

JUPITER-X/Xm MIDI Implementation

Model: JUPITER-X/Xm

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Version: 1.06

1. Data Reception

■ 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)

● 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)

● Control Change

* If you select a controller number that corresponds to an MFX Src 1-4 parameter, the respective effect is applied according to the setting.

o Bank Select (Controller number 0, 32)

Status	2nd byte	3rd byte
BnH	00H	mmH
BnH	20H	11H

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

mm, 11 = Bank number: 00 00H - 7F 7FH (bank.1 - bank.16384)

* Not received when the Rx Bank parameter (SYSTEM: MIDI RX) is OFF.

* Not received when the Rx Bank parameter (SCENE PART EDIT: MIDI) is OFF.

The Scenes corresponding to each Bank Select are as follows.

BANK SELECT	PROGRAM	GROUP	NUMBER
MSB | LSB	NUMBER		
085 | 000 - 003	001 - 128	SCENE	1 - 512

The Tones corresponding to each Bank Select are as follows.

BANK SELECT	PROGRAM	GROUP	NUMBER
MSB | LSB	NUMBER		
071 | 003 - 006	001 - 128	User Tone	0001 - 0512
071 | 067	001 - 015	PR-X	0001 - 0035
| 069	001 - 005	RD-PIANO	0001 - 0005
| 070	001 - 002	VOCODER	0001 - 0002
087 | 064	001 - 128	PR-B	0001 - 0128
:	:	:	:
| 067	001 - 075	|	0385 - 0459
| 068	001 - 128	PR-C	0001 - 0128
| 069	001 - 128	PR-D	0001 - 0128
:	:	:	:
| 077	001 - 085	|	1025 - 1109
| 078	001 - 128	XV-5080	0001 - 0128
:	:	:	:
| 084	001 - 128	|	0769 - 0896
| 085	001 - 128	COMMON	0001 - 0128
:	:	:	:

097	| 091	| 001 - 069		| 0768 - 0837
	| 092	| 001 - 128	FR-A	| 0001 - 0128
	| 093	| 001 - 111		| 0129 - 0239
	| 064	| 001 - 116	JUPITER-8	| 0001 - 0116
	| 066	| 001 - 122	JUNO-106	| 0001 - 0122
	| 068	| 001 - 117	JX-8P	| 0001 - 0117
	070	001 - 102	SH-101	0001 - 0102
	081	001 - 128	JUPITER-X	0001 - 0128
	082	001 - 030		0129 - 0158
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086	064	001 - 017	FR-A DRUM	0001 - 0017
	065	001 - 074	CMN DRUM	0001 - 0074

o Modulation (Controller number 1)

Status	2nd byte	3rd byte
BnH	01H	vvH

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

vv = Modulation depth: 00H - 7FH (0 - 127)

* Not received when the Rx Mod parameter (SCENE PART EDIT: MIDI) is OFF.

o Portamento Time (Controller number 5)

Status	2nd byte	3rd byte
BnH	05H	vvH

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

vv = Portamento Time: 00H - 7FH (0 - 127)

* The Porta Time parameter (SCENE PART EDIT: CTRL) will change.

o Data Entry (Controller number 6, 38)

Status	2nd byte	3rd byte
BnH	06H	mmH
BnH	26H	11H

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

mm, 11 = the value of the parameter specified by RPN/NRPN

mm = MSB, 11 = LSB

o Volume (Controller number 7)

Status	2nd byte	3rd byte
BnH	07H	vvH

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

vv = Volume: 00H - 7FH (0 - 127)

* Not received when the Rx Volume parameter (SCENE PART EDIT: MIDI) is OFF.

* The Part Level parameter (SCENE PART EDIT) will change.

o Panpot (Controller number 10)

Status	2nd byte	3rd byte
BnH	0AH	vvH

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

vv = Panpot: 00H - 40H - 7FH (Left - Center - Right)

* Not received when the Rx Pan parameter (SCENE PART EDIT: MIDI) is OFF.

* The Pan parameter (SCENE PART EDIT) will change.

o Expression (Controller number 11)

Status	2nd byte	3rd byte
BnH	0BH	vvH

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

vv = Expression: 00H - 7FH (0 - 127)

* Not received when the Rx Exp parameter (SCENE PART EDIT: MIDI) is OFF.

o Hold 1 (Controller number 64)

Status	2nd byte	3rd byte
BnH	40H	vvH

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

vv = Control value: 00H - 7FH (0 - 127)

0-63 = OFF, 64-127 = ON

* Not received when the Rx Hold-1 parameter (SCENE PART EDIT: MIDI) is OFF.

o Portamento (Controller number 65)

Status	2nd byte	3rd byte
BnH	41H	vvH

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

vv = Control value: 00H - 7FH (0 - 127)

0-63 = OFF, 64-127 = ON

* The Porta Sw parameter (SCENE PART EDIT: CTRL) will change.

o Sostenuto (Controller number 66)

Status	2nd byte	3rd byte
BnH	42H	vvH

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

vv = Control value: 00H - 7FH (0 - 127)

0-63 = OFF, 64-127 = ON

o Soft (Controller number 67)

Status	2nd byte	3rd byte
BnH	43H	vvH

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

vv = Control value: 00H - 7FH (0 - 127)

o Legato Foot Switch (Controller number 68)

Status	2nd byte	3rd byte
BnH	44H	vvH

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

vv = Control value: 00H - 7FH (0 - 127)

0-63 = OFF, 64-127 = ON

* The Legato Sw parameter (SCENE PART EDIT: CTRL) will change.

o 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 Resonance parameter (SCENE PART EDIT: MODIFY) will change.

o 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 Release parameter (SCENE PART EDIT: MODIFY) will change.

o 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 Attack parameter (SCENE PART EDIT: MODIFY) will change.

o 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 Cutoff parameter (SCENE PART EDIT: MODIFY) will change.

o 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 Decay parameter (SCENE PART EDIT: MODIFY) will change.

o 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 Vib Rate parameter (SCENE PART EDIT: MODIFY) will change.

o 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 Vib Depth parameter (SCENE PART EDIT: MODIFY) will change.

o 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 Vib Delay parameter (SCENE PART EDIT: MODIFY) will change.

o Portamento control (Controller number 84)

Status	2nd byte	3rd byte
BnH	54H	kkH

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

o General Purpose Effect 1 (Reverb Send Level)

(Controller number 91)

Status	2nd byte	3rd byte
BnH	5BH	vvH

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

vv = Reverb Send Level: 00H - 7FH (0 - 127)

* The Rev Send parameter (SCENE PART EDIT: MODIFY) will change.

o General Purpose Effect 3 (Chorus Send Level)

(Controller number 93)

Status	2nd byte	3rd byte
BnH	5DH	vvH

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

vv = Chorus Send Level: 00H - 7FH (0 - 127)

* The Cho Send parameter (SCENE PART EDIT: MODIFY) will change.

o 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 - ch.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
MSB, LSB	MSB, LSB	Pitch Bend Sensitivity
00H, 00H	mmH, llH	mm: 00H - 18H (0 - 24 semitones) ll: ignored (processed as 00H) Up to 2 octave can be specified in semitone steps.

* The Pitch Bend Range (Bend Range) parameter (PART VIEW: Pitch) 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)

* The Fine Tune parameter (SCENE PART EDIT: PITCH) will change.

00H, 02H	mmH, llH	Channel Coarse Tuning
		mm: 10H - 40H - 70H (-48 - 0 - +48 semitones) ll: ignored (processed as 00H)

* The Coarse Tune parameter (SCENE PART EDIT: PITCH) will change.

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

• 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 Rx PC parameter (SYSTEM: MIDI RX) is OFF.

* Not received when the Rx PC parameter (SCENE PART EDIT: MIDI) is OFF.

• Channel Pressure

Status	2nd byte
DnH	vvH

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

vv = Channel Pressure: 00H - 7FH (0 - 127)

* Not received when the Rx Ch Pres parameter (SCENE PART EDIT: MIDI) 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 Rx Bend parameter (SCENE PART EDIT: MIDI) is OFF.

■ Channel Mode Messages

● All Sounds Off

(Controller number 120)

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

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

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

● Reset All Controllers

(Controller number 121)

(Controller number 121)

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

n = MIDI channel number: 0H - FH (ch.1 - ch.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)
Foot Type	0 (min)
Expression	127 (max)
	However the controller will be at minimum.
Hold 1	0 (off)
Sostenuto	0 (off)
Soft	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 - ch.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 - ch.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 - ch.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 - ch.16)

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

* The same processing will be carried out as when All Notes Off is received.
* The Mono/Poly parameter (SCENE PART EDIT: CTRL) will change.

● POLY (Controller number 127)

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

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

* The same processing will be carried out as when All Notes Off is received.
* The Mono/Poly parameter (SCENE PART EDIT: CTRL) will change.

■ System Realtime Message

● 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)

The System Exclusive messages received by this device are the Universal Nonrealtime System Exclusive messages and the Universal Realtime System Exclusive messages and the Data Request (RQ1) messages and the Data Set (DT1) messages.

● 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 will be transmitted.

● 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 00H 00H 65H.

○ 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, 00H, 00H, 65H, 11H, aaH, bbH, F7H	
	ccH, ddH, ssH, ttH, uuH, vvH, sum	

Byte	Explanation
F0H	Exclusive status
41H	ID number (Roland)
dev	device ID (dev: 10H - 1FH, 7FH)
00H	model ID #1 (JUPITER-X/Xm)
00H	model ID #2 (JUPITER-X/Xm)
00H	model ID #3 (JUPITER-X/Xm)
52H	model ID #4 (JUPITER-X/Xm)
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 fro 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.
 * For the checksum, refer to "How to calculate the checksum".
 * Not received when the Rx Exclusive parameter (SYSTEM: MIDI RX) is OFF.

○ Data set 1 (DT1)

This is the message that actually performs data transmission, and is used when you wish to transmit the data.

Status	data byte	Status
F0H	41H, dev, 00H, 00H, 00H, 65H, 12H, aaH, bbH, F7H	
	ccH, ddH, eeH, ... ffH, sum	

Byte	Explanation
F0H	Exclusive status
41H	ID number (Roland)
dev	device ID (dev: 10H - 1FH, 7FH)
00H	model ID #1 (JUPITER-X/Xm)
00H	model ID #2 (JUPITER-X/Xm)
00H	model ID #3 (JUPITER-X/Xm)
52H	model ID #4 (JUPITER-X/Xm)
12H	Command ID (DT1)
aaH	address MSB
bbH	address
ccH	address
ddH	address LSB
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.
 * 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.
 * For the checksum, refer to "How to calculate the checksum".
 * Not received when the Rx Exclusive parameter (SYSTEM: MIDI RX) 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 - ch.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 - ch.16)

kk = Note number: 00H - 7FH (0 - 127)

vv = Note on velocity: 01H - 7FH (1 - 127)

● Control Change

* By selecting a controller number that corresponds to the setting of parameters of controllers (knobs, etc.), this unit can transmit any control change message.

○ Bank Select (Controller number 0, 32)

Status	2nd byte	3rd byte
BnH	00H	mmH
BnH	20H	11H

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

mm, 11 = Bank number: 00 00H - 7F 7FH (bank.1 - bank.16384)

* These messages are transmitted when Scene or Tone is selected. But not transmitted when Tx PC (SYSTEM: MIDI TX) or Tx Bank parameter (SYSTEM: MIDI TX) is OFF.

○ Modulation (Controller number 1)

Status	2nd byte	3rd byte
BnH	01H	vvH

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

vv = Modulation depth: 00H - 7FH (0 - 127)

○ Foot Type (Controller number 4)

Status	2nd byte	3rd byte
BnH	04H	vvH

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

vv = Control value: 00H - 7FH (0 - 127)

○ Volume (Controller number 7)

Status	2nd byte	3rd byte
BnH	07H	vvH

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

vv = Volume: 00H - 7FH (0 - 127)

○ Expression (Controller number 11)

Status	2nd byte	3rd byte
BnH	0BH	vvH

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

vv = Control value: 00H - 7FH (0 - 127)

0-63 = OFF, 64-127 = ON

○ Portamento (Controller number 65)

Status	2nd byte	3rd byte
BnH	41H	vvH

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

vv = Control value: 00H - 7FH (0 - 127)

0-63 = OFF, 64-127 = ON

○ 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)

● 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)

* These messages are transmitted when Program or Tone is selected. But not transmitted when Transmit Program Change parameter (SYSTEM: MIDI TX) is OFF.

● Channel Pressure

Status	2nd byte
DnH	vvH

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

vv = Channel Pressure: 00H - 7FH (0 - 127)

● Pitch Bend Change

Status	2nd byte	3rd byte
EnH	11H	mmH

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

mm, 11 = Pitch Bend value: 00 00H - 40 00H - 7F 7FH (-8192 - 0 - +8191)

■ System Realtime Message

● Active Sensing

Status
FEH

* This message is transmitted at intervals of approximately 250 msec.

■ System Exclusive Message

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

● Universal Non-realtime System Exclusive Messages

o Identity Reply Message

JUPITER-X		
Status	data byte	Status
F0H	7EH, 7F, 06H, 02H, 41H, 65H, 03H, 00H, 00H, 01H, 01H, 00H, 05H,	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)	
02H	Sub ID#2 (Identity Reply)	
41H	ID number (Roland)	
65H 03H	Device family code	
00H 00H	Device family number code	
00H 01H 00H 05H	Software revision level	
F7H	EOX (End Of Exclusive)	

JUPITER-Xm		
Status	data byte	Status
F0H	7EH, 7F, 06H, 02H, 41H, 65H, 03H, 00H, 00H, 00H, 01H, 00H, 05H,	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)	
02H	Sub ID#2 (Identity Reply)	
41H	ID number (Roland)	
65H 03H	Device family code	
00H 00H	Device family number code	
00H 01H 00H 05H	Software revision level	
F7H	EOX (End Of Exclusive)	

● Data Transmission

o Data set 1 (DT1)

Status	data byte	Status
F0H	41H, dev, 00H, 00H, 00H, 65H, 12H, aaH, bbH, F7H	
	ccH, ddH, eeH, ... ffH, sum,	
Byte	Explanation	
F0H	Exclusive status	
41H	ID number (Roland)	
dev	device ID (dev: 10H - 1FH, 7FH)	
00H	model ID #1 (JUPITER-X/Xm)	
00H	model ID #2 (JUPITER-X/Xm)	
00H	model ID #3 (JUPITER-X/Xm)	
65H	model ID #4 (JUPITER-X/Xm)	
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 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.

* 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. 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.

JUPITER-X/Xm (ModelID = 00H 00H 00 65H)

Start	Address	Description
00 00 00 00	System	[System]
00 10 00 00	Setup	[Setup]
01 00 00 00	Temporary Scene	[Scene]
02 00 00 00	Temporary Tone ZCore (01)	[ZCore]
02 01 00 00	Temporary Tone ZCore (02)	[ZCore]
:	:	:
02 03 00 00	Temporary Tone ZCore (04)	[ZCore]
02 10 00 00	Temporary Tone Analog Synth Model (01)	[SynMdl]
02 11 00 00	Temporary Tone Analog Synth Model (02)	[SynMdl]
:	:	:
02 13 00 00	Temporary Tone Analog Synth Model (04)	[SynMdl]
02 20 00 00	Temporary Tone RD Piano (01)	[RDTONE]
02 50 00 00	Temporary Tone JUPITER-X (01)	[MdlJFX]
02 51 00 00	Temporary Tone JUPITER-X (02)	[MdlJFX]
:	:	:
02 53 00 00	Temporary Tone JUPITER-X (04)	[MdlJFX]
40 00 00 00	User Scene (001)	[Scene]
40 05 00 00	User Scene (002)	[Scene]
:	:	:
49 7B 00 00	User Scene (256)	[Scene]

JUPITER-X/Xm MIDI Implementation

50 00 00 00	User Tone (001)	[UserTone]
50 02 00 00	User Tone (002)	[UserTone]
:		
57 7E 00 00	User Tone (512)	[UserTone]
60 00 00 00	User Scene (257)	[Scene]
60 05 00 00	User Scene (258)	[Scene]
:		
69 7B 00 00	User Scene (512)	[Scene]
7F 00 00 00	Editor	

* [System]

Offset	Address	Description
00 00 00	System Common	[System Common]
00 01 00	System Control	[System Control]
00 02 00	System Chorus	[Chorus]
00 03 00	System Delay	[Chorus]
00 04 00	System Reverb	[Reverb]
00 05 00	Master EQ	[Master EQ]
00 06 00	Master Comp	[Master Comp]
00 07 00	Model Bank (01) Assign	[Model Bank Assign]
00 08 00	Model Bank (02) Assign	[Model Bank Assign]
:		
00 16 00	Model Bank (16) Assign	[Model Bank Assign]
00 17 00	Button Color Set(01)	[Button Color Set]
00 18 00	Button Color Set(02)	[Button Color Set]
:		
00 20 00	Button Color Set(10)	[Button Color Set]

* [SynMdl]

Offset	Address	Description
00 00 00	Analog Synth Model Parameter	[MDLSYN0]
00 02 00	Analog Synth Model MFX	[MFX]
00 04 00	Analog Synth Model Tone Com	[ToneCom]

* [RDTONE]

Offset	Address	Description
00 00 00	RD Tone Name	[ToneName]
00 01 00	RD Piano Sympathetic Resonance	[Sympathetic Resonance]

* [MdlJPX]

Offset	Address	Description
00 00 00	Model JUPITER-X Parameter	[MDLJPX]
00 03 00	Model JUPITER-X MFX	[MFX]
00 05 00	Model JUPITER-X Tone Com	[ToneCom]

* [Scene]

Offset	Address	Description
00 00 00	Scene Common	[Scene Common]
00 10 00	Scene Part (01)	[Scene Part]
00 11 00	Scene Part (02)	[Scene Part]
:		
00 14 00	Scene Part (05)	[Scene Part]
00 20 00	Scene EQ (01)	[Scene EQ]
00 21 00	Scene EQ (02)	[Scene EQ]
:		
00 24 00	Scene EQ (05)	[Scene EQ]

00 30 00	Scene MFX (01)	[MFX]
00 32 00	Scene MFX (02)	[MFX]
:		
00 38 00	Scene MFX (05)	[MFX]
00 40 00	Scene Zone (01)	[Scene Zone]
00 41 00	Scene Zone (02)	[Scene Zone]
:		
00 44 00	Scene Zone (05)	[Scene Zone]

00 50 00	Scene Chorus	[Chorus]
00 51 00	Scene Delay	[Chorus]
00 52 00	Scene Reverb	[Reverb]
00 53 00	Scene Drive	[Drive]
00 54 00	Scene Arpeggio Common	[Arpeggio Common]
00 55 00	Scene Arpeggio Part (01)	[Arpeggio Part]
00 56 00	Scene Arpeggio Part (02)	[Arpeggio Part]
:		
00 59 00	Scene Arpeggio Part (05)	[Arpeggio Part]
00 5A 00	Scene Arpeggio User Pattern (01)	[User Pattern]
00 7A 00	Scene Arpeggio User Pattern (02)	[User Pattern]
:		
01 5A 00	Scene Arpeggio User Pattern (05)	[User Pattern]

* [ZCore]

Offset	Address	Description
00 00 00	Tone Common	[Tone Common]
00 01 00	Tone MFX	[MFX]
00 10 00	Tone PMT	[Tone PMT]
00 20 00	Tone Partial 1	[Tone Partial]
00 21 00	Tone Partial 2	[Tone Partial]
:		
00 23 00	Tone Partial 4	[Tone Partial]
00 24 00	Partial Pitch Env 1	[Partial Pitch Env]
00 25 00	Partial Pitch Env 2	[Partial Pitch Env]
:		
00 27 00	Partial Pitch Env 4	[Partial Pitch Env]
00 28 00	Partial Filter Env 1	[Partial Filter Env]
00 29 00	Partial Filter Env 2	[Partial Filter Env]
:		
00 2B 00	Partial Filter Env 4	[Partial Filter Env]
00 2C 00	Partial Amp Env 1	[Partial Amp Env]
00 2D 00	Partial Amp Env 2	[Partial Amp Env]
:		
00 2F 00	Partial Amp Env 4	[Partial Amp Env]
00 30 00	Partial LFO 1	[Partial LFO]
00 32 00	Partial LFO 2	[Partial LFO]
:		
00 36 00	Partial LFO 4	[Partial LFO]
00 38 00	Partial EQ 1	[Partial EQ]
00 39 00	Partial EQ 2	[Partial EQ]
:		
00 3B 00	Partial EQ 4	[Partial EQ]
00 3C 00	Synth Common	[Tone Synth Common]
00 3D 00	Synth PMT	[Tone Synth PMT]
00 3E 00	Synth Partial 1	[Tone Synth Partial]
00 3F 00	Synth Partial 2	[Tone Synth Partial]
:		
00 41 00	Synth Partial 4	[Tone Synth Partial]

* [UserTone]

Offset	Address	Description
00 00 00	data 1	[USRDATA1BLK]
00 02 00	data 2	[USRDATA1BLK]
:		
00 1E 00	data 16	[USRDATA1BLK]

* [Setup]

Offset	Address	Description
00 00	0aaa aaaa	Scene BS MSB (CC# 0) (0 - 127)
00 01	0aaa aaaa	Scene BS LSB (CC# 32) (0 - 127)
00 02	0aaa aaaa	Scene PC (PC) (0 - 127)
00 00 00 03	Total Size	

* [System Common]

