	Chorus Send
vv = 00H - 7FH	0 - 127 (Absolute)
:	:
F7	EOX (End Of Exclusive)

\* This parameter affects drum instruments only.

## ●Data Transmission

This instrument can use exclusive messages to exchange many varieties of internal settings with other devices.

The model ID of the exclusive messages used by this instrument is 00H 27H.

### ○Data Request 1 RQ1

This message requests the other device to transmit data. The address and size indicate the type and amount of data that is requested.

When a Data Request message is received, if the device is in a state in which it is able to transmit data, and if the address and size are appropriate, the requested data is transmitted as a Data Set 1 (DT1) message. If the conditions are not met, nothing is transmitted.

Status	data byte	status
F0H	41H, dev, 00H, 27H, 11H, aaH, bbH, ccH, ddH, ssH, ttH, uuH, vvH, sum	F7H

Byte	Remarks
F0H	Exclusive status
41H	ID number (Roland)
dev	device ID (dev: 10H - 1FH, 7FH)
00H	model ID #1 (Fantom-G6/G7/G8)
00H	model ID #2 (Fantom-G6/G7/G8)
27H	model ID #3 (Fantom-G6/G7/G8)
11H	command ID (RQ1)
aaH	address MSB
bbH	address

ccH	address
ddH	address LSB
ssH	size MSB
ttH	size
uuH	size
vvH	size LSB
sum	checksum
F7H	EOX (End Of Exclusive)

\* The size of data that can be transmitted at one time is fixed for each type of data. And data requests must be made with a fixed starting address and size. Refer to the address and size given in **Parameter Address Map** (P.14).

\* For the checksum, refer to P.45.

\* Not received when the Receive Exclusive parameter is OFF.

### ○Data set 1 (DT1)

Status	Data byte	Status
F0H	41H, dev, 00H, 27H, 12H, aaH, bbH, ccH, ddH, eeH, ... ffH, sum	F7H

Byte	Explanation
F0H	Exclusive status
41H	ID number (Roland)
dev	Device ID (dev: 00H - 1FH, 7FH)
00H	model ID #1 (Fantom-G6/G7/G8)
00H	model ID #2 (Fantom-G6/G7/G8)
27H	model ID #3 (Fantom-G6/G7/G8)
12H	Command ID (DT1)
aaH	Address MSB: upper byte of the starting address of the data to be sent
bbH	Address: upper middle byte of the starting address of the data to be sent
ccH	Address: lower middle byte of the starting address of the data to be sent
ddH	Address LSB: lower byte of the starting address of the data to be sent.
eeH	Data: the actual data to be sent. Multiple bytes of data are transmitted in order starting from the address.
:	:
ffH	Data
sum	Checksum
F7H	EOX (End Of Exclusive)

\* The amount of data that can be transmitted at one time depends on the type of data, and data will be transmitted from the specified starting address and size. Refer to the address and size given in **Parameter Address Map** (P.14).

\* Data larger than 256 bytes will be divided into packets of 256 bytes or less, and each packet will be sent at an interval of about 20 ms.

\* Regarding the checksum, please refer to P.45.

\* Not received when the Receive Exclusive parameter is OFF.

### ○Data set 1 (DT1)

Status	Data byte	Status
F0H	41H, dev, 42H, 12H, aaH, bbH, ccH, ddH, ... eeH, sum	F7H

Byte	Explanation
F0H	Exclusive status
41H	ID number (Roland)
dev	Device ID (dev: 10H - 1FH, 7FH)
42H	Model ID (GS)
12H	Command ID (DT1)
aaH	Address MSB: upper byte of the starting address of the transmitted data
bbH	Address: middle byte of the starting address of the transmitted data
ccH	Address LSB: lower byte of the starting address of the transmitted data
ddH	Data: the actual data to be transmitted. Multiple bytes of data are transmitted starting from the address.
:	:
eeH	Data
sum	Checksum
F7H	EOX (End Of Exclusive)

- \* The amount of data that can be transmitted at one time depends on the type of data, and data will be transmitted from the specified starting address and size. Refer to the address and size given in **Parameter Address Map** (P.14).
- \* Data larger than 256 bytes will be divided into packets of 256 bytes or less, and each packet will be sent at an interval of about 20 ms.
- \* Regarding the checksum, please refer to P.45.
- \* Not received when the Receive Exclusive parameter is OFF.

## 2. Data Transmission

### ■ Channel Voice Messages

#### ● Note off

Status	2nd byte	3rd byte
8nH	kkH	vvH
n = MIDI channel number:	0H - FH (ch.1 - 16)	
kk = note number:	00H - 7FH (0 - 127)	
vv = note off velocity:	00H - 7FH (0 - 127)	

#### ● Note on

Status	2nd byte	3rd byte
9nH	kkH	vvH
n = MIDI channel number:	0H - FH (ch.1 - 16)	
kk = note number:	00H - 7FH (0 - 127)	
vv = note on velocity:	01H - 7FH (1 - 127)	

#### ● Polyphonic Key Pressure

Status	2nd byte	3rd byte
AnH	kkH	vvH
n = MIDI channel number:	0H - FH (ch.1 - 16)	
kk = note number:	00H - 7FH (0 - 127)	
vv = Polyphonic Key Pressure:	00H - 7FH (0 - 127)	

#### ● Control Change

- \* By selecting a controller number that corresponds to the setting of parameters of controllers (knob, slider and so on), the Fantom-G can transmit any control change message.

#### ○ Bank Select (Controller number 0, 32)

Status	2nd byte	3rd byte
BnH	00H	mmH
BnH	20H	llH
n = MIDI channel number:	0H - FH (ch.1 - 16)	
mm, ll = Bank number:	00 00H - 7F 7FH (bank.1 - bank.16384)	

- \* These messages are transmitted when Patch, Rhythm Set, Sample Set, Live Set or Studio Set is selected. But not transmitted when Transmit Program Change or Transmit Bank Select parameter is OFF.
- \* These messages are not transmitted when External Bank Select MSB or External PC Number parameter is OFF.
- \* Although with the Fantom-G you can select the Bank Select messages to be transmitted, be sure to refer to the Program Change Map on "Sound List" for the Bank Select messages transmitted when the Fantom-G is select a Patch, Rhythm Set, Sample Set, Live Set or Studio Set.
- \* The Bank Select Numbers corresponding to ARX series should be referred to the ARX series owner's manual.

#### ○ Modulation (Controller number 1)

Status	2nd byte	3rd byte
BnH	01H	vvH
n = MIDI channel number:	0H - FH (ch.1 - 16)	
vv = Modulation depth:	00H - 7FH (0 - 127)	

#### ○ Portamento Time (Controller number 5)

Status	2nd byte	3rd byte
BnH	05H	vvH
n = MIDI channel number:	0H - FH (ch.1 - 16)	
vv = Portamento Time:	00H - 7FH (0 - 127)	

#### ○ Data Entry (Controller number 6, 38)

Status	2nd byte	3rd byte
BnH	06H	mmH
BnH	26H	llH
n = MIDI channel number:	0H - FH (ch.1 - 16)	
mm, ll = the value of the parameter specified by RPN/NRPN		
mm = MSB, ll = LSB		

#### ○ Volume (Controller number 7)

Status	2nd byte	3rd byte
BnH	07H	vvH
n = MIDI channel number:	0H - FH (ch.1 - 16)	
vv = Volume:	00H - 7FH (0 - 127)	



# Fantom-G MIDI Implementation

## ○Panpot (Controller number 10)

Status	2nd byte	3rd byte
BnH	0AH	vvH
n = MIDI channel number:	0H - FH (ch.1 - 16)	
vv = Panpot:	00H - 40H - 7FH (Left - Center - Right),	

## ○Expression (Controller number 11)

Status	2nd byte	3rd byte
BnH	0BH	vvH
n = MIDI channel number:	0H - FH (ch.1 - 16)	
vv = Expression:	00H - 7FH (0 - 127)	

## ○Hold 1 (Controller number 64)

Status	2nd byte	3rd byte
BnH	40H	vvH
n = MIDI channel number:	0H - FH (ch.1 - 16)	
vv = Control value:	00H - 7FH (0 - 127) 0-63 = OFF, 64-127 = ON	

\* When Continuous Hold Pedal parameter is OFF, just only 00H (0FF) and 7FH (0N) can be send as the control value.

## ○Portamento (Controller number 65)

Status	2nd byte	3rd byte
BnH	41H	vvH
n = MIDI channel number:	0H - FH (ch.1 - 16)	
vv = Control value:	00H - 7FH (0 - 127) 0 - 63 = OFF, 64 - 127 = ON	

## ○Sostenuto (Controller number 66)

Status	2nd byte	3rd byte
BnH	42H	vvH
n = MIDI channel number:	0H - FH (ch.1 - 16)	
vv = Control value:	00H - 7FH (0 - 127) 0 - 63 = OFF, 64 - 127 = ON	

## ○Soft (Controller number 67)

Status	2nd byte	3rd byte
BnH	43H	vvH
n = MIDI channel number:	0H - FH (ch.1 - 16)	
vv = Control value:	00H - 7FH (0 - 127) 0 - 63 = OFF, 64 - 127 = ON	

## ○Legato Foot Switch (Controller number 68)

Status	2nd byte	3rd byte
BnH	44H	vvH
n = MIDI channel number:	0H - FH (ch.1 - 16)	
vv = Control value:	00H - 7FH (0 - 127) 0 - 63 = OFF, 64 - 127 = ON	

## ○Resonance (Controller number 71)

Status	2nd byte	3rd byte
BnH	47H	vvH
n = MIDI channel number:	0H - FH (ch.1 - 16)	
vv = Resonance value (relative change):	00H - 40H - 7FH (-64 - 0 - +63)	

## ○Release Time (Controller number 72)

Status	2nd byte	3rd byte
BnH	48H	vvH
n = MIDI channel number:	0H - FH (ch.1 - 16)	
vv = Release Time value (relative change):	00H - 40H - 7FH (-64 - 0 - +63)	

## ○Attack time (Controller number 73)

Status	2nd byte	3rd byte
BnH	49H	vvH
n = MIDI channel number:	0H - FH (ch.1 - 16)	
vv = Attack time value (relative change):	00H - 40H - 7FH (-64 - 0 - +63)	

## ○Cutoff (Controller number 74)

Status	2nd byte	3rd byte
BnH	4AH	vvH
n = MIDI channel number:	0H - FH (ch.1 - 16)	
vv = Cutoff value (relative change):	00H - 40H - 7FH (-64 - 0 - +63)	

## ○Decay Time (Controller number 75)

Status	2nd byte	3rd byte
BnH	4BH	vvH
n = MIDI channel number:	0H - FH (ch.1 - 16)	
vv = Decay Time value (relative change):	00H - 40H - 7FH (-64 - 0 - +63)	

## ○Vibrato Rate (Controller number 76)

Status	2nd byte	3rd byte
BnH	4CH	vvH
n = MIDI channel number:	0H - FH (ch.1 - 16)	
vv = Vibrato Rate value (relative change):	00H - 40H - 7FH (-64 - 0 - +63)	

## ○Vibrato Depth (Controller number 77)

Status	2nd byte	3rd byte
BnH	4DH	vvH
n = MIDI channel number:	0H - FH (ch.1 - 16)	
vv = Vibrato Depth Value (relative change):	00H - 40H - 7FH (-64 - 0 - +63)	

## ○Vibrato Delay (Controller number 78)

Status	2nd byte	3rd byte
BnH	4EH	vvH
n = MIDI channel number:	0H - FH (ch.1 - 16)	
vv = Vibrato Delay value (relative change):	00H - 40H - 7FH (-64 - 0 - +63)	

## ○General Purpose Controller 5 (Controller number 80)

Status	2nd byte	3rd byte
BnH	50H	vvH
n = MIDI channel number:	0H - FH (ch.1 - 16)	
vv = Control value:	00H - 7FH (0 - 127)	

## ○General Purpose Controller 6 (Controller number 81)

Status	2nd byte	3rd byte
BnH	51H	vvH
n = MIDI channel number:	0H - FH (ch.1 - 16)	
vv = Control value:	00H - 7FH (0 - 127)	

## ○General Purpose Controller 7 (Controller number 82)

Status	2nd byte	3rd byte
BnH	52H	vvH
n = MIDI channel number:	0H - FH (ch.1 - 16)	
vv = Control value:	00H - 7FH (0 - 127)	

## ○General Purpose Controller 8 (Controller number 83)

Status	2nd byte	3rd byte
BnH	53H	vvH
n = MIDI channel number:	0H - FH (ch.1 - 16)	
vv = Control value:	00H - 7FH (0 - 127)	

## ○Portamento control (Controller number 84)

Status	2nd byte	3rd byte
BnH	54H	kkH
n = MIDI channel number:	0H - FH (ch.1 - 16)	
kk = source note number:	00H - 7FH (0 - 127)	

## ○Effect 1 (Reverb Send Level) (Controller number 91)

Status	2nd byte	3rd byte
BnH	5BH	vvH
n = MIDI channel number:	0H - FH (ch.1 - 16)	
vv = Reverb Send Level:	00H - 7FH (0 - 127)	

## ○Effect 3 (Chorus Send Level) (Controller number 93)

Status	2nd byte	3rd byte
BnH	5DH	vvH
n = MIDI channel number:	0H - FH (ch.1 - 16)	
vv = Chorus Send Level:	00H - 7FH (0 - 127)	

## ○General Controller

Status	2nd byte	3rd byte
BnH	kkH	vvH
n = MIDI channel number:	0H - FH (ch.1 - 16)	
kk = Controller number:	00H - 7FH (0 - 31, 33 - 95)	
vv = Modulation depth:	00H - 7FH (0 - 127)	



## ●Program Change

<u>Status</u>	<u>2nd byte</u>
CnH	ppH
n = MIDI channel number:	0H - FH (ch.1 - 16)
pp = Program number:	00H - 7FH (prog.1 - prog.128)

- \* These messages are transmitted when Patch, Rhythm Set, Sample Set, Live Set or Studio Set is selected. But not transmitted when Transmit Program Change parameter is OFF.
- \* These messages are not transmitted when External PC Num parameter is OFF.

## ●Channel Pressure

<u>Status</u>	<u>2nd byte</u>
DnH	vvH
n = MIDI channel number:	0H - FH (ch.1 - 16)
vv = Channel Pressure:	00H - 7FH (0 - 127)

## ●Pitch Bend Change

<u>Status</u>	<u>2nd byte</u>	<u>3rd byte</u>
EnH	llH	mmH
n = MIDI channel number:	0H - FH (ch.1 - 16)	
mm, ll = Pitch Bend value:	00 00H - 40 00H - 7F 7FH (-8192 - 0 - +8191)	

## ■Channel Mode Messages

### ●MONO (Controller number 126)

<u>Status</u>	<u>2nd byte</u>	<u>3rd byte</u>
BnH	7EH	mmH
n = MIDI channel number:	0H - FH (ch.1 - 16)	
mm = mono number:	00H - 10H (0 - 16)	

### ●POLY (Controller number 127)

<u>Status</u>	<u>2nd byte</u>	<u>3rd byte</u>
BnH	7FH	00H
n = MIDI channel number:	0H - FH (ch.1 - 16)	

## ■System Realtime Messages

### ●Active Sensing

<u>Status</u>
FEH

- \* This message is transmitted at intervals of approximately 250 msec.
- \* This message is not sent when Transmit Active Sensing parameter is OFF.

## ■System Exclusive Messages

<u>Status</u>	<u>Data byte</u>	<u>Status</u>
F0H	iiH, ddH, .....,eeH	F7H

F0H: System Exclusive Message status  
 ii = ID number: an ID number (manufacturer ID) to indicate the manufacturer whose Exclusive message this is. Roland's manufacturer ID is 41H.  
 ID numbers 7EH and 7FH are extensions of the MIDI standard; Universal Non-realtime Messages (7EH) and Universal Realtime Messages (7FH).  
 dd,....,ee = data: 00H - 7FH (0 - 127)  
 F7H: EOX (End Of Exclusive)

Universal Non-realtime System Exclusive Message" and Data Set 1 (DT1) are the only System Exclusive messages transmitted by the Fantom-G.

## ●Universal Non-realtime System Exclusive Message

### ○Identity Reply Message (Fantom-G6)

Receiving Identity Request Message, the Fantom-G6 send this message.

<u>Status</u>	<u>Data byte</u>	<u>Status</u>
F0H	7EH, dev, 06H, 02H, 41H, 27H, 02H, 00H, 00H, 00H, 03H, 00H, 00H	F7H

<u>Byte</u>	<u>Explanation</u>
F0H	Exclusive status
7EH	ID number (Universal Non-realtime Message)
dev	Device ID (dev: 10H - 1FH)
06H	Sub ID#1 (General Information)
02H	Sub ID#2 (Identity Reply)
41H	ID number (Roland)
27H 02H	Device family code
00H 00H	Device family number code
00H 03H 00H 00H	Software revision level
F7H	EOX (End of Exclusive)

### ○Identity Reply Message (Fantom-G7)

Receiving Identity Request Message, the Fantom-G7 send this message.

<u>Status</u>	<u>Data byte</u>	<u>Status</u>
F0H	7EH, dev, 06H, 02H, 41H, 27H, 02H, 00H, 00H, 01H, 03H, 00H, 00H	F7H

<u>Byte</u>	<u>Explanation</u>
F0H	Exclusive status
7EH	ID number (Universal Non-realtime Message)
dev	Device ID (dev: 10H - 1FH)
06H	Sub ID#1 (General Information)
02H	Sub ID#2 (Identity Reply)
41H	ID number (Roland)
27H 02H	Device family code
00H 00H	Device family number code
01H 03H 00H 00H	Software revision level
F7H	EOX (End of Exclusive)

### ○Identity Reply Message (Fantom-G8)

Receiving Identity Request Message, the Fantom-G8 send this message.

<u>Status</u>	<u>Data byte</u>	<u>Status</u>
F0H	7EH, dev, 06H, 02H, 41H, 27H, 02H, 00H, 00H, 02H, 03H, 00H, 00H	F7H

<u>Byte</u>	<u>Explanation</u>
F0H	Exclusive status
7EH	ID number (Universal Non-realtime Message)
dev	Device ID (dev: 10H - 1FH)
06H	Sub ID#1 (General Information)
02H	Sub ID#2 (Identity Reply)
41H	ID number (Roland)
27H 02H	Device family code
00H 00H	Device family number code
02H 00H 00H 00H	Software revision level
F7H	EOX (End of Exclusive)

# Fantom-G MIDI Implementation

## ●Data Transmission

○Data set 1		DT1	Status
Status	Data byte		F7H
F0H	41H, dev, 00H, 27H, 12H, aaH, bbH, ccH, ddH, eeH, ... ffH, sum		
Byte	Explanation		
F0H	Exclusive status		
41H	ID number (Roland)		
dev	Device ID (dev: 00H - 1FH, 7FH)		
00H	model ID #1 (Fantom-G6/G7/G8)		
00H	model ID #2 (Fantom-G6/G7/G8)		
27H	model ID #3 (Fantom-G6/G7/G8)		
12H	Command ID (DT1)		
aaH	Address MSB: upper byte of the starting address of the data to be sent		
bbH	Address: upper middle byte of the starting address of the data to be sent		
ccH	Address: lower middle byte of the starting address of the data to be sent		
ddH	Address LSB: lower byte of the starting address of the data to be sent.		
eeH	Data: the actual data to be sent. Multiple bytes of data are transmitted in order starting from the address.		
:	:		
ffH	Data		
sum	Checksum		
F7H	EOX (End Of Exclusive)		

\* The amount of data that can be transmitted at one time depends on the type of data, and data will be transmitted from the specified starting address and size. Refer to the address and size given in **Parameter Address Map** (P.14).

\* Data larger than 256 bytes will be divided into packets of 256 bytes or less, and each packet will be sent at an interval of about 20 ms.

## 3. Data reception (Sequencer Section)

### 3.1 Messages recorded during recording

#### ■Channel Voice Messages

##### ●Note Off

Status	2nd byte	3rd byte
8nH	kkH	vvH
9nH	kkH	00H
n=MIDI channel number:		0H - FH (ch.1 - ch.16)
kk=note number:		00H - 7FH (0 - 127)
vv=note off velocity:		00H - 7FH (0 - 127)

\* Not received when the Note parameter (Recording Select window) is OFF.

##### ●Note on

Status	2nd byte	3rd byte
9nH	kkH	vvH
n=MIDI channel number:		0H - FH (ch.1 - ch.16)
kk=note number:		00H - 7FH (0 - 127)
vv=note on velocity:		01H - 7FH (1 - 127)

\* Not received when the Note parameter (Recording Select window) is OFF.

##### ●Polyphonic Aftertouch

Status	2nd byte	3rd byte
AnH	kkH	vvH
n=MIDI channel number:		0H - FH (ch.1 - ch.16)
kk=note number:		00H - 7FH (0 - 127)
vv=Polyphonic Aftertouch:		00H - 7FH (0 - 127)

\* Not received when the Poly Aftertouch parameter (Recording Select window) is OFF.

##### ●Control Change

Status	2nd byte	3rd byte
BnH	kkH	vvH
n=MIDI channel number:		0H - FH (ch.1 - ch.16)
kk=Control number:		00H - 78H (0 - 120)
vv=value:		00H - 7FH (0 - 127)

\* Not received when the Control Change parameter (Recording Select window) is OFF.

##### ●Program Change

Status	2nd byte	
CnH	ppH	
n=MIDI channel number:		0H - FH (ch.1 - ch.16)
pp=Program number:		00H - 7FH (prog.1 - prog.128)

\* Not received when the Program Change parameter (Recording Select window) is OFF.

##### ●Channel Aftertouch

Status	2nd byte	
DnH	vvH	
n=MIDI channel number:		0H - FH (ch.1 - ch.16)
vv=Channel Aftertouch:		00H - 7FH (0 - 127)

\* Not received when the Channel Aftertouch parameter (Recording Select window) is OFF.

##### ●Pitch Bend Change

Status	2nd byte	3rd byte
EnH	llH	mmH
n=MIDI channel number:		0H - FH (ch.1 - ch.16)
mm, ll=Pitch Bend value:		00 00H - 40 00H - 7F 7FH (-8192 - 0 - +8191)

\* Not received when the Pitch Bend parameter (Recording Select window) is OFF.

## ■ Channel Mode messages

### ● All Sound Off (Controller number 120)

<u>Status</u>	<u>2nd byte</u>	<u>3rd byte</u>
BnH	78H	00H
n=MIDI channel number: 0H - FH (ch.1 - ch.16)		

### ● Reset All Controller (Controller number 121)

<u>Status</u>	<u>2nd byte</u>	<u>3rd byte</u>
BnH	79H	00H
n=MIDI channel number: 0H - FH (ch.1 - ch.16)		

### ● Omni Off (Controller number 124)

<u>Status</u>	<u>2nd byte</u>	<u>3rd byte</u>
BnH	7CH	00H
n=MIDI channel number: 0H - FH (ch.1 - ch.16)		

\* The same processing will be done as when an All Note Off message is received.

### ● Omni On (Controller number 125)

<u>Status</u>	<u>2nd byte</u>	<u>3rd byte</u>
BnH	7DH	00H
n=MIDI channel number: 0H - FH (ch.1 - ch.16)		

\* The same processing will be done as when an All Note Off message is received.

### ● Mono (Controller number 126)

<u>Status</u>	<u>2nd byte</u>	<u>3rd byte</u>
BnH	7EH	mmH
n=MIDI channel number: 0H - FH (ch.1 - ch.16)		
mm=mono number: 00H - 10H (0 - 16)		

\* The same processing will be done as when an All Note Off message is received.

### ● Poly (Controller number 127)

<u>Status</u>	<u>2nd byte</u>	<u>3rd byte</u>
BnH	7FH	00H
n=MIDI channel number: 0H - FH (ch.1 - ch.16)		

\* The same processing will be done as when an All Note Off message is received.

## ■ System Exclusive Messages

<u>Status</u>	<u>Data byte</u>	<u>Status</u>
F0H	iiH, ddH, ....., eeH	F7H
F0H:	System Exclusive message status	
ii=ID number:	This is the ID number (manufacturer ID) that specifies the manufacturer whose exclusive message this is. Roland's manufacturer ID is 41H. ID numbers 7EH and 7FH are defined in an expansion of the MIDI standard as Universal Non-real-time messages (7EH) and Universal Realtime Messages (7FH).	
dd, ..., ee = data:	00H - 7FH (0 - 127)	
F7H:	EOX (End of System Exclusive)	

- \* Not received when the System Exclusive parameter (Recording Select window) is OFF.
- \* MIDI Machine Control and MIDI Time code is not recorded. (Refer to "3.3 Messages acknowledged for synchronization")

# Fantom-G MIDI Implementation

## 3.2 Messages not recorded during recording

### ■ Channel mode messages

#### ● Local On/Off (Controller number 122)

Status	2nd byte	3rd byte
BnH	7AH	vvH
n=MIDI channel number:		0H - FH (ch.1 - ch.16)
vv=Value:		00H, 7FH (Local Off, Local On)

#### ● All notes off (Controller number 123)

Status	2nd byte	3rd byte
BnH	7BH	00H
n=MIDI channel number:		0H - FH (ch.1 - ch.16)

\* When an All Note Off message is received, all notes of the corresponding channel that are on will be sent Note Off's, and the resulting Note Off messages will be recorded.

## 3.3 Messages acknowledged for synchronization

### ■ System Common messages

#### ● Tune Request

Status  
F6H

#### ● MIDI Time Code Quarter Frame Messages

MIDI Time Code Quarter Frame Messages can be transmitted while the sequencer is running (Playing or Recording) if the Sync Mode parameter (System/Sync/Tempo) is MASTER and MTC Sync Output parameter (System/Sync/Tempo) is ON. The transmitted time counts are summed to MTC Offset Time parameter (System/Sync/Tempo) as the song top is "00:00:00:00."

The sequencer synchronizes with the time counts which are summed to MTC Offset Time parameter (System/Sync/Tempo) as the song top is "00:00:00:00" if the Sync Mode parameter (System/Sync/Tempo) is SLAVE(MTC).

Status	Second
F1H	mmH (= 0nnndddd)
nnn = Message type :	
0 = Frame count LS nibble	
1 = Frame count MS nibble	
2 = Seconds count LS nibble	
3 = Seconds count MS nibble	
4 = Minutes count LS nibble	
5 = Minutes count MS nibble	
6 = Hours count LS nibble	
7 = Hours count MS nibble	
dddd = 4 bit nibble data : h - FH (0 - 15)	
Bit Field is assigned as follows.	

Frame Count	xxxxxyyy	
xxx	Reserved (000)	
yyyyy	Frame No.(0-29)	
Seconds Count	xyyyyyyy	
	xx	Reserved (00)
	yyyyyy	Seconds (0-59)
Minutes Count	xyyyyyyy	
	xx	Reserved (00)
	yyyyyy	Minutes (0-59)
Hours Count	xyzzzzz	
	x	Reserved (0)
	yy	Time Code type
	0 = 24 Frames / Sec	
	1 = 25 Frames / Sec	
	2 = 30 Frames / Sec (Drop Frame)	
	3 = 30 Frames / Sec (Non Drop Frame)	
	zzzzz	Hours (0-23)

#### ● Song Position Pointer

Status	2nd byte	3rd byte
F2H	mmH	llH
mm, ll=value:		00 00H - 7F 7FH (0 - 16383)

### ■ System Realtime Messages

#### ● Timing Clock

Status  
F8H

\* Received when Sync Mode parameter (System/Sync/Tempo) is set to SLAVE-MIDI.

#### ● Start

Status  
FAH

\* Received when Sync Mode parameter (System/Sync/Tempo) is set to SLAVE-MIDI or REMOTE.

#### ● Continue

Status  
FBH

\* Received when Sync Mode parameter (System/Sync/Tempo) is set to SLAVE-MIDI or REMOTE.

#### ● Stop

Status  
FCH

\* Received when Sync Mode parameter (System/Sync/Tempo) is set to SLAVE-MIDI or REMOTE.

## ■ System Exclusive Message

### ● MIDI Machine Control (MMC)

\* Received when the MMC Mode parameter (System/Sync/Tempo) is SLAVE.

#### ○ STOP (MCS)

Status	Data byte	Status
F0H	7FH, dev, 06H, 01H	F7H

Byte	Remarks
F0H	Exclusive status
7FH	Universal System Exclusive Realtime Header
7FH	Device ID
06H	MMC command message
01H	STOP (MCS)
F7H	EOX (End of Exclusive)

#### ○ DEFERRED PLAY (MCS)

Status	Data byte	Status
F0H	7FH, dev, 06H, 03H	F7H

Byte	Remarks
F0H	Exclusive status
7FH	Universal System Exclusive Realtime Header
7FH	Device ID
06H	MMC command message
03H	DEFERRED PLAY (MCS)
F7H	EOX (End of Exclusive)

#### ○ LOCATE (MCP)

##### ○ Format2—LOCATE [TARGET]

Status	Data byte	Status
F0H	7FH, dev, 06H, 44H, 06H, 01H, hrH, mnH, scH, frH, ffH	F7H

Byte	Remarks
F0H	Exclusive status
7FH	Universal System Exclusive Realtime Header
7FH	Device ID
06H	MMC command message
44H	LOCATE (MCP)
06H	Byte count
01H	"TARGET" sub-Command
hrH	Standard Time Specification with subframes
mnH	
scH	
frH	
ffH	
F7H	EOX (End of Exclusive)

## 4. Data transmission (Sequencer Section)

### 4.1 Messages transmitted during playing

Recorded messages are transmitted during playback.

### 4.2 Soft Through

Messages (except System Common and System Realtime Messages) that are received are then sent out when Soft Through parameter (System/MIDI) is switched to ON.

### 4.3 Messages that are generated and transmitted

#### 4.3.1 Messages Appearing When Synchronizing with Other Devices

### ■ System Common Messages

\* Sent when Sync Output parameter (System/Sync/Tempo) is set to ON.

#### ● Song Position Pointer

Status	2nd byte	3rd byte
F2H	mmH	llH
mm, ll=value:	00 00H - 7F 7FH (0 - 16383)	

### ■ System Realtime Messages

\* Sent when Sync Output parameter (System/Sync/Tempo) is set to ON.

#### ● Timing Clock

Status
F8H

#### ● Start

Status
FAH

#### ● Continue

Status
FBH

#### ● Stop

Status
FCH

#### ● Quarter Frame Messages

Status	2nd byte
FIH	mmH (= 0nnndddd)

\* Sent when Sync Mode parameter (System/Sync/Tempo) is set to MASTER and MTC Sync Output parameter (System/Sync/Tempo) is set to ON. Furthermore, sending a Quarter Frame Message with "00h00m00s00f00" at the beginning of the song adds the MTC Offset Time parameter (System/Sync/Tempo).

# Fantom-G MIDI Implementation

## System Exclusive Message

### MIDI Time code

#### Full Message

Full Messages are used, which encode the complete time into a single message. This message transmitted when the song position moves.

Status	Data Byte	Status
F0H, 7FH xxH, 01H, 01H, hrH, mnH, scH, frH		F7H

F0H, 7FH: Realtime Universal System Exclusive Header

xxH: 7F (Device ID)  
 01H: sub-ID #1 (MIDI Time code)  
 01H: sub-ID #2 (Full Message)  
 hrH: hours and type: 0 yy zzzzz

yy type:  
 00 = 24 Flame/sec  
 01 = 25 Flame/sec  
 10 = 30 Flame/sec  
 11 = 30 Flame/sec

zzzzz: Hours (00 - 23)  
 mnH: Minutes (00 - 59)  
 scH: Seconds (00 - 59)  
 frH: Frames (00 - 29)  
 F7H: EOX (End of Exclusive)

### MIDI Machine Control (MMC)

\* Not received when the MMC Mode parameter (System/Sync/Tempo) is Master.

#### STOP (MCS)

Status	Data byte	Status
F0H	7FH, dev, 06H, 01H	F7H

Byte	Remarks
F0H	Exclusive status
7FH	Universal System Exclusive Realtime Header
7FH	Device ID
06H	MMC command message
01H	STOP (MCS)
F7H	EOX (End of Exclusive)

#### DEFERRED PLAY (MCS)

Status	Data byte	Status
F0H	7FH, dev, 06H, 03H	F7H

Byte	Remarks
F0H	Exclusive status
7FH	Universal System Exclusive Realtime Header
7FH	Device ID
06H	MMC command message
03H	DEFERRED PLAY (MCS)
F7H	EOX (End of Exclusive)

#### LOCATE (MCP)

##### Format2—LOCATE [TARGET]

Status	Data byte	Status
F0H	7FH, dev, 06H, 44H, 06H, 01H, hrH, mnH, scH, frH, fffH	F7H

Byte	Remarks
F0H	Exclusive status
7FH	Universal System Exclusive Realtime Header
7FH	Device ID
06H	MMC command message
44H	LOCATE (MCP)
06H	Byte count
01H	"TARGET" sub-Command
hrH	Standard Time Specification with subframes
mnH	
scH	
frH	
fffH	
F7H	EOX (End of Exclusive)

## 5. Parameter Address Map

- \* Transmission of “#” marked address is divided to some packets. For example, ABH in hexadecimal notation will be divided to 0AH and 0BH, and is sent/received in this order.
- \* “<?” marked address or parameters are ignored when the Fantom-G6/X7/X8 received them.