Offset	Address	Description
# 00 00	0000 aaaa	
00 01	0000 bbbb	
00 02	0000 cccc	
00 03	0000 dddd	Master Tune (24 - 2024)
00 04	0aaa aaaa	Master Key Shift (40 - 88)
00 05	0000 000a	ScaleTune Sw (0 - 1)
00 06	000a aaaa	Scene Control Channel (0 - 16)
00 07	0000 aaaa	Reserved (0 - 9)
00 08	0000 000a	Remote Keyboard (0 - 1)
00 09	0000 000a	Control Source Select (0 - 1)
00 0A	0aaa aaaa	System Control Source(1) (0 - 96)
		OFF, CC01, CC02, CC03, CC04, CC05, CC06, CC07, CC08, CC09, CC10, CC11, CC12, CC13, CC14, CC15, CC16, CC17, CC18, CC19, CC20, CC21, CC22, CC23, CC24, CC25, CC26, CC27, CC28, CC29, CC30, CC31, CC33, CC34, CC35, CC36, CC37, CC38, CC39, CC40, CC41, CC42, CC43, CC44, CC45, CC46, CC47, CC48, CC49, CC50, CC51, CC52, CC53, CC54, CC55, CC56, CC57, CC58, CC59, CC60, CC61, CC62, CC63, CC64, CC65, CC66, CC67, CC68, CC69, CC70, CC71, CC72, CC73, CC74, CC75, CC76, CC77, CC78, CC79, CC80, CC81, CC82, CC83, CC84, CC85, CC86, CC87, CC88, CC89, CC90, CC91, CC92, CC93, CC94, CC95, BEND, AFT
00 0B	0aaa aaaa	System Control Source(2) (0 - 96)
		OFF, CC01, CC02, CC03, CC04, CC05, CC06, CC07, CC08, CC09, CC10, CC11, CC12, CC13, CC14, CC15, CC16, CC17, CC18, CC19, CC20, CC21, CC22, CC23, CC24, CC25, CC26, CC27, CC28, CC29, CC30, CC31, CC33, CC34, CC35, CC36, CC37, CC38, CC39, CC40, CC41, CC42, CC43, CC44, CC45, CC46, CC47, CC48, CC49, CC50, CC51, CC52, CC53, CC54, CC55, CC56, CC57, CC58, CC59, CC60, CC61, CC62, CC63, CC64, CC65, CC66, CC67, CC68, CC69, CC70, CC71, CC72, CC73, CC74, CC75, CC76, CC77, CC78, CC79, CC80, CC81, CC82, CC83, CC84, CC85, CC86, CC87, CC88, CC89, CC90, CC91, CC92, CC93, CC94, CC95, BEND, AFT
00 0C	0aaa aaaa	System Control Source(3) (0 - 96)
		OFF, CC01, CC02, CC03, CC04, CC05, CC06, CC07, CC08, CC09, CC10, CC11, CC12, CC13, CC14, CC15, CC16, CC17, CC18, CC19, CC20, CC21, CC22, CC23, CC24, CC25, CC26, CC27, CC28, CC29, CC30, CC31, CC33, CC34, CC35, CC36, CC37, CC38, CC39, CC40, CC41, CC42, CC43, CC44, CC45, CC46, CC47, CC48, CC49, CC50, CC51, CC52, CC53, CC54, CC55, CC56, CC57, CC58, CC59, CC60, CC61, CC62, CC63, CC64, CC65, CC66, CC67, CC68, CC69, CC70, CC71, CC72, CC73, CC74, CC75, CC76, CC77, CC78, CC79, CC80, CC81, CC82, CC83, CC84, CC85, CC86, CC87, CC88, CC89, CC90, CC91, CC92, CC93, CC94, CC95, BEND, AFT
00 0D	0aaa aaaa	System Control Source(4) (0 - 96)
		OFF, CC01, CC02, CC03, CC04, CC05, CC06, CC07, CC08, CC09, CC10, CC11, CC12, CC13, CC14, CC15, CC16, CC17, CC18, CC19, CC20, CC21, CC22, CC23, CC24, CC25, CC26, CC27, CC28, CC29, CC30, CC31, CC33, CC34, CC35, CC36, CC37, CC38, CC39, CC40, CC41, CC42, CC43, CC44, CC45, CC46, CC47, CC48, CC49, CC50, CC51, CC52, CC53, CC54, CC55, CC56, CC57, CC58, CC59, CC60, CC61, CC62, CC63, CC64, CC65, CC66, CC67, CC68, CC69, CC70, CC71, CC72, CC73, CC74, CC75, CC76, CC77, CC78, CC79, CC80, CC81, CC82, CC83, CC84, CC85, CC86, CC87, CC88, CC89, CC90, CC91, CC92, CC93, CC94, CC95, BEND, AFT
# 00 0E	0000 aaaa	
00 0F	0000 bbbb	
00 10	0000 cccc	
00 11	0000 dddd	System Tempo (2000 - 30000)
00 12	0000 000a	Tempo Source (0 - 1)
00 13	0000 000a	Receive Program Change (0 - 1)
00 14	0000 000a	Receive Bank Select (0 - 1)
00 15	0000 000a	Chorus Source (0 - 1)
00 16	0000 000a	Reverb Source (0 - 1)
00 17	0000 000a	Delay Source (0 - 1)
00 18	0000 000a	Noise Suppressor Switch (0 - 1)
# 00 19	0000 aaaa	
00 1A	0000 bbbb	Mic Noise Suppressor Threshold (-32 - 64)

00 1B	0aaa aaaa	Mic Noise Suppressor Release (0 - 127)
00 1C	0000 000a	Mic Comp Switch (0 - 1)
00 1D	0aaa aaaa	Mic Comp Attack Time (0 - 100)
		0.1, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100[ms]
00 1E	0aaa aaaa	Mic Comp Release Time (0 - 99)
		10 - 1000[ms]
00 1F	0aaa aaaa	Mic Comp Threshold (4 - 64)
00 20	0000 0aaa	Mic Comp Ratio (-60 - 0[dB])
		1:1, 2:1, 3:1, 4:1, 8:1, 16:1, 32:1, INF:1
00 21	000a aaaa	Mic Comp Knee (0 - 30)
00 22	0aaa aaaa	Mic Comp Output Gain (0 - 30 [dB])
		(16 - 112)
00 23	0000 000a	Mic Thru Switch (-24.0 - +24.0 [dB])
00 24	0aaa aaaa	Mic Reverb Send Level (0 - 1)
00 25	0aaa aaaa	Mic Chorus Send Level (0 - 127)
00 26	0aaa aaaa	Mic Delay Send Level (0 - 127)
00 27	0aaa aaaa	USB Audio Input Level (0 - 127)
00 28	0aaa aaaa	USB Audio Output Level (0 - 127)
00 29	0000 000a	Local Switch (0 - 1)
00 2A	0000 00aa	Aging Warm-Up (OFF, ON, FAST)
00 2B	0000 000a	Arpeggio Set Rhythm Tempo (0 - 1)
00 2C	0000 000a	Arpeggio Set Rhythm Sound (OFF, ON)
00 2D	0000 000a	Arpeggio Set Type Sound (0 - 1)
00 2E	00aa aaaa	Aging Initial Temperature (OFF, ON)
		REAL, 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, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60
00 2F	0000 aaaa	(*)Button Color Set (0 - 9)
		1 - 10
00 00 00 30	Total Size	

(*): Not used with JUPITER-Xm.

* [System Control]

Offset	Address	Description
00 00	0000 000a	Transmit Program Change (0 - 1)
00 01	0000 000a	Transmit Bank Select (OFF, ON)
00 02	0aaa aaaa	Keyboard Velocity (0 - 127)
		REAL, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127
00 03	0000 00aa	Keyboard Velocity Curve (0 - 2)
		LIGHT, MEDIUM, HEAVY
00 04	0aaa aaaa	Keyboard Velocity Curve Offset (54 - 73)
00 05	0aaa aaaa	Assignable Button(1) Function (-10 - 9)
		OFF, MOD: CC01, BRETH: CC02, CC03, FOOT: CC04, PTIME: CC05, DENT: CC06, VOL: CC07, BAL: CC08, CC09, PAN: CC10, EXP: CC11, CC12, CC13, CC14, CC15, GEN-1: CC16, GEN-2: CC17, GEN-3: CC18, GEN-4: CC19, CC20, CC21, CC22, CC23, CC24, CC25, CC26, CC27, CC28, CC29, CC30, CC31, OFF: CC32, CC33, CC34, CC35, CC36, CC37, DENT: CC38, CC39, CC40, CC41, CC42, CC43, CC44, CC45, CC46, CC47, CC48, CC49, CC50, CC51, CC52, CC53, CC54, CC55, CC56, CC57, CC58, CC59, CC60, CC61, CC62, CC63, HOLD1: CC64, PORTA: CC65, SOSTE: CC66, SOFT: CC67, LEGAT: CC68, HOLD2: CC69, CC70, RESO: CC71, RELES: CC72, ATTACK: CC73, CUTOFF: CC74, DECAY: CC75, VRATE: CC76, VDEPTH: CC77, VDLV: CC78, CC79, GEN-5: CC80, GEN-6: CC81, GEN-7: CC82, GEN-8: CC83, PCTRL: CC84, CC85, CC86, CC87, CC88, CC89, CC90, REV: CC91, TREM: CC92, CHO: CC93, CELST: CC94, PHASR: CC95, AFT, MONO/POLY, SCENE DOWN, SCENE UP, TONE DOWN, TONE UP, PANEL DEC, PANEL INC, CHO SW, REV SW, DLY SW, ARP SW, ARP HOLD,

JUPITER-X/Xm MIDI Implementation

			DETECT KEYS,DETECT BEAT,UNISON SW,BEND MODE, AUTO TUNING,TAP TEMPO, START/STOP, DRV SW, VOC/MIC				CHO:CC93,CELST:CC94,PHASR:CC95,AFT,BEND DOWN, BEND UP,CHO LEVEL,REV LEVEL,DLY LEVEL,ARP SHUFFLE, ARP DURATION,PART FADE1,PART FADE2, LEVEL P-1, LEVEL P-2, LEVEL P-3, LEVEL P-4, LEVEL P-R, AGE					
00 06	0aaa aaaa	Assignable Button(2) Function	(0 - 117) OFF,MOD:CC01, BRETH:CC02,CC03,FOOT:CC04,PTIME:CC05,DENT:CC06, VOL:CC07,BAL:CC08,CC09,PAN:CC10,EXP:CC11, CC12,CC13,CC14,CC15,GEN-1:CC16,GEN-2:CC17, GEN-3:CC18,GEN-4:CC19,CC20,CC21,CC22,CC23, CC24,CC25,CC26,CC27,CC28,CC29,CC30,CC31,OFF:CC32, CC33,CC34,CC35,CC36,CC37,DENT:CC38,CC39,CC40, CC41,CC42,CC43,CC44,CC45,CC46,CC47,CC48,CC49,CC50, CC51,CC52,CC53,CC54,CC55,CC56,CC57,CC58,CC59,CC60, CC61,CC62,CC63,HOLD1:CC64,PORTA:CC65,SOSTE:CC66, SOFT:CC67,LEGAT:CC68,HOLD2:CC69,CC70,RESO:CC71, RELES:CC72,ATTAK:CC73,CUTOFF:CC74,DECAY:CC75, VRATE:CC76,VDPTH:CC77,VDLY:CC78,CC79,GEN-5:CC80, GEN-6:CC81,GEN-7:CC82,GEN-8:CC83,PCTRL:CC84, CC85,CC86,CC87,CC88,CC89,CC90,REV:CC91,TREM:CC92, CHO:CC93,CELST:CC94,PHASR:CC95,AFT,MONO/POLY, SCENE DOWN,SCENE UP,TONE DOWN,TONE UP,PANEL DEC, PANEL INC,CHO SW,REV SW,DLY SW,ARP SW,ARP HOLD, DETECT KEYS,DETECT BEAT,UNISON SW,BEND MODE, AUTO TUNING,TAP TEMPO, START/STOP, DRV SW, VOC/MIC	00 11	0000 000a	Assignable Slider(1) Source	(0 - 1) SCENE, SYS					
					00 12	0000 000a	Assignable Slider(2) Source	(0 - 1) SCENE, SYS				
					00 13	0aaa aaaa	Assignable Slider(1) Function	(0 - 111) OFF,MOD:CC01, BRETH:CC02,CC03,FOOT:CC04,PTIME:CC05,DENT:CC06, VOL:CC07,BAL:CC08,CC09,PAN:CC10,EXP:CC11, CC12,CC13,CC14,CC15,GEN-1:CC16,GEN-2:CC17, GEN-3:CC18,GEN-4:CC19,CC20,CC21,CC22,CC23, CC24,CC25,CC26,CC27,CC28,CC29,CC30,CC31,OFF:CC32, CC33,CC34,CC35,CC36,CC37,DENT:CC38,CC39,CC40, CC41,CC42,CC43,CC44,CC45,CC46,CC47,CC48,CC49,CC50, CC51,CC52,CC53,CC54,CC55,CC56,CC57,CC58,CC59,CC60, CC61,CC62,CC63,HOLD1:CC64,PORTA:CC65,SOSTE:CC66, SOFT:CC67,LEGAT:CC68,HOLD2:CC69,CC70,RESO:CC71, RELES:CC72,ATTAK:CC73,CUTOFF:CC74,DECAY:CC75, VRATE:CC76,VDPTH:CC77,VDLY:CC78,CC79,GEN-5:CC80, GEN-6:CC81,GEN-7:CC82,GEN-8:CC83,PCTRL:CC84, CC85,CC86,CC87,CC88,CC89,CC90,REV:CC91,TREM:CC92, CHO:CC93,CELST:CC94,PHASR:CC95,AFT,BEND DOWN, BEND UP,CHO LEVEL,REV LEVEL,DLY LEVEL,ARP SHUFFLE, ARP DURATION,PART FADE1,PART FADE2, LEVEL P-1, LEVEL P-2, LEVEL P-3, LEVEL P-4, LEVEL P-R, AGE	00 14	0aaa aaaa	Assignable Slider(2) Function	(0 - 111) OFF,MOD:CC01, BRETH:CC02,CC03,FOOT:CC04,PTIME:CC05,DENT:CC06, VOL:CC07,BAL:CC08,CC09,PAN:CC10,EXP:CC11, CC12,CC13,CC14,CC15,GEN-1:CC16,GEN-2:CC17, GEN-3:CC18,GEN-4:CC19,CC20,CC21,CC22,CC23, CC24,CC25,CC26,CC27,CC28,CC29,CC30,CC31,OFF:CC32, CC33,CC34,CC35,CC36,CC37,DENT:CC38,CC39,CC40, CC41,CC42,CC43,CC44,CC45,CC46,CC47,CC48,CC49,CC50, CC51,CC52,CC53,CC54,CC55,CC56,CC57,CC58,CC59,CC60, CC61,CC62,CC63,HOLD1:CC64,PORTA:CC65,SOSTE:CC66, SOFT:CC67,LEGAT:CC68,HOLD2:CC69,CC70,RESO:CC71, RELES:CC72,ATTAK:CC73,CUTOFF:CC74,DECAY:CC75, VRATE:CC76,VDPTH:CC77,VDLY:CC78,CC79,GEN-5:CC80, GEN-6:CC81,GEN-7:CC82,GEN-8:CC83,PCTRL:CC84, CC85,CC86,CC87,CC88,CC89,CC90,REV:CC91,TREM:CC92, CHO:CC93,CELST:CC94,PHASR:CC95,AFT,BEND DOWN, BEND UP,CHO LEVEL,REV LEVEL,DLY LEVEL,ARP SHUFFLE, ARP DURATION,PART FADE1,PART FADE2, LEVEL P-1, LEVEL P-2, LEVEL P-3, LEVEL P-4, LEVEL P-R, AGE
00 07	0aaa aaaa	Assignable Button(3) Function	(0 - 117) OFF,MOD:CC01, BRETH:CC02,CC03,FOOT:CC04,PTIME:CC05,DENT:CC06, VOL:CC07,BAL:CC08,CC09,PAN:CC10,EXP:CC11, CC12,CC13,CC14,CC15,GEN-1:CC16,GEN-2:CC17, GEN-3:CC18,GEN-4:CC19,CC20,CC21,CC22,CC23, CC24,CC25,CC26,CC27,CC28,CC29,CC30,CC31,OFF:CC32, CC33,CC34,CC35,CC36,CC37,DENT:CC38,CC39,CC40, CC41,CC42,CC43,CC44,CC45,CC46,CC47,CC48,CC49,CC50, CC51,CC52,CC53,CC54,CC55,CC56,CC57,CC58,CC59,CC60, CC61,CC62,CC63,HOLD1:CC64,PORTA:CC65,SOSTE:CC66, SOFT:CC67,LEGAT:CC68,HOLD2:CC69,CC70,RESO:CC71, RELES:CC72,ATTAK:CC73,CUTOFF:CC74,DECAY:CC75, VRATE:CC76,VDPTH:CC77,VDLY:CC78,CC79,GEN-5:CC80, GEN-6:CC81,GEN-7:CC82,GEN-8:CC83,PCTRL:CC84, CC85,CC86,CC87,CC88,CC89,CC90,REV:CC91,TREM:CC92, CHO:CC93,CELST:CC94,PHASR:CC95,AFT,MONO/POLY, SCENE DOWN,SCENE UP,TONE DOWN,TONE UP,PANEL DEC, PANEL INC,CHO SW,REV SW,DLY SW,ARP SW,ARP HOLD, DETECT KEYS,DETECT BEAT,UNISON SW,BEND MODE, AUTO TUNING,TAP TEMPO, START/STOP, DRV SW, VOC/MIC	00 08	0000 000a	Assignable Button(1) Mode	(0 - 1) LATCH, MOMENTARY					
					00 09	0000 000a	Assignable Button(2) Mode	(0 - 1) LATCH, MOMENTARY	00 15	0000 000a	(*)Control Wheel1 Source	(0 - 1) SCENE, SYS
					00 0A	0000 000a	Assignable Button(3) Mode	(0 - 1) LATCH, MOMENTARY	00 16	0aaa aaaa	(*)Control Wheel1 Function	(0 - 97) OFF,MOD:CC01, BRETH:CC02,CC03,FOOT:CC04,PTIME:CC05,DENT:CC06, VOL:CC07,BAL:CC08,CC09,PAN:CC10,EXP:CC11, CC12,CC13,CC14,CC15,GEN-1:CC16,GEN-2:CC17, GEN-3:CC18,GEN-4:CC19,CC20,CC21,CC22,CC23,CC24, CC25,CC26,CC27,CC28,CC29,CC30,CC31,OFF:CC32, CC33,CC34,CC35,CC36,CC37,DENT:CC38,CC39,CC40, CC41,CC42,CC43,CC44,CC45,CC46,CC47,CC48,CC49,CC50, CC51,CC52,CC53,CC54,CC55,CC56,CC57,CC58,CC59,CC60, CC61,CC62,CC63,HOLD1:CC64,PORTA:CC65,SOSTE:CC66, SOFT:CC67,LEGAT:CC68,HOLD2:CC69,CC70,RESO:CC71, RELES:CC72,ATTAK:CC73,CUTOFF:CC74,DECAY:CC75, VRATE:CC76,VDPTH:CC77,VDLY:CC78,CC79,GEN-5:CC80, GEN-6:CC81,GEN-7:CC82,GEN-8:CC83,PCTRL:CC84, CC85,CC86,CC87,CC88,CC89,CC90,REV:CC91,TREM:CC92, CHO:CC93,CELST:CC94,PHASR:CC95,AFT,BEND DOWN, BEND UP,CHO LEVEL,REV LEVEL,DLY LEVEL,ARP SHUFFLE, ARP DURATION,PART FADE1,PART FADE2, LEVEL P-1, LEVEL P-2, LEVEL P-3, LEVEL P-4, LEVEL P-R, AGE
00 0B	0000 000a	Assignable Button Source	(0 - 1) SCENE, SYS									
00 0C	0000 000a	Hold Pedal Source	(0 - 1) SCENE, SYS									
00 0D	0aaa aaaa	Hold Pedal Function	(0 - 117) OFF,MOD:CC01, BRETH:CC02,CC03,FOOT:CC04,PTIME:CC05,DENT:CC06, VOL:CC07,BAL:CC08,CC09,PAN:CC10,EXP:CC11,CC12, CC13,CC14,CC15,GEN-1:CC16,GEN-2:CC17,GEN-3:CC18, GEN-4:CC19,CC20,CC21,CC22,CC23,CC24,CC25, CC26,CC27,CC28,CC29,CC30,CC31,OFF:CC32,CC33,CC34, CC35,CC36,CC37,DENT:CC38,CC39,CC40,CC41,CC42, CC43,CC44,CC45,CC46,CC47,CC48,CC49,CC50,CC51, CC52,CC53,CC54,CC55,CC56,CC57,CC58,CC59,CC60, CC61,CC62,CC63,HOLD1:CC64,PORTA:CC65,SOSTE:CC66, SOFT:CC67,LEGAT:CC68,HOLD2:CC69,CC70,RESO:CC71, RELES:CC72,ATTAK:CC73,CUTOFF:CC74,DECAY:CC75, VRATE:CC76,VDPTH:CC77,VDLY:CC78,CC79,GEN-5:CC80, GEN-6:CC81,GEN-7:CC82,GEN-8:CC83,PCTRL:CC84,CC85, CC86,CC87,CC88,CC89,CC90,REV:CC91,TREM:CC92, CHO:CC93,CELST:CC94,PHASR:CC95,AFT,MONO/POLY, SCENE DOWN,SCENE UP,TONE DOWN,TONE UP,PANEL DEC, PANEL INC,CHO SW,REV SW,DLY SW,ARP SW,ARP HOLD, DETECT KEYS,DETECT BEAT,UNISON SW,BEND MODE, AUTO TUNING,TAP TEMPO,START/STOP, DRV SW, VOC/MIC	00 17	0000 000a	(*)Control Wheel2 Source	(0 - 1) SCENE, SYS					
					00 18	0aaa aaaa	(*)Control Wheel2 Function	(0 - 111) OFF,MOD:CC01, BRETH:CC02,CC03,FOOT:CC04,PTIME:CC05,DENT:CC06, VOL:CC07,BAL:CC08,CC09,PAN:CC10,EXP:CC11, CC12,CC13,CC14,CC15,GEN-1:CC16,GEN-2:CC17, GEN-3:CC18,GEN-4:CC19,CC20,CC21,CC22,CC23, CC24,CC25,CC26,CC27,CC28,CC29,CC30,CC31,OFF:CC32, CC33,CC34,CC35,CC36,CC37,DENT:CC38,CC39,CC40, CC41,CC42,CC43,CC44,CC45,CC46,CC47,CC48,CC49,CC50, CC51,CC52,CC53,CC54,CC55,CC56,CC57,CC58,CC59,CC60, CC61,CC62,CC63,HOLD1:CC64,PORTA:CC65,SOSTE:CC66, SOFT:CC67,LEGAT:CC68,HOLD2:CC69,CC70,RESO:CC71, RELES:CC72,ATTAK:CC73,CUTOFF:CC74,DECAY:CC75, VRATE:CC76,VDPTH:CC77,VDLY:CC78,CC79,GEN-5:CC80, GEN-6:CC81,GEN-7:CC82,GEN-8:CC83,PCTRL:CC84, CC85,CC86,CC87,CC88,CC89,CC90,REV:CC91,TREM:CC92, CHO:CC93,CELST:CC94,PHASR:CC95,AFT,BEND DOWN, BEND UP,CHO LEVEL,REV LEVEL,DLY LEVEL,ARP SHUFFLE, ARP DURATION,PART FADE1,PART FADE2, LEVEL P-1, LEVEL P-2, LEVEL P-3, LEVEL P-4, LEVEL P-R, AGE	00 19	0000 0aaa	Part Button Assign [1]-[5]	(0 - 6) NO ASSIGN, PART SELECT, PART SEL + KBD SW, KEYBOARD SW, PART SW, ARP PART SW, EFFECT SW
00 0E	0000 000a	Hold Pedal Polarity	(0 - 1) STANDARD, REVERSE									
00 0F	0000 000a	Ctrl Pedal Source	(0 - 1) SCENE, SYS									
00 10	0aaa aaaa	Ctrl Pedal Function	(0 - 111) OFF,MOD:CC01, BRETH:CC02,CC03,FOOT:CC04,PTIME:CC05,DENT:CC06, VOL:CC07,BAL:CC08,CC09,PAN:CC10,EXP:CC11, CC12,CC13,CC14,CC15,GEN-1:CC16,GEN-2:CC17, GEN-3:CC18,GEN-4:CC19,CC20,CC21,CC22,CC23, CC24,CC25,CC26,CC27,CC28,CC29,CC30,CC31,OFF:CC32, CC33,CC34,CC35,CC36,CC37,DENT:CC38,CC39,CC40, CC41,CC42,CC43,CC44,CC45,CC46,CC47,CC48,CC49,CC50, CC51,CC52,CC53,CC54,CC55,CC56,CC57,CC58,CC59,CC60, CC61,CC62,CC63,HOLD1:CC64,PORTA:CC65,SOSTE:CC66, SOFT:CC67,LEGAT:CC68,HOLD2:CC69,CC70,RESO:CC71, RELES:CC72,ATTAK:CC73,CUTOFF:CC74,DECAY:CC75, VRATE:CC76,VDPTH:CC77,VDLY:CC78,CC79,GEN-5:CC80, GEN-6:CC81,GEN-7:CC82,GEN-8:CC83,PCTRL:CC84, CC85,CC86,CC87,CC88,CC89,CC90,REV:CC91,TREM:CC92,	00 1A	0000 0aaa	Part Button Assign SHIFT+[1]-[5]	(0 - 6) NO ASSIGN, PART SELECT, PART SEL + KBD SW, KEYBOARD SW, PART SW, ARP PART SW, EFFECT SW					
					00 1B	0000 0aaa	Part Button Assign [6]-[10]	(0 - 6) NO ASSIGN, PART SELECT, PART SEL + KBD SW, KEYBOARD SW, PART SW, ARP PART SW, EFFECT SW	00 1C	0000 0aaa	Part Button Assign SHIFT+[6]-[10]	(0 - 6)

			NO ASSIGN, PART SELECT, PART SEL + KBD SW,	
			KEYBOARD SW, PART SW, ARP PART SW, EFFECT SW	
00 1D	0000 0aaa	(*)	Part Button Assign [11]-[15]	(0 - 6)
			NO ASSIGN, PART SELECT, PART SEL + KBD SW,	
			KEYBOARD SW, PART SW, ARP PART SW, EFFECT SW	
00 1E	0000 0aaa	(*)	Part Button Assign SHIFT+[11]-[15]	(0 - 6)
			NO ASSIGN, PART SELECT, PART SEL + KBD SW,	
			KEYBOARD SW, PART SW, ARP PART SW, EFFECT SW	
00 1F	0aaa aaaa	(*)	Aftertouch Sens	(0 - 100)

00 00 00 20	Total Size			

(*) : Not used with JUPITER-Xm.

* [Button Color Set]

[illegible][illegible]

JUPITER-X/Xm MIDI Implementation

		OFF, ORANGE, YELLOW, YELLOW BLINK, WHITE, WHITE BLINK,	
		GREEN, GREEN BLINK, BLUE, BLUE BLINK, RED, RED BLINK,	
		VIOLET, VIOLET BLINK, INTENSE WHITE, INTENSE RED	

00 00 00 2D | Total Size

(*): Not used with JUPITER-Xm.

* [Drive]

Offset	Address	Description	
	00 00	0aaa aaaa | Drive	(0 - 127)
	00 01	0aaa aaaa | Chorus Send Level	(0 - 127)
			0 - 127
	00 02	0aaa aaaa | Reverb Send Level	(0 - 127)
			0 - 127
	00 03	0aaa aaaa | Delay Send Level	(0 - 127)
			0 - 127
	00 04	0000 000a | Drive Switch	(0 - 1)
			OFF, ON
	00 00 00 05	| Total Size	

* [Scene Common]

Offset	Address	Description	
	00 00	0aaa aaaa | NAME 1	(32 - 127)
	00 01	0aaa aaaa | NAME 2	(32 - 127)
	00 02	0aaa aaaa | NAME 3	(32 - 127)
	00 03	0aaa aaaa | NAME 4	(32 - 127)
	00 04	0aaa aaaa | NAME 5	(32 - 127)
	00 05	0aaa aaaa | NAME 6	(32 - 127)
	00 06	0aaa aaaa | NAME 7	(32 - 127)
	00 07	0aaa aaaa | NAME 8	(32 - 127)
	00 08	0aaa aaaa | NAME 9	(32 - 127)
	00 09	0aaa aaaa | NAME 10	(32 - 127)
	00 0A	0aaa aaaa | NAME 11	(32 - 127)
	00 0B	0aaa aaaa | NAME 12	(32 - 127)
	00 0C	0aaa aaaa | NAME 13	(32 - 127)
	00 0D	0aaa aaaa | NAME 14	(32 - 127)
	00 0E	0aaa aaaa | NAME 15	(32 - 127)
	00 0F	0aaa aaaa | NAME 16	(32 - 127)
	00 10	0aaa aaaa | Scene Level	(0 - 127)
			0 - 127
#	00 11	0000 0000 | Reserved	(0 - 0)
	00 12	0000 aaaa	
	00 13	0000 bbbb	
	00 14	0000 cccc	
	00 15	0000 dddd | Scene Tempo	(2000 - 30000)
			20.00 - 300.00
	00 16	0aaa aaaa | Assignable Button(1) Function	(0 - 116)
			OFF, MOD: CC01,
		BRETH: CC02, CC03, FOOT: CC04, PTIME: CC05, DENT: CC06,	
		VOL: CC07, BAL: CC08, CC09, PAN: CC10, EXP: CC11, CC12,	
		CC13, CC14, CC15, GEN-1: CC16, GEN-2: CC17, GEN-3: CC18,	
		GEN-4: CC19, CC20, CC21, CC22, CC23, CC24, CC25,	
		CC26, CC27, CC28, CC29, CC30, CC31, OFF: CC32, CC33, CC34,	
		CC35, CC36, CC37, DENT: CC38, CC39, CC40, CC41, CC42,	
		CC43, CC44, CC45, CC46, CC47, CC48, CC49, CC50, CC51,	
		CC52, CC53, CC54, CC55, CC56, CC57, CC58, CC59, CC60,	
		CC61, CC62, CC63, HOLD1: CC64, PORTA: CC65, SOSTE: CC66,	
		SOFT: CC67, LEGAT: CC68, HOLD2: CC69, CC70, RESO: CC71,	
		RELES: CC72, ATTACK: CC73, CUTOFF: CC74, DECAY: CC75,	
		VRATE: CC76, VDPATH: CC77, VDLY: CC78, CC79, GEN-5: CC80,	
		GEN-6: CC81, GEN-7: CC82, GEN-8: CC83, PCTRL: CC84, CC85,	
		CC86, CC87, CC88, CC89, CC90, REV: CC91, TREM: CC92,	
		CHO: CC93, CELST: CC94, PHASR: CC95, AFT, MONO/POLY,	
		SCENE DOWN, SCENE UP, TONE DOWN, TONE UP, PANEL DEC,	
		PANEL INC, CHO SW, REV SW, DLY SW, ARP SW, ARP HOLD,	
		DETECT KEYS, DETECT BEAT, UNISON SW, BEND MODE,	
		AUTO TUNING, TAP TEMPO, START/STOP, DRV SW	
			(0 - 116)
	00 17	0aaa aaaa | Assignable Button(2) Function	(0 - 116)
			OFF, MOD: CC01,
		BRETH: CC02, CC03, FOOT: CC04, PTIME: CC05, DENT: CC06,	
		VOL: CC07, BAL: CC08, CC09, PAN: CC10, EXP: CC11, CC12,	
		CC13, CC14, CC15, GEN-1: CC16, GEN-2: CC17, GEN-3: CC18,	
		GEN-4: CC19, CC20, CC21, CC22, CC23, CC24, CC25,	
		CC26, CC27, CC28, CC29, CC30, CC31, OFF: CC32, CC33, CC34,	
		CC35, CC36, CC37, DENT: CC38, CC39, CC40, CC41, CC42,	
		CC43, CC44, CC45, CC46, CC47, CC48, CC49, CC50, CC51,	
		CC52, CC53, CC54, CC55, CC56, CC57, CC58, CC59, CC60,	
		CC61, CC62, CC63, HOLD1: CC64, PORTA: CC65, SOSTE: CC66,	
		SOFT: CC67, LEGAT: CC68, HOLD2: CC69, CC70, RESO: CC71,	
		RELES: CC72, ATTACK: CC73, CUTOFF: CC74, DECAY: CC75,	
		VRATE: CC76, VDPATH: CC77, VDLY: CC78, CC79, GEN-5: CC80,	
		GEN-6: CC81, GEN-7: CC82, GEN-8: CC83, PCTRL: CC84, CC85,	
		CC86, CC87, CC88, CC89, CC90, REV: CC91, TREM: CC92,	
		CHO: CC93, CELST: CC94, PHASR: CC95, AFT, MONO/POLY,	
		SCENE DOWN, SCENE UP, TONE DOWN, TONE UP, PANEL DEC,	
		PANEL INC, CHO SW, REV SW, DLY SW, ARP SW, ARP HOLD,	
		DETECT KEYS, DETECT BEAT, UNISON SW, BEND MODE,	

			AUTO TUNING, TAP TEMPO, START/STOP, DRV SW
00 18	0aaa aaaa	Assignable Button(3) Function	(0 - 116)
			OFF, MOD: CC01,
		BRETH: CC02, CC03, FOOT: CC04, PTIME: CC05, DENT: CC06,	
		VOL: CC07, BAL: CC08, CC09, PAN: CC10, EXP: CC11, CC12,	
		CC13, CC14, CC15, GEN-1: CC16, GEN-2: CC17, GEN-3: CC18,	
		GEN-4: CC19, CC20, CC21, CC22, CC23, CC24, CC25,	
		CC26, CC27, CC28, CC29, CC30, CC31, OFF: CC32, CC33, CC34,	
		CC35, CC36, CC37, DENT: CC38, CC39, CC40, CC41, CC42,	
		CC43, CC44, CC45, CC46, CC47, CC48, CC49, CC50, CC51,	
		CC52, CC53, CC54, CC55, CC56, CC57, CC58, CC59, CC60,	
		CC61, CC62, CC63, HOLD1: CC64, PORTA: CC65, SOSTE: CC66,	
		SOFT: CC67, LEGAT: CC68, HOLD2: CC69, CC70, RESO: CC71,	
		RELES: CC72, ATTACK: CC73, CUTOFF: CC74, DECAY: CC75,	
		VRATE: CC76, VDPATH: CC77, VDLY: CC78, CC79, GEN-5: CC80,	
		GEN-6: CC81, GEN-7: CC82, GEN-8: CC83, PCTRL: CC84, CC85,	
		CC86, CC87, CC88, CC89, CC90, REV: CC91, TREM: CC92,	
		CHO: CC93, CELST: CC94, PHASR: CC95, AFT, MONO/POLY,	
		SCENE DOWN, SCENE UP, TONE DOWN, TONE UP, PANEL DEC,	
		PANEL INC, CHO SW, REV SW, DLY SW, ARP SW, ARP HOLD,	
		DETECT KEYS, DETECT BEAT, UNISON SW, BEND MODE,	
		AUTO TUNING, TAP TEMPO, START/STOP, DRV SW	
00 19	0000 000a	Assignable Button(1) Mode	(0 - 1)
			LATCH, MOMENTARY
00 1A	0000 000a	Assignable Button(2) Mode	(0 - 1)
			LATCH, MOMENTARY
00 1B	0000 000a	Assignable Button(3) Mode	(0 - 1)
			LATCH, MOMENTARY
00 1C	0aaa aaaa	Hold Pedal Function	(0 - 116)
			OFF, MOD: CC01,
		BRETH: CC02, CC03, FOOT: CC04, PTIME: CC05, DENT: CC06,	
		VOL: CC07, BAL: CC08, CC09, PAN: CC10, EXP: CC11, CC12,	
		CC13, CC14, CC15, GEN-1: CC16, GEN-2: CC17, GEN-3: CC18,	
		GEN-4: CC19, CC20, CC21, CC22, CC23, CC24, CC25,	
		CC26, CC27, CC28, CC29, CC30, CC31, OFF: CC32, CC33, CC34,	
		CC35, CC36, CC37, DENT: CC38, CC39, CC40, CC41, CC42,	
		CC43, CC44, CC45, CC46, CC47, CC48, CC49, CC50, CC51,	
		CC52, CC53, CC54, CC55, CC56, CC57, CC58, CC59, CC60,	
		CC61, CC62, CC63, HOLD1: CC64, PORTA: CC65, SOSTE: CC66,	
		SOFT: CC67, LEGAT: CC68, HOLD2: CC69, CC70, RESO: CC71,	
		RELES: CC72, ATTACK: CC73, CUTOFF: CC74, DECAY: CC75,	
		VRATE: CC76, VDPATH: CC77, VDLY: CC78, CC79, GEN-5: CC80,	
		GEN-6: CC81, GEN-7: CC82, GEN-8: CC83, PCTRL: CC84, CC85,	
		CC86, CC87, CC88, CC89, CC90, REV: CC91, TREM: CC92,	
		CHO: CC93, CELST: CC94, PHASR: CC95, AFT, MONO/POLY,	
		SCENE DOWN, SCENE UP, TONE DOWN, TONE UP, PANEL DEC,	
		PANEL INC, CHO SW, REV SW, DLY SW, ARP SW, ARP HOLD,	
		DETECT KEYS, DETECT BEAT, UNISON SW, BEND MODE,	
		AUTO TUNING, TAP TEMPO, START/STOP, DRV SW	
00 1D	0000 000a	Hold Pedal Polarity	(0 - 1)
			STANDARD, REVERSE
00 1E	0aaa aaaa	Ctrl Pedal Function	(0 - 111)
			OFF, MOD: CC01,
		BRETH: CC02, CC03, FOOT: CC04, PTIME: CC05, DENT: CC06,	
		VOL: CC07, BAL: CC08, CC09, PAN: CC10, EXP: CC11,	
		CC12, CC13, CC14, CC15, GEN-1: CC16, GEN-2: CC17,	
		GEN-3: CC18, GEN-4: CC19, CC20, CC21, CC22, CC23,	
		CC24, CC25, CC26, CC27, CC28, CC29, CC30, CC31, OFF: CC32,	
		CC33, CC34, CC35, CC36, CC37, DENT: CC38, CC39, CC40,	
		CC41, CC42, CC43, CC44, CC45, CC46, CC47, CC48, CC49, CC50,	
		CC51, CC52, CC53, CC54, CC55, CC56, CC57, CC58, CC59, CC60,	
		CC61, CC62, CC63, HOLD1: CC64, PORTA: CC65, SOSTE: CC66,	
		SOFT: CC67, LEGAT: CC68, HOLD2: CC69, CC70, RESO: CC71,	
		RELES: CC72, ATTACK: CC73, CUTOFF: CC74, DECAY: CC75,	
		VRATE: CC76, VDPATH: CC77, VDLY: CC78, CC79, GEN-5: CC80,	
		GEN-6: CC81, GEN-7: CC82, GEN-8: CC83, PCTRL: CC84,	
		CC85, CC86, CC87, CC88, CC89, CC90, REV: CC91, TREM: CC92,	
		CHO: CC93, CELST: CC94, PHASR: CC95, AFT, BEND DOWN,	
		BEND UP, CHO LEVEL, REV LEVEL, DLY LEVEL, ARP SHUFFLE,	
		ARP DURATION, PART FADE1, PART FADE2, LEVEL P-1,	
		LEVEL P-2, LEVEL P-3, LEVEL P-4, LEVEL P-R, AGE	
00 1F	0aaa aaaa	Assignable Slider(1) Function	(0 - 111)
			OFF, MOD: CC01,
		BRETH: CC02, CC03, FOOT: CC04, PTIME: CC05, DENT: CC06,	
		VOL: CC07, BAL: CC08, CC09, PAN: CC10, EXP: CC11,	
		CC12, CC13, CC14, CC15, GEN-1: CC16, GEN-2: CC17,	
		GEN-3: CC18, GEN-4: CC19, CC20, CC21, CC22, CC23,	
		CC24, CC25, CC26, CC27, CC28, CC29, CC30, CC31, OFF: CC32,	
		CC33, CC34, CC35, CC36, CC37, DENT: CC38, CC39, CC40,	
		CC41, CC42, CC43, CC44, CC45, CC46, CC47, CC48, CC49, CC50,	
		CC51, CC52, CC53, CC54, CC55, CC56, CC57, CC58, CC59, CC60,	
		CC61, CC62, CC63, HOLD1: CC64, PORTA: CC65, SOSTE: CC66,	
		SOFT: CC67, LEGAT: CC68, HOLD2: CC69, CC70, RESO: CC71,	
		RELES: CC72, ATTACK: CC73, CUTOFF: CC74, DECAY: CC75,	
		VRATE: CC76, VDPATH: CC77, VDLY: CC78, CC79, GEN-5: CC80,	
		GEN-6: CC81, GEN-7: CC82, GEN-8: CC83, PCTRL: CC84,	
		CC85, CC86, CC87, CC88, CC89, CC90, REV: CC91, TREM: CC92,	
		CHO: CC93, CELST: CC94, PHASR: CC95, AFT, BEND DOWN,	
		BEND UP, CHO LEVEL, REV LEVEL, DLY LEVEL, ARP SHUFFLE,	
		ARP DURATION, PART FADE1, PART FADE2, LEVEL P-1,	
		LEVEL P-2, LEVEL P-3, LEVEL P-4, LEVEL P-R, AGE	
00 20	0aaa aaaa	Assignable Slider(2) Function	(0 - 111)
			OFF, MOD: CC01,
		BRETH: CC02, CC03, FOOT: CC04, PTIME: CC05, DENT: CC06,	
		VOL: CC07, BAL: CC08, CC09, PAN: CC10, EXP: CC11,	
		CC12, CC13, CC14, CC15, GEN-1: CC16, GEN-2: CC17,	
		GEN-3: CC18, GEN-4: CC19, CC20, CC21, CC22, CC23,	
		CC24, CC25, CC26, CC27, CC28, CC29, CC30, CC31, OFF: CC32,	
		CC33, CC34, CC35, CC36, CC37, DENT: CC38, CC39, CC40,	

(*): Not used with JUPITER-Xm.

			9,10,11,12,13,14,15,16,17,18,19,20,21,22,23,24,25,	
			26,27,28,29,30,31,32,33,34,35,36,37,38,39,40,41,	
			42,43,44,45,46,47,48,49,50,51,52,53,54,55,56,57,	
			58,59,60,61,62,63,64,65,66,67,68,69,70,71,72,73,	
			74,75,76,77,78,79,80,81,82,83,84,85,86,87,88,89,	
			90,91,92,93,94,95,96,97,98,99,100,101,102,103,104,	
			105,106,107,108,109,110,111,112,113,114,115,116,	
			117,118,119,120,121,122,123,124,125,126,127,128	
#	00 1A	0000 aaaa		
	00 1B	0000 bbbb	Master Keyboard Volume	(0 - 128)
			OFF, 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,	
			25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40,	
			41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56,	
			57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72,	
			73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88,	
			89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103,	
			104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115,	
			116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127	
	00 00 00 1C	Total Size		

(*) : Not used with JUPITER-Xm.

* [Arpeggio Common]

Offset	Address	Description		
	00 00	0000 000a	Master Switch	(0 - 1)
				OFF, ON
	00 01	0000 000a	Master Hold Switch	(0 - 1)
				OFF, ON
	00 02	0000 000a	Keys Detect	(0 - 1)
				OFF, ON
	00 03	0000 000a	Beat Detect	(0 - 1)
				OFF, ON
	00 04	0000 aaaa	Beat Detect Sens	(1 - 10)
				1 - 10
	00 05	0aaa aaaa	G-Shuffle Rate	(0 - 100)
				0 - 100 [%]
	00 06	0aaa aaaa	G-Duration	(14 - 114)
				-50 - 50
	00 07	0000 0000	Reserved	(0 - 0)
#	00 08	0000 aaaa		
	00 09	0000 bbbb		
	00 0A	0000 cccc		
	00 0B	0000 dddd	Original Type No.	(0 - 65)
				0 - 255
#	00 0C	0000 aaaa		
	00 0D	0000 bbbb		
	00 0E	0000 cccc		
	00 0F	0000 dddd	Original Rhythm No.	(0 - 65)
				0 - 255
	00 10	0aaa aaaa	Keyboard Input Range Lower	(0 - 127)
	00 11	0aaa aaaa	Keyboard Input Range Upper	(0 - 127)
	00 00 00 12	Total Size		

* [Arpeggio Part]

Offset	Address	Description	
	00 00	0000 000a	Part Switch (0 - 1)
			OFF, ON
#	00 01	0000 aaaa	
	00 02	0000 bbbb	
	00 03	0000 cccc	
	00 04	0000 dddd	Reserved (0 - 0)
	00 05	0aaa aaaa	Duration (0 - 100)
			0 - 100 [%]
	00 06	0aaa aaaa	Shuffle Rate (0 - 100)
			0 - 100 [%]
	00 07	0aaa aaaa	Octave Range (61 - 67)
			-3 - 3
	00 08	0aaa aaaa	Transpose (28 - 100)
			-36 - 36
	00 09	0000 000a	Part Hold Switch (0 - 1)
			OFF, ON
	00 0A	0000 0aaa	Motif (0 - 7)
			UP, DOWN,
			UP&DOWN, RANDOM, NOTE ORDER, RHYTHM, PHRASE, AUTO
	00 0B	0000 000a	Shuffle Resolution (0 - 1)
			16TH, 8TH
	00 0C	0000 0aaa	Grid Note (0 - 5)
			4th, 8th, 8th_3, 16th, 16th_3, 32thN
	00 0D	00aa aaaa	End of Grid (1 - 63)
			2 - 64
	00 0E	0aaa aaaa	Velocity (0 - 127)
			REAL, 1, 2, 3, 4, 5, 6, 7,
			8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24,
			25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40,
			41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56,
			57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72,