### 1. FANTOM-G (ModelID = 00H 00H 27H)

Start Address	Description
01 00 00 00	Setup
02 00 00 00	System
10 00 00 00	Temporary Live Set
11 00 00 00	Temporary Patch/Rhythm (Live Mode Part 1)
11 20 00 00	Temporary Patch/Rhythm (Live Mode Part 2)
12 60 00 00	Temporary Patch/Rhythm (Live Mode Part 8)
16 00 00 00	Temporary Arpeggio (Live Mode)
16 01 00 00	Temporary Chord (Live Mode)
18 00 00 00	Temporary Studio Set
19 00 00 00	Temporary Patch/Rhythm (Studio Mode Part 1)
19 20 00 00	Temporary Patch/Rhythm (Studio Mode Part 2)
1C 60 00 00	Temporary Patch/Rhythm (Studio Mode Part 16)
1E 00 00 00	Temporary Arpeggio (Studio Mode)
1E 01 00 00	Temporary Chord (Studio Mode)
1F 00 00 00	Temporary Arpeggio Set
1F 01 00 00	Temporary Chord Set

#### System

Offset Address	Description
00 00 00	System Common
00 02 00	System Insert MFX
00 0E 00	System Mastering
00 0F 00	System Input FX
00 60 00	System Controller

#### Temporary Patch/Rhythm

Offset Address	Description
00 00 00	Temporary Patch
08 00 00	Temporary Sample Set
10 00 00	Temporary Rhythm

#### Live Set

Offset Address	Description
00 00 00	Live Set Common
00 01 00	Live Set Expl Common
00 01 40	Live Set Exp2 Common
00 06 00	Live Set Common Chorus
00 0A 00	Live Set Common Reverb
00 10 00	Live Set MIDI (Channel 1)
00 11 00	Live Set MIDI (Channel 2)
00 1F 00	Live Set MIDI (Channel 16)
00 20 00	Live Set Part (Part 1)
00 21 00	Live Set Part (Part 2)
00 27 00	Live Set Part (Part 8)
00 30 00	Live Set Expl Part (Part 1)
00 31 00	Live Set Expl Part (Part 2)
00 3F 00	Live Set Expl Part (Part 16)
00 40 00	Live Set Exp2 Part (Part 1)
00 41 00	Live Set Exp2 Part (Part 2)
00 4F 00	Live Set Exp2 Part (Part 16)
00 50 00	Live Set Ext Part (Part 1)
00 51 00	Live Set Ext Part (Part 2)
00 5F 00	Live Set Ext Part (Part 16)
00 60 00	Live Set Controller

#### Studio Set

Offset Address	Description
00 00 00	Studio Set Common
00 01 00	Studio Set Expl Common
00 01 40	Studio Set Exp2 Common
00 02 00	Studio Set Common Insert MFX1
00 04 00	Studio Set Common Insert MFX2
00 06 00	Studio Set Common Chorus
00 0A 00	Studio Set Common Reverb
00 0E 00	Studio Set Common Mastering
00 0F 00	Studio Set Common Input FX
00 10 00	Studio Set MIDI (Channel 1)
00 11 00	Studio Set MIDI (Channel 2)
00 1F 00	Studio Set MIDI (Channel 16)
00 20 00	Studio Set Part (Part 1)
00 21 00	Studio Set Part (Part 2)
00 2F 00	Studio Set Part (Part 16)
00 30 00	Studio Set Expl Part (Part 1)
00 31 00	Studio Set Expl Part (Part 2)
00 3F 00	Studio Set Expl Part (Part 16)
00 40 00	Studio Set Exp2 Part (Part 1)
00 41 00	Studio Set Exp2 Part (Part 2)
00 4F 00	Studio Set Exp2 Part (Part 16)
00 50 00	Studio Set Ext Part (Part 1)
00 51 00	Studio Set Ext Part (Part 2)
00 5F 00	Studio Set Ext Part (Part 16)
00 60 00	Studio Set Controller

# Fantom-G MIDI Implementation

## ○Patch

Offset	Address	Description
00 00 00		Patch Common
00 02 00		Patch Common MFX
00 04 00		Patch Common Chorus
00 06 00		Patch Common Reverb
00 10 00		Patch TMT (Tone Mix Table)
00 20 00		Patch Tone (Tone 1)
00 22 00		Patch Tone (Tone 2)
00 24 00		Patch Tone (Tone 3)
00 26 00		Patch Tone (Tone 4)
00 30 00		Patch Common 2
00 40 00		Patch Tone 2 (Tone 1)
00 42 00		Patch Tone 2 (Tone 2)
00 44 00		Patch Tone 2 (Tone 3)
00 46 00		Patch Tone 2 (Tone 4)
00 60 00		Patch Controller

## ○Sample Set

Offset	Address	Description
00 00 00		Sample Set Common
00 02 00		Sample Set Common MFX
00 04 00		Sample Set Common Chorus
00 06 00		Sample Set Common Reverb
00 10 00		Sample Set Tone (Tone # 1)
00 12 00		Sample Set Tone (Tone # 2)
:		:
00 2E 00		Sample Set Tone (Tone # 16)

## ○Rhythm

Offset	Address	Description
00 00 00		Rhythm Common
00 02 00		Rhythm Common MFX
00 04 00		Rhythm Common Chorus
00 06 00		Rhythm Common Reverb
00 10 00		Rhythm Tone (Key # 21)
00 12 00		Rhythm Tone (Key # 22)
:		:
01 3E 00		Rhythm Tone (Key # 108)
02 00 00		Rhythm Common 2
02 10 00		Rhythm Tone 2 (Key # 21)
02 12 00		Rhythm Tone 2 (Key # 22)
:		:
03 3E 00		Rhythm Tone 2 (Key # 108)
03 60 00		Rhythm Controller

## ○Arpeggio

Offset	Address	Description
00 00 00		Arpeggio

## ○Chord

Offset	Address	Description
00 00 00		Chord Memory

## ○Arpeggio Set

Offset	Address	Description
00 00 00		Arpeggio Set

## ○Chord Set

Offset	Address	Description
00 00 00		Chord Set

## ○Setup

Offset	Address	Description
00 00	0000 0aaa	Sound Mode (0 - 4) SINGLE, LIVE, STUDIO, GM1, GM2
00 01	0aaa aaaa	Live Set Bank Select MSB (CC# 0) (0 - 127)
00 02	0aaa aaaa	Live Set Bank Select LSB (CC# 32) (0 - 127)
00 03	0aaa aaaa	Live Set Program Number (PC) (0 - 127)
00 04	0aaa aaaa	Studio Set Bank Select MSB (CC# 0) (0 - 127)
00 05	0aaa aaaa	Studio Set Bank Select LSB (CC# 32) (0 - 127)
00 06	0aaa aaaa	Studio Set Program Number (PC) (0 - 127)
00 07	0aaa aaaa	Arpeggio Set Number (0 - 127)
00 08	0aaa aaaa	Chord Set Number (1 - 128)
:		:
00 09	0000 aaaa	Transpose Value (0 - 127)
00 0A	0000 0aaa	Octave Shift (-5 - +6) (61 - 67) -3 - +3
00 00 00 0B		Total Size

## ○System Common

Offset	Address	Description
# 00 00	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Master Tune (24 - 2024) -100.0 - 100.0 [cent]

00 04	00aa aaaa	Master Key Shift (40 - 88) -24 - +24
00 05	0aaa aaaa	Master Level (0 - 127)
00 06	0000 000a	Scale Tune Switch (0 - 1) OFF, ON
00 07	0000 000a	Patch Remain (0 - 1) OFF, ON
00 08	0000 000a	Control Remain (0 - 1) OFF, ON
00 09	0000 000a	Mix/Parallel (0 - 1) MIX, PARALLEL
00 0A	000a aaaa	Live Set Control Channel (0 - 16) 1 - 16, OFF
00 0B	000a aaaa	Studio Set Control Channel (0 - 16) 1 - 16, OFF
00 0C	000a aaaa	(reserve) <*> (0 - 16) 1 - 16, OFF
00 0D	0aaa aaaa	System Control 1 Source (0 - 97) OFF, CC01 - CC31, CC33 - CC95, BEND, APT (0 - 97)
00 0E	0aaa aaaa	System Control 2 Source (0 - 97) OFF, CC01 - CC31, CC33 - CC95, BEND, APT (0 - 97)
00 0F	0aaa aaaa	System Control 3 Source (0 - 97) OFF, CC01 - CC31, CC33 - CC95, BEND, APT (0 - 97)
00 10	0aaa aaaa	System Control 4 Source (0 - 97) OFF, CC01 - CC31, CC33 - CC95, BEND, APT (0 - 97)
00 11	0000 000a	Receive Program Change (0 - 1) OFF, ON
00 12	0000 000a	Receive Bank Select (0 - 1) OFF, ON
00 13	0000 000a	Insert MFX1 Switch (0 - 1) OFF, ON
00 14	0000 000a	Mastering Switch (0 - 1) OFF, ON
00 15	0000 000a	Input FX Switch (0 - 1) OFF, ON
00 16	0aaa aaaa	Master Reverb Level (0 - 127)
00 00 00 17		Total Size

## ○System Insert MFX

Offset	Address	Description
00 00	0aaa aaaa	MFX Type (0 - 78)
00 01	0aaa aaaa	MFX Dry Send Level (0 - 127)
00 02	0aaa aaaa	MFX Chorus Send Level (0 - 127)
00 03	0aaa aaaa	MFX Reverb Send Level (0 - 127)
00 04	0000 00aa	MFX Output Assign (0 - 1) A, B
00 05	0aaa aaaa	(reserve) <*> (0 - 101)
00 06	0aaa aaaa	(reserve) <*> (1 - 127)
00 07	0aaa aaaa	(reserve) <*> (0 - 101)
00 08	0aaa aaaa	(reserve) <*> (1 - 127)
00 09	0aaa aaaa	(reserve) <*> (0 - 101)
00 0A	0aaa aaaa	(reserve) <*> (1 - 127)
00 0B	0aaa aaaa	(reserve) <*> (0 - 101)
00 0C	0aaa aaaa	(reserve) <*> (1 - 127)
00 0D	000a aaaa	MFX Control Assign 1 (0 - 16) OFF, 1 - 16
00 0E	000a aaaa	MFX Control Assign 2 (0 - 16) OFF, 1 - 16
00 0F	000a aaaa	MFX Control Assign 3 (0 - 16) OFF, 1 - 16
00 10	000a aaaa	MFX Control Assign 4 (0 - 16) OFF, 1 - 16
# 00 11	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 1 (12768 - 52768) -20000 - +20000
# 00 15	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 2 (12768 - 52768) -20000 - +20000
# 00 19	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 3 (12768 - 52768) -20000 - +20000
# 00 1D	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 4 (12768 - 52768) -20000 - +20000
# 00 21	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 5 (12768 - 52768) -20000 - +20000
# 00 25	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 6 (12768 - 52768) -20000 - +20000
# 00 29	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 7 (12768 - 52768) -20000 - +20000
# 00 2D	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 8 (12768 - 52768) -20000 - +20000
# 00 31	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 9 (12768 - 52768) -20000 - +20000
# 00 35	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 10 (12768 - 52768) -20000 - +20000
# 00 39	0000 aaaa 0000 bbbb	(12768 - 52768) -20000 - +20000



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#	00 3D	0000 cccc 0000 dddd	MFX Parameter 11	(12768 - 52768) -20000 - +20000
#	00 41	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 12	(12768 - 52768) -20000 - +20000
#	00 45	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 13	(12768 - 52768) -20000 - +20000
#	00 49	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 14	(12768 - 52768) -20000 - +20000
#	00 4D	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 15	(12768 - 52768) -20000 - +20000
#	00 51	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 16	(12768 - 52768) -20000 - +20000
#	00 55	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 17	(12768 - 52768) -20000 - +20000
#	00 59	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 18	(12768 - 52768) -20000 - +20000
#	00 5D	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 19	(12768 - 52768) -20000 - +20000
#	00 61	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 20	(12768 - 52768) -20000 - +20000
#	00 65	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 21	(12768 - 52768) -20000 - +20000
#	00 69	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 22	(12768 - 52768) -20000 - +20000
#	00 6D	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 23	(12768 - 52768) -20000 - +20000
#	00 71	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 24	(12768 - 52768) -20000 - +20000
#	00 75	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 25	(12768 - 52768) -20000 - +20000
#	00 79	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 26	(12768 - 52768) -20000 - +20000
#	00 7D	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 27	(12768 - 52768) -20000 - +20000
#	01 01	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 28	(12768 - 52768) -20000 - +20000
#	01 05	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 29	(12768 - 52768) -20000 - +20000
#	01 09	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 30	(12768 - 52768) -20000 - +20000
#	01 0D	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 31	(12768 - 52768) -20000 - +20000
#	01 11	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 32	(12768 - 52768) -20000 - +20000
00 00 01 11		Total Size		

## System Mastering

Offset	Address	Description	
	00 00	0000 000a (reserve) <*>	(0 - 1)
	00 01	0aaa aaaa Low band Attack time	(0 - 100)
	00 02	0aaa aaaa Low band Release time	(0 - 100)
	00 03	00aa aaaa Low band Threshold	(0 - 36) -36, -35, -34, -33, -32, -31, -30, -29, -28, -27, -26, -25, -24, -23, -22, -21, -20, -19, -18, -17, -16, -15, -14, -13, -12, -11, -10, -9, -8, -7, -6, -5, -4, -3, -2, -1, 0 [dB]
	00 04	0000 aaaa Low band Ratio	(0 - 13) 1:1.0, 1:1.1, 1:1.2, 1:1.4, 1:1.6, 1:1.8, 1:2.0, 1:2.5, 1:3.2, 1:4.0, 1:5.6, 1:8.0, 1:16, 1:INF
	00 05	000a aaaa Low band Level	(0 - 24) 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22,

	00 06	0aaa aaaa Mid band Attack time	23, 24 [dB] (0 - 100)
	00 07	0aaa aaaa Mid band Release time	(0 - 100)
	00 08	00aa aaaa Mid band Threshold	(0 - 36) -36, -35, -34, -33, -32, -31, -30, -29, -28, -27, -26, -25, -24, -23, -22, -21, -20, -19, -18, -17, -16, -15, -14, -13, -12, -11, -10, -9, -8, -7, -6, -5, -4, -3, -2, -1, 0 [dB]
	00 09	0000 aaaa Mid band Ratio	(0 - 13) 1:1.0, 1:1.1, 1:1.2, 1:1.4, 1:1.6, 1:1.8, 1:2.0, 1:2.5, 1:3.2, 1:4.0, 1:5.6, 1:8.0, 1:16, 1:INF
	00 0A	000a aaaa Mid band Level	(0 - 24) 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22,
	00 0B	0aaa aaaa High band Attack time	23, 24 [dB] (0 - 100)
	00 0C	0aaa aaaa High band Release time	(0 - 100)
	00 0D	00aa aaaa High band Threshold	(0 - 36) -36, -35, -34, -33, -32, -31, -30, -29, -28, -27, -26, -25, -24, -23, -22, -21, -20, -19, -18, -17, -16, -15, -14, -13, -12, -11, -10, -9, -8, -7, -6, -5, -4, -3, -2, -1, 0 [dB]
	00 0E	0000 aaaa High band Ratio	(0 - 13) 1:1.0, 1:1.1, 1:1.2, 1:1.4, 1:1.6, 1:1.8, 1:2.0, 1:2.5, 1:3.2, 1:4.0, 1:5.6, 1:8.0, 1:16, 1:INF
	00 0F	000a aaaa High band Level	(0 - 24) 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22,
	00 10	0000 0aaa Split Freq Low	(0 - 6) 200, 250, 315, 400, 500, 630, 800 [Hz]
	00 11	0000 0aaa Split Freq High	(0 - 6) 2000, 2500, 3150, 4000, 5000, 6300, 8000 [Hz]
00 00 00 12		Total Size	

## System Input FX

Offset	Address	Description	
	00 00	0aaa aaaa External Dry Send Level	(0 - 127)
	00 01	0aaa aaaa External Chorus Send Level	(0 - 127)
	00 02	0aaa aaaa External Reverb Send Level	(0 - 127)
	00 03	0000 aaaa External Output Destination Select	(0 - 2) INT, EXPL, EXP2
	00 04	0000 aaaa External Output Assign	(0 - 2) A, B, MFX
	00 05	0000 00aa (reserve) <*>	(0 - 1)
	00 06	0000 000a (reserve) <*>	(0 - 1)
	00 07	0000 000a (reserve) <*>	(0 - 1)
	00 08	0000 aaaa Input Effect Type	(1 - 6)
#	00 09	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Input Effect Parameter 1 (12768 - 52768) -20000 - +20000
#	00 0D	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Input Effect Parameter 2 (12768 - 52768) -20000 - +20000
#	00 11	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Input Effect Parameter 3 (12768 - 52768) -20000 - +20000
#	00 15	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Input Effect Parameter 4 (12768 - 52768) -20000 - +20000
#	00 19	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Input Effect Parameter 5 (12768 - 52768) -20000 - +20000
#	00 1D	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Input Effect Parameter 6 (12768 - 52768) -20000 - +20000
#	00 21	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Input Effect Parameter 7 (12768 - 52768) -20000 - +20000
#	00 25	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Input Effect Parameter 8 (12768 - 52768) -20000 - +20000
#	00 29	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Input Effect Parameter 9 (12768 - 52768) -20000 - +20000
#	00 2D	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Input Effect Parameter 10 (12768 - 52768) -20000 - +20000
#	00 31	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Input Effect Parameter 11 (12768 - 52768) -20000 - +20000
#	00 35	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Input Effect Parameter 12 (12768 - 52768) -20000 - +20000
#	00 39	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Input Effect Parameter 13 (12768 - 52768) -20000 - +20000
#	00 3D	0000 aaaa 0000 bbbb	

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#	00 41	0000 cccc 0000 dddd	Input Effect Parameter 14	(12768 - 52768) -20000 - +20000
#	00 45	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Input Effect Parameter 15	(12768 - 52768) -20000 - +20000
#	00 49	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Input Effect Parameter 16	(12768 - 52768) -20000 - +20000
#	00 4D	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Input Effect Parameter 17	(12768 - 52768) -20000 - +20000
#	00 51	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Input Effect Parameter 18	(12768 - 52768) -20000 - +20000
#	00 55	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Input Effect Parameter 19	(12768 - 52768) -20000 - +20000
#	00 55	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Input Effect Parameter 20	(12768 - 52768) -20000 - +20000
00 00 00 59		Total Size		

## System Controller

Offset	Address	Description
00 00	0000 000a	Transmit Program Change (0 - 1) OFF, ON
00 01	0000 000a	Transmit Bank Select (0 - 1) OFF, ON
00 02	0aaa aaaa	Keyboard Velocity (0 - 127) REAL, 1 - 127
00 03	0000 00aa	Keyboard Sens (0 - 2) LIGHT, MEDIUM, HEAVY
00 04	0aaa aaaa	Aftertouch Sens (0 - 100)
00 05	0000 0aaa	Hold Pedal Polarity (0 - 1) STANDARD, REVERSE
00 06	0000 000a	Continuous Hold Pedal (0 - 1) OFF, ON
00 07	0aaa aaaa	Control Pedal 1 Assign (0 - 107) OFF, CC01 - CC31, CC33 - CC95, AFT, BEND-UP, BEND-DOWN, START/STOP, TAP-TEMPO, PROG-UP, PROG-DOWN, USER-GRP-UP, USER-GRP-DOWN, FAV-UP, FAV-DOWN, PANEL_SW
00 08	0aaa aaaa	Control Pedal 1 Panel Switch Assign (0 - 11) OCT-UP, OCT-DW, ARP-SW, CHD-SW, INC, DEC, SHIFT, ENTER, EXIT, SKIPBACK, ROLL, HOLD
00 09	0000 0aaa	Control Pedal 1 Polarity (0 - 1) STANDARD, REVERSE
00 0A	0aaa aaaa	Control Pedal 2 Assign (0 - 107) OFF, CC01 - CC31, CC33 - CC95, AFT, BEND-UP, BEND-DOWN, START/STOP, TAP-TEMPO, PROG-UP, PROG-DOWN, USER-GRP-UP, USER-GRP-DOWN, FAV-UP, FAV-DOWN, PANEL_SW
00 0B	0aaa aaaa	Control Pedal 2 Panel Switch Assign (0 - 11) OCT-UP, OCT-DW, ARP-SW, CHD-SW, INC, DEC, SHIFT, ENTER, EXIT, SKIPBACK, ROLL, HOLD
00 0C	0000 0aaa	Control Pedal 2 Polarity (0 - 1) STANDARD, REVERSE
00 0D	0000 aaaa	Beam Sens (1 - 10)
00 0E	0aaa aaaa	Beam Switch (0 - 3) OFF, PAD-TRIG, SOLO-SYN, ASGN
00 0F	0aaa aaaa	Beam Assign (0 - 102) OFF, CC01 - CC31, CC33 - CC95, AFT, BEND-UP, BEND-DOWN, ARP-ACCENT, ARP-SHUFFLE, ARP-OCT-UP, ARP-OCT-DOWN
00 10	0aaa aaaa	Beam Range Lower (0 - 127)
00 11	0aaa aaaa	Beam Range Upper (0 - 127)
00 12	0000 aaaa	Beam Trigger Pad (0 - 15) 1 - 15
00 13	0aaa aaaa	Beam Trigger Velo (1 - 127)
00 14	0aaa aaaa	Beam Trigger Mode (0 - 1) MOMENTARY, LATCH
00 15	0aaa aaaa	Knob 1 Assign (0 - 103) OFF, CC01 - CC31, CC33 - CC95, AFT, BEND, ARP-ACCENT, ARP-SHUFFLE, ARP-OCT-UP, ARP-OCT-DOWN, MASTER-LEVEL, DIGITAL-IN-LEVEL
00 16	0aaa aaaa	(reserve) <*> (0 - 15) 1 - 16
00 17	0aaa aaaa	Knob 2 Assign (0 - 103) OFF, CC01 - CC31, CC33 - CC95, AFT, BEND, ARP-ACCENT, ARP-SHUFFLE, ARP-OCT-UP, ARP-OCT-DOWN, MASTER-LEVEL, DIGITAL-IN-LEVEL
00 18	0aaa aaaa	(reserve) <*> (0 - 15) 1 - 16
00 19	0aaa aaaa	Knob 3 Assign (0 - 103) OFF, CC01 - CC31, CC33 - CC95, AFT, BEND, ARP-ACCENT, ARP-SHUFFLE, ARP-OCT-UP, ARP-OCT-DOWN, MASTER-LEVEL, DIGITAL-IN-LEVEL
00 1A	0aaa aaaa	(reserve) <*> (0 - 15) 1 - 16
00 1B	0aaa aaaa	Knob 4 Assign (0 - 103) OFF, CC01 - CC31, CC33 - CC95, AFT, BEND, ARP-ACCENT, ARP-SHUFFLE, ARP-OCT-UP, ARP-OCT-DOWN, MASTER-LEVEL, DIGITAL-IN-LEVEL
00 1C	0aaa aaaa	(reserve) <*> (0 - 15) 1 - 16
00 1D	0aaa aaaa	Slider 1 Assign (0 - 101) OFF, CC01 - CC31, CC33 - CC95, AFT, BEND, ARP-ACCENT, ARP-SHUFFLE,

00 1E	0aaa aaaa	(reserve) <*>	ARP-OCT-UP, ARP-OCT-DOWN (0 - 15) 1 - 16
00 1F	0aaa aaaa	Slider 2 Assign	(0 - 101) OFF, CC01 - CC31, CC33 - CC95, AFT, BEND, ARP-ACCENT, ARP-SHUFFLE, ARP-OCT-UP, ARP-OCT-DOWN
00 20	0aaa aaaa	(reserve) <*>	(0 - 15) 1 - 16
00 21	0aaa aaaa	Slider 3 Assign	(0 - 101) OFF, CC01 - CC31, CC33 - CC95, AFT, BEND, ARP-ACCENT, ARP-SHUFFLE, ARP-OCT-UP, ARP-OCT-DOWN
00 22	0aaa aaaa	(reserve) <*>	(0 - 15) 1 - 16
00 23	0aaa aaaa	Slider 4 Assign	(0 - 101) OFF, CC01 - CC31, CC33 - CC95, AFT, BEND, ARP-ACCENT, ARP-SHUFFLE, ARP-OCT-UP, ARP-OCT-DOWN
00 24	0aaa aaaa	(reserve) <*>	(0 - 15) 1 - 16
00 25	0aaa aaaa	Slider 5 Assign	(0 - 101) OFF, CC01 - CC31, CC33 - CC95, AFT, BEND, ARP-ACCENT, ARP-SHUFFLE, ARP-OCT-UP, ARP-OCT-DOWN
00 26	0aaa aaaa	(reserve) <*>	(0 - 15) 1 - 16
00 27	0aaa aaaa	Slider 6 Assign	(0 - 101) OFF, CC01 - CC31, CC33 - CC95, AFT, BEND, ARP-ACCENT, ARP-SHUFFLE, ARP-OCT-UP, ARP-OCT-DOWN
00 28	0aaa aaaa	(reserve) <*>	(0 - 15) 1 - 16
00 29	0aaa aaaa	Slider 7 Assign	(0 - 101) OFF, CC01 - CC31, CC33 - CC95, AFT, BEND, ARP-ACCENT, ARP-SHUFFLE, ARP-OCT-UP, ARP-OCT-DOWN
00 2A	0aaa aaaa	(reserve) <*>	(0 - 15) 1 - 16
00 2B	0aaa aaaa	Slider 8 Assign	(0 - 101) OFF, CC01 - CC31, CC33 - CC95, AFT, BEND, ARP-ACCENT, ARP-SHUFFLE, ARP-OCT-UP, ARP-OCT-DOWN
00 2C	0aaa aaaa	(reserve) <*>	(0 - 15) 1 - 16
00 2D	0aaa aaaa	Switch S1 Assign	(0 - 106) OFF, CC01 - CC31, CC33 - CC95, AFT, MONO/POLY, PFX-SW, MPX1-SW, MPX2-SW, CHO-SW, REV-SW, MASTERING-SW, MASTER-KEY-UP, MASTER-KEY-DW, SCALE-TUNE-SW
00 2E	0000 000a	Switch S1 Assign Mode	MOMENTARY, LATCH (0 - 1)
00 2F	0aaa aaaa	(reserve) <*>	(0 - 15)
00 30	0aaa aaaa	Switch S2 Assign	(0 - 106) OFF, CC01 - CC31, CC33 - CC95, AFT, MONO/POLY, PFX-SW, MPX1-SW, MPX2-SW, CHO-SW, REV-SW, MASTERING-SW, MASTER-KEY-UP, MASTER-KEY-DW, SCALE-TUNE-SW
00 31	0000 000a	Switch S2 Assign Mode	MOMENTARY, LATCH (0 - 1)
00 32	0aaa aaaa	(reserve) <*>	(0 - 15)
00 33	0aaa aaaa	Pad Velocity	(0 - 127) REAL, 1 - 127
00 34	0000 00aa	Pad Sens	LIGHT, MEDIUM, HEAVY (0 - 2)
00 35	0aaa aaaa	Pad Aftertouch Sens	(0 - 100)
00 36	0aaa aaaa	Pad Mode	(0 - 15) SAMPLE, RHYTHM, CHORD, ARP-SET, RPS, RHY-PTN, TONE-SW, TRK-MUTE, BOOKMARK, TX-SW, EFX-SW, PFX-SW, PART-SEL, PART-MUTE, USER-GRP, FAVORITE
00 37	0000 aaaa	Pad Roll Resolution	(0 - 7)
00 38	0000 000a	Pad Assign Source	(0 - 1) TEMP, SYS
00 39	0000 000a	D Beam Assign Source	(0 - 1) TEMP, SYS
00 3A	0000 000a	S1/S2 Assign Source	(0 - 1) TEMP, SYS
00 3B	0000 aaaa	Knob Slider Mode	(0 - 1) DIRECT, CATCH
00 3C	0aaa aaaa	Magi Control Switch	(0 - 1) OFF, ON
00 3D	0aaa aaaa	Knob Assign Source	(0 - 1) TEMP, SYS
00 3E	0aaa aaaa	Knob Assign Select	(0 - 1) FIX, SCREEN
00 3F	0aaa aaaa	Slider Assign Source	(0 - 1) TEMP, SYS
00 40	0aaa aaaa	Slider Assign Select	(0 - 1) FIX, SCREEN
00 00 00 41		Total Size	

## Live Set Common

Offset	Address	Description
00 00	0aaa aaaa	Live Set Name 1 (32 - 127) [ASCII]
00 01	0aaa aaaa	Live Set Name 2 (32 - 127) [ASCII]
00 02	0aaa aaaa	Live Set Name 3 (32 - 127) [ASCII]
00 03	0aaa aaaa	Live Set Name 4 (32 - 127) [ASCII]
00 04	0aaa aaaa	Live Set Name 5 (32 - 127) [ASCII]
00 05	0aaa aaaa	Live Set Name 6 (32 - 127) [ASCII]
00 06	0aaa aaaa	Live Set Name 7 (32 - 127) [ASCII]
00 07	0aaa aaaa	Live Set Name 8 (32 - 127) [ASCII]
00 08	0aaa aaaa	Live Set Name 9 (32 - 127) [ASCII]
00 09	0aaa aaaa	Live Set Name 10 (32 - 127) [ASCII]
00 0A	0aaa aaaa	Live Set Name 11 (32 - 127) [ASCII]

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00 0B	0aaa aaaa	Live Set Name 12	32 - 127 [ASCII]
00 0C	0aaa aaaa	Live Set Name 13	(32 - 127)
00 0D	0aaa aaaa	Live Set Name 14	32 - 127 [ASCII]
00 0E	0aaa aaaa	Live Set Name 15	(32 - 127)
00 0F	0aaa aaaa	Live Set Name 16	32 - 127 [ASCII]
00 10	0aaa aaaa	Live Set Memo 1	(32 - 127)
00 11	0aaa aaaa	Live Set Memo 2	32 - 127 [ASCII]
00 12	0aaa aaaa	Live Set Memo 3	(32 - 127)
00 13	0aaa aaaa	Live Set Memo 4	32 - 127 [ASCII]
00 14	0aaa aaaa	Live Set Memo 5	(32 - 127)
00 15	0aaa aaaa	Live Set Memo 6	32 - 127 [ASCII]
00 16	0aaa aaaa	Live Set Memo 7	(32 - 127)
00 17	0aaa aaaa	Live Set Memo 8	32 - 127 [ASCII]
00 18	0aaa aaaa	Live Set Memo 9	(32 - 127)
00 19	0aaa aaaa	Live Set Memo 10	32 - 127 [ASCII]
00 1A	0aaa aaaa	Live Set Memo 11	(32 - 127)
00 1B	0aaa aaaa	Live Set Memo 12	32 - 127 [ASCII]
00 1C	0aaa aaaa	Live Set Memo 13	(32 - 127)
00 1D	0aaa aaaa	Live Set Memo 14	32 - 127 [ASCII]
00 1E	0aaa aaaa	Live Set Memo 15	(32 - 127)
00 1F	0aaa aaaa	Live Set Memo 16	32 - 127 [ASCII]
00 20	0aaa aaaa	Live Set Memo 17	(32 - 127)
00 21	0aaa aaaa	Live Set Memo 18	32 - 127 [ASCII]
00 22	0aaa aaaa	Live Set Memo 19	(32 - 127)
00 23	0aaa aaaa	Live Set Memo 20	32 - 127 [ASCII]
00 24	0aaa aaaa	Live Set Memo 21	(32 - 127)
00 25	0aaa aaaa	Live Set Memo 22	32 - 127 [ASCII]
00 26	0aaa aaaa	Live Set Memo 23	(32 - 127)
00 27	0aaa aaaa	Live Set Memo 24	32 - 127 [ASCII]
00 28	0aaa aaaa	Live Set Memo 25	(32 - 127)
00 29	0aaa aaaa	Live Set Memo 26	32 - 127 [ASCII]
00 2A	0aaa aaaa	Live Set Memo 27	(32 - 127)
00 2B	0aaa aaaa	Live Set Memo 28	32 - 127 [ASCII]
00 2C	0aaa aaaa	Live Set Memo 29	(32 - 127)
00 2D	0aaa aaaa	Live Set Memo 30	32 - 127 [ASCII]
00 2E	0aaa aaaa	Live Set Memo 31	(32 - 127)
00 2F	0aaa aaaa	Live Set Memo 32	32 - 127 [ASCII]
00 30	0aaa aaaa	(reserve) <*>	(0 - 127)
00 31	0aaa aaaa	(reserve) <*>	(0 - 127)
00 32	0aaa aaaa	(reserve) <*>	(0 - 127)
00 33	0aaa aaaa	(reserve) <*>	(0 - 127)
00 34	0aaa aaaa	(reserve) <*>	(0 - 127)
00 35	0aaa aaaa	(reserve) <*>	(0 - 127)
00 36	0aaa aaaa	(reserve) <*>	(0 - 127)
00 37	0aaa aaaa	(reserve) <*>	(0 - 127)
00 38	0aaa aaaa	(reserve) <*>	(0 - 127)
00 39	00aa aaaa	(reserve) <*>	(0 - 16)
00 3A	000a aaaa	(reserve) <*>	(0 - 16)
00 3B	000a aaaa	(reserve) <*>	(0 - 16)
00 3C	0aaa aaaa	Voice Reserve 1	(0 - 64)
00 3D	0aaa aaaa	Voice Reserve 2	0 - 63, FULL
00 3E	0aaa aaaa	Voice Reserve 3	(0 - 64)
00 3F	0aaa aaaa	Voice Reserve 4	0 - 63, FULL
00 40	0aaa aaaa	Voice Reserve 5	(0 - 64)
00 41	0aaa aaaa	Voice Reserve 6	0 - 63, FULL
00 42	0aaa aaaa	Voice Reserve 7	(0 - 64)
00 43	0aaa aaaa	Voice Reserve 8	0 - 63, FULL
00 44	0aaa aaaa	(reserve) <*>	(0 - 64)
00 45	0aaa aaaa	(reserve) <*>	(0 - 64)
00 46	0aaa aaaa	(reserve) <*>	(0 - 64)
00 47	0aaa aaaa	(reserve) <*>	(0 - 64)
00 48	0aaa aaaa	(reserve) <*>	(0 - 64)
00 49	0aaa aaaa	(reserve) <*>	(0 - 64)
00 4A	0aaa aaaa	(reserve) <*>	(0 - 64)
00 4B	0aaa aaaa	(reserve) <*>	(0 - 64)
00 4C	0000 000a	(reserve) <*>	(0 - 1)
00 4D	0000 000a	(reserve) <*>	(0 - 1)

00 4E	0000 000a	Live Set Chorus Switch	(0 - 1)
00 4F	0000 000a	(reserve) <*>	OFF, ON
00 50	0000 000a	Live Set Reverb Switch	(0 - 1)
00 51	0000 000a	(reserve) <*>	OFF, ON
00 52	0000 000a	(reserve) <*>	(0 - 1)
00 53	0000 000a	(reserve) <*>	(0 - 1)
00 54	0000 000a	(reserve) <*>	(0 - 1)
00 55	0000 000a	(reserve) <*>	(0 - 1)
00 56	0000 000a	(reserve) <*>	(0 - 1)
00 57	0000 000a	(reserve) <*>	(0 - 1)
00 00 00 58	Total Size		

## Live Set Common Chorus

Offset	Address	Description	
00 00	0000 aaaa	Chorus Type	(0 - 3)
00 01	0aaa aaaa	Chorus Level	(0 - 127)
00 02	0000 000a	Chorus Output Assign	(0 - 1)
00 03	0000 000a	(reserve) <*>	A, B
00 04	0000 00aa	Chorus Output Select	(0 - 2)
			MAIN, REV, MAIN+REV
#	00 05	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Chorus Parameter 1 (12768 - 52768) -20000 - +20000
#	00 09	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Chorus Parameter 2 (12768 - 52768) -20000 - +20000
#	00 0D	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Chorus Parameter 3 (12768 - 52768) -20000 - +20000
#	00 11	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Chorus Parameter 4 (12768 - 52768) -20000 - +20000
#	00 15	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Chorus Parameter 5 (12768 - 52768) -20000 - +20000
#	00 19	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Chorus Parameter 6 (12768 - 52768) -20000 - +20000
#	00 1D	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Chorus Parameter 7 (12768 - 52768) -20000 - +20000
#	00 21	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Chorus Parameter 8 (12768 - 52768) -20000 - +20000
#	00 25	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Chorus Parameter 9 (12768 - 52768) -20000 - +20000
#	00 29	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Chorus Parameter 10 (12768 - 52768) -20000 - +20000
#	00 2D	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Chorus Parameter 11 (12768 - 52768) -20000 - +20000
#	00 31	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Chorus Parameter 12 (12768 - 52768) -20000 - +20000
#	00 35	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Chorus Parameter 13 (12768 - 52768) -20000 - +20000
#	00 39	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Chorus Parameter 14 (12768 - 52768) -20000 - +20000
#	00 3D	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Chorus Parameter 15 (12768 - 52768) -20000 - +20000
#	00 41	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Chorus Parameter 16 (12768 - 52768) -20000 - +20000
#	00 45	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Chorus Parameter 17 (12768 - 52768) -20000 - +20000
#	00 49	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Chorus Parameter 18 (12768 - 52768) -20000 - +20000
#	00 4D	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Chorus Parameter 19 (12768 - 52768) -20000 - +20000
#	00 51	0000 aaaa 0000 bbbb 0000 cccc	