			73,74,75,76,77,78,79,80,81,82,83,84,85,86,87,88,	
			89,90,91,92,93,94,95,96,97,98,99,100,101,102,103,	
			104,105,106,107,108,109,110,111,112,113,114,115,	
			116,117,118,119,120,121,122,123,124,125,126,127	
#	00 0F	0000 aaaa		
	00 10	0000 bbbb	Grid Offset	(-63 - 64)
				-63 - 64
	00 11	0000 000a	Grid Sync	(0 - 1)
				OFF, ON
#	00 12	0000 aaaa		
	00 13	0000 bbbb	Offset Velocity	(-127 - 127)
				-127 - 127
	00 14	0aaa aaaa	Ducking Rate	(0 - 100)
				0 - 100
#	00 15	0000 aaaa		
	00 16	0000 bbbb	Ducking Note	(0 - 128)
			Any, 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,	
			25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40,	
			41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56,	
			57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72,	
			73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88,	
			89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103,	
			104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115,	
			116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127	
	00 17	0000 0aaa	Ducking Part	(0 - 5)
			OFF, PART 1, PART 2, PART 3, PART 4, PART R	
	00 18	0aaa aaaa	Key Range Low	(0 - 127)
				0 - 127
	00 19	0000 aaaa	Key Range Octave	(0 - 12)
			OFF, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12	
	00 1A	0000 000a	Recieve Switch	(0 - 1)
				OFF, ON
	00 1B	0000 000a	Note Off Mode	(0 - 1)
			NORMAL, IMMEDIATE	
	00 1C	0000 00aa	Pattern Change Timing	(0 - 3)
			IMMEDIATE, BEAT, MEAS, END	
	00 1D	0000 000a	Reset Octave Shift	(0 - 1)
				OFF, ON
	00 1E	0aaa aaaa	Arp Poly Remain Notes	(0 - 127)
			OFF, 1, 2, 3, 4, 5, 6, 7,	
			8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24,	
			25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40,	
			41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56,	
			57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72,	
			73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88,	
			89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103,	
			104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115,	
			116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127	
	00 1F	0000 00aa	Step Seq Mode	(0 - 2)
			OFF, ON, KEYSHIFT	
#	00 20	0000 aaaa		
	00 21	0000 bbbb		
	00 22	0000 cccc		
	00 23	0000 dddd	Initial Pattern Number	(0 - 65535)
				1 - 65536
	00 24	0000 00aa	Arp Mode	(0 - 2)
			I-ARP, ARP, STEP	
	00 25	0000 000a	Key Switch Sync	(0 - 1)
			OFF, ON	
	00 26	0000 000a	Step Key Shift	(0 - 1)
			OFF, ON	
	00 27	0000 0aaa	I-Arp Style Part	(0 - 4)
			PART 1, PART 2, PART 3, PART 4, PART R	
#	00 28	0000 aaaa		
	00 29	0000 bbbb		
	00 2A	0000 cccc		
	00 2B	0000 dddd	I-Arp Style	(0 - 65)
#	00 2C	0000 aaaa		
	00 2D	0000 bbbb	Arp Style	(0 - 255)
				1 - 256
#	00 2E	0000 aaaa		
	00 2F	0000 bbbb	Arp Variation	(0 - 255)
				1 - 256
	00 30	0000 000a	Arp Step Switch	(0 - 1)
			OFF, ON	
#	00 31	0000 aaaa		
	00 32	0000 bbbb	Probability Style	(0 - 255)
	00 33	0aaa aaaa	Probability Amount	(0 - 100)
				0 - 100 [%]
	00 34	0000 000a	Probability Amount Direction	(0 - 1)
			STANDARD, REVERSE	
	00 35	0000 000a	Probability Amount Auto	(0 - 1)
			OFF, ON	
	00 36	0aaa aaaa	Probability Velocity Amount	(0 - 100)
				0 - 100 [%]
#	00 37	0000 aaaa		
	00 38	0000 bbbb		
	00 39	0000 cccc		
	00 3A	0000 dddd	Reserved	(65535 - 65535)
#	00 3B	0000 aaaa		
	00 3C	0000 bbbb	Probability Grid Offset	(-63 - 64)
				-63 - 64
	00 00 00 3D	Total Size		

* [User Pattern]

[illegible]

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				12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27, 28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43, 44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59, 60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75, 76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91, 92,93,94,95,96,97,98,99,100,101,102,103,104,105, 106,107,108,109,110,111,112,113,114,115,116,117, 118,119,120,121,122,123,124,125,126,127, OFF, TIE					12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27, 28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43, 44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59, 60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75, 76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91, 92,93,94,95,96,97,98,99,100,101,102,103,104,105, 106,107,108,109,110,111,112,113,114,115,116,117, 118,119,120,121,122,123,124,125,126,127, OFF, TIE
#	00 6E 00 6F	0000 aaaa 0000 bbbb	[01] Value Step.55 0,1,2,3,4,5,6,7,8,9,10,11, 12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27, 28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43, 44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59, 60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75, 76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91, 92,93,94,95,96,97,98,99,100,101,102,103,104,105, 106,107,108,109,110,111,112,113,114,115,116,117, 118,119,120,121,122,123,124,125,126,127, OFF, TIE		#	01 00 01 01	0000 aaaa 0000 bbbb	(0 - 129) [01] Value Step.64 0,1,2,3,4,5,6,7,8,9,10,11, 12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27, 28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43, 44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59, 60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75, 76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91, 92,93,94,95,96,97,98,99,100,101,102,103,104,105, 106,107,108,109,110,111,112,113,114,115,116,117, 118,119,120,121,122,123,124,125,126,127, OFF, TIE	
#	00 70 00 71	0000 aaaa 0000 bbbb	[01] Value Step.56 0,1,2,3,4,5,6,7,8,9,10,11, 12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27, 28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43, 44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59, 60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75, 76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91, 92,93,94,95,96,97,98,99,100,101,102,103,104,105, 106,107,108,109,110,111,112,113,114,115,116,117, 118,119,120,121,122,123,124,125,126,127, OFF, TIE			01 02 01 03 01 04	0000 0000 0000 0000 0000 00aa	Reserved (0 - 0) Reserved (0 - 0) [02] Type (0 - 2)	
						01 05	0aaa aaaa	[02] Number (0 - 127) NONE, NOTE, CC (0 - 127)	
					#	01 06 01 07	0000 aaaa 0000 bbbb	[02] Value Step.01 (0 - 129) 0,1,2,3,4,5,6,7,8,9,10,11, 12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27, 28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43, 44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59, 60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75, 76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91, 92,93,94,95,96,97,98,99,100,101,102,103,104,105, 106,107,108,109,110,111,112,113,114,115,116,117, 118,119,120,121,122,123,124,125,126,127, OFF, TIE	
#	00 72 00 73	0000 aaaa 0000 bbbb	[01] Value Step.57 0,1,2,3,4,5,6,7,8,9,10,11, 12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27, 28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43, 44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59, 60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75, 76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91, 92,93,94,95,96,97,98,99,100,101,102,103,104,105, 106,107,108,109,110,111,112,113,114,115,116,117, 118,119,120,121,122,123,124,125,126,127, OFF, TIE		#	01 08 01 09	0000 aaaa 0000 bbbb	[02] Value Step.02 (0 - 129) 0,1,2,3,4,5,6,7,8,9,10,11, 12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27, 28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43, 44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59, 60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75, 76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91, 92,93,94,95,96,97,98,99,100,101,102,103,104,105, 106,107,108,109,110,111,112,113,114,115,116,117, 118,119,120,121,122,123,124,125,126,127, OFF, TIE	
#	00 74 00 75	0000 aaaa 0000 bbbb	[01] Value Step.58 0,1,2,3,4,5,6,7,8,9,10,11, 12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27, 28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43, 44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59, 60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75, 76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91, 92,93,94,95,96,97,98,99,100,101,102,103,104,105, 106,107,108,109,110,111,112,113,114,115,116,117, 118,119,120,121,122,123,124,125,126,127, OFF, TIE		#	01 0A 01 0B	0000 aaaa 0000 bbbb	[02] Value Step.03 (0 - 129) 0,1,2,3,4,5,6,7,8,9,10,11, 12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27, 28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43, 44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59, 60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75, 76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91, 92,93,94,95,96,97,98,99,100,101,102,103,104,105, 106,107,108,109,110,111,112,113,114,115,116,117, 118,119,120,121,122,123,124,125,126,127, OFF, TIE	
#	00 76 00 77	0000 aaaa 0000 bbbb	[01] Value Step.59 0,1,2,3,4,5,6,7,8,9,10,11, 12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27, 28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43, 44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59, 60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75, 76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91, 92,93,94,95,96,97,98,99,100,101,102,103,104,105, 106,107,108,109,110,111,112,113,114,115,116,117, 118,119,120,121,122,123,124,125,126,127, OFF, TIE		#	01 0C 01 0D	0000 aaaa 0000 bbbb	[02] Value Step.04 (0 - 129) 0,1,2,3,4,5,6,7,8,9,10,11, 12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27, 28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43, 44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59, 60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75, 76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91, 92,93,94,95,96,97,98,99,100,101,102,103,104,105, 106,107,108,109,110,111,112,113,114,115,116,117, 118,119,120,121,122,123,124,125,126,127, OFF, TIE	
#	00 78 00 79	0000 aaaa 0000 bbbb	[01] Value Step.60 0,1,2,3,4,5,6,7,8,9,10,11, 12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27, 28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43, 44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59, 60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75, 76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91, 92,93,94,95,96,97,98,99,100,101,102,103,104,105, 106,107,108,109,110,111,112,113,114,115,116,117, 118,119,120,121,122,123,124,125,126,127, OFF, TIE		#	01 0E 01 0F	0000 aaaa 0000 bbbb	[02] Value Step.05 (0 - 129) 0,1,2,3,4,5,6,7,8,9,10,11, 12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27, 28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43, 44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59, 60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75, 76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91, 92,93,94,95,96,97,98,99,100,101,102,103,104,105, 106,107,108,109,110,111,112,113,114,115,116,117, 118,119,120,121,122,123,124,125,126,127, OFF, TIE	
#	00 7A 00 7B	0000 aaaa 0000 bbbb	[01] Value Step.61 0,1,2,3,4,5,6,7,8,9,10,11, 12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27, 28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43, 44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59, 60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75, 76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91, 92,93,94,95,96,97,98,99,100,101,102,103,104,105, 106,107,108,109,110,111,112,113,114,115,116,117, 118,119,120,121,122,123,124,125,126,127, OFF, TIE		#	01 10 01 11	0000 aaaa 0000 bbbb	[02] Value Step.06 (0 - 129) 0,1,2,3,4,5,6,7,8,9,10,11, 12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27, 28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43, 44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59, 60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75, 76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91, 92,93,94,95,96,97,98,99,100,101,102,103,104,105, 106,107,108,109,110,111,112,113,114,115,116,117, 118,119,120,121,122,123,124,125,126,127, OFF, TIE	
#	00 7C 00 7D	0000 aaaa 0000 bbbb	[01] Value Step.62 0,1,2,3,4,5,6,7,8,9,10,11, 12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27, 28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43, 44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59, 60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75, 76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91, 92,93,94,95,96,97,98,99,100,101,102,103,104,105, 106,107,108,109,110,111,112,113,114,115,116,117, 118,119,120,121,122,123,124,125,126,127, OFF, TIE		#	01 12 01 13	0000 aaaa 0000 bbbb	[02] Value Step.07 (0 - 129) 0,1,2,3,4,5,6,7,8,9,10,11, 12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27, 28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43, 44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59, 60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75, 76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91, 92,93,94,95,96,97,98,99,100,101,102,103,104,105, 106,107,108,109,110,111,112,113,114,115,116,117, 118,119,120,121,122,123,124,125,126,127, OFF, TIE	
#	00 7E 00 7F	0000 aaaa 0000 bbbb	[01] Value Step.63 0,1,2,3,4,5,6,7,8,9,10,11, 12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27, 28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43, 44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59, 60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75, 76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91, 92,93,94,95,96,97,98,99,100,101,102,103,104,105, 106,107,108,109,110,111,112,113,114,115,116,117, 118,119,120,121,122,123,124,125,126,127, OFF, TIE						

JUPITER-X/Xm MIDI Implementation

				92,93,94,95,96,97,98,99,100,101,102,103,104,105, 106,107,108,109,110,111,112,113,114,115,116,117, 118,119,120,121,122,123,124,125,126,127, OFF, TIE					92,93,94,95,96,97,98,99,100,101,102,103,104,105, 106,107,108,109,110,111,112,113,114,115,116,117, 118,119,120,121,122,123,124,125,126,127, OFF, TIE	
#	01 14	0000	aaaa		#	01 26	0000	aaaa		
	01 15	0000	bbbb	[02] Value Step.08 (0 - 129)		01 27	0000	bbbb	[02] Value Step.17 (0 - 129)	
				0,1,2,3,4,5,6,7,8,9,10,11, 12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27, 28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43, 44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59, 60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75, 76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91, 92,93,94,95,96,97,98,99,100,101,102,103,104,105, 106,107,108,109,110,111,112,113,114,115,116,117, 118,119,120,121,122,123,124,125,126,127, OFF, TIE						0,1,2,3,4,5,6,7,8,9,10,11, 12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27, 28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43, 44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59, 60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75, 76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91, 92,93,94,95,96,97,98,99,100,101,102,103,104,105, 106,107,108,109,110,111,112,113,114,115,116,117, 118,119,120,121,122,123,124,125,126,127, OFF, TIE
#	01 16	0000	aaaa		#	01 28	0000	aaaa		
	01 17	0000	bbbb	[02] Value Step.09 (0 - 129)		01 29	0000	bbbb	[02] Value Step.18 (0 - 129)	
				0,1,2,3,4,5,6,7,8,9,10,11, 12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27, 28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43, 44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59, 60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75, 76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91, 92,93,94,95,96,97,98,99,100,101,102,103,104,105, 106,107,108,109,110,111,112,113,114,115,116,117, 118,119,120,121,122,123,124,125,126,127, OFF, TIE						0,1,2,3,4,5,6,7,8,9,10,11, 12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27, 28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43, 44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59, 60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75, 76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91, 92,93,94,95,96,97,98,99,100,101,102,103,104,105, 106,107,108,109,110,111,112,113,114,115,116,117, 118,119,120,121,122,123,124,125,126,127, OFF, TIE
#	01 18	0000	aaaa		#	01 2A	0000	aaaa		
	01 19	0000	bbbb	[02] Value Step.10 (0 - 129)		01 2B	0000	bbbb	[02] Value Step.19 (0 - 129)	
				0,1,2,3,4,5,6,7,8,9,10,11, 12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27, 28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43, 44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59, 60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75, 76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91, 92,93,94,95,96,97,98,99,100,101,102,103,104,105, 106,107,108,109,110,111,112,113,114,115,116,117, 118,119,120,121,122,123,124,125,126,127, OFF, TIE						0,1,2,3,4,5,6,7,8,9,10,11, 12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27, 28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43, 44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59, 60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75, 76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91, 92,93,94,95,96,97,98,99,100,101,102,103,104,105, 106,107,108,109,110,111,112,113,114,115,116,117, 118,119,120,121,122,123,124,125,126,127, OFF, TIE
#	01 1A	0000	aaaa		#	01 2C	0000	aaaa		
	01 1B	0000	bbbb	[02] Value Step.11 (0 - 129)		01 2D	0000	bbbb	[02] Value Step.20 (0 - 129)	
				0,1,2,3,4,5,6,7,8,9,10,11, 12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27, 28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43, 44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59, 60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75, 76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91, 92,93,94,95,96,97,98,99,100,101,102,103,104,105, 106,107,108,109,110,111,112,113,11						

				92,93,94,95,96,97,98,99,100,101,102,103,104,105, 106,107,108,109,110,111,112,113,114,115,116,117, 118,119,120,121,122,123,124,125,126,127, OFF, TIE					92,93,94,95,96,97,98,99,100,101,102,103,104,105, 106,107,108,109,110,111,112,113,114,115,116,117, 118,119,120,121,122,123,124,125,126,127, OFF, TIE											
#	01 38	0000	aaaa			#	01 4A	0000	aaaa											
	01 39	0000	bbbb	[02] Value Step.26	(0 - 129)		01 4B	0000	bbbb	[02] Value Step.35	(0 - 129)									
					0,1,2,3,4,5,6,7,8,9,10,11, 12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27, 28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43, 44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59, 60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75, 76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91, 92,93,94,95,96,97,98,99,100,101,102,103,104,105, 106,107,108,109,110,111,112,113,114,115,116,117, 118,119,120,121,122,123,124,125,126,127, OFF, TIE															
#	01 3A	0000	aaaa			#	01 4C	0000	aaaa											
	01 3B	0000	bbbb	[02] Value Step.27	(0 - 129)		01 4D	0000	bbbb	[02] Value Step.36	(0 - 129)									
					0,1,2,3,4,5,6,7,8,9,10,11, 12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27, 28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43, 44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59, 60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75, 76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91, 92,93,94,95,96,97,98,99,100,101,102,103,104,105, 106,107,108,109,110,111,112,113,114,115,116,117, 118,119,120,121,122,123,124,125,126,127, OFF, TIE															
#	01 3C	0000	aaaa			#	01 4E	0000	aaaa											
	01 3D	0000	bbbb	[02] Value Step.28	(0 - 129)		01 4F	0000	bbbb	[02] Value Step.37	(0 - 129)									
					0,1,2,3,4,5,6,7,8,9,10,11, 12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27, 28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43, 44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59, 60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75, 76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91, 92,93,94,95,96,97,98,99,100,101,102,103,104,105, 106,107,108,109,110,111,112,113,114,115,116,117, 118,119,120,121,122,123,124,125,126,127, OFF, TIE															
#	01 3E	0000	aaaa			#	01 50	0000	aaaa											
	01 3F	0000	bbbb	[02] Value Step.29	(0 - 129)		01 51	0000	bbbb	[02] Value Step.38	(0 - 129)									
					0,1,2,3,4,5,6,7,8,9,10,11, 12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27, 28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43, 44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59, 60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75, 76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91, 92,93,94,95,96,97,98,99,100,101,102,103,104,105, 106,107,108,109,110,111,112,113,114,115,116,117, 118,119,120,121,122,123,124,125,126,127, OFF, TIE															
#	01 40	0000	aaaa			#	01 52	0000	aaaa											
	01 41	0000	bbbb	[02] Value Step.30	(0 - 129)		01 53	0000	bbbb	[02] Value Step.39	(0 - 129)									
					0,1,2,3,4,5,6,7,8,9,10,11, 12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27, 28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43, 44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59, 60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75, 76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91, 92,93,94,95,96,97,98,99,100,101,102,103,104,105, 106,107,108,109,110,111,112,113,114,115,116,117, 118,119,120,121,122,123,124,125,126,127, OFF, TIE															
#	01 42	0000	aaaa			#	01 54	0000	aaaa											
	01 43	0000	bbbb	[02] Value Step.31	(0 - 129)		01 55	0000	bbbb	[02] Value Step.40	(0 - 129)									
					0,1,2,3,4,5,6,7,8,9,10,11, 12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27, 28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43, 44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59, 60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75, 76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91, 92,93,94,95,96,97,98,99,100,101,102,103,104,105, 106,107,108,109,110,111,112,113,114,115,116,117, 118,119,120,121,122,123,124,125,126,127, OFF, TIE															
#	01 44	0000	aaaa			#	01 56	0000	aaaa											
	01 45	0000	bbbb	[02] Value Step.32	(0 - 129)		01 57	0000	bbbb	[02] Value Step.41	(0 - 129)									
					0,1,2,3,4,5,6,7,8,9,10,11, 12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27, 28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43, 44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59, 60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75, 76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91, 92,93,94,95,96,97,98,99,100,101,102,103,104,105, 106,107,108,109,110,111,112,113,114,115,116,117, 118,119,120,121,122,123,124,125,126,127, OFF, TIE															
#	01 46	0000	aaaa			#	01 58	0000	aaaa											
	01 47	0000	bbbb	[02] Value Step.33	(0 - 129)		01 59	0000	bbbb	[02] Value Step.42	(0 - 129)									
					0,1,2,3,4,5,6,7,8,9,10,11, 12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27, 28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43, 44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59, 60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75, 76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91, 92,93,94,95,96,97,98,99,100,101,102,103,104,105, 106,107,108,109,110,111,112,113,114,115,116,117, 118,119,120,121,122,123,124,125,126,127, OFF, TIE															
#	01 48	0000	aaaa			#	01 5A	0000	aaaa											
	01 49	0000	bbbb	[02] Value Step.34	(0 - 129)		01 5B	0000	bbbb	[02] Value Step.43	(0 - 129)									
					0,1,2,3,4,5,6,7,8,9,10,11, 12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27, 28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43, 44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59, 60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75, 76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91, 92,93,94,95,96,97,98,99,100,101,102,103,104,105, 106,107,108,109,110,111,112,113,114,115,116,117, 118,119,120,121,122,123,124,125,126,127, OFF, TIE															

JUPITER-X/Xm MIDI Implementation

				92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, OFF, TIE					92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, OFF, TIE														
#	01 5C	0000	aaaa			#	01 6E	0000	aaaa			#	01 70	0000	aaaa								
	01 5D	0000	bbbb	[02] Value Step.44	(0 - 129)		01 6F	0000	bbbb	[02] Value Step.53	(0 - 129)		01 71	0000	bbbb	[02] Value Step.54	(0 - 129)						
				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, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, OFF, TIE																			
				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, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, OFF, TIE																			
#	01 5E	0000	aaaa			#	01 72	0000	aaaa			#	01 74	0000	aaaa								
	01 5F	0000	bbbb	[02] Value Step.45	(0 - 129)		01 73	0000	bbbb	[02] Value Step.55	(0 - 129)		01 75	0000	bbbb	[02] Value Step.56	(0 - 129)						
				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, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, OFF, TIE																			
				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, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, OFF, TIE																			
#	01 60	0000	aaaa			#	01 76	0000	aaaa			#	01 78	0000	aaaa								
	01 61	0000	bbbb	[02] Value Step.46	(0 - 129)		01 77	0000	bbbb	[02] Value Step.57	(0 - 129)		01 79	0000	bbbb	[02] Value Step.58	(0 - 129)						
				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, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35,																			

JUPITER-X/Xm MIDI Implementation

[illegible]

[illegible]

26

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29

JUPITER-X/Xm MIDI Implementation

[illegible]