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	0000 dddd	Chorus Parameter 20	(12768 - 52768) -20000 - +20000
00 00 00 55	Total Size		

## Live Set Common Reverb

Offset Address	Description		
00 00	0aaa aaaa	Reverb Type	(0 - 10)
00 01	0aaa aaaa	Reverb Level	(0 - 127)
00 02	0000 00aa	Reverb Output Assign	(0 - 1) A, B
# 00 03	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Reverb Parameter 1	(12768 - 52768) -20000 - +20000
# 00 07	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Reverb Parameter 2	(12768 - 52768) -20000 - +20000
# 00 0B	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Reverb Parameter 3	(12768 - 52768) -20000 - +20000
# 00 0F	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Reverb Parameter 4	(12768 - 52768) -20000 - +20000
# 00 13	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Reverb Parameter 5	(12768 - 52768) -20000 - +20000
# 00 17	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Reverb Parameter 6	(12768 - 52768) -20000 - +20000
# 00 1B	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Reverb Parameter 7	(12768 - 52768) -20000 - +20000
# 00 1F	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Reverb Parameter 8	(12768 - 52768) -20000 - +20000
# 00 23	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Reverb Parameter 9	(12768 - 52768) -20000 - +20000
# 00 27	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Reverb Parameter 10	(12768 - 52768) -20000 - +20000
# 00 2B	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Reverb Parameter 11	(12768 - 52768) -20000 - +20000
# 00 2F	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Reverb Parameter 12	(12768 - 52768) -20000 - +20000
# 00 33	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Reverb Parameter 13	(12768 - 52768) -20000 - +20000
# 00 37	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Reverb Parameter 14	(12768 - 52768) -20000 - +20000
# 00 3B	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Reverb Parameter 15	(12768 - 52768) -20000 - +20000
# 00 3F	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Reverb Parameter 16	(12768 - 52768) -20000 - +20000
# 00 43	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Reverb Parameter 17	(12768 - 52768) -20000 - +20000
# 00 47	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Reverb Parameter 18	(12768 - 52768) -20000 - +20000
# 00 4B	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Reverb Parameter 19	(12768 - 52768) -20000 - +20000
# 00 4F	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Reverb Parameter 20	(12768 - 52768) -20000 - +20000
00 00 00 53	Total Size		

## Live Set MIDI

Offset Address	Description		
00 00	0000 000a	Receive Program Change	(0 - 1) OFF, ON
00 01	0000 000a	Receive Bank Select	(0 - 1) OFF, ON
00 02	0000 000a	Receive Bender	(0 - 1) OFF, ON
00 03	0000 000a	Receive Polyphonic Key Pressure	(0 - 1) OFF, ON
00 04	0000 000a	Receive Channel Pressure	(0 - 1) OFF, ON
00 05	0000 000a	Receive Modulation	(0 - 1) OFF, ON

00 06	0000 000a	Receive Volume	OFF, ON (0 - 1)
00 07	0000 000a	Receive Pan	OFF, ON (0 - 1)
00 08	0000 000a	Receive Expression	OFF, ON (0 - 1)
00 09	0000 000a	Receive Hold-1	OFF, ON (0 - 1)
00 0A	0000 000a	Phase Lock	(0 - 1) OFF, ON
00 0B	0000 0aaa	Velocity Curve Type	(0 - 4) OFF, 1 - 4
00 00 00 0C	Total Size		

## Live Set Part

Offset Address	Description		
00 00	0000 aaaa	Receive Channel	(0 - 15) 1 - 16
00 01	0000 000a	Receive Switch	(0 - 1) OFF, ON
00 02	0aaa aaaa	Patch Bank Select MSB (CC# 0)	(0 - 127)
00 03	0aaa aaaa	Patch Bank Select LSB (CC# 32)	(0 - 127)
00 04	0aaa aaaa	Patch Program Number (PC)	(0 - 127)
00 05	0aaa aaaa	Part Level (CC# 7)	(0 - 127)
00 06	0aaa aaaa	Part Pan (CC# 10)	(0 - 127) L64 - +63R
00 07	0aaa aaaa	Part Coarse Tune (RPN# 2)	(16 - 112) -48 - +48 (14 - 114)
00 08	0aaa aaaa	Part Fine Tune (RPN# 1)	-50 - +50 (0 - 2)
00 09	0000 00aa	Part Mono/Poly (MONO ON/POLY ON)	MONO, POLY, PATCH (0 - 2)
00 0A	0000 00aa	Part Legato Switch (CC# 68)	OFF, ON, PATCH (0 - 25)
00 0B	000a aaaa	Part Pitch Bend Range (RPN# 0)	0 - 24, PATCH (0 - 2)
00 0C	0000 00aa	Part Portamento Switch (CC# 65)	OFF, ON, PATCH (0 - 128)
# 00 0D	0000 aaaa 0000 bbbb	Part Portamento Time (CC# 5)	0 - 127, PATCH (0 - 127)
00 0F	0aaa aaaa	Part Cutoff Offset (CC# 74)	-64 - +63
00 10	0aaa aaaa	Part Resonance Offset (CC# 71)	(0 - 127) -64 - +63
00 11	0aaa aaaa	Part Attack Time Offset (CC# 73)	(0 - 127) -64 - +63
00 12	0aaa aaaa	Part Decay Time Offset (CC# 75)	(0 - 127) -64 - +63
00 13	0aaa aaaa	Part Release Time Offset (CC# 72)	(0 - 127) -64 - +63
00 14	0aaa aaaa	Part Vibrato Rate (CC# 76)	(0 - 127) -64 - +63
00 15	0aaa aaaa	Part Vibrato Depth (CC# 77)	(0 - 127) -64 - +63
00 16	0aaa aaaa	Part Vibrato Delay (CC# 78)	(0 - 127) -64 - +63
00 17	0000 0aaa	Part Octave Shift	(61 - 67) -3 - +3
00 18	0aaa aaaa	Part Velocity Sens Offset	(1 - 127) -63 - +63
00 19	0aaa aaaa	Keyboard Range Lower	(0 - 127) C-1 - UPPER
00 1A	0aaa aaaa	Keyboard Range Upper	(0 - 127) LOWER - G9
00 1B	0aaa aaaa	(reserve) <*>	(0 - 127)
00 1C	0aaa aaaa	(reserve) <*>	(0 - 127)
00 1D	0000 000a	Mute Switch	(0 - 1) OFF, MUTE
00 1E	0aaa aaaa	Part Output Level	(0 - 127)
00 1F	0aaa aaaa	Part Chorus Send Level (CC# 93)	(0 - 127)
00 20	0aaa aaaa	Part Reverb Send Level (CC# 91)	(0 - 127)
00 21	0000 aaaa	Part Output Assign	(0 - 5) A, B, 1, 2, 3, 4
00 22	0000 00aa	(reserve) <*>	(0 - 1)
00 23	0000 00aa	(reserve) <*>	(0 - 1)
00 24	0000 00aa	(reserve) <*>	(0 - 1)
00 25	0aaa aaaa	Part Scale Tune for C	(0 - 127) -64 - +63
00 26	0aaa aaaa	Part Scale Tune for C#	(0 - 127) -64 - +63
00 27	0aaa aaaa	Part Scale Tune for D	(0 - 127) -64 - +63
00 28	0aaa aaaa	Part Scale Tune for D#	(0 - 127) -64 - +63
00 29	0aaa aaaa	Part Scale Tune for E	(0 - 127) -64 - +63
00 2A	0aaa aaaa	Part Scale Tune for F	(0 - 127) -64 - +63
00 2B	0aaa aaaa	Part Scale Tune for F#	(0 - 127) -64 - +63
00 2C	0aaa aaaa	Part Scale Tune for G	(0 - 127) -64 - +63
00 2D	0aaa aaaa	Part Scale Tune for G#	(0 - 127) -64 - +63
00 2E	0aaa aaaa	Part Scale Tune for A	(0 - 127) -64 - +63
00 2F	0aaa aaaa	Part Scale Tune for A#	(0 - 127) -64 - +63
00 30	0aaa aaaa	Part Scale Tune for B	(0 - 127) -64 - +63

00 31	0000 000a	Keyboard Switch	(0 - 1) OFF, ON
00 32	0000 000a	Control Bender	(0 - 1) OFF, ON
00 33	0000 000a	Control Aftertouch	(0 - 1) OFF, ON
00 34	0000 000a	Control Modulation	(0 - 1) OFF, ON
00 35	0000 000a	Control Hold Pedal	(0 - 1) OFF, ON
00 36	0000 000a	Control Pedal 1	(0 - 1) OFF, ON
00 37	0000 000a	Control Pedal 2	(0 - 1) OFF, ON
00 38	0000 000a	(reserve) <*>	(0 - 1)
00 39	0000 000a	(reserve) <*>	(0 - 1)

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00 3A	0000 000a	(reserve) <*>	(0 - 1)
00 3B	0000 000a	(reserve) <*>	(0 - 1)
00 3C	0000 000a	(reserve) <*>	(0 - 1)
00 3D	0000 000a	(reserve) <*>	(0 - 1)
00 3E	0000 000a	(reserve) <*>	(0 - 1)
00 3F	0000 000a	(reserve) <*>	(0 - 1)
00 40	0000 000a	(reserve) <*>	(0 - 1)
00 41	0000 000a	(reserve) <*>	(0 - 1)
00 42	0000 000a	(reserve) <*>	(0 - 1)
00 43	0000 000a	(reserve) <*>	(0 - 1)
00 44	0000 000a	(reserve) <*>	(0 - 1)
00 45	0000 000a	(reserve) <*>	(0 - 1)
00 46	0000 000a	(reserve) <*>	(0 - 1)
-----			
00 47	0aaa aaaa	Velocity Range Lower	(1 - 127)
00 48	0aaa aaaa	Velocity Range Upper	1 - UPPER
00 49	0aaa aaaa	Part Transpose Value	LOWER - 127 (59 - 70) -5 - +6
-----			
00 00 00 4A	Total Size		

## Live Set Exp Common

Offset Address	Description		
00 00	0aaa aaaa	Level (0 - 127)	
00 01	0aaa aaaa	Pan (0 - 127)	
		L64 - 63R	
-----			
00 02	0aaa aaaa	Output Level (0 - 127)	
00 03	0aaa aaaa	Chorus Send Level (0 - 127)	
00 04	0aaa aaaa	Reverb Send Level (0 - 127)	
00 05	0000 aaaa	Output Assign (0 - 5)	
		A, B, 1, 2, 3, 4	
00 06	0000 00aa	(reserve) <*> (0 - 1)	
00 07	0000 00aa	(reserve) <*> (0 - 1)	
00 08	0000 00aa	(reserve) <*> (0 - 1)	
-----			
00 00 00 09	Total Size		

## Live Set Exp Part

Offset Address	Description	
00 00	0000 aaaa	Receive Channel (0 - 15)
00 01	0000 000a	Receive Switch (0 - 1)
		OFF, ON
-----		
00 02	0aaa aaaa	Patch Bank Select MSB (CC# 0) (0 - 127)
00 03	0aaa aaaa	Patch Bank Select LSB (CC# 32) (0 - 127)
00 04	0aaa aaaa	Patch Program Number (PC) (0 - 127)
-----		
00 05	0aaa aaaa	Part Level (CC# 7) (0 - 127)
00 06	0aaa aaaa	Part Pan (CC# 10) (0 - 127)
		L64 - 63R
00 07	0aaa aaaa	Part Coarse Tune (RPN# 2) (16 - 112)
00 08	0aaa aaaa	Part Fine Tune (RPN# 1) (-48 - +48)
		(14 - 114)
00 09	000a aaaa	Part Pitch Bend Range (RPN# 0) (-50 - +50)
		(0 - 25)
		0 - 24, PATCH
-----		
00 0A	0000 0aaa	Part Octave Shift (61 - 67)
		-3 - +3
00 0B	0aaa aaaa	Keyboard Range Lower (0 - 127)
00 0C	0aaa aaaa	Keyboard Range Upper (0 - 127)
		C-1 - UPPER
00 0D	0aaa aaaa	(reserve) <*> (0 - 127)
		LOWER - G9
00 0E	0aaa aaaa	(reserve) <*> (0 - 127)
00 0F	0000 000a	Mute Switch (0 - 1)
		OFF, MUTE
-----		
00 10	0aaa aaaa	Part Output Level (0 - 127)
00 11	0aaa aaaa	Part Effect1 Send Level (CC# 93) (0 - 127)
00 12	0aaa aaaa	Part Effect2 Send Level (CC# 91) (0 - 127)
00 13	0000 aaaa	Part Output Assign (0 - 1)
		EXP, DRY
00 14	0000 00aa	(reserve) <*> (0 - 1)
00 15	0000 00aa	(reserve) <*> (0 - 1)
00 16	0000 00aa	(reserve) <*> (0 - 1)
-----		
00 17	0aaa aaaa	Part Scale Tune for C (0 - 127)
00 18	0aaa aaaa	Part Scale Tune for C# (-64 - +63)
		(0 - 127)
00 19	0aaa aaaa	Part Scale Tune for D (0 - 127)
00 1A	0aaa aaaa	Part Scale Tune for D# (-64 - +63)
		(0 - 127)
00 1B	0aaa aaaa	Part Scale Tune for E (-64 - +63)
		(0 - 127)
00 1C	0aaa aaaa	Part Scale Tune for F (-64 - +63)
		(0 - 127)
00 1D	0aaa aaaa	Part Scale Tune for F# (-64 - +63)
		(0 - 127)
00 1E	0aaa aaaa	Part Scale Tune for G (-64 - +63)
		(0 - 127)
00 1F	0aaa aaaa	Part Scale Tune for G# (-64 - +63)
		(0 - 127)
00 20	0aaa aaaa	Part Scale Tune for A (-64 - +63)
		(0 - 127)
00 21	0aaa aaaa	Part Scale Tune for A# (-64 - +63)
		(0 - 127)
00 22	0aaa aaaa	Part Scale Tune for B (-64 - +63)
		(0 - 127)
		-64 - +63
-----		
00 23	0000 000a	Keyboard Switch (0 - 1)

00 24	0000 000a	Control Bender	OFF, ON (0 - 1)
00 25	0000 000a	Control Aftertouch	OFF, ON (0 - 1)
00 26	0000 000a	Control Modulation	OFF, ON (0 - 1)
00 27	0000 000a	Control Hold Pedal	OFF, ON (0 - 1)
00 28	0000 000a	Control Pedal 1	OFF, ON (0 - 1)
00 29	0000 000a	Control Pedal 2	OFF, ON (0 - 1)
00 2A	0000 000a	(reserve) <*>	OFF, ON (0 - 1)
00 2B	0000 000a	(reserve) <*>	(0 - 1)
00 2C	0000 000a	(reserve) <*>	(0 - 1)
00 2D	0000 000a	(reserve) <*>	(0 - 1)
00 2E	0000 000a	(reserve) <*>	(0 - 1)
00 2F	0000 000a	(reserve) <*>	(0 - 1)
00 30	0000 000a	(reserve) <*>	(0 - 1)
00 31	0000 000a	(reserve) <*>	(0 - 1)
00 32	0000 000a	(reserve) <*>	(0 - 1)
00 33	0000 000a	(reserve) <*>	(0 - 1)
00 34	0000 000a	(reserve) <*>	(0 - 1)
00 35	0000 000a	(reserve) <*>	(0 - 1)
00 36	0000 000a	(reserve) <*>	(0 - 1)
00 37	0000 000a	(reserve) <*>	(0 - 1)
00 38	0000 000a	(reserve) <*>	(0 - 1)
-----			
00 39	0aaa aaaa	Velocity Range Lower	(1 - 127)
00 3A	0aaa aaaa	Velocity Range Upper	1 - UPPER
00 3B	0aaa aaaa	Part Transpose Value	LOWER - 127 (59 - 70) -5 - +6
-----			
00 00 00 3C	Total Size		

## Live Set Ext Part

Offset Address	Description		
# 00 00	0000 aaaa	External Bank Select MSB (CC# 0) (0 - 128)	
	0000 bbbb	NO-SEND (0 - 127)	
# 00 02	0aaa aaaa	External Bank Select LSB (CC# 32) (0 - 127)	
# 00 03	0000 aaaa	External Program Number (PC) (0 - 128)	
	0000 bbbb	NO-SEND (0 - 127)	
# 00 05	0000 aaaa	External Level (CC# 7) (0 - 128)	
	0000 bbbb	NO-SEND (0 - 127)	
# 00 07	0000 aaaa	External Pan (CC# 10) (0 - 128)	
	0000 bbbb	L64 - 63R, NO-SEND	
-----			
00 09	0aaa aaaa	Keyboard Range Lower (0 - 127)	
00 0A	0aaa aaaa	Keyboard Range Upper (0 - 127)	
		LOWER - G9	
-----			
00 0B	0000 000a	Keyboard Switch (0 - 1)	
		OFF, ON	
00 0C	0000 000a	Control Bender (0 - 1)	
		OFF, ON	
00 0D	0000 000a	Control Aftertouch (0 - 1)	
		OFF, ON	
00 0E	0000 000a	Control Modulation (0 - 1)	
		OFF, ON	
00 0F	0000 000a	Control Hold Pedal (0 - 1)	
		OFF, ON	
00 10	0000 000a	Control Pedal 1 (0 - 1)	
		OFF, ON	
00 11	0000 000a	Control Pedal 2 (0 - 1)	
		OFF, ON	
00 12	0000 000a	(reserve) <*> (0 - 1)	
00 13	0000 000a	(reserve) <*> (0 - 1)	
00 14	0000 000a	(reserve) <*> (0 - 1)	
00 15	0000 000a	(reserve) <*> (0 - 1)	
00 16	0000 000a	(reserve) <*> (0 - 1)	
00 17	0000 000a	(reserve) <*> (0 - 1)	
00 18	0000 000a	(reserve) <*> (0 - 1)	
00 19	0000 000a	(reserve) <*> (0 - 1)	
00 1A	0000 000a	(reserve) <*> (0 - 1)	
00 1B	0000 000a	(reserve) <*> (0 - 1)	
00 1C	0000 000a	(reserve) <*> (0 - 1)	
00 1D	0000 000a	(reserve) <*> (0 - 1)	
00 1E	0000 000a	(reserve) <*> (0 - 1)	
00 1F	0000 000a	(reserve) <*> (0 - 1)	
00 20	0000 000a	(reserve) <*> (0 - 1)	
-----			
00 21	0aaa aaaa	Velocity Range Lower (1 - 127)	
00 22	0aaa aaaa	Velocity Range Upper (1 - 127)	
00 23	0000 0aaa	Part Octave Shift (61 - 67)	
		-3 - +3	
00 24	0000 aaaa	Part Transpose Value (59 - 70)	
		-5 - +6	
-----			
00 00 00 25	Total Size		

## Live Set Controller

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Offset Address	Description	Parameters	Function	Range
00 00	0aaa aaaa	Beam Switch		(0 - 3)
00 01	0aaa aaaa	Beam Assign	OFF, PAD-TRIG, SOLO-SYM, ASGN	(0 - 102)
00 02	0aaa aaaa	Beam Range Lower	OFF, CC01 - CC31, CC33 - CC95, APT, BEND-UP, BEND-DOWN, ARP-ACCENT, ARP-SHUFFLE, ARP-OCT-UP, ARP-OCT-DOWN	(0 - 127)
00 03	0aaa aaaa	Beam Range Upper		(0 - 127)
00 04	0000 aaaa	Beam Trigger Pad		(0 - 15)
00 05	0aaa aaaa	Beam Trigger Velo		(1 - 127)
00 06	0aaa aaaa	Beam Trigger Mode		(0 - 1)
00 07	0aaa aaaa	Knob 1 Assign	OFF, CC01 - CC31, CC33 - CC95, APT, BEND, ARP-ACCENT, ARP-SHUFFLE, ARP-OCT-UP, ARP-OCT-DOWN, MASTER-LEVEL, DIGITAL-IN-LEVEL	(0 - 103)
00 08	0aaa aaaa	(reserve) <*>		(0 - 15)
00 09	0aaa aaaa	Knob 2 Assign	OFF, CC01 - CC31, CC33 - CC95, APT, BEND, ARP-ACCENT, ARP-SHUFFLE, ARP-OCT-UP, ARP-OCT-DOWN, MASTER-LEVEL, DIGITAL-IN-LEVEL	(0 - 103)
00 0A	0aaa aaaa	(reserve) <*>		(0 - 15)
00 0B	0aaa aaaa	Knob 3 Assign	OFF, CC01 - CC31, CC33 - CC95, APT, BEND, ARP-ACCENT, ARP-SHUFFLE, ARP-OCT-UP, ARP-OCT-DOWN, MASTER-LEVEL, DIGITAL-IN-LEVEL	(0 - 103)
00 0C	0aaa aaaa	(reserve) <*>		(0 - 15)
00 0D	0aaa aaaa	Knob 4 Assign	OFF, CC01 - CC31, CC33 - CC95, APT, BEND, ARP-ACCENT, ARP-SHUFFLE, ARP-OCT-UP, ARP-OCT-DOWN, MASTER-LEVEL, DIGITAL-IN-LEVEL	(0 - 103)
00 0E	0aaa aaaa	(reserve) <*>		(0 - 15)
00 0F	0aaa aaaa	Slider 1 Assign	OFF, CC01 - CC31, CC33 - CC95, APT, BEND, ARP-ACCENT, ARP-SHUFFLE, ARP-OCT-UP, ARP-OCT-DOWN	(0 - 101)
00 10	0aaa aaaa	(reserve) <*>		(0 - 15)
00 11	0aaa aaaa	Slider 2 Assign	OFF, CC01 - CC31, CC33 - CC95, APT, BEND, ARP-ACCENT, ARP-SHUFFLE, ARP-OCT-UP, ARP-OCT-DOWN	(0 - 101)
00 12	0aaa aaaa	(reserve) <*>		(0 - 15)
00 13	0aaa aaaa	Slider 3 Assign	OFF, CC01 - CC31, CC33 - CC95, APT, BEND, ARP-ACCENT, ARP-SHUFFLE, ARP-OCT-UP, ARP-OCT-DOWN	(0 - 101)
00 14	0aaa aaaa	(reserve) <*>		(0 - 15)
00 15	0aaa aaaa	Slider 4 Assign	OFF, CC01 - CC31, CC33 - CC95, APT, BEND, ARP-ACCENT, ARP-SHUFFLE, ARP-OCT-UP, ARP-OCT-DOWN	(0 - 101)
00 16	0aaa aaaa	(reserve) <*>		(0 - 15)
00 17	0aaa aaaa	Slider 5 Assign	OFF, CC01 - CC31, CC33 - CC95, APT, BEND, ARP-ACCENT, ARP-SHUFFLE, ARP-OCT-UP, ARP-OCT-DOWN	(0 - 101)
00 18	0aaa aaaa	(reserve) <*>		(0 - 15)
00 19	0aaa aaaa	Slider 6 Assign	OFF, CC01 - CC31, CC33 - CC95, APT, BEND, ARP-ACCENT, ARP-SHUFFLE, ARP-OCT-UP, ARP-OCT-DOWN	(0 - 101)
00 1A	0aaa aaaa	(reserve) <*>		(0 - 15)
00 1B	0aaa aaaa	Slider 7 Assign	OFF, CC01 - CC31, CC33 - CC95, APT, BEND, ARP-ACCENT, ARP-SHUFFLE, ARP-OCT-UP, ARP-OCT-DOWN	(0 - 101)
00 1C	0aaa aaaa	(reserve) <*>		(0 - 15)
00 1D	0aaa aaaa	Slider 8 Assign	OFF, CC01 - CC31, CC33 - CC95, APT, BEND, ARP-ACCENT, ARP-SHUFFLE, ARP-OCT-UP, ARP-OCT-DOWN	(0 - 101)
00 1E	0aaa aaaa	(reserve) <*>		(0 - 15)
00 1F	0aaa aaaa	Switch S1 Assign	OFF, CC01 - CC31, CC33 - CC95, APT, MONO/POLY, PFX-SW, MFX-SW, RESERV, CHO-SW, REV-SW, MASTERING-SW, MASTER-KEY-UP, MASTER-KEY-DW, SCALE-TUNE-SW	(0 - 106)
00 20	0000 000a	Switch S1 Assign Mode		(0 - 1)
00 21	0aaa aaaa	(reserve) <*>		(0 - 15)
00 22	0aaa aaaa	Switch S2 Assign	OFF, CC01 - CC31, CC33 - CC95, APT, MONO/POLY, PFX-SW, MFX-SW, RESERV, CHO-SW, REV-SW, MASTERING-SW, MASTER-KEY-UP, MASTER-KEY-DW, SCALE-TUNE-SW	(0 - 106)
00 23	0000 000a	Switch S2 Assign Mode		(0 - 1)
00 24	0aaa aaaa	(reserve) <*>		(0 - 15)
00 25	0000 000a	Arpeggio Switch		(0 - 1)
00 26	0000 000a	Arpeggio Hold		(0 - 1)
00 27	0aaa aaaa	Arpeggio Number		(0 - 127)
00 28	0000 aaaa	Arpeggio Part Group		(0 - 3)
00 29	0000 aaaa	Arpeggio Part Number		(0 - 15)
00 2A	0000 000a	Chord Switch		(0 - 1)
00 2B	0aaa aaaa	Chord Number		(0 - 127)
00 2C	0000 000a	Rolled Chord		(0 - 1)
00 2D	0aaa aaaa	Rolled Chord Type		(0 - 4)
00 2E	0000 000a	Pad Internal Switch		(0 - 1)
00 2F	0000 000a	Pad External Switch		(0 - 1)
00 30	0000 00aa	Pad Internal Group		(0 - 2)
00 31	0000 aaaa	Pad Internal Part		(0 - 15)
00 32	000a aaaa	Pad Transmit Channel		(0 - 15)
00 33	000a aaaa	Sample Pad Part		(0 - 7)
00 34	0aaa aaaa	Pad 1 Note Number		(0 - 127)
00 35	0aaa aaaa	Pad 1 Velocity		(0 - 127)
00 36	0aaa aaaa	(reserve) <*>		(0 - 127)
00 37	0aaa aaaa	(reserve) <*>		(0 - 127)
00 38	0aaa aaaa	(reserve) <*>		(0 - 127)
00 39	0aaa aaaa	(reserve) <*>		(0 - 127)
00 3A	0aaa aaaa	(reserve) <*>		(0 - 127)
00 3B	0aaa aaaa	(reserve) <*>		(0 - 127)
00 3C	0aaa aaaa	(reserve) <*>		(0 - 127)
00 3D	0aaa aaaa	(reserve) <*>		(0 - 127)
00 3E	0aaa aaaa	Pad 2 Note Number		(0 - 127)
00 3F	0aaa aaaa	Pad 2 Velocity		(0 - 127)
00 40	0aaa aaaa	(reserve) <*>		(0 - 127)
00 41	0aaa aaaa	(reserve) <*>		(0 - 127)
00 42	0aaa aaaa	(reserve) <*>		(0 - 127)
00 43	0aaa aaaa	(reserve) <*>		(0 - 127)
00 44	0aaa aaaa	(reserve) <*>		(0 - 127)
00 45	0aaa aaaa	(reserve) <*>		(0 - 127)
00 46	0aaa aaaa	(reserve) <*>		(0 - 127)
00 47	0aaa aaaa	(reserve) <*>		(0 - 127)
00 48	0aaa aaaa	Pad 3 Note Number		(0 - 127)
00 49	0aaa aaaa	Pad 3 Velocity		(0 - 127)
00 4A	0aaa aaaa	(reserve) <*>		(0 - 127)
00 4B	0aaa aaaa	(reserve) <*>		(0 - 127)
00 4C	0aaa aaaa	(reserve) <*>		(0 - 127)
00 4D	0aaa aaaa	(reserve) <*>		(0 - 127)
00 4E	0aaa aaaa	(reserve) <*>		(0 - 127)
00 4F	0aaa aaaa	(reserve) <*>		(0 - 127)
00 50	0aaa aaaa	(reserve) <*>		(0 - 127)
00 51	0aaa aaaa	(reserve) <*>		(0 - 127)
00 52	0aaa aaaa	Pad 4 Note Number		(0 - 127)
00 53	0aaa aaaa	Pad 4 Velocity		(0 - 127)
00 54	0aaa aaaa	(reserve) <*>		(0 - 127)
00 55	0aaa aaaa	(reserve) <*>		(0 - 127)
00 56	0aaa aaaa	(reserve) <*>		(0 - 127)
00 57	0aaa aaaa	(reserve) <*>		(0 - 127)
00 58	0aaa aaaa	(reserve) <*>		(0 - 127)
00 59	0aaa aaaa	(reserve) <*>		(0 - 127)
00 5A	0aaa aaaa	(reserve) <*>		(0 - 127)
00 5B	0aaa aaaa	(reserve) <*>		(0 - 127)
00 5C	0aaa aaaa	Pad 5 Note Number		(0 - 127)
00 5D	0aaa aaaa	Pad 5 Velocity		(0 - 127)
00 5E	0aaa aaaa	(reserve) <*>		(0 - 127)
00 5F	0aaa aaaa	(reserve) <*>		(0 - 127)
00 60	0aaa aaaa	(reserve) <*>		(0 - 127)
00 61	0aaa aaaa	(reserve) <*>		(0 - 127)
00 62	0aaa aaaa	(reserve) <*>		(0 - 127)
00 63	0aaa aaaa	(reserve) <*>		(0 - 127)
00 64	0aaa aaaa	(reserve) <*>		(0 - 127)
00 65	0aaa aaaa	(reserve) <*>		(0 - 127)
00 66	0aaa aaaa	Pad 6 Note Number		(0 - 127)
00 67	0aaa aaaa	Pad 6 Velocity		(0 - 127)
00 68	0aaa aaaa	(reserve) <*>		(0 - 127)
00 69	0aaa aaaa	(reserve) <*>		(0 - 127)
00 6A	0aaa aaaa	(reserve) <*>		(0 - 127)
00 6B	0aaa aaaa	(reserve) <*>		(0 - 127)

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00 6C	0aaa aaaa	(reserve) <*>	(0 - 127)
00 6D	0aaa aaaa	(reserve) <*>	(0 - 127)
00 6E	0aaa aaaa	(reserve) <*>	(0 - 127)
00 6F	0aaa aaaa	(reserve) <*>	(0 - 127)
00 70	0aaa aaaa	Pad 7 Note Number	(0 - 127)
00 71	0aaa aaaa	Pad 7 Velocity	C-1 - G9 (0 - 127)
00 72	0aaa aaaa	(reserve) <*>	REAL, 1 - 127 (0 - 127)
00 73	0aaa aaaa	(reserve) <*>	(0 - 127)
00 74	0aaa aaaa	(reserve) <*>	(0 - 127)
00 75	0aaa aaaa	(reserve) <*>	(0 - 127)
00 76	0aaa aaaa	(reserve) <*>	(0 - 127)
00 77	0aaa aaaa	(reserve) <*>	(0 - 127)
00 78	0aaa aaaa	(reserve) <*>	(0 - 127)
00 79	0aaa aaaa	(reserve) <*>	(0 - 127)
00 7A	0aaa aaaa	Pad 8 Note Number	(0 - 127)
00 7B	0aaa aaaa	Pad 8 Velocity	C-1 - G9 (0 - 127)
00 7C	0aaa aaaa	(reserve) <*>	REAL, 1 - 127 (0 - 127)
00 7D	0aaa aaaa	(reserve) <*>	(0 - 127)
00 7E	0aaa aaaa	(reserve) <*>	(0 - 127)
00 7F	0aaa aaaa	(reserve) <*>	(0 - 127)
01 00	0aaa aaaa	(reserve) <*>	(0 - 127)
01 01	0aaa aaaa	(reserve) <*>	(0 - 127)
01 02	0aaa aaaa	(reserve) <*>	(0 - 127)
01 03	0aaa aaaa	(reserve) <*>	(0 - 127)
01 04	0aaa aaaa	Pad 9 Note Number	(0 - 127)
01 05	0aaa aaaa	Pad 9 Velocity	C-1 - G9 (0 - 127)
01 06	0aaa aaaa	(reserve) <*>	REAL, 1 - 127 (0 - 127)
01 07	0aaa aaaa	(reserve) <*>	(0 - 127)
01 08	0aaa aaaa	(reserve) <*>	(0 - 127)
01 09	0aaa aaaa	(reserve) <*>	(0 - 127)
01 0A	0aaa aaaa	(reserve) <*>	(0 - 127)
01 0B	0aaa aaaa	(reserve) <*>	(0 - 127)
01 0C	0aaa aaaa	(reserve) <*>	(0 - 127)
01 0D	0aaa aaaa	(reserve) <*>	(0 - 127)
01 0E	0aaa aaaa	Pad 10 Note Number	(0 - 127)
01 0F	0aaa aaaa	Pad 10 Velocity	C-1 - G9 (0 - 127)
01 10	0aaa aaaa	(reserve) <*>	REAL, 1 - 127 (0 - 127)
01 11	0aaa aaaa	(reserve) <*>	(0 - 127)
01 12	0aaa aaaa	(reserve) <*>	(0 - 127)
01 13	0aaa aaaa	(reserve) <*>	(0 - 127)
01 14	0aaa aaaa	(reserve) <*>	(0 - 127)
01 15	0aaa aaaa	(reserve) <*>	(0 - 127)
01 16	0aaa aaaa	(reserve) <*>	(0 - 127)
01 17	0aaa aaaa	(reserve) <*>	(0 - 127)
01 18	0aaa aaaa	Pad 11 Note Number	(0 - 127)
01 19	0aaa aaaa	Pad 11 Velocity	C-1 - G9 (0 - 127)
01 1A	0aaa aaaa	(reserve) <*>	REAL, 1 - 127 (0 - 127)
01 1B	0aaa aaaa	(reserve) <*>	(0 - 127)
01 1C	0aaa aaaa	(reserve) <*>	(0 - 127)
01 1D	0aaa aaaa	(reserve) <*>	(0 - 127)
01 1E	0aaa aaaa	(reserve) <*>	(0 - 127)
01 1F	0aaa aaaa	(reserve) <*>	(0 - 127)
01 20	0aaa aaaa	(reserve) <*>	(0 - 127)
01 21	0aaa aaaa	(reserve) <*>	(0 - 127)
01 22	0aaa aaaa	Pad 12 Note Number	(0 - 127)
01 23	0aaa aaaa	Pad 12 Velocity	C-1 - G9 (0 - 127)
01 24	0aaa aaaa	(reserve) <*>	REAL, 1 - 127 (0 - 127)
01 25	0aaa aaaa	(reserve) <*>	(0 - 127)
01 26	0aaa aaaa	(reserve) <*>	(0 - 127)
01 27	0aaa aaaa	(reserve) <*>	(0 - 127)
01 28	0aaa aaaa	(reserve) <*>	(0 - 127)
01 29	0aaa aaaa	(reserve) <*>	(0 - 127)
01 2A	0aaa aaaa	(reserve) <*>	(0 - 127)
01 2B	0aaa aaaa	(reserve) <*>	(0 - 127)
01 2C	0aaa aaaa	Pad 13 Note Number	(0 - 127)
01 2D	0aaa aaaa	Pad 13 Velocity	C-1 - G9 (0 - 127)
01 2E	0aaa aaaa	(reserve) <*>	REAL, 1 - 127 (0 - 127)
01 2F	0aaa aaaa	(reserve) <*>	(0 - 127)
01 30	0aaa aaaa	(reserve) <*>	(0 - 127)

01 31	0aaa aaaa	(reserve) <*>	(0 - 127)
01 32	0aaa aaaa	(reserve) <*>	(0 - 127)
01 33	0aaa aaaa	(reserve) <*>	(0 - 127)
01 34	0aaa aaaa	(reserve) <*>	(0 - 127)
01 35	0aaa aaaa	(reserve) <*>	(0 - 127)
01 36	0aaa aaaa	Pad 14 Note Number	(0 - 127)
01 37	0aaa aaaa	Pad 14 Velocity	C-1 - G9 (0 - 127)
01 38	0aaa aaaa	(reserve) <*>	REAL, 1 - 127 (0 - 127)
01 39	0aaa aaaa	(reserve) <*>	(0 - 127)
01 3A	0aaa aaaa	(reserve) <*>	(0 - 127)
01 3B	0aaa aaaa	(reserve) <*>	(0 - 127)
01 3C	0aaa aaaa	(reserve) <*>	(0 - 127)
01 3D	0aaa aaaa	(reserve) <*>	(0 - 127)
01 3E	0aaa aaaa	(reserve) <*>	(0 - 127)
01 3F	0aaa aaaa	(reserve) <*>	(0 - 127)
01 40	0aaa aaaa	Pad 15 Note Number	(0 - 127)
01 41	0aaa aaaa	Pad 15 Velocity	C-1 - G9 (0 - 127)
01 42	0aaa aaaa	(reserve) <*>	REAL, 1 - 127 (0 - 127)
01 43	0aaa aaaa	(reserve) <*>	(0 - 127)
01 44	0aaa aaaa	(reserve) <*>	(0 - 127)
01 45	0aaa aaaa	(reserve) <*>	(0 - 127)
01 46	0aaa aaaa	(reserve) <*>	(0 - 127)
01 47	0aaa aaaa	(reserve) <*>	(0 - 127)
01 48	0aaa aaaa	(reserve) <*>	(0 - 127)
01 49	0aaa aaaa	(reserve) <*>	(0 - 127)
01 4A	0aaa aaaa	Pad 16 Note Number	(0 - 127)
01 4B	0aaa aaaa	Pad 16 Velocity	C-1 - G9 (0 - 127)
01 4C	0aaa aaaa	(reserve) <*>	REAL, 1 - 127 (0 - 127)
01 4D	0aaa aaaa	(reserve) <*>	(0 - 127)
01 4E	0aaa aaaa	(reserve) <*>	(0 - 127)
01 4F	0aaa aaaa	(reserve) <*>	(0 - 127)
01 50	0aaa aaaa	(reserve) <*>	(0 - 127)
01 51	0aaa aaaa	(reserve) <*>	(0 - 127)
01 52	0aaa aaaa	(reserve) <*>	(0 - 127)
01 53	0aaa aaaa	(reserve) <*>	(0 - 127)
01 54	0aaa aaaa	(reserve) <*>	(0 - 1)
01 55	0aaa aaaa	Pad Mode	(0 - 15) SAMPLE, RHYTHM, CHORD, ARP-SET, RPS, RHY-PIN, TONE-SW, TRK-MUTE, BOOKMARK, TX-SW, EPX-SW, PFX-SW, PART-SEL, PART-MUTE, USER-GRP, FAVORITE
01 56	0000 aaaa	(reserve) <*>	(0 - 7)

00 00 01 57 | Total Size

## Studio Set Common

Offset	Address	Description	
00 00	0aaa aaaa	Studio Set Name 1	(32 - 127)
00 01	0aaa aaaa	Studio Set Name 2	32 - 127 [ASCII]
00 02	0aaa aaaa	Studio Set Name 3	32 - 127 [ASCII]
00 03	0aaa aaaa	Studio Set Name 4	32 - 127 [ASCII]
00 04	0aaa aaaa	Studio Set Name 5	32 - 127 [ASCII]
00 05	0aaa aaaa	Studio Set Name 6	32 - 127 [ASCII]
00 06	0aaa aaaa	Studio Set Name 7	32 - 127 [ASCII]
00 07	0aaa aaaa	Studio Set Name 8	32 - 127 [ASCII]
00 08	0aaa aaaa	Studio Set Name 9	32 - 127 [ASCII]
00 09	0aaa aaaa	Studio Set Name 10	32 - 127 [ASCII]
00 0A	0aaa aaaa	Studio Set Name 11	32 - 127 [ASCII]
00 0B	0aaa aaaa	Studio Set Name 12	32 - 127 [ASCII]
00 0C	0aaa aaaa	Studio Set Name 13	32 - 127 [ASCII]
00 0D	0aaa aaaa	Studio Set Name 14	32 - 127 [ASCII]
00 0E	0aaa aaaa	Studio Set Name 15	32 - 127 [ASCII]
00 0F	0aaa aaaa	Studio Set Name 16	32 - 127 [ASCII]
00 10	0aaa aaaa	Studio Set Memo 1	32 - 127 [ASCII]
00 11	0aaa aaaa	Studio Set Memo 2	32 - 127 [ASCII]
00 12	0aaa aaaa	Studio Set Memo 3	32 - 127 [ASCII]
00 13	0aaa aaaa	Studio Set Memo 4	32 - 127 [ASCII]
00 14	0aaa aaaa	Studio Set Memo 5	32 - 127 [ASCII]
00 15	0aaa aaaa	Studio Set Memo 6	32 - 127 [ASCII]
00 16	0aaa aaaa	Studio Set Memo 7	32 - 127 [ASCII]
00 17	0aaa aaaa	Studio Set Memo 8	32 - 127 [ASCII]



# Fantom-G MIDI Implementation

00 18	0aaa aaaa	Studio Set Memo 9	32 - 127 [ASCII] (32 - 127)
00 19	0aaa aaaa	Studio Set Memo 10	32 - 127 [ASCII] (32 - 127)
00 1A	0aaa aaaa	Studio Set Memo 11	32 - 127 [ASCII] (32 - 127)
00 1B	0aaa aaaa	Studio Set Memo 12	32 - 127 [ASCII] (32 - 127)
00 1C	0aaa aaaa	Studio Set Memo 13	32 - 127 [ASCII] (32 - 127)
00 1D	0aaa aaaa	Studio Set Memo 14	32 - 127 [ASCII] (32 - 127)
00 1E	0aaa aaaa	Studio Set Memo 15	32 - 127 [ASCII] (32 - 127)
00 1F	0aaa aaaa	Studio Set Memo 16	32 - 127 [ASCII] (32 - 127)
00 20	0aaa aaaa	Studio Set Memo 17	32 - 127 [ASCII] (32 - 127)
00 21	0aaa aaaa	Studio Set Memo 18	32 - 127 [ASCII] (32 - 127)
00 22	0aaa aaaa	Studio Set Memo 19	32 - 127 [ASCII] (32 - 127)
00 23	0aaa aaaa	Studio Set Memo 20	32 - 127 [ASCII] (32 - 127)
00 24	0aaa aaaa	Studio Set Memo 21	32 - 127 [ASCII] (32 - 127)
00 25	0aaa aaaa	Studio Set Memo 22	32 - 127 [ASCII] (32 - 127)
00 26	0aaa aaaa	Studio Set Memo 23	32 - 127 [ASCII] (32 - 127)
00 27	0aaa aaaa	Studio Set Memo 24	32 - 127 [ASCII] (32 - 127)
00 28	0aaa aaaa	Studio Set Memo 25	32 - 127 [ASCII] (32 - 127)
00 29	0aaa aaaa	Studio Set Memo 26	32 - 127 [ASCII] (32 - 127)
00 2A	0aaa aaaa	Studio Set Memo 27	32 - 127 [ASCII] (32 - 127)
00 2B	0aaa aaaa	Studio Set Memo 28	32 - 127 [ASCII] (32 - 127)
00 2C	0aaa aaaa	Studio Set Memo 29	32 - 127 [ASCII] (32 - 127)
00 2D	0aaa aaaa	Studio Set Memo 30	32 - 127 [ASCII] (32 - 127)
00 2E	0aaa aaaa	Studio Set Memo 31	32 - 127 [ASCII] (32 - 127)
00 2F	0aaa aaaa	Studio Set Memo 32	32 - 127 [ASCII] (32 - 127)
00 30	0aaa aaaa	(reserve) <*>	(0 - 127)
00 31	0aaa aaaa	(reserve) <*>	(0 - 127)
00 32	0aaa aaaa	(reserve) <*>	(0 - 127)
00 33	0aaa aaaa	(reserve) <*>	(0 - 127)
00 34	0aaa aaaa	(reserve) <*>	(0 - 127)
00 35	0aaa aaaa	(reserve) <*>	(0 - 127)
00 36	0aaa aaaa	(reserve) <*>	(0 - 127)
00 37	0aaa aaaa	(reserve) <*>	(0 - 127)
00 38	0aaa aaaa	(reserve) <*>	(0 - 127)
00 39	00aa aaaa	(reserve) <*>	(0 - 16)
00 3A	000a aaaa	(reserve) <*>	(0 - 16)
00 3B	000a aaaa	(reserve) <*>	(0 - 16)
00 3C	0aaa aaaa	Voice Reserve 1	(0 - 64) 0 - 63, FULL
00 3D	0aaa aaaa	Voice Reserve 2	(0 - 64) 0 - 63, FULL
00 3E	0aaa aaaa	Voice Reserve 3	(0 - 64) 0 - 63, FULL
00 3F	0aaa aaaa	Voice Reserve 4	(0 - 64) 0 - 63, FULL
00 40	0aaa aaaa	Voice Reserve 5	(0 - 64) 0 - 63, FULL
00 41	0aaa aaaa	Voice Reserve 6	(0 - 64) 0 - 63, FULL
00 42	0aaa aaaa	Voice Reserve 7	(0 - 64) 0 - 63, FULL
00 43	0aaa aaaa	Voice Reserve 8	(0 - 64) 0 - 63, FULL
00 44	0aaa aaaa	Voice Reserve 9	(0 - 64) 0 - 63, FULL
00 45	0aaa aaaa	Voice Reserve 10	(0 - 64) 0 - 63, FULL
00 46	0aaa aaaa	Voice Reserve 11	(0 - 64) 0 - 63, FULL
00 47	0aaa aaaa	Voice Reserve 12	(0 - 64) 0 - 63, FULL
00 48	0aaa aaaa	Voice Reserve 13	(0 - 64) 0 - 63, FULL
00 49	0aaa aaaa	Voice Reserve 14	(0 - 64) 0 - 63, FULL
00 4A	0aaa aaaa	Voice Reserve 15	(0 - 64) 0 - 63, FULL
00 4B	0aaa aaaa	Voice Reserve 16	(0 - 64) 0 - 63, FULL
00 4C	0000 000a	Studio Set Insert MFX1 Switch	(0 - 1) OFF, ON
00 4D	0000 000a	Studio Set Insert MFX2 Switch	(0 - 1) OFF, ON
00 4E	0000 000a	Studio Set Chorus Switch	(0 - 1) OFF, ON
00 4F	0000 000a	(reserve) <*>	(0 - 1) OFF, ON
00 50	0000 000a	Studio Set Reverb Switch	(0 - 1) OFF, ON
00 51	0000 000a	(reserve) <*>	(0 - 1) OFF, ON
00 52	0000 000a	Studio Set Mastering Switch	(0 - 1) OFF, ON
00 53	0000 000a	Studio Set Input FX Switch	(0 - 1) OFF, ON
00 54	0000 000a	(reserve) <*>	(0 - 1)
00 55	0000 000a	(reserve) <*>	(0 - 1)
00 56	0000 000a	(reserve) <*>	(0 - 1)
00 57	0000 000a	(reserve) <*>	(0 - 1)
00 00 00 58	Total Size		

## Studio Set Common Insert MFX

Offset	Address	Description	
00 00	0aaa aaaa	MFX Type	(0 - 78)
00 01	0aaa aaaa	MFX Dry Send Level	(0 - 127)
00 02	0aaa aaaa	MFX Chorus Send Level	(0 - 127)
00 03	0aaa aaaa	MFX Reverb Send Level	(0 - 127)
00 04	0000 00aa	MFX Output Assign	(0 - 1) A, B
00 05	0aaa aaaa	(reserve) <*>	(0 - 101)
00 06	0aaa aaaa	(reserve) <*>	(1 - 127)
00 07	0aaa aaaa	(reserve) <*>	(0 - 101)
00 08	0aaa aaaa	(reserve) <*>	(1 - 127)
00 09	0aaa aaaa	(reserve) <*>	(0 - 101)
00 0A	0aaa aaaa	(reserve) <*>	(1 - 127)
00 0B	0aaa aaaa	(reserve) <*>	(0 - 101)
00 0C	0aaa aaaa	(reserve) <*>	(1 - 127)
00 0D	000a aaaa	MFX Control Assign 1	(0 - 16) OFF, 1 - 16
00 0E	000a aaaa	MFX Control Assign 2	(0 - 16) OFF, 1 - 16
00 0F	000a aaaa	MFX Control Assign 3	(0 - 16) OFF, 1 - 16
00 10	000a aaaa	MFX Control Assign 4	(0 - 16) OFF, 1 - 16
# 00 11	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 1	(12768 - 52768) -20000 - +20000
# 00 15	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 2	(12768 - 52768) -20000 - +20000
# 00 19	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 3	(12768 - 52768) -20000 - +20000
# 00 1D	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 4	(12768 - 52768) -20000 - +20000
# 00 21	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 5	(12768 - 52768) -20000 - +20000
# 00 25	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 6	(12768 - 52768) -20000 - +20000
# 00 29	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 7	(12768 - 52768) -20000 - +20000
# 00 2D	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 8	(12768 - 52768) -20000 - +20000
# 00 31	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 9	(12768 - 52768) -20000 - +20000
# 00 35	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 10	(12768 - 52768) -20000 - +20000
# 00 39	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 11	(12768 - 52768) -20000 - +20000
# 00 3D	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 12	(12768 - 52768) -20000 - +20000
# 00 41	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 13	(12768 - 52768) -20000 - +20000
# 00 45	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 14	(12768 - 52768) -20000 - +20000
# 00 49	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 15	(12768 - 52768) -20000 - +20000
# 00 4D	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 16	(12768 - 52768) -20000 - +20000
# 00 51	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 17	(12768 - 52768) -20000 - +20000
# 00 55	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 18	(12768 - 52768) -20000 - +20000
# 00 59	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 19	(12768 - 52768) -20000 - +20000
# 00 5D	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 20	(12768 - 52768) -20000 - +20000

# Fantom-G MIDI Implementation

#	00 61	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MPX Parameter 21	(12768 - 52768) -20000 - +20000
#	00 65	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MPX Parameter 22	(12768 - 52768) -20000 - +20000
#	00 69	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MPX Parameter 23	(12768 - 52768) -20000 - +20000
#	00 6D	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MPX Parameter 24	(12768 - 52768) -20000 - +20000
#	00 71	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MPX Parameter 25	(12768 - 52768) -20000 - +20000
#	00 75	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MPX Parameter 26	(12768 - 52768) -20000 - +20000
#	00 79	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MPX Parameter 27	(12768 - 52768) -20000 - +20000
#	00 7D	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MPX Parameter 28	(12768 - 52768) -20000 - +20000
#	01 01	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MPX Parameter 29	(12768 - 52768) -20000 - +20000
#	01 05	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MPX Parameter 30	(12768 - 52768) -20000 - +20000
#	01 09	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MPX Parameter 31	(12768 - 52768) -20000 - +20000
#	01 0D	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MPX Parameter 32	(12768 - 52768) -20000 - +20000
00 00 01 11		Total Size		

## Studio Set Common Chorus

Offset	Address	Description		
00 00	0000 aaaa	Chorus Type	(0 - 3)	
00 01	0aaa aaaa	Chorus Level	(0 - 127)	
00 02	0000 000a	Chorus Output Assign	(0 - 1) A, B	
00 03	0000 000a	(reserve) <*>	(0 - 1)	
00 04	0000 00aa	Chorus Output Select	(0 - 2) MAIN, REV, MAIN+REV	
#	00 05	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Chorus Parameter 1	(12768 - 52768) -20000 - +20000
#	00 09	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Chorus Parameter 2	(12768 - 52768) -20000 - +20000
#	00 0D	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Chorus Parameter 3	(12768 - 52768) -20000 - +20000
#	00 11	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Chorus Parameter 4	(12768 - 52768) -20000 - +20000
#	00 15	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Chorus Parameter 5	(12768 - 52768) -20000 - +20000
#	00 19	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Chorus Parameter 6	(12768 - 52768) -20000 - +20000
#	00 1D	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Chorus Parameter 7	(12768 - 52768) -20000 - +20000
#	00 21	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Chorus Parameter 8	(12768 - 52768) -20000 - +20000
#	00 25	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Chorus Parameter 9	(12768 - 52768) -20000 - +20000
#	00 29	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Chorus Parameter 10	(12768 - 52768) -20000 - +20000
#	00 2D	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Chorus Parameter 11	(12768 - 52768) -20000 - +20000
#	00 31	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Chorus Parameter 12	(12768 - 52768)

#	00 35	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Chorus Parameter 13	(12768 - 52768) -20000 - +20000
#	00 39	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Chorus Parameter 14	(12768 - 52768) -20000 - +20000
#	00 3D	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Chorus Parameter 15	(12768 - 52768) -20000 - +20000
#	00 41	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Chorus Parameter 16	(12768 - 52768) -20000 - +20000
#	00 45	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Chorus Parameter 17	(12768 - 52768) -20000 - +20000
#	00 49	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Chorus Parameter 18	(12768 - 52768) -20000 - +20000
#	00 4D	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Chorus Parameter 19	(12768 - 52768) -20000 - +20000
#	00 51	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Chorus Parameter 20	(12768 - 52768) -20000 - +20000
00 00 00 55		Total Size		

## Studio Set Common Reverb

Offset	Address	Description		
00 00	0aaa aaaa	Reverb Type	(0 - 10)	
00 01	0aaa aaaa	Reverb Level	(0 - 127)	
00 02	0000 00aa	Reverb Output Assign	(0 - 1) A, B	
#	00 03	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Reverb Parameter 1	(12768 - 52768) -20000 - +20000
#	00 07	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Reverb Parameter 2	(12768 - 52768) -20000 - +20000
#	00 0B	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Reverb Parameter 3	(12768 - 52768) -20000 - +20000
#	00 0F	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Reverb Parameter 4	(12768 - 52768) -20000 - +20000
#	00 13	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Reverb Parameter 5	(12768 - 52768) -20000 - +20000
#	00 17	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Reverb Parameter 6	(12768 - 52768) -20000 - +20000
#	00 1B	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Reverb Parameter 7	(12768 - 52768) -20000 - +20000
#	00 1F	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Reverb Parameter 8	(12768 - 52768) -20000 - +20000
#	00 23	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Reverb Parameter 9	(12768 - 52768) -20000 - +20000
#	00 27	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Reverb Parameter 10	(12768 - 52768) -20000 - +20000
#	00 2B	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Reverb Parameter 11	(12768 - 52768) -20000 - +20000
#	00 2F	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Reverb Parameter 12	(12768 - 52768) -20000 - +20000
#	00 33	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Reverb Parameter 13	(12768 - 52768) -20000 - +20000
#	00 37	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Reverb Parameter 14	(12768 - 52768) -20000 - +20000
#	00 3B	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Reverb Parameter 15	(12768 - 52768) -20000 - +20000
#	00 3F	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Reverb Parameter 16	(12768 - 52768) -20000 - +20000
#	00 43	0000 aaaa 0000 bbbb		

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#	00 47	0000 cccc 0000 dddd	Reverb Parameter 17	(12768 - 52768) -20000 - +20000
#	00 4B	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Reverb Parameter 18	(12768 - 52768) -20000 - +20000
#	00 4F	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Reverb Parameter 19	(12768 - 52768) -20000 - +20000
			Reverb Parameter 20	(12768 - 52768) -20000 - +20000
00 00 00 53		Total Size		

## Studio Set Mastering

Offset Address	Description	
00 00	0000 000a	(reserve) <*> (0 - 1)
00 01	0aaa aaaa	Low band Attack time (0 - 100)
00 02	0aaa aaaa	Low band Release time (0 - 100)
00 03	00aa aaaa	Low band Threshold (0 - 36)
		-36, -35, -34, -33, -32, -31, -30, -29, -28, -27, -26, -25, -24, -23, -22, -21, -20, -19, -18, -17, -16, -15, -14, -13, -12, -11, -10, -9, -8, -7, -6, -5, -4, -3, -2, -1, 0 [dB]
00 04	0000 aaaa	Low band Ratio (0 - 13)
		1:1.0, 1:1.1, 1:1.2, 1:1.4, 1:1.6, 1:1.8, 1:2.0, 1:2.5, 1:3.2, 1:4.0, 1:5.6, 1:8.0, 1:16, 1:INF
00 05	000a aaaa	Low band Level (0 - 24)
		0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24 [dB]
00 06	0aaa aaaa	Mid band Attack time (0 - 100)
00 07	0aaa aaaa	Mid band Release time (0 - 100)
00 08	00aa aaaa	Mid band Threshold (0 - 36)
		-36, -35, -34, -33, -32, -31, -30, -29, -28, -27, -26, -25, -24, -23, -22, -21, -20, -19, -18, -17, -16, -15, -14, -13, -12, -11, -10, -9, -8, -7, -6, -5, -4, -3, -2, -1, 0 [dB]
00 09	0000 aaaa	Mid band Ratio (0 - 13)
		1:1.0, 1:1.1, 1:1.2, 1:1.4, 1:1.6, 1:1.8, 1:2.0, 1:2.5, 1:3.2, 1:4.0, 1:5.6, 1:8.0, 1:16, 1:INF
00 0A	000a aaaa	Mid band Level (0 - 24)
		0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24 [dB]
00 0B	0aaa aaaa	High band Attack time (0 - 100)
00 0C	0aaa aaaa	High band Release time (0 - 100)
00 0D	00aa aaaa	High band Threshold (0 - 36)
		-36, -35, -34, -33, -32, -31, -30, -29, -28, -27, -26, -25, -24, -23, -22, -21, -20, -19, -18, -17, -16, -15, -14, -13, -12, -11, -10, -9, -8, -7, -6, -5, -4, -3, -2, -1, 0 [dB]
00 0E	0000 aaaa	High band Ratio (0 - 13)
		1:1.0, 1:1.1, 1:1.2, 1:1.4, 1:1.6, 1:1.8, 1:2.0, 1:2.5, 1:3.2, 1:4.0, 1:5.6, 1:8.0, 1:16, 1:INF
00 0F	000a aaaa	High band Level (0 - 24)
		0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24 [dB]
00 10	0000 0aaa	Split Freq Low (0 - 6)
		200, 250, 315, 400, 500, 630, 800 [Hz]
00 11	0000 0aaa	Split Freq High (0 - 6)
		2000, 2500, 3150, 4000, 5000, 6300, 8000 [Hz]
00 00 00 12		Total Size

## Studio Set Input FX

Offset Address	Description		
00 00	0aaa aaaa	External Dry Send Level (0 - 127)	
00 01	0aaa aaaa	External Chorus Send Level (0 - 127)	
00 02	0aaa aaaa	External Reverb Send Level (0 - 127)	
00 03	0000 aaaa	External Output Destination Select (0 - 2)	
		INT, EXPL, EXP2	
00 04	0000 aaaa	External Output Assign (0 - 2)	
		A, B, MPX	
00 05	0000 00aa	External Output MPX Select (0 - 1)	
		MPX1, MPX2	
00 06	0000 000a	(reserve) <*> (0 - 1)	
00 07	0000 000a	(reserve) <*> (0 - 1)	
00 08	0000 aaaa	Input Effect Type (1 - 6)	
#	00 09	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Input Effect Parameter 1 (12768 - 52768) -20000 - +20000
#	00 0D	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Input Effect Parameter 2 (12768 - 52768) -20000 - +20000
#	00 11	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Input Effect Parameter 3 (12768 - 52768) -20000 - +20000
#	00 15	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Input Effect Parameter 4 (12768 - 52768)

#	00 19	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Input Effect Parameter 5 (12768 - 52768) -20000 - +20000
#	00 1D	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Input Effect Parameter 6 (12768 - 52768) -20000 - +20000
#	00 21	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Input Effect Parameter 7 (12768 - 52768) -20000 - +20000
#	00 25	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Input Effect Parameter 8 (12768 - 52768) -20000 - +20000
#	00 29	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Input Effect Parameter 9 (12768 - 52768) -20000 - +20000
#	00 2D	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Input Effect Parameter 10 (12768 - 52768) -20000 - +20000
#	00 31	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Input Effect Parameter 11 (12768 - 52768) -20000 - +20000
#	00 35	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Input Effect Parameter 12 (12768 - 52768) -20000 - +20000
#	00 39	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Input Effect Parameter 13 (12768 - 52768) -20000 - +20000
#	00 3D	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Input Effect Parameter 14 (12768 - 52768) -20000 - +20000
#	00 41	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Input Effect Parameter 15 (12768 - 52768) -20000 - +20000
#	00 45	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Input Effect Parameter 16 (12768 - 52768) -20000 - +20000
#	00 49	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Input Effect Parameter 17 (12768 - 52768) -20000 - +20000
#	00 4D	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Input Effect Parameter 18 (12768 - 52768) -20000 - +20000
#	00 51	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Input Effect Parameter 19 (12768 - 52768) -20000 - +20000
#	00 55	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Input Effect Parameter 20 (12768 - 52768) -20000 - +20000
00 00 00 59		Total Size	

## Studio Set MIDI

Offset Address	Description	
00 00	0000 000a	Receive Program Change (0 - 1) OFF, ON
00 01	0000 000a	Receive Bank Select (0 - 1) OFF, ON
00 02	0000 000a	Receive Bender (0 - 1) OFF, ON
00 03	0000 000a	Receive Polyphonic Key Pressure (0 - 1) OFF, ON
00 04	0000 000a	Receive Channel Pressure (0 - 1) OFF, ON
00 05	0000 000a	Receive Modulation (0 - 1) OFF, ON
00 06	0000 000a	Receive Volume (0 - 1) OFF, ON
00 07	0000 000a	Receive Pan (0 - 1) OFF, ON
00 08	0000 000a	Receive Expression (0 - 1) OFF, ON
00 09	0000 000a	Receive Hold-1 (0 - 1) OFF, ON
00 0A	0000 000a	Phase Lock (0 - 1) OFF, ON
00 0B	0000 0aaa	Velocity Curve Type (0 - 4) OFF, 1 - 4
00 00 00 0C		Total Size

## Studio Set Part

Offset Address	Description	
00 00	0000 aaaa	Receive Channel (0 - 15)
00 01	0000 000a	Receive Switch (1 - 16) (0 - 1) OFF, ON
00 02	0aaa aaaa	Patch Bank Select MSB (CC# 0) (0 - 127)
00 03	0aaa aaaa	Patch Bank Select LSB (CC# 32) (0 - 127)
00 04	0aaa aaaa	Patch Program Number (PC) (0 - 127)
00 05	0aaa aaaa	Part Level (CC# 7) (0 - 127)
00 06	0aaa aaaa	Part Pan (CC# 10) (0 - 127) L64 - 63R

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00 07	0aaa aaaa	Part Coarse Tune (RPN# 2)	(16 - 112)
00 08	0aaa aaaa	Part Fine Tune (RPN# 1)	-48 +48 (14 - 114)
00 09	0000 00aa	Part Mono/Poly (MONO ON/POLY ON)	(0 - 2)
00 0A	0000 00aa	Part Legato Switch (CC# 68)	MONO, POLY, PATCH (0 - 2)
00 0B	000a aaaa	Part Pitch Bend Range (RPN# 0)	OFF, ON, PATCH (0 - 25)
00 0C	0000 00aa	Part Portamento Switch (CC# 65)	0 - 24, PATCH (0 - 2)
00 0D	0000 aaaa 0000 bbbb	Part Portamento Time (CC# 5)	OFF, ON, PATCH (0 - 127)
00 0F	0aaa aaaa	Part Cutoff Offset (CC# 74)	(0 - 127)
00 10	0aaa aaaa	Part Resonance Offset (CC# 71)	-64 +63 (0 - 127)
00 11	0aaa aaaa	Part Attack Time Offset (CC# 73)	-64 +63 (0 - 127)
00 12	0aaa aaaa	Part Decay Time Offset (CC# 75)	-64 +63 (0 - 127)
00 13	0aaa aaaa	Part Release Time Offset (CC# 72)	-64 +63 (0 - 127)
00 14	0aaa aaaa	Part Vibrato Rate (CC# 76)	-64 +63 (0 - 127)
00 15	0aaa aaaa	Part Vibrato Depth (CC# 77)	-64 +63 (0 - 127)
00 16	0aaa aaaa	Part Vibrato Delay (CC# 78)	-64 +63 (0 - 127)
00 17	0000 0aaa	Part Octave Shift	(61 - 67)
00 18	0aaa aaaa	Part Velocity Sens Offset	-3 - +3 (1 - 127)
00 19	0aaa aaaa	Keyboard Range Lower	-63 +63 (0 - 127)
00 1A	0aaa aaaa	Keyboard Range Upper	C-1 - UPPER (0 - 127)
00 1B	0aaa aaaa	(reserve) <*>	LOWER - G9 (0 - 127)
00 1C	0aaa aaaa	(reserve) <*>	(0 - 127)
00 1D	0000 000a	Mute Switch	(0 - 1) OFF, MUTE
00 1E	0aaa aaaa	Part Output Level	(0 - 127)
00 1F	0aaa aaaa	Part Chorus Send Level (CC# 93)	(0 - 127)
00 20	0aaa aaaa	Part Reverb Send Level (CC# 91)	(0 - 127)
00 21	0000 aaaa	Part Output Assign	(0 - 6)
00 22	0000 00aa	Part MFX Select	A, B, 1, 2, 3, 4, MFX (0 - 1)
00 23	0000 00aa	(reserve) <*>	MPX1, MPX2 (0 - 1)
00 24	0000 00aa	(reserve) <*>	(0 - 1)
00 25	0aaa aaaa	Part Scale Tune for C	(0 - 127)
00 26	0aaa aaaa	Part Scale Tune for C#	-64 +63 (0 - 127)
00 27	0aaa aaaa	Part Scale Tune for D	-64 +63 (0 - 127)
00 28	0aaa aaaa	Part Scale Tune for D#	-64 +63 (0 - 127)
00 29	0aaa aaaa	Part Scale Tune for E	-64 +63 (0 - 127)
00 2A	0aaa aaaa	Part Scale Tune for F	-64 +63 (0 - 127)
00 2B	0aaa aaaa	Part Scale Tune for F#	-64 +63 (0 - 127)
00 2C	0aaa aaaa	Part Scale Tune for G	-64 +63 (0 - 127)
00 2D	0aaa aaaa	Part Scale Tune for G#	-64 +63 (0 - 127)
00 2E	0aaa aaaa	Part Scale Tune for A	-64 +63 (0 - 127)
00 2F	0aaa aaaa	Part Scale Tune for A#	-64 +63 (0 - 127)
00 30	0aaa aaaa	Part Scale Tune for B	-64 +63 (0 - 127)
00 31	0000 000a	Keyboard Switch	(0 - 1) OFF, ON
00 32	0000 000a	Control Bender	(0 - 1) OFF, ON
00 33	0000 000a	Control Aftertouch	(0 - 1) OFF, ON
00 34	0000 000a	Control Modulation	(0 - 1) OFF, ON
00 35	0000 000a	Control Hold Pedal	(0 - 1) OFF, ON
00 36	0000 000a	Control Pedal 1	(0 - 1) OFF, ON
00 37	0000 000a	Control Pedal 2	(0 - 1) OFF, ON
00 38	0000 000a	(reserve) <*>	(0 - 1)
00 39	0000 000a	(reserve) <*>	(0 - 1)
00 3A	0000 000a	(reserve) <*>	(0 - 1)
00 3B	0000 000a	(reserve) <*>	(0 - 1)
00 3C	0000 000a	(reserve) <*>	(0 - 1)
00 3D	0000 000a	(reserve) <*>	(0 - 1)
00 3E	0000 000a	(reserve) <*>	(0 - 1)
00 3F	0000 000a	(reserve) <*>	(0 - 1)
00 40	0000 000a	(reserve) <*>	(0 - 1)
00 41	0000 000a	(reserve) <*>	(0 - 1)
00 42	0000 000a	(reserve) <*>	(0 - 1)
00 43	0000 000a	(reserve) <*>	(0 - 1)
00 44	0000 000a	(reserve) <*>	(0 - 1)
00 45	0000 000a	(reserve) <*>	(0 - 1)
00 46	0000 000a	(reserve) <*>	(0 - 1)
00 47	0aaa aaaa	Velocity Range Lower	(1 - 127) 1 - UPPER
00 48	0aaa aaaa	Velocity Range Upper	(1 - 127) LOWER - 127
00 49	0aaa aaaa	Part Transpose Value	(59 - 70) -5 - +6
00 00 00 4A	Total Size		

## Studio Set Exp Common

Offset	Address	Description	
00 00	0aaa aaaa	Level	(0 - 127)
00 01	0aaa aaaa	Pan	(0 - 127) L64 - 63R
00 02	0aaa aaaa	Output Level	(0 - 127)
00 03	0aaa aaaa	Chorus Send Level	(0 - 127)
00 04	0aaa aaaa	Reverb Send Level	(0 - 127)
00 05	0000 aaaa	Output Assign	(0 - 6)
00 06	0000 00aa	MFX Select	A, B, 1, 2, 3, 4, MFX (0 - 1)
00 07	0000 00aa	(reserve) <*>	MPX1, MPX2 (0 - 1)
00 08	0000 00aa	(reserve) <*>	(0 - 1)
00 00 00 09	Total Size		