	04 29	0000 bbbb	[05] Value Step.12	(0 - 129)		04 3B	0000 bbbb	[05] Value Step.21	(0 - 129)
				0,1,2,3,4,5,6,7,8,9,10,11,					0,1,2,3,4,5,6,7,8,9,10,11,
				12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27,					12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27,
				28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43,					28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43,
				44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59,					44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59,
				60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75,					60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75,
				76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91,					76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91,
				92,93,94,95,96,97,98,99,100,101,102,103,104,105,					92,93,94,95,96,97,98,99,100,101,102,103,104,105,
				106,107,108,109,110,111,112,113,114,115,116,117,					106,107,108,109,110,111,112,113,114,115,116,117,
				118,119,120,121,122,123,124,125,126,127, OFF, TIE					118,119,120,121,122,123,124,125,126,127, OFF, TIE
#	04 2A	0000 aaaa			#	04 3C	0000 aaaa		
	04 2B	0000 bbbb	[05] Value Step.13	(0 - 129)		04 3D	0000 bbbb	[05] Value Step.22	(0 - 129)
				0,1,2,3,4,5,6,7,8,9,10,11,					0,1,2,3,4,5,6,7,8,9,10,11,
				12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27,					12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27,
				28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43,					28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43,
				44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59,					44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59,
				60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75,					60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75,
				76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91,					76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91,
				92,93,94,95,96,97,98,99,100,101,102,103,104,105,					92,93,94,95,96,97,98,99,100,101,102,103,104,105,
				106,107,108,109,110,111,112,113,114,115,116,117,					106,107,108,109,110,111,112,113,114,115,116,117,
				118,119,120,121,122,123,124,125,126,127, OFF, TIE					118,119,120,121,122,123,124,125,126,127, OFF, TIE
#	04 2C	0000 aaaa			#	04 3E	0000 aaaa		
	04 2D	0000 bbbb	[05] Value Step.14	(0 - 129)		04 3F	0000 bbbb	[05] Value Step.23	(0 - 129)
				0,1,2,3,4,5,6,7,8,9,10,11,					0,1,2,3,4,5,6,7,8,9,10,11,
				12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27,					12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27,
				28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43,					28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43,
				44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59,					44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59,
				60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75,					60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75,
				76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91,					76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91,
				92,93,94,95,96,97,98,99,100,101,102,103,104,105,					92,93,94,95,96,97,98,99,100,101,102,103,104,105,
				106,107,108,109,110,111,112,113,114,115,116,117,					106,107,108,109,110,111,112,113,114,115,116,117,
				118,119,120,121,122,123,124,125,126,127, OFF, TIE					118,119,120,121,122,123,124,125,126,127, OFF, TIE
#	04 2E	0000 aaaa			#	04 40	0000 aaaa		
	04 2F	0000 bbbb	[05] Value Step.15	(0 - 129)		04 41	0000 bbbb	[05] Value Step.24	(0 - 129)
				0,1,2,3,4,5,6,7,8,9,10,11,					0,1,2,3,4,5,6,7,8,9,10,11,
				12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27,					12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27,
				28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43,					28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43,
				44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59,					44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59,
				60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75,					60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75,
				76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91,					76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91,
				92,93,94,95,96,97,98,99,100,101,102,103,104,105,					92,93,94,95,96,97,98,99,100,101,102,103,104,105,
				106,107,108,109,110,111,112,113,114,115,116,117,					106,107,108,109,110,111,112,113,114,115,116,117,
				118,119,120,121,122,123,124,125,126,127, OFF, TIE					118,119,120,121,122,123,124,125,126,127, OFF, TIE
#	04 30	0000 aaaa			#	04 42	0000 aaaa		
	04 31	0000 bbbb	[05] Value Step.16	(0 - 129)		04 43	0000 bbbb	[05] Value Step.25	(0 - 129)
				0,1,2,3,4,5,6,7,8,9,10,11,					0,1,2,3,4,5,6,7,8,9,10,11,
				12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27,					12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27,
				28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43,					28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43,
				44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59,					44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59,
				60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75,					60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75,
				76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91,					76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91,
				92,93,94,95,96,97,98,99,100,101,102,103,104,105,					92,93,94,95,96,97,98,99,100,101,102,103,104,105,
				106,107,108,109,110,111,112,113,114,115,116,117,					106,107,108,109,110,111,112,113,114,115,116,117,
				118,119,120,121,122,123,124,125,126,127, OFF, TIE					118,119,120,121,122,123,124,125,126,127, OFF, TIE
#	04 32	0000 aaaa			#	04 44	0000 aaaa		
	04 33	0000 bbbb	[05] Value Step.17	(0 - 129)		04 45	0000 bbbb	[05] Value Step.26	(0 - 129)
				0,1,2,3,4,5,6,7,8,9,10,11,					0,1,2,3,4,5,6,7,8,9,10,11,
				12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27,					12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27,
				28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43,					28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43,
				44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59,					44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59,
				60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75,					60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75,
				76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91,					76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91,
				92,93,94,95,96,97,98,99,100,101,102,103,104,105,					92,93,94,95,96,97,98,99,100,101,102,103,104,105,
				106,107,108,109,110,111,112,113,114,115,116,117,					106,107,108,109,110,111,112,113,114,115,116,117,
				118,119,120,121,122,123,124,125,126,127, OFF, TIE					118,119,120,121,122,123,124,125,126,127, OFF, TIE
#	04 34	0000 aaaa			#	04 46	0000 aaaa		
	04 35	0000 bbbb	[05] Value Step.18	(0 - 129)		04 47	0000 bbbb	[05] Value Step.27	(0 - 129)
				0,1,2,3,4,5,6,7,8,9,10,11,					0,1,2,3,4,5,6,7,8,9,10,11,
				12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27,					12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27,
				28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43,					28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43,
				44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59,					44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59,
				60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75,					60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75,
				76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91,					76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91,
				92,93,94,95,96,97,98,99,100,101,102,103,104,105,					92,93,94,95,96,97,98,99,100,101,102,103,104,105,
				106,107,108,109,110,111,112,113,114,115,116,117,					106,107,108,109,110,111,112,113,114,115,116,117,
				118,119,120,121,122,123,124,125,126,127, OFF, TIE					118,119,120,121,122,123,124,125,126,127, OFF, TIE
#	04 36	0000 aaaa			#	04 48	0000 aaaa		
	04 37	0000 bbbb	[05] Value Step.19	(0 - 129)		04 49	0000 bbbb	[05] Value Step.28	(0 - 129)
				0,1,2,3,4,5,6,7,8,9,10,11,					0,1,2,3,4,5,6,7,8,9,10,11,
				12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27,					12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27,
				28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43,					28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43,
				44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59,					44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59,
				60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75,					60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75,
				76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91,					76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91,
				92,93,94,95,96,97,98,99,100,101,102,103,104,105,					92,93,94,95,96,97,98,99,100,101,102,103,104,105,
				106,107,108,109,110,111,112,113,114,115,116,117,					106,107,108,109,110,111,112,113,114,115,116,117,
				118,119,120,121,122,123,124,125,126,127, OFF, TIE					118,119,120,121,122,123,124,125,126,127, OFF, TIE
#	04 38	0000 aaaa			#	04 4A	0000 aaaa		
	04 39	0000 bbbb	[05] Value Step.20	(0 - 129)		04 4B	0000 bbbb	[05] Value Step.29	(0 - 129)
				0,1,2,3,4,5,6,7,8,9,10,11,					0,1,2,3,4,5,6,7,8,9,10,11,
				12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27,					12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27,
				28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43,					28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43,
				44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59,					44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59,
				60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75,					60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75,
				76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91,					76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91,
				92,93,94,95,96,97,98,99,100,101,102,103,104,105,					92,93,94,95,96,97,98,99,100,101,102,103,104,105,
				106,107,108,109,110,111,112,113,114,115,116,117,					106,107,108,109,110,111,112,113,114,115,116,117,
				118,119,120,121,122,123,124,125,126,127, OFF, TIE					118,119,120,121,122,123,124,125,126,127, OFF, TIE

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JUPITER-X/Xm MIDI Implementation

[illegible]

[illegible]

				60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75, 76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91, 92,93,94,95,96,97,98,99,100,101,102,103,104,105, 106,107,108,109,110,111,112,113,114,115,116,117, 118,119,120,121,122,123,124,125,126,127, OFF, TIE					60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75, 76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91, 92,93,94,95,96,97,98,99,100,101,102,103,104,105, 106,107,108,109,110,111,112,113,114,115,116,117, 118,119,120,121,122,123,124,125,126,127, OFF, TIE				
#	06 04 06 05	0000 aaaa 0000 bbbb	[06] Value Step.56 0,1,2,3,4,5,6,7,8,9,10,11, 12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27, 28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43, 44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59, 60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75, 76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91, 92,93,94,95,96,97,98,99,100,101,102,103,104,105, 106,107,108,109,110,111,112,113,114,115,116,117, 118,119,120,121,122,123,124,125,126,127, OFF, TIE	(0 - 129)		06 16 06 17 06 18	0000 0000 0000 0000 0000 00aa	Reserved Reserved [07] Type	(0 - 0) (0 - 0) (0 - 2)				
						06 19	0aaa aaaa	[07] Number	NONE, NOTE, CC (0 - 127) 0 - 127				
					#	06 1A 06 1B	0000 aaaa 0000 bbbb	[07] Value Step.01 0,1,2,3,4,5,6,7,8,9,10,11, 12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27, 28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43, 44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59, 60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75, 76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91, 92,93,94,95,96,97,98,99,100,101,102,103,104,105, 106,107,108,109,110,111,112,113,114,115,116,117, 118,119,120,121,122,123,124,125,126,127, OFF, TIE	(0 - 129)				
#	06 06 06 07	0000 aaaa 0000 bbbb	[06] Value Step.57 0,1,2,3,4,5,6,7,8,9,10,11, 12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27, 28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43, 44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59, 60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75, 76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91, 92,93,94,95,96,97,98,99,100,101,102,103,104,105, 106,107,108,109,110,111,112,113,114,115,116,117, 118,119,120,121,122,123,124,125,126,127, OFF, TIE	(0 - 129)		#	06 1C 06 1D	0000 aaaa 0000 bbbb	[07] Value Step.02 0,1,2,3,4,5,6,7,8,9,10,11, 12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27, 28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43, 44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59, 60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75, 76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91, 92,93,94,95,96,97,98,99,100,101,102,103,104,105, 106,107,108,109,110,111,112,113,114,115,116,117, 118,119,120,121,122,123,124,125,126,127, OFF, TIE	(0 - 129)			
#	06 08 06 09	0000 aaaa 0000 bbbb	[06] Value Step.58 0,1,2,3,4,5,6,7,8,9,10,11, 12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27, 28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43, 44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59, 60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75, 76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91, 92,93,94,95,96,97,98,99,100,101,102,103,104,105, 106,107,108,109,110,111,112,113,114,115,116,117, 118,119,120,121,122,123,124,125,126,127, OFF, TIE	(0 - 129)		#	06 1E 06 1F	0000 aaaa 0000 bbbb	[07] Value Step.03 0,1,2,3,4,5,6,7,8,9,10,11, 12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27, 28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43, 44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59, 60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75, 76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91, 92,93,94,95,96,97,98,99,100,101,102,103,104,105, 106,107,108,109,110,111,112,113,114,115,116,117, 118,119,120,121,122,123,124,125,126,127, OFF, TIE	(0 - 129)			
#	06 0A 06 0B	0000 aaaa 0000 bbbb	[06] Value Step.59 0,1,2,3,4,5,6,7,8,9,10,11, 12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27, 28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43, 44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59, 60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75, 76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91, 92,93,94,95,96,97,98,99,100,101,102,103,104,105, 106,107,108,109,110,111,112,113,114,115,116,117, 118,119,120,121,122,123,124,125,126,127, OFF, TIE	(0 - 129)		#	06 20 06 21	0000 aaaa 0000 bbbb	[07] Value Step.04 0,1,2,3,4,5,6,7,8,9,10,11, 12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27, 28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43, 44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59, 60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75, 76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91, 92,93,94,95,96,97,98,99,100,101,102,103,104,105, 106,107,108,109,110,111,112,113,114,115,116,117, 118,119,120,121,122,123,124,125,126,127, OFF, TIE	(0 - 129)			
#	06 0C 06 0D	0000 aaaa 0000 bbbb	[06] Value Step.60 0,1,2,3,4,5,6,7,8,9,10,11, 12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27, 28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43, 44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59, 60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75, 76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91, 92,93,94,95,96,97,98,99,100,101,102,103,104,105, 106,107,108,109,110,111,112,113,114,115,116,117, 118,119,120,121,122,123,124,125,126,127, OFF, TIE	(0 - 129)		#	06 22 06 23	0000 aaaa 0000 bbbb	[07] Value Step.05 0,1,2,3,4,5,6,7,8,9,10,11, 12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27, 28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43, 44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59, 60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75, 76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91, 92,93,94,95,96,97,98,99,100,101,102,103,104,105, 106,107,108,109,110,111,112,113,114,115,116,117, 118,119,120,121,122,123,124,125,126,127, OFF, TIE	(0 - 129)			
#	06 0E 06 0F	0000 aaaa 0000 bbbb	[06] Value Step.61 0,1,2,3,4,5,6,7,8,9,10,11, 12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27, 28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43, 44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59, 60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75, 76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91, 92,93,94,95,96,97,98,99,100,101,102,103,104,105, 106,107,108,109,110,111,112,113,114,115,116,117, 118,119,120,121,122,123,124,125,126,127, OFF, TIE	(0 - 129)		#	06 24 06 25	0000 aaaa 0000 bbbb	[07] Value Step.06 0,1,2,3,4,5,6,7,8,9,10,11, 12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27, 28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43, 44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59, 60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75, 76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91, 92,93,94,95,96,97,98,99,100,101,102,103,104,105, 106,107,108,109,110,111,112,113,114,115,116,117, 118,119,120,121,122,123,124,125,126,127, OFF, TIE	(0 - 129)			
#	06 10 06 11	0000 aaaa 0000 bbbb	[06] Value Step.62 0,1,2,3,4,5,6,7,8,9,10,11, 12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27, 28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43, 44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59, 60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75, 76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91, 92,93,94,95,96,97,98,99,100,101,102,103,104,105, 106,107,108,109,110,111,112,113,114,115,116,117, 118,119,120,121,122,123,124,125,126,127, OFF, TIE	(0 - 129)		#	06 26 06 27	0000 aaaa 0000 bbbb	[07] Value Step.07 0,1,2,3,4,5,6,7,8,9,10,11, 12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27, 28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43, 44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59, 60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75, 76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91, 92,93,94,95,96,97,98,99,100,101,102,103,104,105, 106,107,108,109,110,111,112,113,114,115,116,117, 118,119,120,121,122,123,124,125,126,127, OFF, TIE	(0 - 129)			
#	06 12 06 13	0000 aaaa 0000 bbbb	[06] Value Step.63 0,1,2,3,4,5,6,7,8,9,10,11, 12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27, 28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43, 44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59, 60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75, 76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91, 92,93,94,95,96,97,98,99,100,101,102,103,104,105, 106,107,108,109,110,111,112,113,114,115,116,117, 118,119,120,121,122,123,124,125,126,127, OFF, TIE	(0 - 129)		#	06 28 06 29	0000 aaaa 0000 bbbb	[07] Value Step.08 0,1,2,3,4,5,6,7,8,9,10,11, 12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27, 28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43, 44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59, 60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75, 76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91, 92,93,94,95,96,97,98,99,100,101,102,103,104,105, 106,107,108,109,110,111,112,113,114,115,116,117, 118,119,120,121,122,123,124,125,126,127, OFF, TIE	(0 - 129)			
#	06 14 06 15	0000 aaaa 0000 bbbb	[06] Value Step.64 0,1,2,3,4,5,6,7,8,9,10,11, 12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27, 28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43, 44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59, 60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75, 76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91, 92,93,94,95,96,97,98,99,100,101,102,103,104,105, 106,107,108,109,110,111,112,113,114,115,116,117, 118,119,120,121,122,123,124,125,126,127, OFF, TIE	(0 - 129)									

38

	06 4E	0000	aaaa			#	06 60	0000	aaaa			(0 - 129)
	06 4F	0000	bbbb	[07] Value Step.27	(0 - 129)		06 61	0000	bbbb	[07] Value Step.36	(0 - 129)	
					0,1,2,3,4,5,6,7,8,9,10,11,						0,1,2,3,4,5,6,7,8,9,10,11,	
					12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27,						12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27,	
					28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43,						28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43,	
					44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59,						44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59,	
					60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75,						60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75,	
					76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91,						76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91,	
					92,93,94,95,96,97,98,99,100,101,102,103,104,105,						92,93,94,95,96,97,98,99,100,101,102,103,104,105,	
					106,107,108,109,110,111,112,113,114,115,116,117,						106,107,108,109,110,111,112,113,114,115,116,117,	
					118,119,120,121,122,123,124,125,126,127, OFF, TIE						118,119,120,121,122,123,124,125,126,127, OFF, TIE	
#	06 50	0000	aaaa			#	06 62	0000	aaaa			(0 - 129)
	06 51	0000	bbbb	[07] Value Step.28	(0 - 129)		06 63	0000	bbbb	[07] Value Step.37	(0 - 129)	
					0,1,2,3,4,5,6,7,8,9,10,11,						0,1,2,3,4,5,6,7,8,9,10,11,	
					12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27,						12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27,	
					28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43,						28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43,	
					44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59,						44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59,	
					60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75,						60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75,	
					76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91,						76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91,	
					92,93,94,95,96,97,98,99,100,101,102,103,104,105,						92,93,94,95,96,97,98,99,100,101,102,103,104,105,	
					106,107,108,109,110,111,112,113,114,115,116,117,						106,107,108,109,110,111,112,113,114,115,116,117,	
					118,119,120,121,122,123,124,125,126,127, OFF, TIE						118,119,120,121,122,123,124,125,126,127, OFF, TIE	
#	06 52	0000	aaaa			#	06 64	0000	aaaa			(0 - 129)
	06 53	0000	bbbb	[07] Value Step.29	(0 - 129)		06 65	0000	bbbb	[07] Value Step.38	(0 - 129)	
					0,1,2,3,4,5,6,7,8,9,10,11,						0,1,2,3,4,5,6,7,8,9,10,11,	
					12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27,						12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27,	
					28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43,						28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43,	
					44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59,						44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59,	
					60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75,						60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75,	
					76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91,						76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91,	
					92,93,94,95,96,97,98,99,100,101,102,103,104,105,						92,93,94,95,96,97,98,99,100,101,102,103,104,105,	
					106,107,108,109,110,111,112,113,114,115,116,117,						106,107,108,109,110,111,112,113,114,115,116,117,	
					118,119,120,121,122,123,124,125,126,127, OFF, TIE						118,119,120,121,122,123,124,125,126,127, OFF, TIE	
#	06 54	0000	aaaa			#	06 66	0000	aaaa			(0 - 129)
	06 55	0000	bbbb	[07] Value Step.30	(0 - 129)		06 67	0000	bbbb	[07] Value Step.39	(0 - 129)	
					0,1,2,3,4,5,6,7,8,9,10,11,						0,1,2,3,4,5,6,7,8,9,10,11,	
					12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27,						12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27,	
					28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43,						28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43,	
					44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59,						44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59,	
					60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75,						60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75,	
					76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91,						76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91,	
					92,93,94,95,96,97,98,99,100,101,102,103,104,105,						92,93,94,95,96,97,98,99,100,101,102,103,104,105,	
					106,107,108,109,110,111,112,113,114,115,116,117,						106,107,108,109,110,111,112,113,114,115,116,117,	
					118,119,120,121,122,123,124,125,126,127, OFF, TIE						118,119,120,121,122,123,124,125,126,127, OFF, TIE	
#	06 56	0000	aaaa			#	06 68	0000	aaaa			(0 - 129)
	06 57	0000	bbbb	[07] Value Step.31	(0 - 129)		06 69	0000	bbbb	[07] Value Step.40	(0 - 129)	
					0,1,2,3,4,5,6,7,8,9,10,11,						0,1,2,3,4,5,6,7,8,9,10,11,	
					12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27,						12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27,	
					28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43,						28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43,	
					44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59,						44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59,	
					60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75,						60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75,	
					76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91,						76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91,	
					92,93,94,95,96,97,98,99,100,101,102,103,104,105,						92,93,94,95,96,97,98,99,100,101,102,103,104,105,	
					106,107,108,109,110,111,112,113,114,115,116,117,						106,107,108,109,110,111,112,113,114,115,116,117,	
					118,119,120,121,122,123,124,125,126,127, OFF, TIE						118,119,120,121,122,123,124,125,126,127, OFF, TIE	
#	06 58	0000	aaaa			#	06 6A	0000	aaaa			(0 - 129)
	06 59	0000	bbbb	[07] Value Step.32	(0 - 129)		06 6B	0000	bbbb	[07] Value Step.41	(0 - 129)	
					0,1,2,3,4,5,6,7,8,9,10,11,						0,1,2,3,4,5,6,7,8,9,10,11,	
					12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27,						12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27,	
					28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43,						28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43,	
					44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59,						44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59,	
					60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75,						60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75,	
					76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91,						76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91,	
					92,93,94,95,96,97,98,99,100,101,102,103,104,105,						92,93,94,95,96,97,98,99,100,101,102,103,104,105,	
					106,107,108,109,110,111,112,113,114,115,116,117,						106,107,108,109,110,111,112,113,114,115,116,117,	
					118,119,120,121,122,123,124,125,126,127, OFF, TIE						118,119,120,121,122,123,124,125,126,127, OFF, TIE	
#	06 5A	0000	aaaa			#	06 6C	0000	aaaa			(0 - 129)
	06 5B	0000	bbbb	[07] Value Step.33	(0 - 129)		06 6D	0000	bbbb	[07] Value Step.42	(0 - 129)	
					0,1,2,3,4,5,6,7,8,9,10,11,						0,1,2,3,4,5,6,7,8,9,10,11,	
					12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27,						12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27,	
					28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43,						28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43,	
					44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59,						44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59,	
					60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75,						60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75,	
					76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91,						76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91,	
					92,93,94,95,96,97,98,99,100,101,102,103,104,105,						92,93,94,95,96,97,98,99,100,101,102,103,104,105,	
					106,107,108,109,110,111,112,113,114,115,116,117,						106,107,108,109,110,111,112,113,114,115,116,117,	
					118,119,120,121,122,123,124,125,126,127, OFF, TIE						118,119,120,121,122,123,124,125,126,127, OFF, TIE	
#	06 5C	0000	aaaa			#	06 6E	0000	aaaa			(0 - 129)
	06 5D	0000	bbbb	[07] Value Step.34	(0 - 129)		06 6F	0000	bbbb	[07] Value Step.43	(0 - 129)	
					0,1,2,3,4,5,6,7,8,9,10,11,						0,1,2,3,4,5,6,7,8,9,10,11,	
					12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27,						12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27,	
					28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43,						28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43,	
					44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59,						44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59,	
					60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75,						60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75,	
					76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91,						76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91,	
					92,93,94,95,96,97,98,99,100,101,102,103,104,105,						92,93,94,95,96,97,98,99,100,101,102,103,104,105,	
					106,107,108,109,110,111,112,113,114,115,116,117,						106,107,108,109,110,111,112,113,114,115,116,117,	
					118,119,120,121,122,123,124,125,126,127, OFF, TIE						118,119,120,121,122,123,124,125,126,127, OFF, TIE	
#	06 5E	0000	aaaa			#	06 70	0000	aaaa			(0 - 129)
	06 5F	0000	bbbb	[07] Value Step.35	(0 - 129)		06 71	0000	bbbb	[07] Value Step.44	(0 - 129)	

[illegible]

JUPITER-X/Xm MIDI Implementation

[illegible]

[illegible]

44

#	08 2C	0000	aaaa	118,119,120,121,122,123,124,125,126,127, OFF, TIE	#	08 3E	0000	aaaa	118,119,120,121,122,123,124,125,126,127, OFF, TIE
	08 2D	0000	bbbb	[09] Value Step.06 (0 - 129)		08 3F	0000	bbbb	[09] Value Step.15 (0 - 129)
				0,1,2,3,4,5,6,7,8,9,10,11,					0,1,2,3,4,5,6,7,8,9,10,11,
				12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27,					12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27,
				28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43,					28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43,
				44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59,					44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59,
				60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75,					60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75,
				76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91,					76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91,
				92,93,94,95,96,97,98,99,100,101,102,103,104,105,					92,93,94,95,96,97,98,99,100,101,102,103,104,105,
				106,107,108,109,110,111,112,113,114,115,116,117,					106,107,108,109,110,111,112,113,114,115,116,117,
				118,119,120,121,122,123,124,125,126,127, OFF, TIE					118,119,120,121,122,123,124,125,126,127, OFF, TIE
#	08 2E	0000	aaaa	[09] Value Step.07 (0 - 129)	#	08 40	0000	aaaa	[09] Value Step.16 (0 - 129)
	08 2F	0000	bbbb	(0 - 129)		08 41	0000	bbbb	(0 - 129)
				0,1,2,3,4,5,6,7,8,9,10,11,					0,1,2,3,4,5,6,7,8,9,10,11,
				12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27,					12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27,
				28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43,					28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43,
				44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59,					44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59,
				60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75,					60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75,
				76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91,					76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91,
				92,93,94,95,96,97,98,99,100,101,102,103,104,105,					92,93,94,95,96,97,98,99,100,101,102,103,104,105,
				106,107,108,109,110,111,112,113,114,115,116,117,					106,107,108,109,110,111,112,113,114,115,116,117,
				118,119,120,121,122,123,124,125,126,127, OFF, TIE					118,119,120,121,122,123,124,125,126,127, OFF, TIE
#	08 30	0000	aaaa	[09] Value Step.08 (0 - 129)	#	08 42	0000	aaaa	[09] Value Step.17 (0 - 129)
	08 31	0000	bbbb	(0 - 129)		08 43	0000	bbbb	(0 - 129)
				0,1,2,3,4,5,6,7,8,9,10,11,					0,1,2,3,4,5,6,7,8,9,10,11,
				12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27,					12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27,
				28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43,					28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43,
				44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59,					44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59,
				60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75,					60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75,
				76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91,					76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91,
				92,93,94,95,96,97,98,99,100,101,102,103,104,105,					92,93,94,95,96,97,98,99,100,101,102,103,104,105,
				106,107,108,109,110,111,112,113,114,115,116,117,					106,107,10