## Studio Set Exp Part

Offset	Address	Description	
00 00	0000 aaaa	Receive Channel	(0 - 15)
00 01	0000 000a	Receive Switch	1 - 16 (0 - 1) OFF, ON
00 02	0aaa aaaa	Patch Bank Select MSB (CC# 0)	(0 - 127)
00 03	0aaa aaaa	Patch Bank Select LSB (CC# 32)	(0 - 127)
00 04	0aaa aaaa	Patch Program Number (PC)	(0 - 127)
00 05	0aaa aaaa	Part Level (CC# 7)	(0 - 127)
00 06	0aaa aaaa	Part Pan (CC# 10)	(0 - 127) L64 - 63R
00 07	0aaa aaaa	Part Coarse Tune (RPN# 2)	(16 - 112)
00 08	0aaa aaaa	Part Fine Tune (RPN# 1)	-48 +48 (14 - 114)
00 09	000a aaaa	Part Pitch Bend Range (RPN# 0)	-50 +50 (0 - 25)
00 0A	0000 0aaa	Part Octave Shift	0 - 24, PATCH (61 - 67)
00 0B	0aaa aaaa	Keyboard Range Lower	-3 - +3 (0 - 127)
00 0C	0aaa aaaa	Keyboard Range Upper	C-1 - UPPER (0 - 127)
00 0D	0aaa aaaa	(reserve) <*>	LOWER - G9 (0 - 127)
00 0E	0aaa aaaa	(reserve) <*>	(0 - 127)
00 0F	0000 000a	Mute Switch	(0 - 1) OFF, MUTE
00 10	0aaa aaaa	Part Output Level	(0 - 127)
00 11	0aaa aaaa	Part Effect1 Send Level (CC# 93)	(0 - 127)
00 12	0aaa aaaa	Part Effect2 Send Level (CC# 91)	(0 - 127)
00 13	0000 aaaa	Part Output Assign	(0 - 1) EXP, DRY
00 14	0000 00aa	(reserve) <*>	(0 - 1)
00 15	0000 00aa	(reserve) <*>	(0 - 1)
00 16	0000 00aa	(reserve) <*>	(0 - 1)
00 17	0aaa aaaa	Part Scale Tune for C	(0 - 127)
00 18	0aaa aaaa	Part Scale Tune for C#	-64 +63 (0 - 127)
00 19	0aaa aaaa	Part Scale Tune for D	-64 +63 (0 - 127)
00 1A	0aaa aaaa	Part Scale Tune for D#	-64 +63 (0 - 127)
00 1B	0aaa aaaa	Part Scale Tune for E	-64 +63 (0 - 127)
00 1C	0aaa aaaa	Part Scale Tune for F	-64 +63 (0 - 127)
00 1D	0aaa aaaa	Part Scale Tune for F#	-64 +63 (0 - 127)
00 1E	0aaa aaaa	Part Scale Tune for G	-64 +63 (0 - 127)
00 1F	0aaa aaaa	Part Scale Tune for G#	-64 +63 (0 - 127)
00 20	0aaa aaaa	Part Scale Tune for A	-64 +63 (0 - 127)
00 21	0aaa aaaa	Part Scale Tune for A#	-64 +63 (0 - 127)
00 22	0aaa aaaa	Part Scale Tune for B	-64 +63 (0 - 127)
00 23	0000 000a	Keyboard Switch	(0 - 1) OFF, ON
00 24	0000 000a	Control Bender	(0 - 1) OFF, ON
00 25	0000 000a	Control Aftertouch	(0 - 1) OFF, ON
00 26	0000 000a	Control Modulation	(0 - 1) OFF, ON
00 27	0000 000a	Control Hold Pedal	(0 - 1) OFF, ON
00 28	0000 000a	Control Pedal 1	(0 - 1) OFF, ON
00 29	0000 000a	Control Pedal 2	(0 - 1) OFF, ON
00 2A	0000 000a	(reserve) <*>	(0 - 1)
00 2B	0000 000a	(reserve) <*>	(0 - 1)
00 2C	0000 000a	(reserve) <*>	(0 - 1)
00 2D	0000 000a	(reserve) <*>	(0 - 1)
00 2E	0000 000a	(reserve) <*>	(0 - 1)
00 2F	0000 000a	(reserve) <*>	(0 - 1)
00 30	0000 000a	(reserve) <*>	(0 - 1)
00 31	0000 000a	(reserve) <*>	(0 - 1)
00 32	0000 000a	(reserve) <*>	(0 - 1)
00 33	0000 000a	(reserve) <*>	(0 - 1)
00 34	0000 000a	(reserve) <*>	(0 - 1)
00 35	0000 000a	(reserve) <*>	(0 - 1)

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00 36	0000 000a	(reserve) <*>	(0 - 1)
00 37	0000 000a	(reserve) <*>	(0 - 1)
00 38	0000 000a	(reserve) <*>	(0 - 1)
00 39	0aaa aaaa	Velocity Range Lower	(1 - 127)
00 3A	0aaa aaaa	Velocity Range Upper	1 - UPPER (1 - 127)
00 3B	0aaa aaaa	Part Transpose Value	LOWER - 127 (59 - 70) -5 +6
00 00 00 3C	Total Size		

## Studio Set Ext Part

Offset Address	Description	
# 00 00	0000 aaaa 0000 bbbb	External Bank Select MSB (CC# 0) (0 - 128)
# 00 02	0aaa aaaa	External Bank Select LSB (CC# 32) (0 - 127)
# 00 03	0000 aaaa 0000 bbbb	External Program Number (PC) (0 - 128)
# 00 05	0000 aaaa 0000 bbbb	External Level (CC# 7) (0 - 128)
# 00 07	0000 aaaa 0000 bbbb	External Pan (CC# 10) (0 - 128)
00 09	0aaa aaaa	Keyboard Range Lower (0 - 127)
00 0A	0aaa aaaa	Keyboard Range Upper (0 - 127)
00 0B	0000 000a	Keyboard Switch (0 - 1)
00 0C	0000 000a	Control Bender (0 - 1)
00 0D	0000 000a	Control Aftertouch (0 - 1)
00 0E	0000 000a	Control Modulation (0 - 1)
00 0F	0000 000a	Control Hold Pedal (0 - 1)
00 10	0000 000a	Control Pedal 1 (0 - 1)
00 11	0000 000a	Control Pedal 2 (0 - 1)
00 12	0000 000a	(reserve) <*> (0 - 1)
00 13	0000 000a	(reserve) <*> (0 - 1)
00 14	0000 000a	(reserve) <*> (0 - 1)
00 15	0000 000a	(reserve) <*> (0 - 1)
00 16	0000 000a	(reserve) <*> (0 - 1)
00 17	0000 000a	(reserve) <*> (0 - 1)
00 18	0000 000a	(reserve) <*> (0 - 1)
00 19	0000 000a	(reserve) <*> (0 - 1)
00 1A	0000 000a	(reserve) <*> (0 - 1)
00 1B	0000 000a	(reserve) <*> (0 - 1)
00 1C	0000 000a	(reserve) <*> (0 - 1)
00 1D	0000 000a	(reserve) <*> (0 - 1)
00 1E	0000 000a	(reserve) <*> (0 - 1)
00 1F	0000 000a	(reserve) <*> (0 - 1)
00 20	0000 000a	(reserve) <*> (0 - 1)
00 21	0aaa aaaa	Velocity Range Lower (1 - 127)
00 22	0aaa aaaa	Velocity Range Upper (1 - 127)
00 23	0000 0aaa	Part Octave Shift (61 - 67)
00 24	0000 0aaa	Part Transpose Value (-3 +3) (59 - 70) -5 +6
00 00 00 25	Total Size	

## Studio Set Controller

Offset Address	Description	
00 00	0aaa aaaa	Beam Switch (0 - 3)
00 01	0aaa aaaa	Beam Assign (0 - 102)
00 02	0aaa aaaa	Beam Range Lower (0 - 127)
00 03	0aaa aaaa	Beam Range Upper (0 - 127)
00 04	0000 aaaa	Beam Trigger Pad (0 - 15)
00 05	0aaa aaaa	Beam Trigger Velo (1 - 15)
00 06	0aaa aaaa	Beam Trigger Mode (1 - 127)
00 07	0aaa aaaa	Knob 1 Assign (0 - 103)
00 08	0aaa aaaa	(reserve) <*> (0 - 15)
00 09	0aaa aaaa	Knob 2 Assign (0 - 103)
00 0A	0aaa aaaa	(reserve) <*> (0 - 15)
00 0B	0aaa aaaa	Knob 3 Assign (0 - 103)

00 0C	0aaa aaaa	(reserve) <*>	OFF, CC01 - CC31, CC33 - CC95, APT, BEND, ARP-ACCENT, ARP-SHUFFLE, ARP-OCT-UP, ARP-OCT-DOWN, MASTER-LEVEL, DIGITAL-IN-LEVEL (0 - 15)
00 0D	0aaa aaaa	Knob 4 Assign	(0 - 15) (0 - 103)
00 0E	0aaa aaaa	(reserve) <*>	OFF, CC01 - CC31, CC33 - CC95, APT, BEND, ARP-ACCENT, ARP-SHUFFLE, ARP-OCT-UP, ARP-OCT-DOWN, MASTER-LEVEL, DIGITAL-IN-LEVEL (0 - 15)
00 0F	0aaa aaaa	Slider 1 Assign	(0 - 101)
00 10	0aaa aaaa	(reserve) <*>	OFF, CC01 - CC31, CC33 - CC95, APT, BEND, ARP-ACCENT, ARP-SHUFFLE, ARP-OCT-UP, ARP-OCT-DOWN (0 - 15)
00 11	0aaa aaaa	Slider 2 Assign	(0 - 101)
00 12	0aaa aaaa	(reserve) <*>	OFF, CC01 - CC31, CC33 - CC95, APT, BEND, ARP-ACCENT, ARP-SHUFFLE, ARP-OCT-UP, ARP-OCT-DOWN (0 - 15)
00 13	0aaa aaaa	Slider 3 Assign	(0 - 101)
00 14	0aaa aaaa	(reserve) <*>	OFF, CC01 - CC31, CC33 - CC95, APT, BEND, ARP-ACCENT, ARP-SHUFFLE, ARP-OCT-UP, ARP-OCT-DOWN (0 - 15)
00 15	0aaa aaaa	Slider 4 Assign	(0 - 101)
00 16	0aaa aaaa	(reserve) <*>	OFF, CC01 - CC31, CC33 - CC95, APT, BEND, ARP-ACCENT, ARP-SHUFFLE, ARP-OCT-UP, ARP-OCT-DOWN (0 - 15)
00 17	0aaa aaaa	Slider 5 Assign	(0 - 101)
00 18	0aaa aaaa	(reserve) <*>	OFF, CC01 - CC31, CC33 - CC95, APT, BEND, ARP-ACCENT, ARP-SHUFFLE, ARP-OCT-UP, ARP-OCT-DOWN (0 - 15)
00 19	0aaa aaaa	Slider 6 Assign	(0 - 101)
00 1A	0aaa aaaa	(reserve) <*>	OFF, CC01 - CC31, CC33 - CC95, APT, BEND, ARP-ACCENT, ARP-SHUFFLE, ARP-OCT-UP, ARP-OCT-DOWN (0 - 15)
00 1B	0aaa aaaa	Slider 7 Assign	(0 - 101)
00 1C	0aaa aaaa	(reserve) <*>	OFF, CC01 - CC31, CC33 - CC95, APT, BEND, ARP-ACCENT, ARP-SHUFFLE, ARP-OCT-UP, ARP-OCT-DOWN (0 - 15)
00 1D	0aaa aaaa	Slider 8 Assign	(0 - 101)
00 1E	0aaa aaaa	(reserve) <*>	OFF, CC01 - CC31, CC33 - CC95, APT, BEND, ARP-ACCENT, ARP-SHUFFLE, ARP-OCT-UP, ARP-OCT-DOWN (0 - 15)
00 1F	0aaa aaaa	Switch S1 Assign	(0 - 106)
00 20	0000 000a	Switch S1 Assign Mode	OFF, CC01 - CC31, CC33 - CC95, APT, MONO/POLY, PFX-SW, MFX1-SW, MFX2-SW, CHO-SW, REV-SW, MASTERING-SW, MASTER-KEY-UP, MASTER-KEY-DW, SCALE-TUNE-SW (0 - 1)
00 21	0aaa aaaa	(reserve) <*>	MOMENTARY, LATCH (0 - 15)
00 22	0aaa aaaa	Switch S2 Assign	(0 - 106)
00 23	0000 000a	Switch S2 Assign Mode	OFF, CC01 - CC31, CC33 - CC95, APT, MONO/POLY, PFX-SW, MFX1-SW, MFX2-SW, CHO-SW, REV-SW, MASTERING-SW, MASTER-KEY-UP, MASTER-KEY-DW, SCALE-TUNE-SW (0 - 1)
00 24	0aaa aaaa	(reserve) <*>	MOMENTARY, LATCH (0 - 15)
00 25	0000 000a	Arpeggio Switch	(0 - 1)
00 26	0000 000a	Arpeggio Hold	OFF, ON (0 - 1)
00 27	0aaa aaaa	Arpeggio Number	OFF, ON (0 - 1)
00 28	0000 aaaa	Arpeggio Part Group	INT, EXP1, EXP2, EXT (0 - 3)
00 29	0000 aaaa	Arpeggio Part Number	(0 - 15)
00 2A	0000 000a	Chord Switch	(0 - 1)
00 2B	0aaa aaaa	Chord Number	OFF, ON (0 - 127)
00 2C	0000 000a	Rolled Chord	(0 - 1)
00 2D	0aaa aaaa	Rolled Chord Type	UP, DOWN, ALTERNATE, L-DOWN, U-UP (0 - 4)
00 2E	0000 000a	Pad Internal Switch	(0 - 1)
00 2F	0000 000a	Pad External Switch	OFF, ON (0 - 1)
00 30	0000 00aa	Pad Internal Group	OFF, ON (0 - 2)
00 31	0000 aaaa	Pad Internal Part	INT, EXP1, EXP2 (0 - 15)
00 32	000a aaaa	Pad Transmit Channel	(0 - 15)
00 33	000a aaaa	Sample Pad Part	(0 - 15)
00 34	0aaa aaaa	Pad 1 Note Number	(0 - 127)
00 35	0aaa aaaa	Pad 1 Velocity	C-1 - G9 (0 - 127)
00 36	0aaa aaaa	(reserve) <*>	REAL, (0 - 127)
00 37	0aaa aaaa	(reserve) <*>	(0 - 127)
00 38	0aaa aaaa	(reserve) <*>	(0 - 127)



# Fantom-G MIDI Implementation

01 43	0aaa aaaa	(reserve) <*>	(0 - 127)
01 44	0aaa aaaa	(reserve) <*>	(0 - 127)
01 45	0aaa aaaa	(reserve) <*>	(0 - 127)
01 46	0aaa aaaa	(reserve) <*>	(0 - 127)
01 47	0aaa aaaa	(reserve) <*>	(0 - 127)
01 48	0aaa aaaa	(reserve) <*>	(0 - 127)
01 49	0aaa aaaa	(reserve) <*>	(0 - 127)
01 4A	0aaa aaaa	Pad 16 Note Number	(0 - 127)
01 4B	0aaa aaaa	Pad 16 Velocity	C-1 - G9 (0 - 127)
01 4C	0aaa aaaa	(reserve) <*>	REAL, 1 - 127 (0 - 127)
01 4D	0aaa aaaa	(reserve) <*>	(0 - 127)
01 4E	0aaa aaaa	(reserve) <*>	(0 - 127)
01 4F	0aaa aaaa	(reserve) <*>	(0 - 127)
01 50	0aaa aaaa	(reserve) <*>	(0 - 127)
01 51	0aaa aaaa	(reserve) <*>	(0 - 127)
01 52	0aaa aaaa	(reserve) <*>	(0 - 127)
01 53	0aaa aaaa	(reserve) <*>	(0 - 127)
-----			
01 54	0aaa aaaa	(reserve) <*>	(0 - 1)
01 55	0aaa aaaa	Pad Mode	(0 - 15)
		SAMPLE, RHYTHM, CHORD, ARP-SET, RPS, RHY-PTN, TONE-SW, TRK-MUTE, BOOKMARK, TX-SW, EFX-SW, PFX-SW, PART-SEL, PART-MUTE, USER-GRP, FAVORITE	
01 56	0000 aaaa	(reserve) <*>	(0 - 7)
-----			
00 00 01 57	Total Size		

## ○Arpeggio

Offset Address	Description	
00 00	0aaa aaaa	Arpeggio Name 1 (32 - 127)
00 01	0aaa aaaa	Arpeggio Name 2 (32 - 127)
00 02	0aaa aaaa	Arpeggio Name 3 (32 - 127)
00 03	0aaa aaaa	Arpeggio Name 4 (32 - 127)
00 04	0aaa aaaa	Arpeggio Name 5 (32 - 127)
00 05	0aaa aaaa	Arpeggio Name 6 (32 - 127)
00 06	0aaa aaaa	Arpeggio Name 7 (32 - 127)
00 07	0aaa aaaa	Arpeggio Name 8 (32 - 127)
00 08	0aaa aaaa	Arpeggio Name 9 (32 - 127)
00 09	0aaa aaaa	Arpeggio Name 10 (32 - 127)
00 0A	0aaa aaaa	Arpeggio Name 11 (32 - 127)
00 0B	0aaa aaaa	Arpeggio Name 12 (32 - 127)
00 0C	0aaa aaaa	Arpeggio Name 13 (32 - 127)
00 0D	0aaa aaaa	Arpeggio Name 14 (32 - 127)
00 0E	0aaa aaaa	Arpeggio Name 15 (32 - 127)
00 0F	0aaa aaaa	Arpeggio Name 16 (32 - 127)
-----		
00 10	0aaa aaaa	Style (0 - 127)
00 11	0aaa aaaa	Variation (0 - 127)
00 12	0aaa aaaa	Motif (0 - 9)
		UP, DOWN, UP&DOWN, RANDOM, NOTE-ORDER, GLISSANDO, CHORD, AUTOL, AUTOZ, PHRASE
00 13	0aaa aaaa	Accent Rate (0 - 100)
00 14	0aaa aaaa	Shuffle Rate (0 - 100)
00 15	0000 000a	Shuffle Resolution (0 - 1)
00 16	0aaa aaaa	Keyboard Velocity (0 - 127)
00 17	0000 0aaa	Octave Range (61 - 67)
00 18	0000 000a	Key Trigger (-3 - +3)
		OFF, ON
-----		
00 00 00 19	Total Size	

## ○Chord Memory

Offset Address	Description	
00 00	0000 000a	Chord Note1 (0 - 1)
00 01	0000 000a	Chord Note2 OFF, ON (0 - 1)
00 02	0000 000a	Chord Note3 OFF, ON (0 - 1)
00 03	0000 000a	Chord Note4 OFF, ON (0 - 1)
00 04	0000 000a	Chord Note5 OFF, ON (0 - 1)
00 05	0000 000a	Chord Note6 OFF, ON (0 - 1)
00 06	0000 000a	Chord Note7 OFF, ON (0 - 1)
00 07	0000 000a	Chord Note8 OFF, ON (0 - 1)
00 08	0000 000a	Chord Note9 OFF, ON (0 - 1)
00 09	0000 000a	Chord Note10 OFF, ON (0 - 1)
00 0A	0000 000a	Chord Note11 OFF, ON (0 - 1)

00 0B	0000 000a	Chord Note12 (0 - 1)
00 0C	0000 000a	Chord Note13 OFF, ON (0 - 1)
00 0D	0000 000a	Chord Note14 OFF, ON (0 - 1)
00 0E	0000 000a	Chord Note15 OFF, ON (0 - 1)
00 0F	0000 000a	Chord Note16 OFF, ON (0 - 1)
00 10	0000 000a	Chord Note17 OFF, ON (0 - 1)
00 11	0000 000a	Chord Note18 OFF, ON (0 - 1)
00 12	0000 000a	Chord Note19 OFF, ON (0 - 1)
00 13	0000 000a	Chord Note20 OFF, ON (0 - 1)
00 14	0000 000a	Chord Note21 OFF, ON (0 - 1)
00 15	0000 000a	Chord Note22 OFF, ON (0 - 1)
00 16	0000 000a	Chord Note23 OFF, ON (0 - 1)
00 17	0000 000a	Chord Note24 OFF, ON (0 - 1)
00 18	0000 000a	Chord Note25 OFF, ON (0 - 1)
00 19	0000 000a	Chord Note26 OFF, ON (0 - 1)
00 1A	0000 000a	Chord Note27 OFF, ON (0 - 1)
00 1B	0000 000a	Chord Note28 OFF, ON (0 - 1)
00 1C	0000 000a	Chord Note29 OFF, ON (0 - 1)
00 1D	0000 000a	Chord Note30 OFF, ON (0 - 1)
00 1E	0000 000a	Chord Note31 OFF, ON (0 - 1)
00 1F	0000 000a	Chord Note32 OFF, ON (0 - 1)
00 20	0000 000a	Chord Note33 OFF, ON (0 - 1)
00 21	0000 000a	Chord Note34 OFF, ON (0 - 1)
00 22	0000 000a	Chord Note35 OFF, ON (0 - 1)
00 23	0000 000a	Chord Note36 OFF, ON (0 - 1)
00 24	0000 000a	Chord Note37 OFF, ON (0 - 1)
00 25	0000 000a	Chord Note38 OFF, ON (0 - 1)
00 26	0000 000a	Chord Note39 OFF, ON (0 - 1)
00 27	0000 000a	Chord Note40 OFF, ON (0 - 1)
00 28	0000 000a	Chord Note41 OFF, ON (0 - 1)
00 29	0000 000a	Chord Note42 OFF, ON (0 - 1)
00 2A	0000 000a	Chord Note43 OFF, ON (0 - 1)
00 2B	0000 000a	Chord Note44 OFF, ON (0 - 1)
00 2C	0000 000a	Chord Note45 OFF, ON (0 - 1)
00 2D	0000 000a	Chord Note46 OFF, ON (0 - 1)
00 2E	0000 000a	Chord Note47 OFF, ON (0 - 1)
00 2F	0000 000a	Chord Note48 OFF, ON (0 - 1)
00 30	0000 000a	Chord Note49 OFF, ON (0 - 1)
00 31	0000 000a	Chord Note50 OFF, ON (0 - 1)
00 32	0000 000a	Chord Note51 OFF, ON (0 - 1)
00 33	0000 000a	Chord Note52 OFF, ON (0 - 1)
00 34	0000 000a	Chord Note53 OFF, ON (0 - 1)
00 35	0000 000a	Chord Note54 OFF, ON (0 - 1)
00 36	0000 000a	Chord Note55 OFF, ON (0 - 1)
00 37	0000 000a	Chord Note56 OFF, ON (0 - 1)
00 38	0000 000a	Chord Note57 OFF, ON (0 - 1)
00 39	0000 000a	Chord Note58 OFF, ON (0 - 1)
00 3A	0000 000a	Chord Note59 OFF, ON (0 - 1)
00 3B	0000 000a	Chord Note60 OFF, ON (0 - 1)
00 3C	0000 000a	Chord Note61 OFF, ON (0 - 1)
00 3D	0000 000a	Chord Note62 OFF, ON (0 - 1)
00 3E	0000 000a	Chord Note63 OFF, ON (0 - 1)
00 3F	0000 000a	Chord Note64 OFF, ON (0 - 1)
00 40	0000 000a	Chord Note65 OFF, ON (0 - 1)
00 41	0000 000a	Chord Note66 OFF, ON (0 - 1)
00 42	0000 000a	Chord Note67 OFF, ON (0 - 1)
00 43	0000 000a	Chord Note68 OFF, ON (0 - 1)
00 44	0000 000a	Chord Note69 OFF, ON (0 - 1)
00 45	0000 000a	Chord Note70 OFF, ON (0 - 1)
00 46	0000 000a	Chord Note71 OFF, ON (0 - 1)
00 47	0000 000a	Chord Note72 OFF, ON (0 - 1)
00 48	0000 000a	Chord Note73 OFF, ON (0 - 1)
00 49	0000 000a	Chord Note74 OFF, ON (0 - 1)
00 4A	0000 000a	Chord Note75 OFF, ON (0 - 1)
00 4B	0000 000a	Chord Note76 OFF, ON (0 - 1)
00 4C	0000 000a	Chord Note77 OFF, ON (0 - 1)
00 4D	0000 000a	Chord Note78 OFF, ON (0 - 1)
00 4E	0000 000a	Chord Note79 OFF, ON (0 - 1)
00 4F	0000 000a	Chord Note80 OFF, ON (0 - 1)





# Fantom-G MIDI Implementation

00 15	0aaa aaaa	Pad 3 Chord Number	(0 - 127)
00 16	0aaa aaaa	(reserve) <*>	(0 - 127)
00 17	0aaa aaaa	Pad 4 Chord Number	(0 - 127)
00 18	0aaa aaaa	(reserve) <*>	(0 - 127)
00 19	0aaa aaaa	Pad 5 Chord Number	(0 - 127)
00 1A	0aaa aaaa	(reserve) <*>	(0 - 127)
00 1B	0aaa aaaa	Pad 6 Chord Number	(0 - 127)
00 1C	0aaa aaaa	(reserve) <*>	(0 - 127)
00 1D	0aaa aaaa	Pad 7 Chord Number	(0 - 127)
00 1E	0aaa aaaa	(reserve) <*>	(0 - 127)
00 1F	0aaa aaaa	Pad 8 Chord Number	(0 - 127)
00 20	0aaa aaaa	(reserve) <*>	(0 - 127)
00 21	0aaa aaaa	Pad 9 Chord Number	(0 - 127)
00 22	0aaa aaaa	(reserve) <*>	(0 - 127)
00 23	0aaa aaaa	Pad 10 Chord Number	(0 - 127)
00 24	0aaa aaaa	(reserve) <*>	(0 - 127)
00 25	0aaa aaaa	Pad 11 Chord Number	(0 - 127)
00 26	0aaa aaaa	(reserve) <*>	(0 - 127)
00 27	0aaa aaaa	Pad 12 Chord Number	(0 - 127)
00 28	0aaa aaaa	(reserve) <*>	(0 - 127)
00 29	0aaa aaaa	Pad 13 Chord Number	(0 - 127)
00 2A	0aaa aaaa	(reserve) <*>	(0 - 127)
00 2B	0aaa aaaa	Pad 14 Chord Number	(0 - 127)
00 2C	0aaa aaaa	(reserve) <*>	(0 - 127)
00 2D	0aaa aaaa	Pad 15 Chord Number	(0 - 127)
00 2E	0aaa aaaa	(reserve) <*>	(0 - 127)
00 2F	0aaa aaaa	Pad 16 Chord Number	(0 - 127)
00 00 00 30	Total Size		

## ○Patch Common

Offset	Address	Description	
00 00	0aaa aaaa	(reserve) <*>	(32 - 127)
00 01	0aaa aaaa	(reserve) <*>	(32 - 127)
00 02	0aaa aaaa	(reserve) <*>	(32 - 127)
00 03	0aaa aaaa	(reserve) <*>	(32 - 127)
00 04	0aaa aaaa	(reserve) <*>	(32 - 127)
00 05	0aaa aaaa	(reserve) <*>	(32 - 127)
00 06	0aaa aaaa	(reserve) <*>	(32 - 127)
00 07	0aaa aaaa	(reserve) <*>	(32 - 127)
00 08	0aaa aaaa	(reserve) <*>	(32 - 127)
00 09	0aaa aaaa	(reserve) <*>	(32 - 127)
00 0A	0aaa aaaa	(reserve) <*>	(32 - 127)
00 0B	0aaa aaaa	(reserve) <*>	(32 - 127)
00 0C	0aaa aaaa	(reserve) <*>	(0 - 127)
00 0D	0000 000a	(reserve) <*>	
00 0E	0aaa aaaa	Patch Level	(0 - 127)
00 0F	0aaa aaaa	Patch Pan	(0 - 127)
00 10	0000 000a	Patch Priority	L64 - 63R (0 - 1)
00 11	0aaa aaaa	Patch Coarse Tune	LAST, LOUDEST (16 - 112) -48 +48
00 12	0aaa aaaa	Patch Fine Tune	(14 - 114) -50 +50
00 13	0000 000a	Octave Shift	(61 - 67) -3 +3
00 14	0000 000a	Stretch Tune Depth	(0 - 3) OFF, 1 - 3
00 15	0aaa aaaa	Analog Feel	(0 - 127)
00 16	0000 000a	Mono/Poly	(0 - 1) MONO, POLY
00 17	0000 000a	(reserve) <*>	(0 - 1)
00 18	0000 000a	(reserve) <*>	(0 - 1)
00 19	0000 000a	Portamento Switch	(0 - 1) OFF, ON
00 1A	0000 000a	Portamento Mode	(0 - 1) NORMAL, LEGATO
00 1B	0000 000a	Portamento Type	(0 - 1) RATE, TIME
00 1C	0000 000a	Portamento Start	(0 - 1) PITCH, NOTE
00 1D	0aaa aaaa	Portamento Time	(0 - 127)
00 1E	0000 000a	(reserve) <*>	
00 1F	0000 000a	(reserve) <*>	
00 20	0000 000a	(reserve) <*>	
00 21	0000 000a	(reserve) <*>	
00 22	0aaa aaaa	Cutoff Offset	(1 - 127) -63 +63
00 23	0aaa aaaa	Resonance Offset	(1 - 127) -63 +63
00 24	0aaa aaaa	Attack Time Offset	(1 - 127) -63 +63
00 25	0aaa aaaa	Release Time Offset	(1 - 127) -63 +63
00 26	0aaa aaaa	Velocity Sens Offset	(1 - 127) -63 +63
00 27	0000 000a	(reserve) <*>	(0 - 13)
00 28	0000 000a	TMT Control Switch	(0 - 1) OFF, ON
00 29	00aa aaaa	Pitch Bend Range Up	(0 - 48)
00 2A	00aa aaaa	Pitch Bend Range Down	(0 - 48)
00 2B	0aaa aaaa	Matrix Control 1 Source	(0 - 109) OFF, CC01 - CC31, CC33 - CC95, BEND, APT, SYS1 - SYS4, VELOCITY, KEYFOLLOW, TEMPO, LFO1, LFO2, PIT-ENV, TVF-ENV, TVA-ENV
00 2C	00aa aaaa	Matrix Control 1 Destination 1	(0 - 33)

00 2D	0aaa aaaa	Matrix Control 1 Sens 1	(1 - 127) -63 +63
00 2E	00aa aaaa	Matrix Control 1 Destination 2	(0 - 33) OFF, PCH, CUT, RES, LEV, PAN, DRY, CHO, REV, PIT-LFO1, PIT-LFO2, TVF-LFO1, TVF-LFO2, TVA-LFO1, TVA-LFO2, PAN-LFO1, PAN-LFO2, LFO1-RATE, LFO2-RATE, PIT-ATK, PIT-DCY, PIT-REL, TVF-ATK, TVF-DCY, TVF-REL, TVA-ATK, TVA-DCY, TVA-REL, TMT, FXM, PFX1, PFX2, PFX3, PFX4
00 2F	0aaa aaaa	Matrix Control 1 Sens 2	(1 - 127) -63 +63
00 30	00aa aaaa	Matrix Control 1 Destination 3	(0 - 33) OFF, PCH, CUT, RES, LEV, PAN, DRY, CHO, REV, PIT-LFO1, PIT-LFO2, TVF-LFO1, TVF-LFO2, TVA-LFO1, TVA-LFO2, PAN-LFO1, PAN-LFO2, LFO1-RATE, LFO2-RATE, PIT-ATK, PIT-DCY, PIT-REL, TVF-ATK, TVF-DCY, TVF-REL, TVA-ATK, TVA-DCY, TVA-REL, TMT, FXM, PFX1, PFX2, PFX3, PFX4
00 31	0aaa aaaa	Matrix Control 1 Sens 3	(1 - 127) -63 +63
00 32	00aa aaaa	Matrix Control 1 Destination 4	(0 - 33) OFF, PCH, CUT, RES, LEV, PAN, DRY, CHO, REV, PIT-LFO1, PIT-LFO2, TVF-LFO1, TVF-LFO2, TVA-LFO1, TVA-LFO2, PAN-LFO1, PAN-LFO2, LFO1-RATE, LFO2-RATE, PIT-ATK, PIT-DCY, PIT-REL, TVF-ATK, TVF-DCY, TVF-REL, TVA-ATK, TVA-DCY, TVA-REL, TMT, FXM, PFX1, PFX2, PFX3, PFX4
00 33	0aaa aaaa	Matrix Control 1 Sens 4	(1 - 127) -63 +63
00 34	0aaa aaaa	Matrix Control 2 Source	(0 - 109) OFF, CC01 - CC31, CC33 - CC95, BEND, APT, SYS1 - SYS4, VELOCITY, KEYFOLLOW, TEMPO, LFO1, LFO2, PIT-ENV, TVF-ENV, TVA-ENV
00 35	00aa aaaa	Matrix Control 2 Destination 1	(0 - 33) OFF, PCH, CUT, RES, LEV, PAN, DRY, CHO, REV, PIT-LFO1, PIT-LFO2, TVF-LFO1, TVF-LFO2, TVA-LFO1, TVA-LFO2, PAN-LFO1, PAN-LFO2, LFO1-RATE, LFO2-RATE, PIT-ATK, PIT-DCY, PIT-REL, TVF-ATK, TVF-DCY, TVF-REL, TVA-ATK, TVA-DCY, TVA-REL, TMT, FXM, PFX1, PFX2, PFX3, PFX4
00 36	0aaa aaaa	Matrix Control 2 Sens 1	(1 - 127) -63 +63
00 37	00aa aaaa	Matrix Control 2 Destination 2	(0 - 33) OFF, PCH, CUT, RES, LEV, PAN, DRY, CHO, REV, PIT-LFO1, PIT-LFO2, TVF-LFO1, TVF-LFO2, TVA-LFO1, TVA-LFO2, PAN-LFO1, PAN-LFO2, LFO1-RATE, LFO2-RATE, PIT-ATK, PIT-DCY, PIT-REL, TVF-ATK, TVF-DCY, TVF-REL, TVA-ATK, TVA-DCY, TVA-REL, TMT, FXM, PFX1, PFX2, PFX3, PFX4
00 38	0aaa aaaa	Matrix Control 2 Sens 2	(1 - 127) -63 +63
00 39	00aa aaaa	Matrix Control 2 Destination 3	(0 - 33) OFF, PCH, CUT, RES, LEV, PAN, DRY, CHO, REV, PIT-LFO1, PIT-LFO2, TVF-LFO1, TVF-LFO2, TVA-LFO1, TVA-LFO2, PAN-LFO1, PAN-LFO2, LFO1-RATE, LFO2-RATE, PIT-ATK, PIT-DCY, PIT-REL, TVF-ATK, TVF-DCY, TVF-REL, TVA-ATK, TVA-DCY, TVA-REL, TMT, FXM, PFX1, PFX2, PFX3, PFX4
00 3A	0aaa aaaa	Matrix Control 2 Sens 3	(1 - 127) -63 +63
00 3B	00aa aaaa	Matrix Control 2 Destination 4	(0 - 33) OFF, PCH, CUT, RES, LEV, PAN, DRY, CHO, REV, PIT-LFO1, PIT-LFO2, TVF-LFO1, TVF-LFO2, TVA-LFO1, TVA-LFO2, PAN-LFO1, PAN-LFO2, LFO1-RATE, LFO2-RATE, PIT-ATK, PIT-DCY, PIT-REL, TVF-ATK, TVF-DCY, TVF-REL, TVA-ATK, TVA-DCY, TVA-REL, TMT, FXM, PFX1, PFX2, PFX3, PFX4
00 3C	0aaa aaaa	Matrix Control 2 Sens 4	(1 - 127) -63 +63
00 3D	0aaa aaaa	Matrix Control 3 Source	(0 - 109) OFF, CC01 - CC31, CC33 - CC95, BEND, APT, SYS1 - SYS4, VELOCITY, KEYFOLLOW, TEMPO, LFO1, LFO2, PIT-ENV, TVF-ENV, TVA-ENV
00 3E	00aa aaaa	Matrix Control 3 Destination 1	(0 - 33) OFF, PCH, CUT, RES, LEV, PAN, DRY, CHO, REV, PIT-LFO1, PIT-LFO2, TVF-LFO1, TVF-LFO2, TVA-LFO1, TVA-LFO2, PAN-LFO1, PAN-LFO2, LFO1-RATE, LFO2-RATE, PIT-ATK, PIT-DCY, PIT-REL, TVF-ATK, TVF-DCY, TVF-REL, TVA-ATK, TVA-DCY, TVA-REL, TMT, FXM, PFX1, PFX2, PFX3, PFX4
00 3F	0aaa aaaa	Matrix Control 3 Sens 1	(1 - 127) -63 +63
00 40	00aa aaaa	Matrix Control 3 Destination 2	(0 - 33) OFF, PCH, CUT, RES, LEV, PAN, DRY, CHO, REV, PIT-LFO1, PIT-LFO2, TVF-LFO1, TVF-LFO2, TVA-LFO1, TVA-LFO2, PAN-LFO1, PAN-LFO2, LFO1-RATE, LFO2-RATE, PIT-ATK, PIT-DCY, PIT-REL, TVF-ATK, TVF-DCY, TVF-REL, TVA-ATK, TVA-DCY, TVA-REL, TMT, FXM, PFX1, PFX2, PFX3, PFX4
00 41	0aaa aaaa	Matrix Control 3 Sens 2	(1 - 127) -63 +63
00 42	00aa aaaa	Matrix Control 3 Destination 3	(0 - 33) OFF, PCH, CUT, RES, LEV, PAN, DRY, CHO, REV, PIT-LFO1, PIT-LFO2, TVF-LFO1, TVF-LFO2, TVA-LFO1, TVA-LFO2, PAN-LFO1, PAN-LFO2, LFO1-RATE, LFO2-RATE, PIT-ATK, PIT-DCY, PIT-REL, TVF-ATK, TVF-DCY, TVF-REL, TVA-ATK, TVA-DCY, TVA-REL, TMT, FXM, PFX1, PFX2, PFX3, PFX4

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00 43	0aaa aaaa	Matrix Control 3 Sens 3	TVP-ATK, TVF-DCY, TVP-REL, TVA-ATK, TVA-DCY, TVA-REL, TMT, FXM, PFX1, PFX2, PFX3, PFX4 (1 - 127) -63 - +63	#	00 21	0000 dddd	MFX Parameter 4	(12768 - 52768) -20000 - +20000	
00 44	00aa aaaa	Matrix Control 3 Destination 4	OFF, PCH, CUT, RES, LEV, PAN, DRV, CHO, REV, PIT-LFO1, PIT-LFO2, TVF-LFO1, TVF-LFO2, TVA-LFO1, TVA-LFO2, PAN-LFO1, PAN-LFO2, LFO1-RATE, LFO2-RATE, PIT-ATK, PIT-DCY, PIT-REL, TVP-ATK, TVF-DCY, TVP-REL, TVA-ATK, TVA-DCY, TVA-REL, TMT, FXM, PFX1, PFX2, PFX3, PFX4 (1 - 127) -63 - +63	#	00 25	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 5	(12768 - 52768) -20000 - +20000	
00 45	0aaa aaaa	Matrix Control 3 Sens 4	OFF, PCH, CUT, RES, LEV, PAN, DRV, CHO, REV, PIT-LFO1, PIT-LFO2, TVF-LFO1, TVF-LFO2, TVA-LFO1, TVA-LFO2, PAN-LFO1, PAN-LFO2, LFO1-RATE, LFO2-RATE, PIT-ATK, PIT-DCY, PIT-REL, TVP-ATK, TVF-DCY, TVP-REL, TVA-ATK, TVA-DCY, TVA-REL, TMT, FXM, PFX1, PFX2, PFX3, PFX4 (1 - 127) -63 - +63	#	00 29	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 6	(12768 - 52768) -20000 - +20000	
00 46	0aaa aaaa	Matrix Control 4 Source	OFF, CC01 - CC31, CC33 - CC95, BEND, APT, SYS1 - SYS4, VELOCITY, KEYFOLLOW, TEMPO, LFO1, LFO2, PIT-ENV, TVF-ENV, TVA-ENV (0 - 109)	#	00 2D	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 7	(12768 - 52768) -20000 - +20000	
00 47	00aa aaaa	Matrix Control 4 Destination 1	OFF, PCH, CUT, RES, LEV, PAN, DRV, CHO, REV, PIT-LFO1, PIT-LFO2, TVF-LFO1, TVF-LFO2, TVA-LFO1, TVA-LFO2, PAN-LFO1, PAN-LFO2, LFO1-RATE, LFO2-RATE, PIT-ATK, PIT-DCY, PIT-REL, TVP-ATK, TVF-DCY, TVP-REL, TVA-ATK, TVA-DCY, TVA-REL, TMT, FXM, PFX1, PFX2, PFX3, PFX4 (1 - 127) -63 - +63	#	00 31	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 8	(12768 - 52768) -20000 - +20000	
00 48	0aaa aaaa	Matrix Control 4 Sens 1	OFF, PCH, CUT, RES, LEV, PAN, DRV, CHO, REV, PIT-LFO1, PIT-LFO2, TVF-LFO1, TVF-LFO2, TVA-LFO1, TVA-LFO2, PAN-LFO1, PAN-LFO2, LFO1-RATE, LFO2-RATE, PIT-ATK, PIT-DCY, PIT-REL, TVP-ATK, TVF-DCY, TVP-REL, TVA-ATK, TVA-DCY, TVA-REL, TMT, FXM, PFX1, PFX2, PFX3, PFX4 (1 - 127) -63 - +63	#	00 35	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 9	(12768 - 52768) -20000 - +20000	
00 49	00aa aaaa	Matrix Control 4 Destination 2	OFF, PCH, CUT, RES, LEV, PAN, DRV, CHO, REV, PIT-LFO1, PIT-LFO2, TVF-LFO1, TVF-LFO2, TVA-LFO1, TVA-LFO2, PAN-LFO1, PAN-LFO2, LFO1-RATE, LFO2-RATE, PIT-ATK, PIT-DCY, PIT-REL, TVP-ATK, TVF-DCY, TVP-REL, TVA-ATK, TVA-DCY, TVA-REL, TMT, FXM, PFX1, PFX2, PFX3, PFX4 (1 - 127) -63 - +63	#	00 39	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 10	(12768 - 52768) -20000 - +20000	
00 4A	0aaa aaaa	Matrix Control 4 Sens 2	OFF, PCH, CUT, RES, LEV, PAN, DRV, CHO, REV, PIT-LFO1, PIT-LFO2, TVF-LFO1, TVF-LFO2, TVA-LFO1, TVA-LFO2, PAN-LFO1, PAN-LFO2, LFO1-RATE, LFO2-RATE, PIT-ATK, PIT-DCY, PIT-REL, TVP-ATK, TVF-DCY, TVP-REL, TVA-ATK, TVA-DCY, TVA-REL, TMT, FXM, PFX1, PFX2, PFX3, PFX4 (1 - 127) -63 - +63	#	00 3D	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 11	(12768 - 52768) -20000 - +20000	
00 4B	00aa aaaa	Matrix Control 4 Destination 3	OFF, PCH, CUT, RES, LEV, PAN, DRV, CHO, REV, PIT-LFO1, PIT-LFO2, TVF-LFO1, TVF-LFO2, TVA-LFO1, TVA-LFO2, PAN-LFO1, PAN-LFO2, LFO1-RATE, LFO2-RATE, PIT-ATK, PIT-DCY, PIT-REL, TVP-ATK, TVF-DCY, TVP-REL, TVA-ATK, TVA-DCY, TVA-REL, TMT, FXM, PFX1, PFX2, PFX3, PFX4 (1 - 127) -63 - +63	#	00 41	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 12	(12768 - 52768) -20000 - +20000	
00 4C	0aaa aaaa	Matrix Control 4 Sens 3	OFF, PCH, CUT, RES, LEV, PAN, DRV, CHO, REV, PIT-LFO1, PIT-LFO2, TVF-LFO1, TVF-LFO2, TVA-LFO1, TVA-LFO2, PAN-LFO1, PAN-LFO2, LFO1-RATE, LFO2-RATE, PIT-ATK, PIT-DCY, PIT-REL, TVP-ATK, TVF-DCY, TVP-REL, TVA-ATK, TVA-DCY, TVA-REL, TMT, FXM, PFX1, PFX2, PFX3, PFX4 (1 - 127) -63 - +63	#	00 45	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 13	(12768 - 52768) -20000 - +20000	
00 4D	00aa aaaa	Matrix Control 4 Destination 4	OFF, PCH, CUT, RES, LEV, PAN, DRV, CHO, REV, PIT-LFO1, PIT-LFO2, TVF-LFO1, TVF-LFO2, TVA-LFO1, TVA-LFO2, PAN-LFO1, PAN-LFO2, LFO1-RATE, LFO2-RATE, PIT-ATK, PIT-DCY, PIT-REL, TVP-ATK, TVF-DCY, TVP-REL, TVA-ATK, TVA-DCY, TVA-REL, TMT, FXM, PFX1, PFX2, PFX3, PFX4 (1 - 127) -63 - +63	#	00 49	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 14	(12768 - 52768) -20000 - +20000	
00 4E	0aaa aaaa	Matrix Control 4 Sens 4	OFF, PCH, CUT, RES, LEV, PAN, DRV, CHO, REV, PIT-LFO1, PIT-LFO2, TVF-LFO1, TVF-LFO2, TVA-LFO1, TVA-LFO2, PAN-LFO1, PAN-LFO2, LFO1-RATE, LFO2-RATE, PIT-ATK, PIT-DCY, PIT-REL, TVP-ATK, TVF-DCY, TVP-REL, TVA-ATK, TVA-DCY, TVA-REL, TMT, FXM, PFX1, PFX2, PFX3, PFX4 (1 - 127) -63 - +63	#	00 4D	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 15	(12768 - 52768) -20000 - +20000	
00 4F	0000 000a	Part Modulation Switch	(0 - 1) OFF, ON	#	00 4D	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 16	(12768 - 52768) -20000 - +20000	
00 00 00 50	Total Size			#	00 51	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 17	(12768 - 52768) -20000 - +20000	
				#	00 55	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 18	(12768 - 52768) -20000 - +20000	
				#	00 59	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 19	(12768 - 52768) -20000 - +20000	
				#	00 5D	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 20	(12768 - 52768) -20000 - +20000	
				#	00 61	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 21	(12768 - 52768) -20000 - +20000	
				#	00 65	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 22	(12768 - 52768) -20000 - +20000	
				#	00 69	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 23	(12768 - 52768) -20000 - +20000	
				#	00 6D	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 24	(12768 - 52768) -20000 - +20000	
				#	00 71	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 25	(12768 - 52768) -20000 - +20000	
				#	00 75	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 26	(12768 - 52768) -20000 - +20000	
				#	00 79	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 27	(12768 - 52768) -20000 - +20000	
				#	00 7D	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 28	(12768 - 52768) -20000 - +20000	
#	00 11	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 1	(12768 - 52768) -20000 - +20000	#	01 01	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 29	(12768 - 52768) -20000 - +20000
#	00 15	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 2	(12768 - 52768) -20000 - +20000	#	01 05	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 30	(12768 - 52768) -20000 - +20000
#	00 19	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 3	(12768 - 52768) -20000 - +20000	#	01 09	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 31	(12768 - 52768) -20000 - +20000
#	00 1D	0000 aaaa 0000 bbbb 0000 cccc			#	01 0D	0000 aaaa		(12768 - 52768) -20000 - +20000

## ○Patch Common MFX

Offset Address	Description			
00 00	0aaa aaaa	MFX Type	(0 - 76)	
00 01	0aaa aaaa	MFX Dry Send Level	(0 - 127)	
00 02	0aaa aaaa	MFX Chorus Send Level	(0 - 127)	
00 03	0aaa aaaa	MFX Reverb Send Level	(0 - 127)	
00 04	0000 00aa	(reserve) <*>	(0 - 3)	
00 05	0aaa aaaa	MFX Control 1 Source	(0 - 101)	
00 06	0aaa aaaa	MFX Control 1 Sens	OFF, CC01 - CC31, CC33 - CC95, BEND, APT, SYS1 - SYS4 (1 - 127)	
00 07	0aaa aaaa	MFX Control 2 Source	(0 - 101)	
00 08	0aaa aaaa	MFX Control 2 Sens	OFF, CC01 - CC31, CC33 - CC95, BEND, APT, SYS1 - SYS4 (1 - 127)	
00 09	0aaa aaaa	MFX Control 3 Source	(0 - 101)	
00 0A	0aaa aaaa	MFX Control 3 Sens	OFF, CC01 - CC31, CC33 - CC95, BEND, APT, SYS1 - SYS4 (1 - 127)	
00 0B	0aaa aaaa	MFX Control 4 Source	(0 - 101)	
00 0C	0aaa aaaa	MFX Control 4 Sens	OFF, CC01 - CC31, CC33 - CC95, BEND, APT, SYS1 - SYS4 (1 - 127) -63 - +63	
00 0D	000a aaaa	MFX Control Assign 1	(0 - 16)	
00 0E	000a aaaa	MFX Control Assign 2	OFF, 1 - 16 (0 - 16)	
00 0F	000a aaaa	MFX Control Assign 3	OFF, 1 - 16 (0 - 16)	
00 10	000a aaaa	MFX Control Assign 4	OFF, 1 - 16 (0 - 16)	
#	00 11	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 1	(12768 - 52768) -20000 - +20000
#	00 15	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 2	(12768 - 52768) -20000 - +20000
#	00 19	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 3	(12768 - 52768) -20000 - +20000
#	00 1D	0000 aaaa 0000 bbbb 0000 cccc		

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0000	bbbb	MPX Parameter 32	(12768 - 52768) -20000 - +20000
0000	cccc		
0000	dddd		
00 00 01 11	Total Size		

## ○Patch Common Chorus

Offset Address	Description	
00 00	0000 aaaa	Chorus Type (0 - 3)
00 01	0aaa aaaa	Chorus Level (0 - 127)
00 02	0000 000a	Chorus Output Assign (0 - 1) A, B
00 03	0000 000a	(reserve) <*> (0 - 1)
00 04	0000 00aa	Chorus Output Select (0 - 2) MAIN, REV, MAIN+REV
# 00 05	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Chorus Parameter 1 (12768 - 52768) -20000 - +20000
# 00 09	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Chorus Parameter 2 (12768 - 52768) -20000 - +20000
# 00 0D	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Chorus Parameter 3 (12768 - 52768) -20000 - +20000
# 00 11	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Chorus Parameter 4 (12768 - 52768) -20000 - +20000
# 00 15	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Chorus Parameter 5 (12768 - 52768) -20000 - +20000
# 00 19	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Chorus Parameter 6 (12768 - 52768) -20000 - +20000
# 00 1D	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Chorus Parameter 7 (12768 - 52768) -20000 - +20000
# 00 21	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Chorus Parameter 8 (12768 - 52768) -20000 - +20000
# 00 25	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Chorus Parameter 9 (12768 - 52768) -20000 - +20000
# 00 29	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Chorus Parameter 10 (12768 - 52768) -20000 - +20000
# 00 2D	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Chorus Parameter 11 (12768 - 52768) -20000 - +20000
# 00 31	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Chorus Parameter 12 (12768 - 52768) -20000 - +20000
# 00 35	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Chorus Parameter 13 (12768 - 52768) -20000 - +20000
# 00 39	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Chorus Parameter 14 (12768 - 52768) -20000 - +20000
# 00 3D	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Chorus Parameter 15 (12768 - 52768) -20000 - +20000
# 00 41	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Chorus Parameter 16 (12768 - 52768) -20000 - +20000
# 00 45	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Chorus Parameter 17 (12768 - 52768) -20000 - +20000
# 00 49	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Chorus Parameter 18 (12768 - 52768) -20000 - +20000
# 00 4D	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Chorus Parameter 19 (12768 - 52768) -20000 - +20000
# 00 51	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Chorus Parameter 20 (12768 - 52768) -20000 - +20000
00 00 00 55	Total Size	

## ○Patch Common Reverb

Offset Address	Description	
00 00	0aaa aaaa	Reverb Type (0 - 10)
00 01	0aaa aaaa	Reverb Level (0 - 127)
00 02	0000 00aa	Reverb Output Assign (0 - 1) A, B

# 00 03	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Reverb Parameter 1 (12768 - 52768) -20000 - +20000
# 00 07	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Reverb Parameter 2 (12768 - 52768) -20000 - +20000
# 00 0B	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Reverb Parameter 3 (12768 - 52768) -20000 - +20000
# 00 0F	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Reverb Parameter 4 (12768 - 52768) -20000 - +20000
# 00 13	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Reverb Parameter 5 (12768 - 52768) -20000 - +20000
# 00 17	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Reverb Parameter 6 (12768 - 52768) -20000 - +20000
# 00 1B	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Reverb Parameter 7 (12768 - 52768) -20000 - +20000
# 00 1F	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Reverb Parameter 8 (12768 - 52768) -20000 - +20000
# 00 23	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Reverb Parameter 9 (12768 - 52768) -20000 - +20000
# 00 27	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Reverb Parameter 10 (12768 - 52768) -20000 - +20000
# 00 2B	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Reverb Parameter 11 (12768 - 52768) -20000 - +20000
# 00 2F	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Reverb Parameter 12 (12768 - 52768) -20000 - +20000
# 00 33	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Reverb Parameter 13 (12768 - 52768) -20000 - +20000
# 00 37	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Reverb Parameter 14 (12768 - 52768) -20000 - +20000
# 00 3B	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Reverb Parameter 15 (12768 - 52768) -20000 - +20000
# 00 3F	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Reverb Parameter 16 (12768 - 52768) -20000 - +20000
# 00 43	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Reverb Parameter 17 (12768 - 52768) -20000 - +20000
# 00 47	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Reverb Parameter 18 (12768 - 52768) -20000 - +20000
# 00 4B	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Reverb Parameter 19 (12768 - 52768) -20000 - +20000
# 00 4F	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Reverb Parameter 20 (12768 - 52768) -20000 - +20000
00 00 00 53	Total Size	

## ○Patch TMT (Tone Mix Table)

Offset Address	Description	
00 00	0000 aaaa	Structure Type 1 & 2 (0 - 9) 1 - 10
00 01	0000 00aa	Booster 1 & 2 (0 - 3)
00 02	0000 aaaa	Structure Type 3 & 4 (0 - 9) 1 - 10
00 03	0000 00aa	Booster 3 & 4 (0 - 3) 0, +6, +12, +18 (dB)
00 04	0000 00aa	TMT Velocity Control (0 - 3) OFF, ON, RANDOM, CYCLE
00 05	0000 000a	TMT1 Tone Switch (0 - 1) OFF, ON
00 06	0aaa aaaa	TMT1 Keyboard Range Lower (0 - 127) C-1 - UPPER
00 07	0aaa aaaa	TMT1 Keyboard Range Upper (0 - 127) LOWER - G9
00 08	0aaa aaaa	TMT1 Keyboard Fade Width Lower (0 - 127)
00 09	0aaa aaaa	TMT1 Keyboard Fade Width Upper (0 - 127)
00 0A	0aaa aaaa	TMT1 Velocity Range Lower (1 - 127) 1 - UPPER
00 0B	0aaa aaaa	TMT1 Velocity Range Upper (1 - 127) LOWER - 127
00 0C	0aaa aaaa	TMT1 Velocity Fade Width Lower (0 - 127)
00 0D	0aaa aaaa	TMT1 Velocity Fade Width Upper (0 - 127)
00 0E	0000 000a	TMT2 Tone Switch (0 - 1)

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00 0F	0aaa aaaa	TMT2 Keyboard Range Lower	OFF, ON (0 - 127)
00 10	0aaa aaaa	TMT2 Keyboard Range Upper	C-1 - UPPER (0 - 127)
00 11	0aaa aaaa	TMT2 Keyboard Fade Width Lower	LOWER - G9 (0 - 127)
00 12	0aaa aaaa	TMT2 Keyboard Fade Width Upper	(0 - 127)
00 13	0aaa aaaa	TMT2 Velocity Range Lower	(1 - 127)
00 14	0aaa aaaa	TMT2 Velocity Range Upper	1 - UPPER (1 - 127)
00 15	0aaa aaaa	TMT2 Velocity Fade Width Lower	LOWER - 127 (0 - 127)
00 16	0aaa aaaa	TMT2 Velocity Fade Width Upper	(0 - 127)
00 17	0000 000a	TMT3 Tone Switch	(0 - 1)
00 18	0aaa aaaa	TMT3 Keyboard Range Lower	OFF, ON (0 - 127)
00 19	0aaa aaaa	TMT3 Keyboard Range Upper	C-1 - UPPER (0 - 127)
00 1A	0aaa aaaa	TMT3 Keyboard Fade Width Lower	LOWER - G9 (0 - 127)
00 1B	0aaa aaaa	TMT3 Keyboard Fade Width Upper	(0 - 127)
00 1C	0aaa aaaa	TMT3 Velocity Range Lower	(1 - 127)
00 1D	0aaa aaaa	TMT3 Velocity Range Upper	1 - UPPER (1 - 127)
00 1E	0aaa aaaa	TMT3 Velocity Fade Width Lower	LOWER - 127 (0 - 127)
00 1F	0aaa aaaa	TMT3 Velocity Fade Width Upper	(0 - 127)
00 20	0000 000a	TMT4 Tone Switch	(0 - 1)
00 21	0aaa aaaa	TMT4 Keyboard Range Lower	OFF, ON (0 - 127)
00 22	0aaa aaaa	TMT4 Keyboard Range Upper	C-1 - UPPER (0 - 127)
00 23	0aaa aaaa	TMT4 Keyboard Fade Width Lower	LOWER - G9 (0 - 127)
00 24	0aaa aaaa	TMT4 Keyboard Fade Width Upper	(0 - 127)
00 25	0aaa aaaa	TMT4 Velocity Range Lower	(1 - 127)
00 26	0aaa aaaa	TMT4 Velocity Range Upper	1 - UPPER (1 - 127)
00 27	0aaa aaaa	TMT4 Velocity Fade Width Lower	LOWER - 127 (0 - 127)
00 28	0aaa aaaa	TMT4 Velocity Fade Width Upper	(0 - 127)
00 00 00 29	Total Size		

## Patch Tone

Offset Address	Description	
00 00	0aaa aaaa	Tone Level (0 - 127)
00 01	0aaa aaaa	Tone Coarse Tune (16 - 112)
00 02	0aaa aaaa	Tone Fine Tune (-48 +48)
00 03	000a aaaa	Tone Random Pitch Depth (14 - 114)
		-50 +50
		(0 - 30)
		0, 1, 2, 3, 4, 5, 6, 7, 8, 9
		10, 20, 30, 40, 50, 60, 70, 80,
		90, 100, 200, 300, 400, 500,
		600, 700, 800, 900, 1000, 1100,
		1200
00 04	0aaa aaaa	Tone Pan (0 - 127)
00 05	000a aaaa	Tone Pan Keyfollow (L64 - 63R)
		(54 - 74)
		-100 +100
00 06	00aa aaaa	Tone Random Pan Depth (0 - 63)
00 07	0aaa aaaa	Tone Alternate Pan Depth (1 - 127)
00 08	0000 000a	Tone Env Mode (L63 - 63R)
		NO-SUS, SUSTAIN
00 09	0000 00aa	Tone Delay Mode (0 - 3)
		NORMAL, HOLD, KEY-OFF-NORMAL,
		KEY-OFF-DECAY
# 00 0A	0000 aaaa	Tone Delay Time (0 - 149)
	0000 bbbb	MUSICAL-NOTES
		0 - 127, MUSICAL-NOTES
00 0C	0aaa aaaa	Tone Output Level (0 - 127)
00 0D	0aaa aaaa	Tone Chorus Send Level (0 - 127)
00 0E	0aaa aaaa	Tone Reverb Send Level (0 - 127)
00 0F	0aaa aaaa	(reserve) <*> (0 - 127)
00 10	0aaa aaaa	(reserve) <*> (0 - 127)
00 11	0000 aaaa	(reserve) <*> (0 - 12)
00 12	0000 000a	Tone Receive Bender (0 - 1)
00 13	0000 000a	Tone Receive Expression (OFF, ON)
00 14	0000 000a	Tone Receive Hold-1 (0 - 1)
00 15	0000 000a	Tone Receive Pan Mode (OFF, ON)
00 16	0000 000a	Tone Redamper Switch (0 - 1)
		CONTINUOUS, KEY-ON
		OFF, ON
00 17	0000 00aa	Tone Control 1 Switch 1 (0 - 2)
00 18	0000 00aa	Tone Control 1 Switch 2 (OFF, ON, REVERSE)
00 19	0000 00aa	Tone Control 1 Switch 3 (0 - 2)
00 1A	0000 00aa	Tone Control 1 Switch 4 (OFF, ON, REVERSE)
00 1B	0000 00aa	Tone Control 2 Switch 1 (OFF, ON, REVERSE)
00 1C	0000 00aa	Tone Control 2 Switch 2 (0 - 2)
00 1D	0000 00aa	Tone Control 2 Switch 3 (OFF, ON, REVERSE)
00 1E	0000 00aa	Tone Control 2 Switch 4 (OFF, ON, REVERSE)
00 1F	0000 00aa	Tone Control 3 Switch 1 (0 - 2)
00 20	0000 00aa	Tone Control 3 Switch 2 (OFF, ON, REVERSE)
00 21	0000 00aa	Tone Control 3 Switch 3 (0 - 2)
00 22	0000 00aa	Tone Control 3 Switch 4 (OFF, ON, REVERSE)
00 23	0000 00aa	Tone Control 4 Switch 1 (0 - 2)
00 24	0000 00aa	Tone Control 4 Switch 2 (OFF, ON, REVERSE)
00 25	0000 00aa	Tone Control 4 Switch 3 (0 - 2)
00 26	0000 00aa	Tone Control 4 Switch 4 (OFF, ON, REVERSE)
00 27	0000 00aa	Wave Group Type (0 - 3)
		INT, ---, SAMPLE, ---
# 00 28	0000 aaaa	
	0000 bbbb	

# 00 2C	0000 cccc	Wave Group ID (0 - 16384)
	0000 dddd	OFF, 1 - 16384
# 00 30	0000 aaaa	Wave Number L (Mono) (0 - 16384)
	0000 bbbb	OFF, 1 - 16384
	0000 cccc	
	0000 dddd	
00 34	0000 00aa	Wave Gain (-6, 0, +6, +12 [dB])
00 35	0000 000a	Wave FXM Switch (0 - 1)
00 36	0000 00aa	Wave FXM Color (OFF, ON)
00 37	000a aaaa	Wave FXM Depth (1 - 4)
00 38	0000 000a	Wave Tempo Sync (0 - 16)
00 39	00aa aaaa	Wave Pitch Keyfollow (OFF, ON)
		(44 - 84)
		-200 +200
00 3A	000a aaaa	Pitch Env Depth (52 - 76)
00 3B	0aaa aaaa	Pitch Env Velocity Sens (-12 +12)
00 3C	0aaa aaaa	Pitch Env Time 1 Velocity Sens (-63 +63)
00 3D	0aaa aaaa	Pitch Env Time 4 Velocity Sens (-63 +63)
00 3E	000a aaaa	Pitch Env Time Keyfollow (54 - 74)
00 3F	0aaa aaaa	Pitch Env Time 1 (-100 +100)
00 40	0aaa aaaa	Pitch Env Time 2 (0 - 127)
00 41	0aaa aaaa	Pitch Env Time 3 (0 - 127)
00 42	0aaa aaaa	Pitch Env Time 4 (0 - 127)
00 43	0aaa aaaa	Pitch Env Level 0 (1 - 127)
00 44	0aaa aaaa	Pitch Env Level 1 (-63 +63)
00 45	0aaa aaaa	Pitch Env Level 2 (1 - 127)
00 46	0aaa aaaa	Pitch Env Level 3 (-63 +63)
00 47	0aaa aaaa	Pitch Env Level 4 (1 - 127)
		-63 +63
00 48	0000 0aaa	TVF Filter Type (0 - 6)
		OFF, LPF, BPF, HPF, PKG, LPF2,
		LPF3
00 49	0aaa aaaa	TVF Cutoff Frequency (0 - 127)
00 4A	0aaa aaaa	TVF Cutoff Keyfollow (44 - 84)
		-200 +200
00 4B	0000 0aaa	TVF Cutoff Velocity Curve (FIXED, 1 - 7)
00 4C	0aaa aaaa	TVF Cutoff Velocity Sens (-63 +63)
00 4D	0aaa aaaa	TVF Resonance (0 - 127)
00 4E	0aaa aaaa	TVF Resonance Velocity Sens (1 - 127)
00 4F	0aaa aaaa	TVF Env Depth (-63 +63)
00 50	0000 0aaa	TVF Env Velocity Curve (FIXED, 1 - 7)
00 51	0aaa aaaa	TVF Env Velocity Sens (-63 +63)
00 52	0aaa aaaa	TVF Env Time 1 Velocity Sens (1 - 127)
00 53	0aaa aaaa	TVF Env Time 4 Velocity Sens (-63 +63)
00 54	000a aaaa	TVF Env Time Keyfollow (54 - 74)
		-100 +100
00 55	0aaa aaaa	TVF Env Time 1 (0 - 127)
00 56	0aaa aaaa	TVF Env Time 2 (0 - 127)
00 57	0aaa aaaa	TVF Env Time 3 (0 - 127)
00 58	0aaa aaaa	TVF Env Time 4 (0 - 127)
00 59	0aaa aaaa	TVF Env Level 0 (0 - 127)
00 5A	0aaa aaaa	TVF Env Level 1 (0 - 127)
00 5B	0aaa aaaa	TVF Env Level 2 (0 - 127)
00 5C	0aaa aaaa	TVF Env Level 3 (0 - 127)
00 5D	0aaa aaaa	TVF Env Level 4 (0 - 127)
00 5E	000a aaaa	Bias Level (54 - 74)
		-100 +100
00 5F	0aaa aaaa	Bias Position (0 - 127)
		C-1 - 99
00 60	0000 00aa	Bias Direction (0 - 3)
00 61	0000 0aaa	TVA Level Velocity Curve (LOWER, UPPER, LOWER&UPPER, ALL)
		(0 - 7)
00 62	0aaa aaaa	TVA Level Velocity Sens (FIXED, 1 - 7)
00 63	0aaa aaaa	TVA Env Time 1 Velocity Sens (-63 +63)
00 64	0aaa aaaa	TVA Env Time 4 Velocity Sens (-63 +63)
00 65	000a aaaa	TVA Env Time Keyfollow (54 - 74)
		-100 +100
00 66	0aaa aaaa	TVA Env Time 1 (0 - 127)
00 67	0aaa aaaa	TVA Env Time 2 (0 - 127)
00 68	0aaa aaaa	TVA Env Time 3 (0 - 127)
00 69	0aaa aaaa	TVA Env Time 4 (0 - 127)
00 6A	0aaa aaaa	TVA Env Level 1 (0 - 127)
00 6B	0aaa aaaa	TVA Env Level 2 (0 - 127)
00 6C	0aaa aaaa	TVA Env Level 3 (0 - 127)
00 6D	0000 aaaa	LF01 Waveform (0 - 12)
		SIN, TRI, SAW-UP, SAW-DW, SQR,
		RND, BEND-UP, BEND-DW, TRP, S&H,
		CHS, VSIN, STEP
# 00 6E	0000 aaaa	LF01 Rate (0 - 149)
	0000 bbbb	MUSICAL-NOTES
00 70	0000 0aaa	LF01 Offset (-100, -50, 0, +50, +100)
00 71	0aaa aaaa	LF01 Rate Detune (0 - 127)
00 72	0aaa aaaa	LF01 Delay Time (0 - 127)
00 73	000a aaaa	LF01 Delay Time Keyfollow (54 - 74)
		-100 +100
00 74	0000 00aa	LF01 Fade Mode (0 - 3)
		ON-IN, ON-OUT, OFF-IN, OFF-OUT
00 75	0aaa aaaa	LF01 Fade Time (0 - 127)
00 76	0000 000a	LF01 Key Trigger (OFF, ON)
00 77	0aaa aaaa	LF01 Pitch Depth (1 - 127)
00 78	0aaa aaaa	LF01 TVF Depth (-63 +63)
00 79	0aaa aaaa	LF01 TVA Depth (-63 +63)
00 7A	0aaa aaaa	LF01 Pan Depth (1 - 127)
		-63 +63
00 7B	0000 aaaa	LF02 Waveform (0 - 12)
		SIN, TRI, SAW-UP, SAW-DW, SQR,
		RND, BEND-UP, BEND-DW, TRP, S&H,