[illegible]

[illegible]

[illegible]

52

JUPITER-X/Xm MIDI Implementation

				106,107,108,109,110,111,112,113,114,115,116,117, 118,119,120,121,122,123,124,125,126,127, OFF, TIE					106,107,108,109,110,111,112,113,114,115,116,117, 118,119,120,121,122,123,124,125,126,127, OFF, TIE
#	OA 52	0000	aaaa		#	OA 64	0000	aaaa	
	OA 53	0000	bbbb	[11] Value Step.21 (0 - 129)		OA 65	0000	bbbb	[11] Value Step.30 (0 - 129)
				0,1,2,3,4,5,6,7,8,9,10,11, 12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27, 28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43, 44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59, 60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75, 76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91, 92,93,94,95,96,97,98,99,100,101,102,103,104,105, 106,107,108,109,110,111,112,113,114,115,116,117, 118,119,120,121,122,123,124,125,126,127, OFF, TIE				0,1,2,3,4,5,6,7,8,9,10,11, 12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27, 28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43, 44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59, 60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75, 76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91, 92,93,94,95,96,97,98,99,100,101,102,103,104,105, 106,107,108,109,110,111,112,113,114,115,116,117, 118,119,120,121,122,123,124,125,126,127, OFF, TIE	
#	OA 54	0000	aaaa		#	OA 66	0000	aaaa	
	OA 55	0000	bbbb	[11] Value Step.22 (0 - 129)		OA 67	0000	bbbb	[11] Value Step.31 (0 - 129)
				0,1,2,3,4,5,6,7,8,9,10,11, 12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27, 28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43, 44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59, 60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75, 76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91, 92,93,94,95,96,97,98,99,100,101,102,103,104,105, 106,107,108,109,110,111,112,113,114,115,116,117, 118,119,120,121,122,123,124,125,126,127, OFF, TIE				0,1,2,3,4,5,6,7,8,9,10,11, 12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27, 28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43, 44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59, 60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75, 76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91, 92,93,94,95,96,97,98,99,100,101,102,103,104,105, 106,107,108,109,110,111,112,113,114,115,116,117, 118,119,120,121,122,123,124,125,126,127, OFF, TIE	
#	OA 56	0000	aaaa		#	OA 68	0000	aaaa	
	OA 57	0000	bbbb	[11] Value Step.23 (0 - 129)		OA 69	0000	bbbb	[11] Value Step.32 (0 - 129)
				0,1,2,3,4,5,6,7,8,9,10,11, 12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27, 28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43, 44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59, 60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75, 76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91, 92,93,94,95,96,97,98,99,100,101,102,103,104,105, 106,107,108,109,110,111,112,113,114,115,116,117, 118,119,120,121,122,123,124,125,126,127, OFF, TIE				0,1,2,3,4,5,6,7,8,9,10,11, 12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27, 28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43, 44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59, 60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75, 76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91, 92,93,94,95,96,97,98,99,100,101,102,103,104,105, 106,107,108,109,110,111,112,113,114,115,116,117, 118,119,120,121,122,123,124,125,126,127, OFF, TIE	
#	OA 58	0000	aaaa		#	OA 6A	0000	aaaa	
	OA 59	0000	bbbb	[11] Value Step.24 (0 - 129)		OA 6B	0000	bbbb	[11] Value Step.33 (0 - 129)
				0,1,2,3,4,5,6,7,8,9,10,11, 12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27, 28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43, 44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59, 60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75, 76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91, 92,93,94,95,96,97,98,99,100,101,102,103,104,105, 106,107,108,109,110,111,112,113,114,115,116,117, 118,119,120,121,122,123,124,125,126,127, OFF, TIE				0,1,2,3,4,5,6,7,8,9,10,11, 12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27, 28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43, 44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59, 60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75, 76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91, 92,93,94,95,96,97,98,99,100,101,102,103,104,105, 106,107,108,109,110,111,112,113,114,115,116,117, 118,119,120,121,122,123,124,125,126,127, OFF, TIE	
#	OA 5A	0000	aaaa		#	OA 6C	0000	aaaa	
	OA 5B	0000	bbbb	[11] Value Step.25 (0 - 129)		OA 6D	0000	bbbb	[11] Value Step.34 (0 - 129)
				0,1,2,3,4,5,6,7,8,9,10,11, 12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27, 28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43, 44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59, 60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75, 76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91, 92,93,94,95,96,97,98,99,100,101,102,103,104,105, 106,107,108,109,110,111,112,113,114,115,116,117, 118,119,120,121,122,123,124,125,126,127, OFF, TIE				0,1,2,3,4,5,6,7,8,9,10,11, 12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27, 28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43, 44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59, 60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75, 76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91, 92,93,94,95,96,97,98,99,100,101,102,103,104,105, 106,107,108,109,110,111,112,113,114,115,116,117, 118,119,120,121,122,123,124,125,126,127, OFF, TIE	
#	OA 5C	0000	aaaa		#	OA 6E	0000	aaaa	
	OA 5D	0000	bbbb	[11] Value Step.26 (0 - 129)		OA 6F	0000	bbbb	[11] Value Step.35 (0 - 129)
				0,1,2,3,4,5,6,7,8,9,10,11, 12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27, 28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43, 44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59, 60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75, 76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91, 92,93,94,95,96,97,98,99,100,101,102,103,104,105, 106,107,108,109,110,111,112,113,114,115,116,117, 118,119,120,121,122,123,124,125,126,127, OFF, TIE				0,1,2,3,4,5,6,7,8,9,10,11, 12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27, 28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43, 44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59, 60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75, 76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91, 92,93,94,95,96,97,98,99,100,101,102,103,104,105, 106,107,108,109,110,111,112,113,114,115,116,117, 118,119,120,121,122,123,124,125,126,127, OFF, TIE	
#	OA 5E	0000	aaaa		#	OA 70	0000	aaaa	
	OA 5F	0000	bbbb	[11] Value Step.27 (0 - 129)		OA 71	0000	bbbb	[11] Value Step.36 (0 - 129)
				0,1,2,3,4,5,6,7,8,9,10,11, 12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27, 28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43, 44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59, 60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75, 76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91, 92,93,94,95,96,97,98,99,100,101,102,103,104,105, 106,107,108,109,110,111,112,113,114,115,116,117, 118,119,120,121,122,123,124,125,126,127, OFF, TIE				0,1,2,3,4,5,6,7,8,9,10,11, 12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27, 28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43, 44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59, 60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75, 76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91, 92,93,94,95,96,97,98,99,100,101,102,103,104,105, 106,107,108,109,110,111,112,113,114,115,116,117, 118,119,120,121,122,123,124,125,126,127, OFF, TIE	
#	OA 60	0000	aaaa		#	OA 72	0000	aaaa	
	OA 61	0000	bbbb	[11] Value Step.28 (0 - 129)		OA 73	0000	bbbb	[11] Value Step.37 (0 - 129)
				0,1,2,3,4,5,6,7,8,9,10,11, 12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27, 28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43, 44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59, 60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75, 76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91, 92,93,94,95,96,97,98,99,100,101,102,103,104,105, 106,107,108,109,110,111,112,113,114,115,116,117, 118,119,120,121,122,123,124,125,126,127, OFF, TIE				0,1,2,3,4,5,6,7,8,9,10,11, 12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27, 28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43, 44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59, 60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75, 76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91, 92,93,94,95,96,97,98,99,100,101,102,103,104,105, 106,107,108,109,110,111,112,113,114,115,116,117, 118,119,120,121,122,123,124,125,126,127, OFF, TIE	
#	OA 62	0000	aaaa		#	OA 74	0000	aaaa	
	OA 63	0000	bbbb	[11] Value Step.29 (0 - 129)		OA 75	0000	bbbb	[11] Value Step.38 (0 - 129)
				0,1,2,3,4,5,6,7,8,9,10,11, 12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27, 28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43, 44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59, 60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75, 76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91, 92,93,94,95,96,97,98,99,100,101,102,103,104,105, 106,107,108,109,110,111,112,113,114,115,116,117, 118,119,120,121,122,123,124,125,126,127, OFF, TIE				0,1,2,3,4,5,6,7,8,9,10,11, 12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27, 28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43, 44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59, 60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75, 76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91, 92,93,94,95,96,97,98,99,100,101,102,103,104,105, 106,107,108,109,110,111,112,113,114,115,116,117, 118,119,120,121,122,123,124,125,126,127, OFF, TIE	

[illegible]

57

[illegible]

61

JUPITER-X/Xm MIDI Implementation

				92,93,94,95,96,97,98,99,100,101,102,103,104,105, 106,107,108,109,110,111,112,113,114,115,116,117, 118,119,120,121,122,123,124,125,126,127, OFF, TIE					92,93,94,95,96,97,98,99,100,101,102,103,104,105, 106,107,108,109,110,111,112,113,114,115,116,117, 118,119,120,121,122,123,124,125,126,127, OFF, TIE
#	OD 1C OD 1D	0000 aaaa 0000 bbbb	[13] Value Step.54	(0 - 129) 0,1,2,3,4,5,6,7,8,9,10,11, 12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27, 28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43, 44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59, 60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75, 76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91, 92,93,94,95,96,97,98,99,100,101,102,103,104,105, 106,107,108,109,110,111,112,113,114,115,116,117, 118,119,120,121,122,123,124,125,126,127, OFF, TIE	#	OD 2E OD 2F	0000 aaaa 0000 bbbb	[13] Value Step.63	(0 - 129) 0,1,2,3,4,5,6,7,8,9,10,11, 12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27, 28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43, 44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59, 60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75, 76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91, 92,93,94,95,96,97,98,99,100,101,102,103,104,105, 106,107,108,109,110,111,112,113,114,115,116,117, 118,119,120,121,122,123,124,125,126,127, OFF, TIE
#	OD 1E OD 1F	0000 aaaa 0000 bbbb	[13] Value Step.55	(0 - 129) 0,1,2,3,4,5,6,7,8,9,10,11, 12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27, 28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43, 44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59, 60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75, 76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91, 92,93,94,95,96,97,98,99,100,101,102,103,104,105, 106,107,108,109,110,111,112,113,114,115,116,117, 118,119,120,121,122,123,124,125,126,127, OFF, TIE	#	OD 30 OD 31	0000 aaaa 0000 bbbb	[13] Value Step.64	(0 - 129) 0,1,2,3,4,5,6,7,8,9,10,11, 12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27, 28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43, 44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59, 60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75, 76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91, 92,93,94,95,96,97,98,99,100,101,102,103,104,105, 106,107,108,109,110,111,112,113,114,115,116,117, 118,119,120,121,122,123,124,125,126,127, OFF, TIE
#	OD 20 OD 21	0000 aaaa 0000 bbbb	[13] Value Step.56	(0 - 129) 0,1,2,3,4,5,6,7,8,9,10,11, 12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27, 28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43, 44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59, 60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75, 76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91, 92,93,94,95,96,97,98,99,100,101,102,103,104,105, 106,107,108,109,110,111,112,113,114,115,116,117, 118,119,120,121,122,123,124,125,126,127, OFF, TIE		OD 32 OD 33 OD 34	0000 0000 0000 0000 0000 00aa	Reserved Reserved [14] Type	(0 - 0) (0 - 0) (0 - 2)
						OD 35	0aaa aaaa	[14] Number	NONE, NOTE, CC (0 - 127) 0 - 127
					#	OD 36 OD 37	0000 aaaa 0000 bbbb	[14] Value Step.01	(0 - 129) 0,1,2,3,4,5,6,7,8,9,10,11, 12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27, 28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43, 44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59, 60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75, 76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91, 92,93,94,95,96,97,98,99,100,101,102,103,104,105, 106,107,108,109,110,111,112,113,114,115,116,117, 118,119,120,121,122,123,124,125,126,127, OFF, TIE
#	OD 22 OD 23	0000 aaaa 0000 bbbb	[13] Value Step.57	(0 - 129) 0,1,2,3,4,5,6,7,8,9,10,11, 12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27, 28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43, 44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59, 60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75, 76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91, 92,93,94,95,96,97,98,99,100,101,102,103,104,105, 106,107,108,109,110,111,112,113,114,115,116,117, 118,119,120,121,122,123,124,125,126,127, OFF, TIE	#	OD 38 OD 39	0000 aaaa 0000 bbbb	[14] Value Step.02	(0 - 129) 0,1,2,3,4,5,6,7,8,9,10,11, 12,13,14,15,16,

JUPITER-X/Xm MIDI Implementation

[illegible]

[illegible]

66

				76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91, 92,93,94,95,96,97,98,99,100,101,102,103,104,105, 106,107,108,109,110,111,112,113,114,115,116,117, 118,119,120,121,122,123,124,125,126,127, OFF, TIE					76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91, 92,93,94,95,96,97,98,99,100,101,102,103,104,105, 106,107,108,109,110,111,112,113,114,115,116,117, 118,119,120,121,122,123,124,125,126,127, OFF, TIE					
#	OE 56	0000	aaaa			#	OE 68	0000	aaaa					
	OE 57	0000	bbbb	[15] Value Step.15	(0 - 129)		OE 69	0000	bbbb	[15] Value Step.24	(0 - 129)			
				0,1,2,3,4,5,6,7,8,9,10,11, 12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27, 28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43, 44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59, 60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75, 76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91, 92,93,94,95,96,97,98,99,100,101,102,103,104,105, 106,107,108,109,110,111,112,113,114,115,116,117, 118,119,120,121,122,123,124,125,126,127, OFF, TIE						0,1,2,3,4,5,6,7,8,9,10,11, 12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27, 28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43, 44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59, 60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75, 76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91, 92,93,94,95,96,97,98,99,100,101,102,103,104,105, 106,107,108,109,110,111,112,113,114,115,116,117, 118,119,120,121,122,123,124,125,126,127, OFF, TIE				
#	OE 58	0000	aaaa			#	OE 6A	0000	aaaa					
	OE 59	0000	bbbb	[15] Value Step.16	(0 - 129)		OE 6B	0000	bbbb	[15] Value Step.25	(0 - 129)			
				0,1,2,3,4,5,6,7,8,9,10,11, 12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27, 28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43, 44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59, 60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75, 76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91, 92,93,94,95,96,97,98,99,100,101,102,103,104,105, 106,107,108,109,110,111,112,113,114,115,116,117, 118,119,120,121,122,123,124,125,126,127, OFF, TIE						0,1,2,3,4,5,6,7,8,9,10,11, 12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27, 28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43, 44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59, 60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75, 76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91, 92,93,94,95,96,97,98,99,100,101,102,103,104,105, 106,107,108,109,110,111,112,113,114,115,116,117, 118,119,120,121,122,123,124,125,126,127, OFF, TIE				
#	OE 5A	0000	aaaa			#	OE 6C	0000	aaaa					
	OE 5B	0000	bbbb	[15] Value Step.17	(0 - 129)		OE 6D	0000	bbbb	[15] Value Step.26	(0 - 129)			
				0,1,2,3,4,5,6,7,8,9,10,11, 12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27, 28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43, 44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59, 60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75, 76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91, 92,93,94,95,96,97,98,99,100,101,102,103,104,105, 106,107,108,109,110,111,112,113,114,115,116,117, 118,119,120,121,122,123,124,125,126,127, OFF, TIE						0,1,2,3,4,5,6,7,8,9,10,11, 12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27, 28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43, 44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59, 60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75, 76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91, 92,93,94,95,96,97,98,99,100,101,102,103,104,105, 106,107,108,109,110,111,112,113,114,115,116,117, 118,119,120,121,122,123,124,125,126,127, OFF, TIE				
#	OE 5C	0000	aaaa			#	OE 6E	0000	aaaa					
	OE 5D	0000	bbbb	[15] Value Step.18	(0 - 129)		OE 6F	0000	bbbb	[15] Value Step.27	(0 - 129)			
				0,1,2,3,4,5,6,7,8,9,10,11, 12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27, 28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43, 44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59, 60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75, 76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91, 92,93,94,95,96,97,98,99,100,101,102,103,104,105, 106,107,108,109,110,111,112,113,114,115,116,117, 118,119,120,121,122,123,124,125,126,127, OFF, TIE						0,1,2,3,4,5,6,7,8,9,10,11, 12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27, 28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43, 44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59, 60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75, 76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91, 92,93,94,95,96,97,98,99,100,101,102,103,104,105, 106,107,108,109,110,111,112,113,114,115,116,117, 118,119,120,121,122,123,124,125,126,127, OFF, TIE				
#	OE 5E	0000	aaaa			#	OE 70	0000	aaaa					
	OE 5F	0000	bbbb	[15] Value Step.19	(0 - 129)		OE 71	0000	bbbb	[15] Value Step.28	(0 - 129)			
				0,1,2,3,4,5,6,7,8,9,10,11, 12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27, 28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43, 44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59, 60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75, 76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91, 92,93,94,95,96,97,98,99,100,101,102,103,104,105, 106,107,108,109,110,111,112,113,114,115,116,117, 118,119,120,121,122,123,124,125,126,127, OFF, TIE						0,1,2,3,4,5,6,7,8,9,10,11, 12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27, 28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43, 44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59, 60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75, 76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91, 92,93,94,95,96,97,98,99,100,101,102,103,104,105, 106,107,108,109,110,111,112,113,114,115,116,117, 118,119,120,121,122,123,124,125,126,127, OFF, TIE				
#	OE 60	0000	aaaa			#	OE 72	0000	aaaa					
	OE 61	0000	bbbb	[15] Value Step.20	(0 - 129)		OE 73	0000	bbbb	[15] Value Step.29	(0 - 129)			
				0,1,2,3,4,5,6,7,8,9,10,11, 12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27, 28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43, 44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59, 60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75, 76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91, 92,93,94,95,96,97,98,99,100,101,102,103,104,105, 106,107,108,109,110,111,112,113,114,115,116,117, 118,119,120,121,122,123,124,125,126,127, OFF, TIE						0,1,2,3,4,5,6,7,8,9,10,11, 12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27, 28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43, 44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59, 60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75, 76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91, 92,93,94,95,96,97,98,99,100,101,102,103,104,105, 106,107,108,109,110,111,112,113,114,115,116,117, 118,119,120,121,122,123,124,125,126,127, OFF, TIE				
#	OE 62	0000	aaaa			#	OE 74	0000	aaaa					
	OE 63	0000	bbbb	[15] Value Step.21	(0 - 129)		OE 75	0000	bbbb	[15] Value Step.30	(0 - 129)			
				0,1,2,3,4,5,6,7,8,9,10,11, 12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27, 28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43, 44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59, 60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75, 76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91, 92,93,94,95,96,97,98,99,100,101,102,103,104,105, 106,107,108,109,110,111,112,113,114,115,116,117, 118,119,120,121,122,123,124,125,126,127, OFF, TIE						0,1,2,3,4,5,6,7,8,9,10,11, 12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27, 28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43, 44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59, 60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75, 76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91, 92,93,94,95,96,97,98,99,100,101,102,103,104,105, 106,107,108,109,110,111,112,113,114,115,116,117, 118,119,120,121,122,123,124,125,126,127, OFF, TIE				
#	OE 64	0000	aaaa			#	OE 76	0000	aaaa					
	OE 65	0000	bbbb	[15] Value Step.22	(0 - 129)		OE 77	0000	bbbb	[15] Value Step.31	(0 - 129)			
				0,1,2,3,4,5,6,7,8,9,10,11, 12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27, 28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43, 44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59, 60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75, 76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91, 92,93,94,95,96,97,98,99,100,101,102,103,104,105, 106,107,108,109,110,111,112,113,114,115,116,117, 118,119,120,121,122,123,124,125,126,127, OFF, TIE						0,1,2,3,4,5,6,7,8,9,10,11, 12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27, 28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43, 44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59, 60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75, 76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91, 92,93,94,95,96,97,98,99,100,101,102,103,104,105, 106,107,108,109,110,111,112,113,114,115,116,117, 118,119,120,121,122,123,124,125,126,127, OFF, TIE				
#	OE 66	0000	aaaa			#	OE 78	0000	aaaa					
	OE 67	0000	bbbb	[15] Value Step.23	(0 - 129)		OE 79	0000	bbbb	[15] Value Step.32	(0 - 129)			
				0,1,2,3,4,5,6,7,8,9,10,11, 12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27, 28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43, 44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59, 60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75, 76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91, 92,93,94,95,96,97,98,99,100,101,102,103,104,105, 106,107,108,109,110,111,112,113,114,115,116,117, 118,119,120,121,122,123,124,125,126,127, OFF, TIE						0,1,2,3,4,5,6,7,8,9,10,11, 12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27, 28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43, 44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59, 60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75, 76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91, 92,93,94,95,96,97,98,99,100,101,102,103,104,105, 106,107,108,109,110,111,112,113,114,115,116,117, 118,119,120,121,122,123,124,125,126,127, OFF, TIE				