# Fantom-G MIDI Implementation

#	Offset	Address	Description	Value
	00 7C	0000 aaaa	LFO2 Rate	(0 - 149)
	00 7E	0000 0aaa	LFO2 Offset	(0 - 4)
	00 7F	0aaa aaaa	LFO2 Rate Detune	(0 - 127)
	01 00	0aaa aaaa	LFO2 Delay Time	(0 - 127)
	01 01	000a aaaa	LFO2 Delay Time Keyfollow	(54 - 74)
	01 02	0000 00aa	LFO2 Fade Mode	(0 - 3)
	01 03	0aaa aaaa	LFO2 Fade Time	(0 - 127)
	01 04	0000 000a	LFO2 Key Trigger	(0 - 1)
	01 05	0aaa aaaa	LFO2 Pitch Depth	(1 - 127)
	01 06	0aaa aaaa	LFO2 TVF Depth	(-63 - +63)
	01 07	0aaa aaaa	LFO2 TVA Depth	(-63 - +63)
	01 08	0aaa aaaa	LFO2 Pan Depth	(-63 - +63)
-----				
	01 09	0000 aaaa	(reserve) <*>	(0 - 1)
	01 0A	0aaa aaaa	(reserve) <*>	(28 - 100)
	01 0B	0aaa aaaa	(reserve) <*>	(28 - 100)
	01 0C	0aaa aaaa	(reserve) <*>	(28 - 100)
	01 0D	0aaa aaaa	(reserve) <*>	(28 - 100)
	01 0E	0aaa aaaa	(reserve) <*>	(28 - 100)
	01 0F	0aaa aaaa	(reserve) <*>	(28 - 100)
	01 10	0aaa aaaa	(reserve) <*>	(28 - 100)
	01 11	0aaa aaaa	(reserve) <*>	(28 - 100)
	01 12	0aaa aaaa	(reserve) <*>	(28 - 100)
	01 13	0aaa aaaa	(reserve) <*>	(28 - 100)
	01 14	0aaa aaaa	(reserve) <*>	(28 - 100)
	01 15	0aaa aaaa	(reserve) <*>	(28 - 100)
	01 16	0aaa aaaa	(reserve) <*>	(28 - 100)
	01 17	0aaa aaaa	(reserve) <*>	(28 - 100)
	01 18	0aaa aaaa	(reserve) <*>	(28 - 100)
	01 19	0aaa aaaa	(reserve) <*>	(28 - 100)
-----				
	00 00 01 1A	Total Size		

## ○Patch Controller

Offset	Address	Description	Value	
	00 00	0aaa aaaa (reserve) <*>	(0 - 3)	
	00 01	0aaa aaaa (reserve) <*>	(0 - 102)	
	00 02	0aaa aaaa (reserve) <*>	(0 - 127)	
	00 03	0aaa aaaa (reserve) <*>	(0 - 127)	
-----				
	00 04	0aaa aaaa (reserve) <*>	(0 - 103)	
	00 05	0aaa aaaa (reserve) <*>	(0 - 103)	
	00 06	0aaa aaaa (reserve) <*>	(0 - 103)	
	00 07	0aaa aaaa (reserve) <*>	(0 - 103)	
-----				
	00 08	0aaa aaaa (reserve) <*>	(0 - 101)	
	00 09	0aaa aaaa (reserve) <*>	(0 - 101)	
	00 0A	0aaa aaaa (reserve) <*>	(0 - 101)	
	00 0B	0aaa aaaa (reserve) <*>	(0 - 101)	
	00 0C	0aaa aaaa (reserve) <*>	(0 - 101)	
	00 0D	0aaa aaaa (reserve) <*>	(0 - 101)	
	00 0E	0aaa aaaa (reserve) <*>	(0 - 101)	
	00 0F	0aaa aaaa (reserve) <*>	(0 - 101)	
-----				
	00 10	0aaa aaaa (reserve) <*>	(0 - 106)	
	00 11	0000 000a (reserve) <*>	(0 - 1)	
	00 12	0aaa aaaa (reserve) <*>	(0 - 106)	
	00 13	0000 000a (reserve) <*>	(0 - 1)	
-----				
	00 00 00 14	Total Size		

## ○Patch Common 2

Offset	Address	Description	Value
	00 00	0aaa aaaa Patch Name 1	(32 - 127)
	00 01	0aaa aaaa Patch Name 2	(32 - 127) [ASCII]
	00 02	0aaa aaaa Patch Name 3	(32 - 127) [ASCII]
	00 03	0aaa aaaa Patch Name 4	(32 - 127) [ASCII]
	00 04	0aaa aaaa Patch Name 5	(32 - 127) [ASCII]
	00 05	0aaa aaaa Patch Name 6	(32 - 127) [ASCII]
	00 06	0aaa aaaa Patch Name 7	(32 - 127) [ASCII]
	00 07	0aaa aaaa Patch Name 8	(32 - 127) [ASCII]
	00 08	0aaa aaaa Patch Name 9	(32 - 127) [ASCII]

00 09	0aaa aaaa	Patch Name 10	(32 - 127) [ASCII]	
00 0A	0aaa aaaa	Patch Name 11	(32 - 127) [ASCII]	
00 0B	0aaa aaaa	Patch Name 12	(32 - 127) [ASCII]	
00 0C	0aaa aaaa	Patch Name 13	(32 - 127) [ASCII]	
00 0D	0aaa aaaa	Patch Name 14	(32 - 127) [ASCII]	
00 0E	0aaa aaaa	Patch Name 15	(32 - 127) [ASCII]	
00 0F	0aaa aaaa	Patch Name 16	(32 - 127) [ASCII]	
00 10	0aaa aaaa	Patch Memo 1	(32 - 127) [ASCII]	
00 11	0aaa aaaa	Patch Memo 2	(32 - 127) [ASCII]	
00 12	0aaa aaaa	Patch Memo 3	(32 - 127) [ASCII]	
00 13	0aaa aaaa	Patch Memo 4	(32 - 127) [ASCII]	
00 14	0aaa aaaa	Patch Memo 5	(32 - 127) [ASCII]	
00 15	0aaa aaaa	Patch Memo 6	(32 - 127) [ASCII]	
00 16	0aaa aaaa	Patch Memo 7	(32 - 127) [ASCII]	
00 17	0aaa aaaa	Patch Memo 8	(32 - 127) [ASCII]	
00 18	0aaa aaaa	Patch Memo 9	(32 - 127) [ASCII]	
00 19	0aaa aaaa	Patch Memo 10	(32 - 127) [ASCII]	
00 1A	0aaa aaaa	Patch Memo 11	(32 - 127) [ASCII]	
00 1B	0aaa aaaa	Patch Memo 12	(32 - 127) [ASCII]	
00 1C	0aaa aaaa	Patch Memo 13	(32 - 127) [ASCII]	
00 1D	0aaa aaaa	Patch Memo 14	(32 - 127) [ASCII]	
00 1E	0aaa aaaa	Patch Memo 15	(32 - 127) [ASCII]	
00 1F	0aaa aaaa	Patch Memo 16	(32 - 127) [ASCII]	
00 20	0aaa aaaa	Patch Memo 17	(32 - 127) [ASCII]	
00 21	0aaa aaaa	Patch Memo 18	(32 - 127) [ASCII]	
00 22	0aaa aaaa	Patch Memo 19	(32 - 127) [ASCII]	
00 23	0aaa aaaa	Patch Memo 20	(32 - 127) [ASCII]	
00 24	0aaa aaaa	Patch Memo 21	(32 - 127) [ASCII]	
00 25	0aaa aaaa	Patch Memo 22	(32 - 127) [ASCII]	
00 26	0aaa aaaa	Patch Memo 23	(32 - 127) [ASCII]	
00 27	0aaa aaaa	Patch Memo 24	(32 - 127) [ASCII]	
00 28	0aaa aaaa	Patch Memo 25	(32 - 127) [ASCII]	
00 29	0aaa aaaa	Patch Memo 26	(32 - 127) [ASCII]	
00 2A	0aaa aaaa	Patch Memo 27	(32 - 127) [ASCII]	
00 2B	0aaa aaaa	Patch Memo 28	(32 - 127) [ASCII]	
00 2C	0aaa aaaa	Patch Memo 29	(32 - 127) [ASCII]	
00 2D	0aaa aaaa	Patch Memo 30	(32 - 127) [ASCII]	
00 2E	0aaa aaaa	Patch Memo 31	(32 - 127) [ASCII]	
00 2F	0aaa aaaa	Patch Memo 32	(32 - 127) [ASCII]	
00 30	0aaa aaaa	Patch Category	(0 - 127)	
00 31	0aaa aaaa	(reserve) <*>	(0 - 127)	
00 32	0aaa aaaa	(reserve) <*>	(0 - 127)	
00 33	0aaa aaaa	(reserve) <*>	(0 - 127)	
00 34	0aaa aaaa	(reserve) <*>	(0 - 127)	
00 35	0aaa aaaa	(reserve) <*>	(0 - 127)	
00 36	0aaa aaaa	(reserve) <*>	(0 - 127)	
00 37	0aaa aaaa	(reserve) <*>	(0 - 127)	
00 38	0aaa aaaa	(reserve) <*>	(0 - 127)	
-----				
00 39	0000 00aa	Legato Switch	(0 - 3)	
			OFF, LEGATO, SUSTAIN	
00 3A	0000 00aa	Legato Retrigger	(0 - 2)	
			LEGATO+SUSTAIN	
00 3B	0000 000a	Hold Bend	(0 - 1)	
			OFF, ON, AUTO	
00 3C	0aaa aaaa	Bend Mode	(0 - 4)	
			OFF, ON	
			NORMAL, TOUCH, CATCH, LAST, CATCH+LAST	
00 3D	0aaa aaaa	Bend Mode Control	(0 - 95)	
00 3E	0aaa aaaa	(reserve) <*>	OFF, CC01 - CC31, CC33 - CC95	
00 3F	0aaa aaaa	(reserve) <*>	(1 - 127)	
00 40	0aaa aaaa	(reserve) <*>	(1 - 127)	
00 41	0aaa aaaa	(reserve) <*>	(1 - 127)	
-----				
00 42	0000 000a	Patch MFX Switch	(0 - 1)	
00 43	0000 000a	Chorus Switch	OFF, ON	
00 44	0000 000a	Reverb Switch	OFF, ON	
-----				
00 00 00 45	Total Size			

## ○Patch Tone 2

Offset	Address	Description	Value
00 00	0aaa aaaa	Tone Output Assign	(0 - 1)
			PFX, DRY
00 01	0000 000a	(reserve) <*>	(0 - 1)





# Fantom-G MIDI Implementation

01 0A	0000 aaaa	(reserve) <*>	(58 - 70)
01 0B	0000 aaaa	(reserve) <*>	(0 - 15)
01 0C	0000 aaaa	(reserve) <*>	(58 - 70)
01 0D	0000 00aa	(reserve) <*>	(0 - 3)
01 0E	0000 aaaa	(reserve) <*>	(0 - 9)
01 0F	0000 aaaa	(reserve) <*>	(58 - 70)
-----			
00 00 01 10	Total Size		

## ○Rhythm Common

Offset Address	Description		
00 00	0aaa aaaa	(reserve) <*>	(32 - 127)
00 01	0aaa aaaa	(reserve) <*>	(32 - 127)
00 02	0aaa aaaa	(reserve) <*>	(32 - 127)
00 03	0aaa aaaa	(reserve) <*>	(32 - 127)
00 04	0aaa aaaa	(reserve) <*>	(32 - 127)
00 05	0aaa aaaa	(reserve) <*>	(32 - 127)
00 06	0aaa aaaa	(reserve) <*>	(32 - 127)
00 07	0aaa aaaa	(reserve) <*>	(32 - 127)
00 08	0aaa aaaa	(reserve) <*>	(32 - 127)
00 09	0aaa aaaa	(reserve) <*>	(32 - 127)
00 0A	0aaa aaaa	(reserve) <*>	(32 - 127)
00 0B	0aaa aaaa	(reserve) <*>	(32 - 127)
-----			
00 0C	0aaa aaaa	Rhythm Level (reserve) <*>	(0 - 127)
00 0D	0000 000a	(reserve) <*>	
00 0E	0000 aaaa	(reserve) <*>	
00 0F	0000 bbbb	(reserve) <*>	
00 10	0000 000a	(reserve) <*>	
-----			
00 11	0000 aaaa	(reserve) <*>	(0 - 13)
-----			
00 00 00 12	Total Size		

## ○Rhythm Common MFX

Offset Address	Description		
00 00	0aaa aaaa	MFX Type	(0 - 76)
00 01	0aaa aaaa	MFX Dry Send Level	(0 - 127)
00 02	0aaa aaaa	MFX Chorus Send Level	(0 - 127)
00 03	0aaa aaaa	MFX Reverb Send Level	(0 - 127)
00 04	0000 00aa	(reserve) <*>	(0 - 3)
-----			
00 05	0aaa aaaa	MFX Control 1 Source	(0 - 101)
		OFF, CC01 - CC31, CC33 - CC95, BEND, APT, SYS1 - SYS4	
00 06	0aaa aaaa	MFX Control 1 Sens	(1 - 127)
		-63 - +63	
00 07	0aaa aaaa	MFX Control 2 Source	(0 - 101)
		OFF, CC01 - CC31, CC33 - CC95, BEND, APT, SYS1 - SYS4	
00 08	0aaa aaaa	MFX Control 2 Sens	(1 - 127)
		-63 - +63	
00 09	0aaa aaaa	MFX Control 3 Source	(0 - 101)
		OFF, CC01 - CC31, CC33 - CC95, BEND, APT, SYS1 - SYS4	
00 0A	0aaa aaaa	MFX Control 3 Sens	(1 - 127)
		-63 - +63	
00 0B	0aaa aaaa	MFX Control 4 Source	(0 - 101)
		OFF, CC01 - CC31, CC33 - CC95, BEND, APT, SYS1 - SYS4	
00 0C	0aaa aaaa	MFX Control 4 Sens	(1 - 127)
		-63 - +63	
-----			
00 0D	000a aaaa	MFX Control Assign 1	(0 - 16)
		OFF, 1 - 16	
00 0E	000a aaaa	MFX Control Assign 2	(0 - 16)
		OFF, 1 - 16	
00 0F	000a aaaa	MFX Control Assign 3	(0 - 16)
		OFF, 1 - 16	
00 10	000a aaaa	MFX Control Assign 4	(0 - 16)
		OFF, 1 - 16	
-----			
# 00 11	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 1	(12768 - 52768) -20000 - +20000
-----			
# 00 15	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 2	(12768 - 52768) -20000 - +20000
-----			
# 00 19	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 3	(12768 - 52768) -20000 - +20000
-----			
# 00 1D	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 4	(12768 - 52768) -20000 - +20000
-----			
# 00 21	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 5	(12768 - 52768) -20000 - +20000
-----			
# 00 25	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 6	(12768 - 52768) -20000 - +20000
-----			
# 00 29	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 7	(12768 - 52768) -20000 - +20000
-----			
# 00 2D	0000 aaaa 0000 bbbb		

# 00 31	0000 cccc 0000 dddd	MFX Parameter 8	(12768 - 52768) -20000 - +20000
-----			
# 00 35	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 9	(12768 - 52768) -20000 - +20000
-----			
# 00 39	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 10	(12768 - 52768) -20000 - +20000
-----			
# 00 3D	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 11	(12768 - 52768) -20000 - +20000
-----			
# 00 41	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 12	(12768 - 52768) -20000 - +20000
-----			
# 00 45	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 13	(12768 - 52768) -20000 - +20000
-----			
# 00 49	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 14	(12768 - 52768) -20000 - +20000
-----			
# 00 4D	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 15	(12768 - 52768) -20000 - +20000
-----			
# 00 51	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 16	(12768 - 52768) -20000 - +20000
-----			
# 00 55	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 17	(12768 - 52768) -20000 - +20000
-----			
# 00 59	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 18	(12768 - 52768) -20000 - +20000
-----			
# 00 5D	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 19	(12768 - 52768) -20000 - +20000
-----			
# 00 61	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 20	(12768 - 52768) -20000 - +20000
-----			
# 00 65	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 21	(12768 - 52768) -20000 - +20000
-----			
# 00 69	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 22	(12768 - 52768) -20000 - +20000
-----			
# 00 6D	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 23	(12768 - 52768) -20000 - +20000
-----			
# 00 71	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 24	(12768 - 52768) -20000 - +20000
-----			
# 00 75	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 25	(12768 - 52768) -20000 - +20000
-----			
# 00 79	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 26	(12768 - 52768) -20000 - +20000
-----			
# 00 7D	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 27	(12768 - 52768) -20000 - +20000
-----			
# 01 01	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 28	(12768 - 52768) -20000 - +20000
-----			
# 01 05	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 29	(12768 - 52768) -20000 - +20000
-----			
# 01 09	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 30	(12768 - 52768) -20000 - +20000
-----			
# 01 0D	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 31	(12768 - 52768) -20000 - +20000
-----			
# 01 11	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 32	(12768 - 52768) -20000 - +20000
-----			
00 00 01 11	Total Size		

## ○Rhythm Common Chorus

Offset Address	Description		
00 00	0000 aaaa	Chorus Type	(0 - 3)
00 01	0aaa aaaa	Chorus Level	(0 - 127)
00 02	0000 000a	Chorus Output Assign	(0 - 1) A, B
00 03	0000 000a	(reserve) <*>	(0 - 1)

# Fantom-G MIDI Implementation

00 04	0000 00aa	Chorus Output Select	(0 - 2) MAIN, REV, MAIN+REV
# 00 05	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Chorus Parameter 1	(12768 - 52768) -20000 - +20000
# 00 09	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Chorus Parameter 2	(12768 - 52768) -20000 - +20000
# 00 0D	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Chorus Parameter 3	(12768 - 52768) -20000 - +20000
# 00 11	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Chorus Parameter 4	(12768 - 52768) -20000 - +20000
# 00 15	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Chorus Parameter 5	(12768 - 52768) -20000 - +20000
# 00 19	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Chorus Parameter 6	(12768 - 52768) -20000 - +20000
# 00 1D	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Chorus Parameter 7	(12768 - 52768) -20000 - +20000
# 00 21	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Chorus Parameter 8	(12768 - 52768) -20000 - +20000
# 00 25	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Chorus Parameter 9	(12768 - 52768) -20000 - +20000
# 00 29	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Chorus Parameter 10	(12768 - 52768) -20000 - +20000
# 00 2D	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Chorus Parameter 11	(12768 - 52768) -20000 - +20000
# 00 31	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Chorus Parameter 12	(12768 - 52768) -20000 - +20000
# 00 35	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Chorus Parameter 13	(12768 - 52768) -20000 - +20000
# 00 39	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Chorus Parameter 14	(12768 - 52768) -20000 - +20000
# 00 3D	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Chorus Parameter 15	(12768 - 52768) -20000 - +20000
# 00 41	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Chorus Parameter 16	(12768 - 52768) -20000 - +20000
# 00 45	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Chorus Parameter 17	(12768 - 52768) -20000 - +20000
# 00 49	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Chorus Parameter 18	(12768 - 52768) -20000 - +20000
# 00 4D	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Chorus Parameter 19	(12768 - 52768) -20000 - +20000
# 00 51	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Chorus Parameter 20	(12768 - 52768) -20000 - +20000
00 00 00 55	Total Size		

## ORhythm Common Reverb

Offset Address	Description	
00 00	0aaa aaaa	Reverb Type (0 - 10)
00 01	0aaa aaaa	Reverb Level (0 - 127)
00 02	0000 00aa	Reverb Output Assign (0 - 3) A, B
# 00 03	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Reverb Parameter 1 (12768 - 52768) -20000 - +20000
# 00 07	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Reverb Parameter 2 (12768 - 52768) -20000 - +20000
# 00 0B	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Reverb Parameter 3 (12768 - 52768) -20000 - +20000
# 00 0F	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Reverb Parameter 4 (12768 - 52768)

# 00 13	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Reverb Parameter 5	(12768 - 52768) -20000 - +20000
# 00 17	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Reverb Parameter 6	(12768 - 52768) -20000 - +20000
# 00 1B	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Reverb Parameter 7	(12768 - 52768) -20000 - +20000
# 00 1F	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Reverb Parameter 8	(12768 - 52768) -20000 - +20000
# 00 23	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Reverb Parameter 9	(12768 - 52768) -20000 - +20000
# 00 27	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Reverb Parameter 10	(12768 - 52768) -20000 - +20000
# 00 2B	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Reverb Parameter 11	(12768 - 52768) -20000 - +20000
# 00 2F	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Reverb Parameter 12	(12768 - 52768) -20000 - +20000
# 00 33	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Reverb Parameter 13	(12768 - 52768) -20000 - +20000
# 00 37	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Reverb Parameter 14	(12768 - 52768) -20000 - +20000
# 00 3B	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Reverb Parameter 15	(12768 - 52768) -20000 - +20000
# 00 3F	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Reverb Parameter 16	(12768 - 52768) -20000 - +20000
# 00 43	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Reverb Parameter 17	(12768 - 52768) -20000 - +20000
# 00 47	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Reverb Parameter 18	(12768 - 52768) -20000 - +20000
# 00 4B	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Reverb Parameter 19	(12768 - 52768) -20000 - +20000
# 00 4F	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Reverb Parameter 20	(12768 - 52768) -20000 - +20000
00 00 00 53	Total Size		

## ORhythm Tone

Offset Address	Description	
00 00	0aaa aaaa	Tone Name 1 (32 - 127) [ASCII]
00 01	0aaa aaaa	Tone Name 2 (32 - 127) [ASCII]
00 02	0aaa aaaa	Tone Name 3 (32 - 127) [ASCII]
00 03	0aaa aaaa	Tone Name 4 (32 - 127) [ASCII]
00 04	0aaa aaaa	Tone Name 5 (32 - 127) [ASCII]
00 05	0aaa aaaa	Tone Name 6 (32 - 127) [ASCII]
00 06	0aaa aaaa	Tone Name 7 (32 - 127) [ASCII]
00 07	0aaa aaaa	Tone Name 8 (32 - 127) [ASCII]
00 08	0aaa aaaa	Tone Name 9 (32 - 127) [ASCII]
00 09	0aaa aaaa	Tone Name 10 (32 - 127) [ASCII]
00 0A	0aaa aaaa	Tone Name 11 (32 - 127) [ASCII]
00 0B	0aaa aaaa	Tone Name 12 (32 - 127) [ASCII]
00 0C	0000 000a	Assign Type (0 - 1) MULTI, SINGLE
00 0D	000a aaaa	Mute Group (0 - 31) OFF, 1 - 31
00 0E	0aaa aaaa	Tone Level (0 - 127)
00 0F	0aaa aaaa	Tone Coarse Tune (0 - 127) C-1 - G9
00 10	0aaa aaaa	Tone Fine Tune (14 - 114) -50 - +50
00 11	000a aaaa	Tone Random Pitch Depth (0 - 30) 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 20, 30, 40, 50, 60, 70, 80, 90, 100, 200, 300, 400, 500, 600, 700, 800, 900, 1000, 1100, 1200
00 12	0aaa aaaa	Tone Pan (0 - 127) L64 - 63R
00 13	00aa aaaa	Tone Random Pan Depth (0 - 63) (1 - 127)
00 14	0aaa aaaa	Tone Alternate Pan Depth (1 - 127) L63 - 63R
00 15	0000 000a	Tone Env Mode (0 - 1)

# Fantom-G MIDI Implementation

MIDI Note	MIDI CC	Parameter Name	Range / Options
		NO-SUS, SUSTAIN	
00 16	0aaa aaaa	Tone Dry Send Level	(0 - 127)
00 17	0aaa aaaa	Tone Chorus Send Level	(0 - 127)
00 18	0aaa aaaa	Tone Reverb Send Level	(0 - 127)
00 19	0aaa aaaa	(reserve) <*>	(0 - 127)
00 1A	0aaa aaaa	(reserve) <*>	(0 - 127)
00 1B	0000 aaaa	(reserve) <*>	(0 - 12)
00 1C	00aa aaaa	Tone Pitch Bend Range	(0 - 48)
00 1D	0000 000a	Tone Receive Expression	OFF, ON
00 1E	0000 000a	Tone Receive Hold-1	OFF, ON
00 1F	0000 000a	Tone Receive Pan Mode	OFF, ON
		CONTINUOUS, KEY-ON	
00 20	0000 00aa	WMT Velocity Control	(0 - 2)
		OFF, ON, RANDOM	
00 21	0000 000a	WMT1 Wave Switch	OFF, ON
00 22	0000 00aa	WMT1 Wave Group Type	INT, ---, SAMPLE, ---
# 00 23	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	WMT1 Wave Group ID	(0 - 16384) OFF, 1 - 16384
# 00 27	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	WMT1 Wave Number L (Mono)	(0 - 16384) OFF, 1 - 16384
# 00 2B	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	WMT1 Wave Number R	(0 - 16384) OFF, 1 - 16384
00 2F	0000 00aa	WMT1 Wave Gain	(0 - 3)
00 30	0000 000a	WMT1 Wave FXM Switch	OFF, ON
00 31	0000 00aa	WMT1 Wave FXM Color	(0 - 3)
00 32	000a aaaa	WMT1 Wave FXM Depth	-6, 0, +6, +12 [dB]
00 33	0000 000a	WMT1 Wave FXM Sync	OFF, ON
00 34	0aaa aaaa	WMT1 Wave Coarse Tune	(16 - 112)
00 35	0aaa aaaa	WMT1 Wave Fine Tune	(-48 - +48)
00 36	0aaa aaaa	WMT1 Wave Pan	(14 - 114)
00 37	0000 000a	WMT1 Wave Random Pan Switch	(0 - 1)
00 38	0000 00aa	WMT1 Wave Alternate Pan Switch	OFF, ON, REVERSE
00 39	0aaa aaaa	WMT1 Wave Level	(0 - 127)
00 3A	0aaa aaaa	WMT1 Velocity Range Lower	1 - UPPER
00 3B	0aaa aaaa	WMT1 Velocity Range Upper	LOWER - 127
00 3C	0aaa aaaa	WMT1 Velocity Fade Width Lower	(0 - 127)
00 3D	0aaa aaaa	WMT1 Velocity Fade Width Upper	(0 - 127)
00 3E	0000 000a	WMT2 Wave Switch	OFF, ON
00 3F	0000 00aa	WMT2 Wave Group Type	INT, ---, SAMPLE, ---
# 00 40	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	WMT2 Wave Group ID	(0 - 16384) OFF, 1 - 16384
# 00 44	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	WMT2 Wave Number L (Mono)	(0 - 16384) OFF, 1 - 16384
# 00 48	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	WMT2 Wave Number R	(0 - 16384) OFF, 1 - 16384
00 4C	0000 00aa	WMT2 Wave Gain	(0 - 3)
00 4D	0000 000a	WMT2 Wave FXM Switch	OFF, ON
00 4E	0000 00aa	WMT2 Wave FXM Color	(0 - 3)
00 4F	000a aaaa	WMT2 Wave FXM Depth	(0 - 1)
00 50	0000 000a	WMT2 Wave FXM Sync	OFF, ON
00 51	0aaa aaaa	WMT2 Wave Coarse Tune	(16 - 112)
00 52	0aaa aaaa	WMT2 Wave Fine Tune	(-48 - +48)
00 53	0aaa aaaa	WMT2 Wave Pan	(14 - 114)
00 54	0000 000a	WMT2 Wave Random Pan Switch	(0 - 1)
00 55	0000 00aa	WMT2 Wave Alternate Pan Switch	OFF, ON, REVERSE
00 56	0aaa aaaa	WMT2 Wave Level	(0 - 127)
00 57	0aaa aaaa	WMT2 Velocity Range Lower	1 - UPPER
00 58	0aaa aaaa	WMT2 Velocity Range Upper	LOWER - 127
00 59	0aaa aaaa	WMT2 Velocity Fade Width Lower	(0 - 127)
00 5A	0aaa aaaa	WMT2 Velocity Fade Width Upper	(0 - 127)
00 5B	0000 000a	WMT3 Wave Switch	OFF, ON
00 5C	0000 00aa	WMT3 Wave Group Type	INT, ---, SAMPLE, ---
# 00 5D	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	WMT3 Wave Group ID	(0 - 16384) OFF, 1 - 16384
# 00 61	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	WMT3 Wave Number L (Mono)	(0 - 16384) OFF, 1 - 16384
# 00 65	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	WMT3 Wave Number R	(0 - 16384) OFF, 1 - 16384
00 69	0000 00aa	WMT3 Wave Gain	(0 - 3)
00 6A	0000 000a	WMT3 Wave FXM Switch	OFF, ON
00 6B	0000 00aa	WMT3 Wave FXM Color	(0 - 3)
00 6C	000a aaaa	WMT3 Wave FXM Depth	(0 - 1)
00 6D	0000 000a	WMT3 Wave FXM Sync	OFF, ON
00 6E	0aaa aaaa	WMT3 Wave Coarse Tune	(16 - 112)
00 6F	0aaa aaaa	WMT3 Wave Fine Tune	(-48 - +48)
00 70	0aaa aaaa	WMT3 Wave Pan	(14 - 114)
00 71	0000 000a	WMT3 Wave Random Pan Switch	(0 - 1)
00 72	0000 00aa	WMT3 Wave Alternate Pan Switch	OFF, ON, REVERSE
00 73	0aaa aaaa	WMT3 Wave Level	(0 - 127)
00 74	0aaa aaaa	WMT3 Velocity Range Lower	1 - UPPER
00 75	0aaa aaaa	WMT3 Velocity Range Upper	LOWER - 127
00 76	0aaa aaaa	WMT3 Velocity Fade Width Lower	(0 - 127)
00 77	0aaa aaaa	WMT3 Velocity Fade Width Upper	(0 - 127)
00 78	0000 000a	WMT4 Wave Switch	OFF, ON
00 79	0000 00aa	WMT4 Wave Group Type	INT, ---, SAMPLE, ---
# 00 7A	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	WMT4 Wave Group ID	(0 - 16384) OFF, 1 - 16384
# 00 7E	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	WMT4 Wave Number L (Mono)	(0 - 16384) OFF, 1 - 16384
# 01 02	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	WMT4 Wave Number R	(0 - 16384) OFF, 1 - 16384
01 06	0000 00aa	WMT4 Wave Gain	(0 - 3)
01 07	0000 000a	WMT4 Wave FXM Switch	OFF, ON
01 08	0000 00aa	WMT4 Wave FXM Color	(0 - 3)
01 09	000a aaaa	WMT4 Wave FXM Depth	(0 - 1)
01 0A	0000 000a	WMT4 Wave FXM Sync	OFF, ON
01 0B	0aaa aaaa	WMT4 Wave Coarse Tune	(16 - 112)
01 0C	0aaa aaaa	WMT4 Wave Fine Tune	(-48 - +48)
01 0D	0aaa aaaa	WMT4 Wave Pan	(14 - 114)
01 0E	0000 000a	WMT4 Wave Random Pan Switch	(0 - 1)
01 0F	0000 00aa	WMT4 Wave Alternate Pan Switch	OFF, ON, REVERSE
01 10	0aaa aaaa	WMT4 Wave Level	(0 - 127)
01 11	0aaa aaaa	WMT4 Velocity Range Lower	1 - UPPER
01 12	0aaa aaaa	WMT4 Velocity Range Upper	LOWER - 127
01 13	0aaa aaaa	WMT4 Velocity Fade Width Lower	(0 - 127)
01 14	0aaa aaaa	WMT4 Velocity Fade Width Upper	(0 - 127)
01 15	000a aaaa	Pitch Env Depth	(52 - 176)
01 16	0aaa aaaa	Pitch Env Velocity Sens	(-12 - +12)
01 17	0aaa aaaa	Pitch Env Time 1 Velocity Sens	(-63 - +63)
01 18	0aaa aaaa	Pitch Env Time 4 Velocity Sens	(-63 - +63)
01 19	0aaa aaaa	Pitch Env Time 1	(0 - 127)
01 1A	0aaa aaaa	Pitch Env Time 2	(0 - 127)
01 1B	0aaa aaaa	Pitch Env Time 3	(0 - 127)
01 1C	0aaa aaaa	Pitch Env Time 4	(0 - 127)
01 1D	0aaa aaaa	Pitch Env Level 0	(-63 - +63)
01 1E	0aaa aaaa	Pitch Env Level 1	(-63 - +63)
01 1F	0aaa aaaa	Pitch Env Level 2	(-63 - +63)
01 20	0aaa aaaa	Pitch Env Level 3	(-63 - +63)
01 21	0aaa aaaa	Pitch Env Level 4	(-63 - +63)
01 22	0000 0aaa	TVP Filter Type	OFF, LFP, BPF, HFP, PKG, LFP2, LFP3
01 23	0aaa aaaa	TVP Cutoff Frequency	(0 - 127)
01 24	0000 0aaa	TVP Cutoff Velocity Curve	FIXED, 1 - 7
01 25	0aaa aaaa	TVP Cutoff Velocity Sens	(-63 - +63)
01 26	0aaa aaaa	TVP Resonance	(0 - 127)
01 27	0aaa aaaa	TVP Resonance Velocity Sens	(-63 - +63)
01 28	0aaa aaaa	TVP Env Depth	(-63 - +63)
01 29	0000 0aaa	TVP Env Velocity Curve Type	FIXED, 1 - 7
01 2A	0aaa aaaa	TVP Env Velocity Sens	(-63 - +63)
01 2B	0aaa aaaa	TVP Env Time 1 Velocity Sens	(-63 - +63)
01 2C	0aaa aaaa	TVP Env Time 4 Velocity Sens	(-63 - +63)
01 2D	0aaa aaaa	TVP Env Time 1	(0 - 127)
01 2E	0aaa aaaa	TVP Env Time 2	(0 - 127)
01 2F	0aaa aaaa	TVP Env Time 3	(0 - 127)
01 30	0aaa aaaa	TVP Env Time 4	(0 - 127)
01 31	0aaa aaaa	TVP Env Level 0	(-63 - +63)
01 32	0aaa aaaa	TVP Env Level 1	(-63 - +63)
01 33	0aaa aaaa	TVP Env Level 2	(-63 - +63)
01 34	0aaa aaaa	TVP Env Level 3	(-63 - +63)
01 35	0aaa aaaa	TVP Env Level 4	(-63 - +63)
01 36	0000 0aaa	TVA Level Velocity Curve	FIXED, 1 - 7
01 37	0aaa aaaa	TVA Level Velocity Sens	(-63 - +63)
01 38	0aaa aaaa	TVA Env Time 1 Velocity Sens	(-63 - +63)
01 39	0aaa aaaa	TVA Env Time 4 Velocity Sens	(-63 - +63)
01 3A	0aaa aaaa	TVA Env Time 1	(0 - 127)
01 3B	0aaa aaaa	TVA Env Time 2	(0 - 127)
01 3C	0aaa aaaa	TVA Env Time 3	(0 - 127)
01 3D	0aaa aaaa	TVA Env Time 4	(0 - 127)
01 3E	0aaa aaaa	TVA Env Level 1	(-63 - +63)
01 3F	0aaa aaaa	TVA Env Level 2	(-63 - +63)
01 40	0aaa aaaa	TVA Env Level 3	(-63 - +63)
01 41	0000 000a	One Shot Mode	OFF, ON

# Fantom-G MIDI Implementation

01 42	0aaa aaaa	Relative Level	(0 - 127) -64 - +63
00 00 01 43	Total Size		

## ○Rhythm Controller

Offset Address	Description		
00 00	0aaa aaaa	(reserve) <*>	(0 - 3)
00 01	0aaa aaaa	(reserve) <*>	(0 - 102)
00 02	0aaa aaaa	(reserve) <*>	(0 - 127)
00 03	0aaa aaaa	(reserve) <*>	(0 - 127)
00 04	0aaa aaaa	(reserve) <*>	(0 - 103)
00 05	0aaa aaaa	(reserve) <*>	(0 - 103)
00 06	0aaa aaaa	(reserve) <*>	(0 - 103)
00 07	0aaa aaaa	(reserve) <*>	(0 - 103)
00 08	0aaa aaaa	(reserve) <*>	(0 - 101)
00 09	0aaa aaaa	(reserve) <*>	(0 - 101)
00 0A	0aaa aaaa	(reserve) <*>	(0 - 101)
00 0B	0aaa aaaa	(reserve) <*>	(0 - 101)
00 0C	0aaa aaaa	(reserve) <*>	(0 - 101)
00 0D	0aaa aaaa	(reserve) <*>	(0 - 101)
00 0E	0aaa aaaa	(reserve) <*>	(0 - 101)
00 0F	0aaa aaaa	(reserve) <*>	(0 - 101)
00 10	0aaa aaaa	(reserve) <*>	(0 - 106)
00 11	0000 000a	(reserve) <*>	(0 - 1)
00 12	0aaa aaaa	(reserve) <*>	(0 - 106)
00 13	0000 000a	(reserve) <*>	(0 - 1)
00 00 00 14	Total Size		

## ○Rhythm Common 2

Offset Address	Description		
00 00	0aaa aaaa	Rhythm Name 1	(32 - 127)
00 01	0aaa aaaa	Rhythm Name 2	(32 - 127)
00 02	0aaa aaaa	Rhythm Name 3	(32 - 127)
00 03	0aaa aaaa	Rhythm Name 4	(32 - 127)
00 04	0aaa aaaa	Rhythm Name 5	(32 - 127)
00 05	0aaa aaaa	Rhythm Name 6	(32 - 127)
00 06	0aaa aaaa	Rhythm Name 7	(32 - 127)
00 07	0aaa aaaa	Rhythm Name 8	(32 - 127)
00 08	0aaa aaaa	Rhythm Name 9	(32 - 127)
00 09	0aaa aaaa	Rhythm Name 10	(32 - 127)
00 0A	0aaa aaaa	Rhythm Name 11	(32 - 127)
00 0B	0aaa aaaa	Rhythm Name 12	(32 - 127)
00 0C	0aaa aaaa	Rhythm Name 13	(32 - 127)
00 0D	0aaa aaaa	Rhythm Name 14	(32 - 127)
00 0E	0aaa aaaa	Rhythm Name 15	(32 - 127)
00 0F	0aaa aaaa	Rhythm Name 16	(32 - 127)
00 10	0aaa aaaa	Rhythm Memo 1	(32 - 127)
00 11	0aaa aaaa	Rhythm Memo 2	(32 - 127)
00 12	0aaa aaaa	Rhythm Memo 3	(32 - 127)
00 13	0aaa aaaa	Rhythm Memo 4	(32 - 127)
00 14	0aaa aaaa	Rhythm Memo 5	(32 - 127)
00 15	0aaa aaaa	Rhythm Memo 6	(32 - 127)
00 16	0aaa aaaa	Rhythm Memo 7	(32 - 127)
00 17	0aaa aaaa	Rhythm Memo 8	(32 - 127)
00 18	0aaa aaaa	Rhythm Memo 9	(32 - 127)
00 19	0aaa aaaa	Rhythm Memo 10	(32 - 127)
00 1A	0aaa aaaa	Rhythm Memo 11	(32 - 127)
00 1B	0aaa aaaa	Rhythm Memo 12	(32 - 127)
00 1C	0aaa aaaa	Rhythm Memo 13	(32 - 127)
00 1D	0aaa aaaa	Rhythm Memo 14	(32 - 127)
00 1E	0aaa aaaa	Rhythm Memo 15	(32 - 127)
00 1F	0aaa aaaa	Rhythm Memo 16	(32 - 127)
00 20	0aaa aaaa	Rhythm Memo 17	(32 - 127)
00 21	0aaa aaaa	Rhythm Memo 18	(32 - 127)
00 22	0aaa aaaa	Rhythm Memo 19	(32 - 127)
00 23	0aaa aaaa	Rhythm Memo 20	(32 - 127)
00 24	0aaa aaaa	Rhythm Memo 21	(32 - 127)

00 25	0aaa aaaa	Rhythm Memo 22	(32 - 127)
00 26	0aaa aaaa	Rhythm Memo 23	(32 - 127)
00 27	0aaa aaaa	Rhythm Memo 24	(32 - 127)
00 28	0aaa aaaa	Rhythm Memo 25	(32 - 127)
00 29	0aaa aaaa	Rhythm Memo 26	(32 - 127)
00 2A	0aaa aaaa	Rhythm Memo 27	(32 - 127)
00 2B	0aaa aaaa	Rhythm Memo 28	(32 - 127)
00 2C	0aaa aaaa	Rhythm Memo 29	(32 - 127)
00 2D	0aaa aaaa	Rhythm Memo 30	(32 - 127)
00 2E	0aaa aaaa	Rhythm Memo 31	(32 - 127)
00 2F	0aaa aaaa	Rhythm Memo 32	(32 - 127)
00 30	0aaa aaaa	(reserve) <*>	(0 - 127)
00 31	0aaa aaaa	(reserve) <*>	(0 - 127)
00 32	0aaa aaaa	(reserve) <*>	(0 - 127)
00 33	0aaa aaaa	(reserve) <*>	(0 - 127)
00 34	0aaa aaaa	(reserve) <*>	(0 - 127)
00 35	0aaa aaaa	(reserve) <*>	(0 - 127)
00 36	0aaa aaaa	(reserve) <*>	(0 - 127)
00 37	0aaa aaaa	(reserve) <*>	(0 - 127)
00 38	0aaa aaaa	(reserve) <*>	(0 - 127)
00 39	0000 000a	Rhythm MFX Switch	(0 - 1) OFF, ON
00 3A	0000 000a	Chorus Switch	(0 - 1) OFF, ON
00 3B	0000 000a	Reverb Switch	(0 - 1) OFF, ON
00 00 00 3C	Total Size		

## ○Rhythm Tone 2

Offset Address	Description		
00 00	0aaa aaaa	Tone Output Assign	(0 - 1) PFX, DRV
00 01	0000 0aaa	(reserve) <*>	(0 - 6)
00 02	0000 aaaa	(reserve) <*>	(58 - 70)
00 03	0000 aaaa	(reserve) <*>	(0 - 15)
00 04	0000 aaaa	(reserve) <*>	(58 - 70)
00 05	0000 00aa	(reserve) <*>	(0 - 3)
00 06	0000 aaaa	(reserve) <*>	(0 - 9)
00 07	0000 aaaa	(reserve) <*>	(58 - 70)
00 00 00 08	Total Size		

## ○Sample Set Common

Offset Address	Description		
00 00	0aaa aaaa	Sample Set Name 1	(32 - 127)
00 01	0aaa aaaa	Sample Set Name 2	(32 - 127)
00 02	0aaa aaaa	Sample Set Name 3	(32 - 127)
00 03	0aaa aaaa	Sample Set Name 4	(32 - 127)
00 04	0aaa aaaa	Sample Set Name 5	(32 - 127)
00 05	0aaa aaaa	Sample Set Name 6	(32 - 127)
00 06	0aaa aaaa	Sample Set Name 7	(32 - 127)
00 07	0aaa aaaa	Sample Set Name 8	(32 - 127)
00 08	0aaa aaaa	Sample Set Name 9	(32 - 127)
00 09	0aaa aaaa	Sample Set Name 10	(32 - 127)
00 0A	0aaa aaaa	Sample Set Name 11	(32 - 127)
00 0B	0aaa aaaa	Sample Set Name 12	(32 - 127)
00 0C	0aaa aaaa	Sample Set Name 13	(32 - 127)
00 0D	0aaa aaaa	Sample Set Name 14	(32 - 127)
00 0E	0aaa aaaa	Sample Set Name 15	(32 - 127)
00 0F	0aaa aaaa	Sample Set Name 16	(32 - 127)
00 10	0aaa aaaa	Sample Set Memo 1	(32 - 127)
00 11	0aaa aaaa	Sample Set Memo 2	(32 - 127)
00 12	0aaa aaaa	Sample Set Memo 3	(32 - 127)
00 13	0aaa aaaa	Sample Set Memo 4	(32 - 127)
00 14	0aaa aaaa	Sample Set Memo 5	(32 - 127)
00 15	0aaa aaaa	Sample Set Memo 6	(32 - 127)
00 16	0aaa aaaa	Sample Set Memo 7	(32 - 127)
00 17	0aaa aaaa	Sample Set Memo 8	(32 - 127)
00 18	0aaa aaaa	Sample Set Memo 9	(32 - 127)
00 19	0aaa aaaa	Sample Set Memo 10	(32 - 127)
00 1A	0aaa aaaa	Sample Set Memo 11	(32 - 127)

# Fantom-G MIDI Implementation

00 1B	0aaa aaaa	Sample Set Memo 12	32 - 127 [ASCII] (32 - 127)
00 1C	0aaa aaaa	Sample Set Memo 13	32 - 127 [ASCII] (32 - 127)
00 1D	0aaa aaaa	Sample Set Memo 14	32 - 127 [ASCII] (32 - 127)
00 1E	0aaa aaaa	Sample Set Memo 15	32 - 127 [ASCII] (32 - 127)
00 1F	0aaa aaaa	Sample Set Memo 16	32 - 127 [ASCII] (32 - 127)
00 20	0aaa aaaa	Sample Set Memo 17	32 - 127 [ASCII] (32 - 127)
00 21	0aaa aaaa	Sample Set Memo 18	32 - 127 [ASCII] (32 - 127)
00 22	0aaa aaaa	Sample Set Memo 19	32 - 127 [ASCII] (32 - 127)
00 23	0aaa aaaa	Sample Set Memo 20	32 - 127 [ASCII] (32 - 127)
00 24	0aaa aaaa	Sample Set Memo 21	32 - 127 [ASCII] (32 - 127)
00 25	0aaa aaaa	Sample Set Memo 22	32 - 127 [ASCII] (32 - 127)
00 26	0aaa aaaa	Sample Set Memo 23	32 - 127 [ASCII] (32 - 127)
00 27	0aaa aaaa	Sample Set Memo 24	32 - 127 [ASCII] (32 - 127)
00 28	0aaa aaaa	Sample Set Memo 25	32 - 127 [ASCII] (32 - 127)
00 29	0aaa aaaa	Sample Set Memo 26	32 - 127 [ASCII] (32 - 127)
00 2A	0aaa aaaa	Sample Set Memo 27	32 - 127 [ASCII] (32 - 127)
00 2B	0aaa aaaa	Sample Set Memo 28	32 - 127 [ASCII] (32 - 127)
00 2C	0aaa aaaa	Sample Set Memo 29	32 - 127 [ASCII] (32 - 127)
00 2D	0aaa aaaa	Sample Set Memo 30	32 - 127 [ASCII] (32 - 127)
00 2E	0aaa aaaa	Sample Set Memo 31	32 - 127 [ASCII] (32 - 127)
00 2F	0aaa aaaa	Sample Set Memo 32	32 - 127 [ASCII] (32 - 127)
00 30	0aaa aaaa	(reserve) <*>	(0 - 127)
00 31	0aaa aaaa	(reserve) <*>	(0 - 127)
00 32	0aaa aaaa	(reserve) <*>	(0 - 127)
00 33	0aaa aaaa	(reserve) <*>	(0 - 127)
00 34	0aaa aaaa	(reserve) <*>	(0 - 127)
00 35	0aaa aaaa	(reserve) <*>	(0 - 127)
00 36	0aaa aaaa	(reserve) <*>	(0 - 127)
00 37	0aaa aaaa	(reserve) <*>	(0 - 127)
00 38	0aaa aaaa	(reserve) <*>	(0 - 127)
-----			
00 39	0aaa aaaa	Sample Set Level	(0 - 127)
-----			
00 3A	0000 000a	Sample Set MFX Switch	(0 - 1) OFF, ON
00 3B	0000 000a	Chorus Switch	(0 - 1) OFF, ON
00 3C	0000 000a	Reverb Switch	(0 - 1) OFF, ON
-----			
00 00 00 3D	Total Size		

## Sample Set Common MFX

Offset Address	Description	
00 00	0aaa aaaa	MFX Type (0 - 76)
00 01	0aaa aaaa	MFX Dry Send Level (0 - 127)
00 02	0aaa aaaa	MFX Chorus Send Level (0 - 127)
00 03	0aaa aaaa	MFX Reverb Send Level (0 - 127)
00 04	0000 00aa	(reserve) <*> (0 - 3)
-----		
00 05	0aaa aaaa	MFX Control 1 Source (0 - 101) OFF, CC01 - CC31, CC33 - CC95, BEND, APT, SYS1 - SYS4
00 06	0aaa aaaa	MFX Control 1 Sens (1 - 127) -63 - +63
00 07	0aaa aaaa	MFX Control 2 Source (0 - 101) OFF, CC01 - CC31, CC33 - CC95, BEND, APT, SYS1 - SYS4
00 08	0aaa aaaa	MFX Control 2 Sens (1 - 127) -63 - +63
00 09	0aaa aaaa	MFX Control 3 Source (0 - 101) OFF, CC01 - CC31, CC33 - CC95, BEND, APT, SYS1 - SYS4
00 0A	0aaa aaaa	MFX Control 3 Sens (1 - 127) -63 - +63
00 0B	0aaa aaaa	MFX Control 4 Source (0 - 101) OFF, CC01 - CC31, CC33 - CC95, BEND, APT, SYS1 - SYS4
00 0C	0aaa aaaa	MFX Control 4 Sens (1 - 127) -63 - +63
-----		
00 0D	000a aaaa	MFX Control Assign 1 (0 - 16) OFF, 1 - 16
00 0E	000a aaaa	MFX Control Assign 2 (0 - 16) OFF, 1 - 16
00 0F	000a aaaa	MFX Control Assign 3 (0 - 16) OFF, 1 - 16
00 10	000a aaaa	MFX Control Assign 4 (0 - 16) OFF, 1 - 16
# 00 11	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 1 (12768 - 52768) -20000 - +20000
# 00 15	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 2 (12768 - 52768) -20000 - +20000
# 00 19	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 3 (12768 - 52768) -20000 - +20000
# 00 1D	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 4 (12768 - 52768) -20000 - +20000
# 00 21	0000 aaaa 0000 bbbb	

# 00 25	0000 cccc 0000 dddd	MFX Parameter 5 (12768 - 52768) -20000 - +20000
# 00 29	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 6 (12768 - 52768) -20000 - +20000
# 00 2D	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 7 (12768 - 52768) -20000 - +20000
# 00 31	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 8 (12768 - 52768) -20000 - +20000
# 00 35	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 9 (12768 - 52768) -20000 - +20000
# 00 39	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 10 (12768 - 52768) -20000 - +20000
# 00 3D	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 11 (12768 - 52768) -20000 - +20000
# 00 41	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 12 (12768 - 52768) -20000 - +20000
# 00 45	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 13 (12768 - 52768) -20000 - +20000
# 00 49	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 14 (12768 - 52768) -20000 - +20000
# 00 4D	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 15 (12768 - 52768) -20000 - +20000
# 00 51	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 16 (12768 - 52768) -20000 - +20000
# 00 55	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 17 (12768 - 52768) -20000 - +20000
# 00 59	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 18 (12768 - 52768) -20000 - +20000
# 00 5D	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 19 (12768 - 52768) -20000 - +20000
# 00 61	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 20 (12768 - 52768) -20000 - +20000
# 00 65	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 21 (12768 - 52768) -20000 - +20000
# 00 69	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 22 (12768 - 52768) -20000 - +20000
# 00 6D	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 23 (12768 - 52768) -20000 - +20000
# 00 71	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 24 (12768 - 52768) -20000 - +20000
# 00 75	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 25 (12768 - 52768) -20000 - +20000
# 00 79	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 26 (12768 - 52768) -20000 - +20000
# 00 7D	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 27 (12768 - 52768) -20000 - +20000
# 01 01	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 28 (12768 - 52768) -20000 - +20000
# 01 05	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 29 (12768 - 52768) -20000 - +20000
# 01 09	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 30 (12768 - 52768) -20000 - +20000
# 01 0D	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 31 (12768 - 52768) -20000 - +20000
# 01 11	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	MFX Parameter 32 (12768 - 52768) -20000 - +20000

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00 00 01 11 | Total Size

## ○Sample Set Common Chorus

Offset Address	Description	
00 00	0000 aaaa	Chorus Type (0 - 3)
00 01	0aaa aaaa	Chorus Level (0 - 127)
00 02	0000 000a	Chorus Output Assign (0 - 1)
00 03	0000 000a	(reserve) <*> A, B (0 - 1)
00 04	0000 00aa	Chorus Output Select (0 - 2) MAIN, REV, MAIN+REV
# 00 05	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Chorus Parameter 1 (12768 - 52768) -20000 - +20000
# 00 09	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Chorus Parameter 2 (12768 - 52768) -20000 - +20000
# 00 0D	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Chorus Parameter 3 (12768 - 52768) -20000 - +20000
# 00 11	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Chorus Parameter 4 (12768 - 52768) -20000 - +20000
# 00 15	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Chorus Parameter 5 (12768 - 52768) -20000 - +20000
# 00 19	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Chorus Parameter 6 (12768 - 52768) -20000 - +20000
# 00 1D	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Chorus Parameter 7 (12768 - 52768) -20000 - +20000
# 00 21	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Chorus Parameter 8 (12768 - 52768) -20000 - +20000
# 00 25	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Chorus Parameter 9 (12768 - 52768) -20000 - +20000
# 00 29	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Chorus Parameter 10 (12768 - 52768) -20000 - +20000
# 00 2D	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Chorus Parameter 11 (12768 - 52768) -20000 - +20000
# 00 31	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Chorus Parameter 12 (12768 - 52768) -20000 - +20000
# 00 35	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Chorus Parameter 13 (12768 - 52768) -20000 - +20000
# 00 39	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Chorus Parameter 14 (12768 - 52768) -20000 - +20000
# 00 3D	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Chorus Parameter 15 (12768 - 52768) -20000 - +20000
# 00 41	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Chorus Parameter 16 (12768 - 52768) -20000 - +20000
# 00 45	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Chorus Parameter 17 (12768 - 52768) -20000 - +20000
# 00 49	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Chorus Parameter 18 (12768 - 52768) -20000 - +20000
# 00 4D	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Chorus Parameter 19 (12768 - 52768) -20000 - +20000
# 00 51	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Chorus Parameter 20 (12768 - 52768) -20000 - +20000
00 00 00 55	Total Size	

## ○Sample Set Common Reverb

Offset Address	Description	
00 00	0aaa aaaa	Reverb Type (0 - 10)
00 01	0aaa aaaa	Reverb Level (0 - 127)
00 02	0000 00aa	Reverb Output Assign (0 - 1) A, B
# 00 03	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Reverb Parameter 1 (12768 - 52768)

# 00 07	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Reverb Parameter 2 (12768 - 52768) -20000 - +20000
# 00 0B	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Reverb Parameter 3 (12768 - 52768) -20000 - +20000
# 00 0F	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Reverb Parameter 4 (12768 - 52768) -20000 - +20000
# 00 13	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Reverb Parameter 5 (12768 - 52768) -20000 - +20000
# 00 17	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Reverb Parameter 6 (12768 - 52768) -20000 - +20000
# 00 1B	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Reverb Parameter 7 (12768 - 52768) -20000 - +20000
# 00 1F	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Reverb Parameter 8 (12768 - 52768) -20000 - +20000
# 00 23	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Reverb Parameter 9 (12768 - 52768) -20000 - +20000
# 00 27	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Reverb Parameter 10 (12768 - 52768) -20000 - +20000
# 00 2B	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Reverb Parameter 11 (12768 - 52768) -20000 - +20000
# 00 2F	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Reverb Parameter 12 (12768 - 52768) -20000 - +20000
# 00 33	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Reverb Parameter 13 (12768 - 52768) -20000 - +20000
# 00 37	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Reverb Parameter 14 (12768 - 52768) -20000 - +20000
# 00 3B	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Reverb Parameter 15 (12768 - 52768) -20000 - +20000
# 00 3F	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Reverb Parameter 16 (12768 - 52768) -20000 - +20000
# 00 43	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Reverb Parameter 17 (12768 - 52768) -20000 - +20000
# 00 47	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Reverb Parameter 18 (12768 - 52768) -20000 - +20000
# 00 4B	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Reverb Parameter 19 (12768 - 52768) -20000 - +20000
# 00 4F	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Reverb Parameter 20 (12768 - 52768) -20000 - +20000
00 00 00 53	Total Size	

## ○Sample Set Tone

Offset Address	Description	
00 00	0000 000a	Direction (0 - 1)
00 01	0000 00aa	Trigger Mode FWD, REV (0 - 1)
00 02	000a aaaa	Mute Group GATE, DRUM (0 - 16) OFF, 1 - 16
# 00 03	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Wave Group ID (0 - 16384) OFF, 1 - 16384
# 00 07	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Wave Number L (Mono) (0 - 16384) OFF, 1 - 16384
# 00 0B	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Wave Number R (0 - 16384) OFF, 1 - 16384
00 0F	0000 00aa	Wave Gain (0 - 3)
00 10	0000 000a	Tempo Sync -6, 0, +6, +12 [dB] (0 - 1) OFF, ON
00 11	0aaa aaaa	Tone Level (0 - 127)
00 12	0aaa aaaa	Tone Coarse Tune (16 - 112) -48 - +48
00 13	0aaa aaaa	Tone Fine Tune (14 - 114) -50 - +50

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00 14	0aaa aaaa	Tone Pan	(0 - 127) L64 - 63R
00 15	0aaa aaaa	Tone Output Level	(0 - 127)
00 16	0aaa aaaa	Tone Chorus Send Level	(0 - 127)
00 17	0aaa aaaa	Tone Reverb Send Level	(0 - 127)
00 18	0aaa aaaa	Tone Output Assign	(0 - 1) PFX, DRY
00 19	0aaa aaaa	Level Velocity Sens	(1 - 127) -63 - +63
00 00 00 1A	Total Size		

m: Map number (0 = MAP1, 1 = MAP2)  
 rr: drum part note number (00H-7FH)

## 6. Supplementary Material

### Decimal and Hexadecimal Table

(An "H" is appended to the end of numbers in hexadecimal notation.)  
 In MIDI documentation, data values and addresses/sizes of Exclusive messages, etc. are expressed as hexadecimal values for each 7 bits.  
 The following table shows how these correspond to decimal numbers.

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

D: decimal

H: hexadecimal

- \* Decimal values such as MIDI channel, bank select, and program change are listed as one greater than the values given in the above table.
- \* A 7-bit byte can express data in the range of 128 steps. For data where greater precision is required, we must use two or more bytes. For example, two hexadecimal numbers aa bbH expressing two 7-bit bytes would indicate a value of  $aa \times 128 + bb$ .
- \* In the case of values which have a +/- sign, 00H = -64, 40H = +/-0, and 7FH = +63, so that the decimal expression would be 64 less than the value given in the above chart. In the case of two types, 00 00H = -8192, 40 00H = +/-0, and 7F 7FH = +8191. For example, if aa bbH were expressed as decimal, this would be  $aa \text{ bbH} - 40 \text{ 00H} = aa \times 128 + bb - 64 \times 128$ .
- \* Data marked "Use nibbled data" is expressed in hexadecimal in 4-bit units. A value expressed as a 2-byte nibble 0a 0bH has the value of  $a \times 16 + b$ .

#### <Example1> What is the decimal expression of 5AH?

From the preceding table, 5AH = 90

#### <Example2> What is the decimal expression of the value 12 34H given as hexadecimal for each 7 bits?

From the preceding table, since 12H = 18 and 34H = 52  
 $18 \times 128 + 52 = 2356$

#### <Example3> What is the decimal expression of the nibbled value 0A 03 09 0D?

From the preceding table, since 0AH = 10, 03H = 3, 09H = 9, 0DH = 13  
 $((10 \times 16 + 3) \times 16 + 9) \times 16 + 13 = 41885$

#### <Example4> What is the nibbled expression of the decimal value 1258?

```

16 | 1258
16 | 78 ...10
16 | 4 ...14
   | 0 ... 4
    
```

Since from the preceding table, 0 = 00H, 4 = 04H, 14 = 0EH, 10 = 0AH, the result is: 00 04 0E 0AH.

### Examples of Actual MIDI Messages

#### <Example1> 92 3E 5F

9n is the Note-on status, and n is the MIDI channel number. Since 2H = 2, 3EH = 62, and 5FH = 95, this is a Note-on message with MIDI CH = 3, note number 62 (note name is D4), and velocity 95.

#### <Example2> CE 49

CnH is the Program Change status, and n is the MIDI channel number. Since EH = 14 and 49H = 73, this is a Program Change message with MIDI CH = 15, program number 74.

#### <Example3> EA 00 28

EnH is the Pitch Bend Change status, and n is the MIDI channel number. The 2nd byte (00H = 0) is the LSB and the 3rd byte (28H = 40) is the MSB, but Pitch Bend Value is a signed number in which  $40 \text{ 00H} (= 64 \times 12 + 80 = 8192)$  is 0, so this Pitch Bend Value is  $28 \text{ 00H} - 40 \text{ 00H} = 40 \times 12 + 80 - (64 \times 12 + 80) = 5120 - 8192 = -3072$

If the Pitch Bend Sensitivity is set to 2 semitones, -8192 (00 00H) will cause the pitch to change -200 cents, so in this case  $-200 \times (-3072) \div (-8192) = -75$  cents of Pitch Bend is being applied to MIDI channel 11.

#### <Example4> B3 64 00 65 00 06 0C 26 00 64 7F 65 7F

BnH is the Control Change status, and n is the MIDI channel number. For Control Changes, the 2nd byte is the control number, and the 3rd byte is the value. In a case in which two or more messages consecutive messages have the same status, MIDI has a provision called "running status" which allows the status byte of the second and following messages to be omitted. Thus, the above messages have the following meaning.

```

B3 64 00   MIDI ch.4, lower byte of RPN parameter number: 00H
(B3) 65 00 (MIDI ch.4) upper byte of RPN parameter number: 00H
(B3) 06 0C (MIDI ch.4) upper byte of parameter value: 0CH
(B3) 26 00 (MIDI ch.4) lower byte of parameter value: 00H
(B3) 64 7F (MIDI ch.4) lower byte of RPN parameter number: 7FH
(B3) 65 7F (MIDI ch.4) upper byte of RPN parameter number: 7FH
    
```

In other words, the above messages specify a value of 0C 00H for RPN parameter number 00 00H on MIDI channel 4, and then set the RPN parameter number to 7F 7FH.

RPN parameter number 00 00H is Pitch Bend Sensitivity, and the MSB of the value indicates semitone units, so a value of 0CH = 12 sets the maximum pitch bend range to +/-12 semitones (1 octave). (The LSB of Pitch Bend Sensitivity is ignored, but the LSB should be transmitted anyway (with a value of 0) so that operation will be correct on any device.)

Once the parameter number has been specified for RPN or NRPN, all Data Entry messages transmitted on that same channel will be valid, so after the desired value has been transmitted, it is a good idea to set the parameter number to 7F 7FH to prevent accidents. This is the reason for the (B3) 64 7F (B3) 65 7F at the end.

It is not desirable for performance data (such as Standard MIDI File data) to contain many events with running status as given in <Example 4>. This is because if playback is halted during the song and then rewound or fast-forwarded, the sequencer may not be able to transmit the correct status, and the sound generator will then misinterpret the data. Take care to give each event its own status.

It is also necessary that the RPN or NRPN parameter number setting and the value setting be done in the proper order. On some sequencers, events occurring in the same (or consecutive) clock may be transmitted in an order different than the order in which they were received. For this reason it is a good idea to slightly skew the time of each event (about 1 tick for TPQN = 96, and about 5 ticks for TPQN = 480).

\* TPQN: Ticks Per Quarter Note



## ■ Example of an Exclusive Message and Calculating a Checksum

Roland Exclusive messages (RQ1, DT1) are transmitted with a checksum at the end (before F7) to make sure that the message was correctly received. The value of the checksum is determined by the address and data (or size) of the transmitted Exclusive message.

### ● How to calculate the checksum (hexadecimal numbers are indicated by "H")

The checksum is a value derived by adding the address, size, and checksum itself and inverting the lower 7 bits.

Here's an example of how the checksum is calculated. We will assume that in the Exclusive message we are transmitting, the address is aabccddH and the data or size is eeffH.

$$\begin{aligned} aa + bb + cc + dd + ee + ff &= \text{sum} \\ \text{sum} \div 128 &= \text{quotient} \dots \text{remainder} \\ 128 - \text{remainder} &= \text{checksum} \end{aligned}$$

#### <Example> Setting CHORUS TYPE of LIVE SET to DELAY (DT1)

According to the **Parameter Address Map** (P.14), the start address of Temporary Live Set is 10 00 00 00H, the offset address of CHORUS at Live Set COMMON is 06 00H, and the address of CHORUS TYPE is 00 00H. Therefore the address of CHORUS TYPE of PERFORMANCE COMMON is;

$$\begin{array}{r} 10\ 00\ 00\ 00\text{H} \\ \quad \quad 06\ 00\text{H} \\ +) \quad \quad \quad 00\ 00\text{H} \\ \hline 10\ 00\ 06\ 00\text{H} \end{array}$$

DELAY has the value of 02H.  
So the system exclusive message should be sent is;

F0 41 10 00 0027 12 10 00 06 00 02 ?? F7  
(1) (2) (3) (4) (5) address data checksum (6)

(1) Exclusive Status (2) ID (Roland) (3) Device ID (17)  
(4) Model ID (Fantom-G6/G7/G8) (5) Command ID (DT1) (6) End of Exclusive

Then calculate the checksum.

$$\begin{aligned} 10\text{H} + 00\text{H} + 06\text{H} + 00\text{H} + 02\text{H} &= 16 + 0 + 6 + 0 + 2 = 24 \text{ (sum)} \\ 24 \text{ (sum)} \div 128 &= 0 \text{ (quotient)} \dots 24 \text{ (remainder)} \\ \text{checksum} = 128 - 24 \text{ (remainder)} &= 104 = 68\text{H} \end{aligned}$$

This means that F0 41 10 00 27 12 10 00 06 00 02 68 F7 is the message should be sent.

## ■ The Scale Tune Feature (address: 40 1x 40)

The scale tune feature allows you to finely adjust the individual pitch of the notes from C through B. Though the settings are made while working with one octave, the fine adjustments will affect all octaves. By making the appropriate Scale Tune settings, you can obtain a complete variety of tuning methods other than equal temperament. As examples, three possible types of scale setting are explained below.

\* The scale tune value received by the part 1 is used in Patch mode and Piano mode.

### ○ Equal Temperament

This method of tuning divides the octave into 12 equal parts. It is currently the most widely used form of tuning, especially in occidental music. On the Fantom, the default settings for the Scale Tune feature produce equal temperament.

### ○ Just Temperament (Tonic of C)

The principal triads resound much more beautifully than with equal temperament, but this benefit can only be obtained in one key. If transposed, the chords tend to become ambiguous. The example given involves settings for a key in which C is the keynote.

### ○ Arabian Scale

By altering the setting for Scale Tune, you can obtain a variety of other tunings suited for ethnic music. For example, the settings introduced below will set the unit to use the Arabian Scale.

#### Example Settings

Note name	Equal Temperament	Just Temperament (Key-tone C)	Arabian Scale
C	0	0	-6
C#	0	-8	+45
D	0	+4	-2
Eb	0	+16	-12
E	0	-14	-51
F	0	-2	-8
F#	0	-10	+43
G	0	+2	-4
G#	0	+14	+47
A	0	-16	0
Bb	0	+14	-10
B	0	-12	-49

The values in the table are given in cents. Convert these values to hexadecimal, and transmit them as Exclusive data.

For example, to set the tune (C-B) of the Part 1 Arabian Scale, send the following data:

F0 41 10 42 12 40 11 40 3A 6D 3E 34 0D 38 6B 3C 6F 40 36 0F 76 F7

## ■ ASCII Code Table

Patch Name and Live Set Name, etc., of MIDI data are described the ASCII code in the table below.

D	H	Char	D	H	Char	D	H	Char
32	20H	SP	64	40H	@	96	60H	`
33	21H	!	65	41H	A	97	61H	a
34	22H	"	66	42H	B	98	62H	b
35	23H	#	67	43H	C	99	63H	c
36	24H	\$	68	44H	D	100	64H	d
37	25H	%	69	45H	E	101	65H	e
38	26H	&	70	46H	F	102	66H	f
39	27H	`	71	47H	G	103	67H	g
40	28H	(	72	48H	H	104	68H	h
41	29H	)	73	49H	I	105	69H	i
42	2AH	*	74	4AH	J	106	6AH	j
43	2BH	+	75	4BH	K	107	6BH	k
44	2CH	,	76	4CH	L	108	6CH	l
45	2DH	-	77	4DH	M	109	6DH	m
46	2EH	.	78	4EH	N	110	6EH	n
47	2FH	/	79	4FH	O	111	6FH	o
48	30H	0	80	50H	P	112	70H	p
49	31H	1	81	51H	Q	113	71H	q
50	32H	2	82	52H	R	114	72H	r
51	33H	3	83	53H	S	115	73H	s
52	34H	4	84	54H	T	116	74H	t
53	35H	5	85	55H	U	117	75H	u
54	36H	6	86	56H	V	118	76H	v
55	37H	7	87	57H	W	119	77H	w
56	38H	8	88	58H	X	120	78H	x
57	39H	9	89	59H	Y	121	79H	y
58	3AH	:	90	5AH	Z	122	7AH	z
59	3BH	;	91	5BH	[	123	7BH	{
60	3CH	<	92	5CH	\	124	7CH	
61	3DH	=	93	5DH	]	125	7DH	}
62	3EH	>	94	5EH	^			
63	3FH	?	95	5FH	_			

D: decimal

H: hexadecimal

\* "SP" is space.



# MIDI Implementation Chart

Function...	Transmitted	Recognized	Remarks
Basic Channel Default Changed	All channel X	All channel 1-16	There is no specific basic channel.
Mode Default Messages Altered	X X *****	X X	
Note Number : True Voice	0-127 *****	0-127 0-127	
Velocity Note On Note Off	O O	O O	
After Touch Key's Channel's	O O	O O	*1 *1
Pitch Bend	O	O	*1
Control Change 0-119	O	O	*1
Program Change : True Number	O *****	O 0-127	*1
System Exclusive	O	O	*1
System Common : Quarter Frames : Song Position : Song Select : Tune Request	O O X O	O O X O	*1 *1 *2 *1
System Real Time : Clock : Commands	O O	O O	*1 *1
Aux Messages : All Sound Off : Reset All Controllers : Local On/Off : All Notes Off : Active Sensing : System Reset	O O X O O X	O O X O (123-127) O X	*2 *3 *3
Notes	*1 O X is selectable. *2 Not stored/transmitted when received, but can be created and transmitted using Microscope. *3 Mode Messages (123-127) are recorded and transmitted, after all currently sounding notes are turned off. The All Note Message itself is not recorded or transmitted. However, it can be created in Microscope and transmitted.		

Mode 1 : OMNI ON, POLY  
Mode 3 : OMNI OFF, POLY

Mode 2 : OMNI ON, MONO  
Mode 4 : OMNI OFF, MONO

O : Yes  
X : No