				76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91, 92,93,94,95,96,97,98,99,100,101,102,103,104,105, 106,107,108,109,110,111,112,113,114,115,116,117, 118,119,120,121,122,123,124,125,126,127, OFF, TIE					76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91, 92,93,94,95,96,97,98,99,100,101,102,103,104,105, 106,107,108,109,110,111,112,113,114,115,116,117, 118,119,120,121,122,123,124,125,126,127, OFF, TIE								
#	OF 1E	0000	aaaa			#	OF 30	0000	aaaa								
	OF 1F	0000	bbbb	[15] Value Step.51	(0 - 129)		OF 31	0000	bbbb	[15] Value Step.60	(0 - 129)						
				0,1,2,3,4,5,6,7,8,9,10,11, 12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27, 28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43, 44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59, 60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75, 76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91, 92,93,94,95,96,97,98,99,100,101,102,103,104,105, 106,107,108,109,110,111,112,113,114,115,116,117, 118,119,120,121,122,123,124,125,126,127, OFF, TIE					0,1,2,3,4,5,6,7,8,9,10,11, 12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27, 28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43, 44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59, 60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75, 76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91, 92,93,94,95,96,97,98,99,100,101,102,103,104,105, 106,107,108,109,110,111,112,113,114,115,116,117, 118,119,120,121,122,123,124,125,126,127, OFF, TIE								
#	OF 20	0000	aaaa			#	OF 32	0000	aaaa								
	OF 21	0000	bbbb	[15] Value Step.52	(0 - 129)		OF 33	0000	bbbb	[15] Value Step.61	(0 - 129)						
				0,1,2,3,4,5,6,7,8,9,10,11, 12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27, 28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43, 44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59, 60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75, 76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91, 92,93,94,95,96,97,98,99,100,101,102,103,104,105, 106,107,108,109,110,111,112,113,114,115,116,117, 118,119,120,121,122,123,124,125,126,127, OFF, TIE					0,1,2,3,4,5,6,7,8,9,10,11, 12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27, 28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43, 44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59, 60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75, 76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91, 92,93,94,95,96,97,98,99,100,101,102,103,104,105, 106,107,108,109,110,111,112,113,114,115,116,117, 118,119,120,121,122,123,124,125,126,127, OFF, TIE								
#	OF 22	0000	aaaa			#	OF 34	0000	aaaa								
	OF 23	0000	bbbb	[15] Value Step.53	(0 - 129)		OF 35	0000	bbbb	[15] Value Step.62	(0 - 129)						
				0,1,2,3,4,5,6,7,8,9,10,11, 12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27, 28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43, 44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59, 60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75, 76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91, 92,93,94,95,96,97,98,99,100,101,102,103,104,105, 106,107,108,109,110,111,112,113,114,115,116,117, 118,119,120,121,122,123,124,125,126,127, OFF, TIE					0,1,2,3,4,5,6,7,8,9,10,11, 12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27, 28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43, 44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59, 60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75, 76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91, 92,93,94,95,96,97,98,99,100,101,102,103,104,105, 106,107,108,109,110,111,112,113,114,115,116,117, 118,119,120,121,122,123,124,125,126,127, OFF, TIE								
#	OF 24	0000	aaaa			#	OF 36	0000	aaaa								
	OF 25	0000	bbbb	[15] Value Step.54	(0 - 129)		OF 37	0000	bbbb	[15] Value Step.63	(0 - 129)						
				0,1,2,3,4,5,6,7,8,9,10,11, 12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27, 28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43, 44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59, 60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75, 76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91, 92,93,94,95,96,97,98,99,100,101,102,103,104,105, 106,107,108,109,110,111,112,113,114,115,116,117, 118,119,120,121,122,123,124,125,126,127, OFF, TIE					0,1,2,3,4,5,6,7,8,9,10,11, 12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27, 28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43, 44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59, 60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75, 76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91, 92,93,94,95,96,97,98,99,100,101,102,103,104,105, 106,107,108,109,110,111,112,113,114,115,116,117, 118,119,120,121,122,123,124,125,126,127, OFF, TIE								
#	OF 26	0000	aaaa			#	OF 38	0000	aaaa								
	OF 27	0000	bbbb	[15] Value Step.55	(0 - 129)		OF 39	0000	bbbb	[15] Value Step.64	(0 - 129)						
				0,1,2,3,4,5,6,7,8,9,10,11, 12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27, 28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43, 44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59, 60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75, 76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91, 92,93,94,95,96,97,98,99,100,101,102,103,104,105, 106,107,108,109,110,111,112,113,114,115,116,117, 118,119,120,121,122,123,124,125,126,127, OFF, TIE					0,1,2,3,4,5,6,7,8,9,10,11, 12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27, 28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43, 44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59, 60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75, 76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91, 92,93,94,95,96,97,98,99,100,101,102,103,104,105, 106,107,108,109,110,111,112,113,114,115,116,117, 118,119,120,121,122,123,124,125,126,127, OFF, TIE								
#	OF 28	0000	aaaa				OF 3A	0000	0000	Reserved	(0 - 0)						
	OF 29	0000	bbbb	[15] Value Step.56	(0 - 129)		OF 3B	0000	0000	Reserved	(0 - 0)						
				0,1,2,3,4,5,6,7,8,9,10,11, 12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27, 28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43, 44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59, 60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75, 76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91, 92,93,94,95,96,97,98,99,100,101,102,103,104,105, 106,107,108,109,110,111,112,113,114,115,116,117, 118,119,120,121,122,123,124,125,126,127, OFF, TIE					OF 3C	0000	00aa	[16] Type	(0 - 2)				
				12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27, 28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43, 44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59, 60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75, 76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91, 92,93,94,95,96,97,98,99,100,101,102,103,104,105, 106,107,108,109,110,111,112,113,114,115,116,117, 118,119,120,121,122,123,124,125,126,127, OFF, TIE						OF 3D	0aaa	aaaa	[16] Number	(0 - 127)			
				0,1,2,3,4,5,6,7,8,9,10,11, 12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27, 28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43, 44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59, 60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75, 76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91, 92,93,94,95,96,97,98,99,100,101,102,103,104,105, 106,107,108,109,110,111,112,113,114,115,116,117, 118,119,120,121,122,123,124,125,126,127, OFF, TIE					#	OF 3E	0000	aaaa		(0 - 129)			
				0,1,2,3,4,5,6,7,8,9,10,11, 12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27, 28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43, 44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59, 60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75, 76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91, 92,93,94,95,96,97,98,99,100,101,102,103,104,105, 106,107,108,109,110,111,112,113,114,115,116,117, 118,119,120,121,122,123,124,125,126,127, OFF, TIE						OF 3F	0000	bbbb	[16] Value Step.01	(0 - 129)			
#	OF 2A	0000	aaaa														
	OF 2B	0000	bbbb	[15] Value Step.57	(0 - 129)												
				0,1,2,3,4,5,6,7,8,9,10,11, 12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27, 28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43, 44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59, 60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75, 76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91, 92,93,94,95,96,97,98,99,100,101,102,103,104,105, 106,107,108,109,110,111,112,113,114,115,116,117, 118,119,120,121,122,123,124,125,126,127, OFF, TIE					#	OF 40	0000	aaaa		(0 - 129)			
				0,1,2,3,4,5,6,7,8,9,10,11, 12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27, 28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43, 44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59, 60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75, 76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91, 92,93,94,95,96,97,98,99,100,101,102,103,104,105, 106,107,108,109,110,111,112,113,114,115,116,117, 118,119,120,121,122,123,124,125,126,127, OFF, TIE						OF 41	0000	bbbb	[16] Value Step.02	(0 - 129)			
				0,1,2,3,4,5,6,7,8,9,10,11, 12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27, 28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43, 44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59, 60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75, 76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91, 92,93,94,95,96,97,98,99,100,101,102,103,104,105, 106,107,108,109,110,111,112,113,114,115,116,117, 118,119,120,121,122,123,124,125,126,127, OFF, TIE													
#	OF 2C	0000	aaaa														
	OF 2D	0000	bbbb	[15] Value Step.58	(0 - 129)												
				0,1,2,3,4,5,6,7,8,9,10,11, 12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27, 28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43, 44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59, 60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75, 76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91, 92,93,94,95,96,97,98,99,100,101,102,103,104,105, 106,107,108,109,110,111,112,113,114,115,116,117, 118,119,120,121,122,123,124,125,126,127, OFF, TIE					#	OF 42	0000	aaaa		(0 - 129)			
				0,1,2,3,4,5,6,7,8,9,10,11, 12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27, 28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43, 44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59, 60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75, 76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91, 92,93,94,95,96,97,98,99,100,101,102,103,104,105, 106,107,108,109,110,111,112,113,114,115,116,117, 118,119,120,121,122,123,124,125,126,127, OFF, TIE						OF 43	0000	bbbb	[16] Value Step.03	(0 - 129)			
#	OF 2E	0000	aaaa														
	OF 2F	0000	bbbb	[15] Value Step.59	(0 - 129)												
				0,1,2,3,4,5,6,7,8,9,10,11, 12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27, 28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43, 44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59, 60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75, 76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91, 92,93,94,95,96,97,98,99,100,101,102,103,104,105, 106,107,108,109,110,111,112,113,114,115,116,117, 118,119,120,121,122,123,124,125,126,127, OFF, TIE					#	OF 44	0000	aaaa		(0 - 129)			
				0,1,2,3,4,5,6,7,8,9,10,11, 12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27, 28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43, 44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59, 60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75, 76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91, 92,93,94,95,96,97,98,99,100,101,102,103,104,105, 106,107,108,109,110,111,112,113,114,115,116,117, 118,119,120,121,122,123,124,125,126,127, OFF, TIE													

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#	10 31	0000 bbbb	[16] Value Step.58	(0 - 129)	0,1,2,3,4,5,6,7,8,9,10,11, 12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27, 28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43, 44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59, 60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75, 76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91, 92,93,94,95,96,97,98,99,100,101,102,103,104,105, 106,107,108,109,110,111,112,113,114,115,116,117, 118,119,120,121,122,123,124,125,126,127, OFF, TIE	00 03	0aaa aaaa	Low Threshold	10 - 1000 [ms]	(4 - 64)		
								00 04	0000 0aaa	Low Ratio	-60 - 0 [dB]	(0 - 7)
										1:1,2:1,3:1,4:1,8:1,16:1,32:1, INF:1		
								00 05	000a aaaa	Low Knee	(0 - 30)	
										0 - 30 [dB]		
								00 06	0aaa aaaa	Low Output Gain	(16 - 112)	
										-24.0 - +24.0 [dB]		
								00 07	0aaa aaaa	Mid Attack Time	(0 - 100)	
#	10 32	0000 aaaa								0.1,1,2,3,4,		
	10 33	0000 bbbb	[16] Value Step.59	(0 - 129)	0,1,2,3,4,5,6,7,8,9,10,11, 12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27, 28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43, 44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59, 60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75, 76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91, 92,93,94,95,96,97,98,99,100,101,102,103,104,105, 106,107,108,109,110,111,112,113,114,115,116,117, 118,119,120,121,122,123,124,125,126,127, OFF, TIE	00 08	0aaa aaaa	Mid Release Time	10 - 1000 [ms]	(4 - 64)		
										-60 - 0 [dB]		
#	10 34	0000 aaaa						00 0A	0000 0aaa	Mid Ratio	(0 - 7)	
	10 35	0000 bbbb	[16] Value Step.60	(0 - 129)	0,1,2,3,4,5,6,7,8,9,10,11, 12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27, 28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43, 44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59, 60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75, 76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91, 92,93,94,95,96,97,98,99,100,101,102,103,104,105, 106,107,108,109,110,111,112,113,114,115,116,117, 118,119,120,121,122,123,124,125,126,127, OFF, TIE			1:1,2:1,3:1,4:1,8:1,16:1,32:1, INF:1				
								00 0B	000a aaaa	Mid Knee	(0 - 30)	
										0 - 30 [dB]		
								00 0C	0aaa aaaa	Mid Output Gain	(16 - 112)	
										-24.0 - +24.0 [dB]		
								00 0D	0aaa aaaa	High Attack Time	(0 - 100)	
#	10 36	0000 aaaa								0.1,1,2,3,4,		
	10 37	0000 bbbb	[16] Value Step.61	(0 - 129)	0,1,2,3,4,5,6,7,8,9,10,11, 12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27, 28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43, 44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59, 60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75, 76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91, 92,93,94,95,96,97,98,99,100,101,102,103,104,105, 106,107,108,109,110,111,112,113,114,115,116,117, 118,119,120,121,122,123,124,125,126,127, OFF, TIE	00 0E	0aaa aaaa	High Release Time	10 - 1000 [ms]	(4 - 64)		
										-60 - 0 [dB]		
								00 0F	0aaa aaaa	High Threshold	(0 - 7)	
#	10 38	0000 aaaa						00 10	0000 0aaa	High Ratio	(0 - 7)	
	10 39	0000 bbbb	[16] Value Step.62	(0 - 129)	0,1,2,3,4,5,6,7,8,9,10,11, 12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27, 28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43, 44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59, 60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75, 76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91, 92,93,94,95,96,97,98,99,100,101,102,103,104,105, 106,107,108,109,110,111,112,113,114,115,116,117, 118,119,120,121,122,123,124,125,126,127, OFF, TIE			1:1,2:1,3:1,4:1,8:1,16:1,32:1, INF:1				
								00 11	000a aaaa	High Knee	(0 - 30)	
										0 - 30 [dB]		
								00 12	0aaa aaaa	High Output Gain	(16 - 112)	
										-24.0 - +24.0 [dB]		
								00 13	000a aaaa	Split Freq Low	(0 - 30)	
#	10 3A	0000 aaaa								16,20,25,31,40,50,63,80,100,125,160,200, 250,315,400,500,630,800,1000,1250,1600,2000,2500, 3150,4000,5000,6300,8000,10000,12500,16000 [Hz]		
	10 3B	0000 bbbb	[16] Value Step.63	(0 - 129)	0,1,2,3,4,5,6,7,8,9,10,11, 12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27, 28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43, 44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59, 60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75, 76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91, 92,93,94,95,96,97,98,99,100,101,102,103,104,105, 106,107,108,109,110,111,112,113,114,115,116,117, 118,119,120,121,122,123,124,125,126,127, OFF, TIE	00 14	000a aaaa	Split Freq Hi	(0 - 30)			
										16,20,25,31,40,50,63,80,100,125,160,200, 250,315,400,500,630,800,1000,1250,1600,2000,2500, 3150,4000,5000,6300,8000,10000,12500,16000 [Hz]		
#	10 3C	0000 aaaa						00 00 00 15	Total Size			
	10 3D	0000 bbbb	[16] Value Step.64	(0 - 129)	0,1,2,3,4,5,6,7,8,9,10,11, 12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27, 28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43, 44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59, 60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75, 76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91, 92,93,94,95,96,97,98,99,100,101,102,103,104,105, 106,107,108,109,110,111,112,113,114,115,116,117, 118,119,120,121,122,123,124,125,126,127, OFF, TIE	* [Master EQ]						
								Offset	Address	Description		
								00 00	0aaa aaaa	EQ Input Gain	(40 - 88)	
										-24 - +24 [dB]		
								00 01	0aaa aaaa	EQ Low Gain	(40 - 88)	
										-24 - +24 [dB]		
								00 02	0aaa aaaa	EQ Mid1 Gain	(40 - 88)	
										-24 - +24 [dB]		
								00 03	0aaa aaaa	EQ Mid2 Gain	(40 - 88)	
										-24 - +24 [dB]		
								00 04	0aaa aaaa	EQ Mid3 Gain	(40 - 88)	
										-24 - +24 [dB]		
								00 05	0aaa aaaa	EQ High Gain	(40 - 88)	
										-24 - +24 [dB]		
								00 06	000a aaaa	EQ Low Frequency	(0 - 29)	
										20,25,31,40,50,63,80,100,125,160,200, 250,315,400,500,630,800,1000,1250,1600,2000,2500, 3150,4000,5000,6300,8000,10000,12600,16000 [Hz]		
								00 07	000a aaaa	EQ Mid1 Frequency	(0 - 29)	
										20,25,31,40,50,63,80,100,125,160,200, 250,315,400,500,630,800,1000,1250,1600,2000,2500, 3150,4000,5000,6300,8000,10000,12600,16000 [Hz]		
								00 08	000a aaaa	EQ Mid2 Frequency	(0 - 29)	
										20,25,31,40,50,63,80,100,125,160,200, 250,315,400,500,630,800,1000,1250,1600,2000,2500, 3150,4000,5000,6300,8000,10000,12600,16000 [Hz]		
								00 09	000a aaaa	EQ Mid3 Frequency	(0 - 29)	
										20,25,31,40,50,63,80,100,125,160,200, 250,315,400,500,630,800,1000,1250,1600,2000,2500, 3150,4000,5000,6300,8000,10000,12600,16000 [Hz]		
								00 0A	000a aaaa	EQ High Frequency	(0 - 29)	
										20,25,31,40,50,63,80,100,125,160,200, 250,315,400,500,630,800,1000,1250,1600,2000,2500, 3150,4000,5000,6300,8000,10000,12600,16000 [Hz]		
								00 0B	0000 0aaa	EQ Mid1 Q	(0 - 5)	
										0.5,1.0,2.0,4.0,8.0,16.0		
								00 0C	0000 0aaa	EQ Mid2 Q	(0 - 5)	
										0.5,1.0,2.0,4.0,8.0,16.0		
	00 02	0aaa aaaa	Low Release Time	(0 - 99)								

* [Master Comp]

Offset	Address	Description
00 00	0000 000a	Switch (0 - 1)
		OFF, ON
00 01	0aaa aaaa	Low Attack Time (0 - 100)
		0.1,1,2,3,4, 5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21,22, 23,24,25,26,27,28,29,30,31,32,33,34,35,36,37,38, 39,40,41,42,43,44,45,46,47,48,49,50,51,52,53,54, 55,56,57,58,59,60,61,62,63,64,65,66,67,68,69,70, 71,72,73,74,75,76,77,78,79,80,81,82,83,84,85,86, 87,88,89,90,91,92,93,94,95,96,97,98,99,100 [ms]
00 02	0aaa aaaa	Low Release Time (0 - 99)

JUPITER-X/Xm MIDI Implementation

00 0D	0000 0aaa	EQ Mid3 Q	(0 - 5)
00 0E	0000 000a	EQ Switch	(0 - 1)
		OFF, ON	
00 00 00 0F	Total Size		

* [Sympathetic Resonance]

Offset	Address	Description	
00 00	0000 000a	SymReso Switch	(0 - 1)
		OFF, ON	
00 01	0000 0000	Reserved	(0 - 0)
00 02	0aaa aaaa	SymReso Depth	(0 - 127)
00 03	0aaa aaaa	Cabinet Resonance	(0 - 127)
00 00 00 04	Total Size		

* [ToneName]

Offset	Address	Description	
00 00	0aaa aaaa	Name	(32 - 127)
00 01	0aaa aaaa	Name	(32 - 127) [ASCII]
00 02	0aaa aaaa	Name	(32 - 127) [ASCII]
00 03	0aaa aaaa	Name	(32 - 127) [ASCII]
00 04	0aaa aaaa	Name	(32 - 127) [ASCII]
00 05	0aaa aaaa	Name	(32 - 127) [ASCII]
00 06	0aaa aaaa	Name	(32 - 127) [ASCII]
00 07	0aaa aaaa	Name	(32 - 127) [ASCII]
00 08	0aaa aaaa	Name	(32 - 127) [ASCII]
00 09	0aaa aaaa	Name	(32 - 127) [ASCII]
00 0A	0aaa aaaa	Name	(32 - 127) [ASCII]
00 0B	0aaa aaaa	Name	(32 - 127) [ASCII]
00 0C	0aaa aaaa	Name	(32 - 127) [ASCII]
00 0D	0aaa aaaa	Name	(32 - 127) [ASCII]
00 0E	0aaa aaaa	Name	(32 - 127) [ASCII]
00 0F	0aaa aaaa	Name	(32 - 127) [ASCII]
00 00 00 10	Total Size		

* [ToneCom]

Offset	Address	Description	
00 00	0aaa aaaa	Name	(32 - 127)
00 01	0aaa aaaa	Name	(32 - 127) [ASCII]
00 02	0aaa aaaa	Name	(32 - 127) [ASCII]
00 03	0aaa aaaa	Name	(32 - 127) [ASCII]
00 04	0aaa aaaa	Name	(32 - 127) [ASCII]
00 05	0aaa aaaa	Name	(32 - 127) [ASCII]
00 06	0aaa aaaa	Name	(32 - 127) [ASCII]
00 07	0aaa aaaa	Name	(32 - 127) [ASCII]
00 08	0aaa aaaa	Name	(32 - 127) [ASCII]
00 09	0aaa aaaa	Name	(32 - 127) [ASCII]
00 0A	0aaa aaaa	Name	(32 - 127) [ASCII]
00 0B	0aaa aaaa	Name	(32 - 127) [ASCII]
00 0C	0aaa aaaa	Name	(32 - 127) [ASCII]
00 0D	0aaa aaaa	Name	(32 - 127) [ASCII]

00 0E	0aaa aaaa	Name	(32 - 127) [ASCII]
00 0F	0aaa aaaa	Name	(32 - 127) [ASCII]
00 10	00aa aaaa	Category	(0 - 50)
#	00 11	0000 aaaa	
#	00 12	0000 bbbb	Reserved
#	00 13	0000 aaaa	
	00 14	0000 bbbb	
	00 15	0000 cccc	
	00 16	0000 dddd	Reserved
00 00 00 17	Total Size		

* [Model Bank Assign]

Offset	Address	Description	
00 00	0000 00aa	Attribute	(0 - 3)
00 01	000a aaaa	Model	MODEL, CATEGORY, USER, EXZ
		OFF, NO ASSIGN, COMMON,	
		PR-A, PR-B, PR-C, PR-D, XV-5080, JUPITER-8, JX-8P,	
		JUNO-106, SH-101, VOCODER, RD-PIANO, PR-X,	
		JD-800, VOCAL DESIGNER, JUPITER-X	
00 02	000a aaaa	Model	(0 - 17)
		OFF, NO ASSIGN, COMMON,	
		PR-A, PR-B, PR-C, PR-D, XV-5080, JUPITER-8, JX-8P,	
		JUNO-106, SH-101, VOCODER, RD-PIANO, PR-X,	
		JD-800, VOCAL DESIGNER, JUPITER-X	
00 03	000a aaaa	Model	(0 - 17)
		OFF, NO ASSIGN, COMMON,	
		PR-A, PR-B, PR-C, PR-D, XV-5080, JUPITER-8, JX-8P,	
		JUNO-106, SH-101, VOCODER, RD-PIANO, PR-X,	
		JD-800, VOCAL DESIGNER, JUPITER-X	
00 04	000a aaaa	Model	(0 - 17)
		OFF, NO ASSIGN, COMMON,	
		PR-A, PR-B, PR-C, PR-D, XV-5080, JUPITER-8, JX-8P,	
		JUNO-106, SH-101, VOCODER, RD-PIANO, PR-X,	
		JD-800, VOCAL DESIGNER, JUPITER-X	
00 05	000a aaaa	Model	(0 - 17)
		OFF, NO ASSIGN, COMMON,	
		PR-A, PR-B, PR-C, PR-D, XV-5080, JUPITER-8, JX-8P,	
		JUNO-106, SH-101, VOCODER, RD-PIANO, PR-X,	
		JD-800, VOCAL DESIGNER, JUPITER-X	
00 06	000a aaaa	Model	(0 - 17)
		OFF, NO ASSIGN, COMMON,	
		PR-A, PR-B, PR-C, PR-D, XV-5080, JUPITER-8, JX-8P,	
		JUNO-106, SH-101, VOCODER, RD-PIANO, PR-X,	
		JD-800, VOCAL DESIGNER, JUPITER-X	
00 07	000a aaaa	Model	(0 - 17)
		OFF, NO ASSIGN, COMMON,	
		PR-A, PR-B, PR-C, PR-D, XV-5080, JUPITER-8, JX-8P,	
		JUNO-106, SH-101, VOCODER, RD-PIANO, PR-X,	
		JD-800, VOCAL DESIGNER, JUPITER-X	
00 08	000a aaaa	Model	(0 - 17)
		OFF, NO ASSIGN, COMMON,	
		PR-A, PR-B, PR-C, PR-D, XV-5080, JUPITER-8, JX-8P,	
		JUNO-106, SH-101, VOCODER, RD-PIANO, PR-X,	
		JD-800, VOCAL DESIGNER, JUPITER-X	
00 09	00aa aaaa	Category	(0 - 51)
00 0A	00aa aaaa	Category	(0 - 51)
00 0B	00aa aaaa	Category	(0 - 51)
00 0C	00aa aaaa	Category	(0 - 51)
00 0D	00aa aaaa	Category	(0 - 51)
00 0E	00aa aaaa	Category	(0 - 51)
00 0F	00aa aaaa	Category	(0 - 51)
00 10	00aa aaaa	Category	(0 - 51)
#	00 11	0000 aaaa	
	00 12	0000 bbbb	
	00 13	0000 cccc	
	00 14	0000 dddd	EXZ
#	00 15	0000 aaaa	(0 - 65535)
	00 16	0000 bbbb	
	00 17	0000 cccc	
	00 18	0000 dddd	EXZ
#	00 19	0000 aaaa	(0 - 65535)
	00 1A	0000 bbbb	
	00 1B	0000 cccc	
	00 1C	0000 dddd	EXZ
#	00 1D	0000 aaaa	(0 - 65535)
	00 1E	0000 bbbb	
	00 1F	0000 cccc	
	00 20	0000 dddd	EXZ
#	00 21	0000 aaaa	(0 - 65535)
	00 22	0000 bbbb	

	00 23	0000 cccc			00 4B	0000 bbbb	DataBlock0 (38)		(0 - 255)
	00 24	0000 dddd	EXZ	(0 - 65535)	00 4C	0000 aaaa			
#	00 25	0000 aaaa			00 4D	0000 bbbb	DataBlock0 (39)		(0 - 255)
	00 26	0000 bbbb			00 4E	0000 aaaa			
	00 27	0000 cccc			00 4F	0000 bbbb	DataBlock0 (40)		(0 - 255)
	00 28	0000 dddd	EXZ	(0 - 65535)	00 50	0000 aaaa			
#	00 29	0000 aaaa			00 51	0000 bbbb	DataBlock0 (41)		(0 - 255)
	00 2A	0000 bbbb			00 52	0000 aaaa			
	00 2B	0000 cccc			00 53	0000 bbbb	DataBlock0 (42)		(0 - 255)
	00 2C	0000 dddd	EXZ	(0 - 65535)	00 54	0000 aaaa			
#	00 2D	0000 aaaa			00 55	0000 bbbb	DataBlock0 (43)		(0 - 255)
	00 2E	0000 bbbb			00 56	0000 aaaa			
	00 2F	0000 cccc			00 57	0000 bbbb	DataBlock0 (44)		(0 - 255)
	00 30	0000 dddd	EXZ	(0 - 65535)	00 58	0000 aaaa			
-----					00 59	0000 bbbb	DataBlock0 (45)		(0 - 255)
00 00 00 31	Total Size				00 5A	0000 aaaa			
-----					00 5B	0000 bbbb	DataBlock0 (46)		(0 - 255)
* [USRDATA0LK]					00 5C	0000 aaaa			
-----					00 5D	0000 bbbb	DataBlock0 (47)		(0 - 255)
Offset					00 5E	0000 aaaa			
Address					00 5F	0000 bbbb	DataBlock0 (48)		(0 - 255)
Description					00 60	0000 aaaa			
-----					00 61	0000 bbbb	DataBlock0 (49)		(0 - 255)
#	00 00	0000 aaaa			00 62	0000 aaaa			
	00 01	0000 bbbb	DataBlock0 (1)	(0 - 255)	00 63	0000 bbbb	DataBlock0 (50)		(0 - 255)
#	00 02	0000 aaaa			00 64	0000 aaaa			
	00 03	0000 bbbb	DataBlock0 (2)	(0 - 255)	00 65	0000 bbbb	DataBlock0 (51)		(0 - 255)
#	00 04	0000 aaaa			00 66	0000 aaaa			
	00 05	0000 bbbb	DataBlock0 (3)	(0 - 255)	00 67	0000 bbbb	DataBlock0 (52)		(0 - 255)
#	00 06	0000 aaaa			00 68	0000 aaaa			
	00 07	0000 bbbb	DataBlock0 (4)	(0 - 255)	00 69	0000 bbbb	DataBlock0 (53)		(0 - 255)
#	00 08	0000 aaaa			00 6A	0000 aaaa			
	00 09	0000 bbbb	DataBlock0 (5)	(0 - 255)	00 6B	0000 bbbb	DataBlock0 (54)		(0 - 255)
#	00 0A	0000 aaaa			00 6C	0000 aaaa			
	00 0B	0000 bbbb	DataBlock0 (6)	(0 - 255)	00 6D	0000 bbbb	DataBlock0 (55)		(0 - 255)
#	00 0C	0000 aaaa			00 6E	0000 aaaa			
	00 0D	0000 bbbb	DataBlock0 (7)	(0 - 255)	00 6F	0000 bbbb	DataBlock0 (56)		(0 - 255)
#	00 0E	0000 aaaa			00 70	0000 aaaa			
	00 0F	0000 bbbb	DataBlock0 (8)	(0 - 255)	00 71	0000 bbbb	DataBlock0 (57)		(0 - 255)
#	00 10	0000 aaaa			00 72	0000 aaaa			
	00 11	0000 bbbb	DataBlock0 (9)	(0 - 255)	00 73	0000 bbbb	DataBlock0 (58)		(0 - 255)
#	00 12	0000 aaaa			00 74	0000 aaaa			
	00 13	0000 bbbb	DataBlock0 (10)	(0 - 255)	00 75	0000 bbbb	DataBlock0 (59)		(0 - 255)
#	00 14	0000 aaaa			00 76	0000 aaaa			
	00 15	0000 bbbb	DataBlock0 (11)	(0 - 255)	00 77	0000 bbbb	DataBlock0 (60)		(0 - 255)
#	00 16	0000 aaaa			00 78	0000 aaaa			
	00 17	0000 bbbb	DataBlock0 (12)	(0 - 255)	00 79	0000 bbbb	DataBlock0 (61)		(0 - 255)
#	00 18	0000 aaaa			00 7A	0000 aaaa			
	00 19	0000 bbbb	DataBlock0 (13)	(0 - 255)	00 7B	0000 bbbb	DataBlock0 (62)		(0 - 255)
#	00 1A	0000 aaaa			00 7C	0000 aaaa			
	00 1B	0000 bbbb	DataBlock0 (14)	(0 - 255)	00 7D	0000 bbbb	DataBlock0 (63)		(0 - 255)
#	00 1C	0000 aaaa			00 7E	0000 aaaa			
	00 1D	0000 bbbb	DataBlock0 (15)	(0 - 255)	00 7F	0000 bbbb	DataBlock0 (64)		(0 - 255)
#	00 1E	0000 aaaa			01 00	0000 aaaa			
	00 1F	0000 bbbb	DataBlock0 (16)	(0 - 255)	01 01	0000 bbbb	DataBlock0 (65)		(0 - 255)
#	00 20	0000 aaaa			01 02	0000 aaaa			
	00 21	0000 bbbb	DataBlock0 (17)	(0 - 255)	01 03	0000 bbbb	DataBlock0 (66)		(0 - 255)
#	00 22	0000 aaaa			01 04	0000 aaaa			
	00 23	0000 bbbb	DataBlock0 (18)	(0 - 255)	01 05	0000 bbbb	DataBlock0 (67)		(0 - 255)
#	00 24	0000 aaaa			01 06	0000 aaaa			
	00 25	0000 bbbb	DataBlock0 (19)	(0 - 255)	01 07	0000 bbbb	DataBlock0 (68)		(0 - 255)
#	00 26	0000 aaaa			01 08	0000 aaaa			
	00 27	0000 bbbb	DataBlock0 (20)	(0 - 255)	01 09	0000 bbbb	DataBlock0 (69)		(0 - 255)
#	00 28	0000 aaaa			01 0A	0000 aaaa			
	00 29	0000 bbbb	DataBlock0 (21)	(0 - 255)	01 0B	0000 bbbb	DataBlock0 (70)		(0 - 255)
#	00 2A	0000 aaaa			01 0C	0000 aaaa			
	00 2B	0000 bbbb	DataBlock0 (22)	(0 - 255)	01 0D	0000 bbbb	DataBlock0 (71)		(0 - 255)
#	00 2C	0000 aaaa			01 0E	0000 aaaa			
	00 2D	0000 bbbb	DataBlock0 (23)	(0 - 255)	01 0F	0000 bbbb	DataBlock0 (72)		(0 - 255)
#	00 2E	0000 aaaa			01 10	0000 aaaa			
	00 2F	0000 bbbb	DataBlock0 (24)	(0 - 255)	01 11	0000 bbbb	DataBlock0 (73)		(0 - 255)
#	00 30	0000 aaaa			01 12	0000 aaaa			
	00 31	0000 bbbb	DataBlock0 (25)	(0 - 255)	01 13	0000 bbbb	DataBlock0 (74)		(0 - 255)
#	00 32	0000 aaaa			01 14	0000 aaaa			
	00 33	0000 bbbb	DataBlock0 (26)	(0 - 255)	01 15	0000 bbbb	DataBlock0 (75)		(0 - 255)
#	00 34	0000 aaaa			01 16	0000 aaaa			
	00 35	0000 bbbb	DataBlock0 (27)	(0 - 255)	01 17	0000 bbbb	DataBlock0 (76)		(0 - 255)
#	00 36	0000 aaaa			01 18	0000 aaaa			
	00 37	0000 bbbb	DataBlock0 (28)	(0 - 255)	01 19	0000 bbbb	DataBlock0 (77)		(0 - 255)
#	00 38	0000 aaaa			01 1A	0000 aaaa			
	00 39	0000 bbbb	DataBlock0 (29)	(0 - 255)	01 1B	0000 bbbb	DataBlock0 (78)		(0 - 255)
#	00 3A	0000 aaaa			01 1C	0000 aaaa			
	00 3B	0000 bbbb	DataBlock0 (30)	(0 - 255)	01 1D	0000 bbbb	DataBlock0 (79)		(0 - 255)
#	00 3C	0000 aaaa			01 1E	0000 aaaa			
	00 3D	0000 bbbb	DataBlock0 (31)	(0 - 255)	01 1F	0000 bbbb	DataBlock0 (80)		(0 - 255)
#	00 3E	0000 aaaa			01 20	0000 aaaa			
	00 3F	0000 bbbb	DataBlock0 (32)	(0 - 255)	01 21	0000 bbbb	DataBlock0 (81)		(0 - 255)
#	00 40	0000 aaaa			01 22	0000 aaaa			
	00 41	0000 bbbb	DataBlock0 (33)	(0 - 255)	01 23	0000 bbbb	DataBlock0 (82)		(0 - 255)
#	00 42	0000 aaaa			01 24	0000 aaaa			
	00 43	0000 bbbb	DataBlock0 (34)	(0 - 255)	01 25	0000 bbbb	DataBlock0 (83)		(0 - 255)
#	00 44	0000 aaaa			01 26	0000 aaaa			
	00 45	0000 bbbb	DataBlock0 (35)	(0 - 255)	01 27	0000 bbbb	DataBlock0 (84)		(0 - 255)
#	00 46	0000 aaaa			01 28	0000 aaaa			
	00 47	0000 bbbb	DataBlock0 (36)	(0 - 255)	01 29	0000 bbbb	DataBlock0 (85)		(0 - 255)
#	00 48	0000 aaaa			01 2A	0000 aaaa			
	00 49	0000 bbbb	DataBlock0 (37)	(0 - 255)	01 2B	0000 bbbb	DataBlock0 (86)		(0 - 255)
#	00 4A	0000 aaaa			01 2C	0000 aaaa			
	00 4B	0000 bbbb	DataBlock0 (38)	(0 - 255)	01 2D	0000 bbbb	DataBlock0 (87)		(0 - 255)

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	00 26	0000 bbbb	Step	(56 - 200)		00 60	0000 00aa	Fade Mode	(0 - 3)
#	00 27	0000 aaaa		-72 - +72	#	00 61	0000 aaaa	ON-IN, ON-OUT, OFF-IN, OFF-OUT	
	00 28	0000 bbbb	Step	(56 - 200)		00 62	0000 bbbb		
				-72 - +72		00 63	0000 cccc		
#	00 29	0000 aaaa				00 64	0000 dddd	Fade Time	(0 - 1023)
	00 2A	0000 bbbb	Step	(56 - 200)					0 - 1023
#	00 2B	0000 aaaa		-72 - +72		00 65	0000 000a	Key Trigger	(0 - 1)
	00 2C	0000 bbbb	Step	(56 - 200)	#	00 66	0000 aaaa		OFF, ON
				-72 - +72		00 67	0000 bbbb	Pitch Depth	(28 - 228)
#	00 2D	0000 aaaa			#	00 68	0000 aaaa		-100 - +100
	00 2E	0000 bbbb	Step	(56 - 200)		00 69	0000 bbbb	TVF Depth	(28 - 228)
				-72 - +72					-100 - +100
#	00 2F	0000 aaaa			#	00 6A	0000 aaaa		
	00 30	0000 bbbb	Step	(56 - 200)		00 6B	0000 bbbb	TVA Depth	(28 - 228)
				-72 - +72					-100 - +100
#	00 31	0000 aaaa				00 6C	0aaa aaaa	PAN Depth	(1 - 127)
	00 32	0000 bbbb	Step	(56 - 200)					-63 - +63
				-72 - +72		00 6D	0000 00aa	Phase Position	(0 - 3)
#	00 33	0000 aaaa			#	00 6E	0000 aaaa		0 - 3
	00 34	0000 bbbb	Step	(56 - 200)		00 6F	0000 bbbb	Step	(56 - 200)
				-72 - +72					-72 - +72
#	00 35	0000 aaaa			#	00 70	0000 aaaa		
	00 36	0000 bbbb	Step	(56 - 200)		00 71	0000 bbbb	Step	(56 - 200)
				-72 - +72					-72 - +72
#	00 37	0000 aaaa			#	00 72	0000 aaaa		
	00 38	0000 bbbb	Step	(56 - 200)		00 73	0000 bbbb	Step	(56 - 200)
				-72 - +72					-72 - +72
#	00 39	0000 aaaa			#	00 74	0000 aaaa		
	00 3A	0000 bbbb	Step	(56 - 200)		00 75	0000 bbbb	Step	(56 - 200)
				-72 - +72					-72 - +72
#	00 3B	0000 aaaa			#	00 76	0000 aaaa		
	00 3C	0000 bbbb	Step	(56 - 200)		00 77	0000 bbbb	Step	(56 - 200)
				-72 - +72					-72 - +72
#	00 3D	0000 aaaa			#	00 78	0000 aaaa		
	00 3E	0000 bbbb	Step	(56 - 200)		00 79	0000 bbbb	Step	(56 - 200)
				-72 - +72					-72 - +72
	00 3F	00aa aaaa	Step Curve	(0 - 36)	#	00 7A	0000 aaaa		
				0 - 36		00 7B	0000 bbbb	Step	(56 - 200)
	00 40	00aa aaaa	Step Curve	(0 - 36)					-72 - +72
				0 - 36	#	00 7C	0000 aaaa		
	00 41	00aa aaaa	Step Curve	(0 - 36)		00 7D	0000 bbbb	Step	(56 - 200)
				0 - 36					-72 - +72
	00 42	00aa aaaa	Step Curve	(0 - 36)	#	00 7E	0000 aaaa		
				0 - 36		00 7F	0000 bbbb	Step	(56 - 200)
	00 43	00aa aaaa	Step Curve	(0 - 36)					-72 - +72
				0 - 36	#	01 00	0000 aaaa		
	00 44	00aa aaaa	Step Curve	(0 - 36)		01 01	0000 bbbb	Step	(56 - 200)
				0 - 36					-72 - +72
	00 45	00aa aaaa	Step Curve	(0 - 36)	#	01 02	0000 aaaa		
				0 - 36		01 03	0000 bbbb	Step	(56 - 200)
	00 46	00aa aaaa	Step Curve	(0 - 36)					-72 - +72
				0 - 36	#	01 04	0000 aaaa		
	00 47	00aa aaaa	Step Curve	(0 - 36)		01 05	0000 bbbb	Step	(56 - 200)
				0 - 36					-72 - +72
	00 48	00aa aaaa	Step Curve	(0 - 36)	#	01 06	0000 aaaa		
				0 - 36		01 07	0000 bbbb	Step	(56 - 200)
	00 49	00aa aaaa	Step Curve	(0 - 36)					-72 - +72
				0 - 36	#	01 08	0000 aaaa		
	00 4A	00aa aaaa	Step Curve	(0 - 36)		01 09	0000 bbbb	Step	(56 - 200)
				0 - 36					-72 - +72
	00 4B	00aa aaaa	Step Curve	(0 - 36)	#	01 0A	0000 aaaa		
				0 - 36		01 0B	0000 bbbb	Step	(56 - 200)
	00 4C	00aa aaaa	Step Curve	(0 - 36)					-72 - +72
				0 - 36	#	01 0C	0000 aaaa		
	00 4D	00aa aaaa	Step Curve	(0 - 36)		01 0D	0000 bbbb	Step	(56 - 200)
				0 - 36					-72 - +72
	00 4E	00aa aaaa	Step Curve	(0 - 36)	#	01 0E	00aa aaaa	Step Curve	(0 - 36)
				0 - 36					0 - 36
	00 4F	0000 aaaa	Waveform	(0 - 10)		01 0F	00aa aaaa	Step Curve	(0 - 36)
				SIN, TRI, SAW-UP, SAW-DW, SQR, RND, TRF, S&H, CHS, VSIN, STEP					0 - 36
				OFF, ON		01 10	00aa aaaa	Step Curve	(0 - 36)
	00 50	0000 000a	Rate Sync	(0 - 1)					0 - 36
				1/64T,		01 11	00aa aaaa	Step Curve	(0 - 36)
				1/32T,1/32,1/16T,1/32.,1/16,1/8T,1/16.,1/8,					0 - 36
				1/4T,1/8.,1/4,1/2T,1/4.,1/2,1T,1/2.,1,2T,1.,2,4		01 12	00aa aaaa	Step Curve	(0 - 36)
	00 51	000a aaaa	Rate (note)	(0 - 22)					0 - 36
				1 - 16		01 13	00aa aaaa	Step Curve	(0 - 36)
#	00 52	0000 aaaa	Step Size	(0 - 15)					0 - 36
				1 - 16		01 14	00aa aaaa	Step Curve	(0 - 36)
	00 53	0000 aaaa							0 - 36
	00 54	0000 bbbb				01 15	00aa aaaa	Step Curve	(0 - 36)
	00 55	0000 cccc							0 - 36
	00 56	0000 dddd	Rate	(0 - 1023)		01 16	00aa aaaa	Step Curve	(0 - 36)
#				0 - 1023					0 - 36
	00 57	0000 aaaa				01 17	00aa aaaa	Step Curve	(0 - 36)
	00 58	0000 bbbb	Offset	(28 - 228)					0 - 36
				-100 - +100		01 18	00aa aaaa	Step Curve	(0 - 36)
	00 59	0aaa aaaa	Rate Detune	(0 - 127)					0 - 36
				0 - 127		01 19	00aa aaaa	Step Curve	(0 - 36)
#	00 5A	0000 aaaa							0 - 36
	00 5B	0000 bbbb				01 1A	00aa aaaa	Step Curve	(0 - 36)
	00 5C	0000 cccc							0 - 36
	00 5D	0000 dddd	Delay Time	(0 - 1023)		01 1B	00aa aaaa	Step Curve	(0 - 36)
				0 - 1023					0 - 36
#	00 5E	0000 aaaa				01 1C	00aa aaaa	Step Curve	(0 - 36)
	00 5F	0000 bbbb	Delay Time Keyfollow	(28 - 228)					0 - 36
				-100 - +100					(0 - 36)

JUPITER-X/Xm MIDI Implementation

				0 - 36					0 - 1023
01 1D	00aa	aaaa	Step Curve	(0 - 36)	#	00 0C	0000	aaaa	
				0 - 36					
00 00 01 1E | Total Size									
* [Partial Pitch Env]									
Offset	Address	Description			#	00 10	0000	aaaa	
						00 11	0000	bbbb	
#	00 00	0000	aaaa			00 12	0000	cccc	
	00 01	0000	bbbb	Pitch Env Depth (28 - 228)		00 13	0000	dddd	TVF Env Time3 (0 - 1023)
				-100 - +100					0 - 1023
#	00 02	0000	aaaa		#	00 14	0000	aaaa	
	00 03	0000	bbbb	Pitch Env Velocity Sens (28 - 228)		00 15	0000	bbbb	
				-100 - +100		00 16	0000	cccc	
#	00 04	0000	aaaa			00 17	0000	dddd	TVF Env Time4 (0 - 1023)
	00 05	0000	bbbb	Pitch Env T1 Velocity Sens (28 - 228)					0 - 1023
				-100 - +100	#	00 18	0000	aaaa	
#	00 06	0000	aaaa			00 19	0000	bbbb	
	00 07	0000	bbbb	Pitch Env T4 Velocity Sens (28 - 228)		00 1A	0000	cccc	
				-100 - +100		00 1B	0000	dddd	TVF Env Level0 (0 - 1023)
#	00 08	0000	aaaa			00 1C	0000	aaaa	
	00 09	0000	bbbb			00 1D	0000	bbbb	
	00 0A	0000	cccc			00 1E	0000	cccc	
	00 0B	0000	dddd	Pitch Env Time1 (0 - 1023)		00 1F	0000	dddd	TVF Env Level1 (0 - 1023)
				0 - 1023	#	00 20	0000	aaaa	
#	00 0C	0000	aaaa			00 21	0000	bbbb	
	00 0D	0000	bbbb			00 22	0000	cccc	
	00 0E	0000	cccc			00 23	0000	dddd	TVF Env Level2 (0 - 1023)
	00 0F	0000	dddd	Pitch Env Time2 (0 - 1023)					0 - 1023
				0 - 1023	#	00 24	0000	aaaa	
#	00 10	0000	aaaa			00 25	0000	bbbb	
	00 11	0000	bbbb			00 26	0000	cccc	
	00 12	0000	cccc			00 27	0000	dddd	TVF Env Level3 (0 - 1023)
	00 13	0000	dddd	Pitch Env Time3 (0 - 1023)					0 - 1023
				0 - 1023	#	00 28	0000	aaaa	
#	00 14	0000	aaaa			00 29	0000	bbbb	
	00 15	0000	bbbb			00 2A	0000	cccc	
	00 16	0000	cccc			00 2B	0000	dddd	TVF Env Level4 (0 - 1023)
	00 17	0000	dddd	Pitch Env Time4 (0 - 1023)					0 - 1023
				0 - 1023	00 00 00 2C | Total Size				
#	00 18	0000	aaaa		* [Partial Amp Env]				
	00 19	0000	bbbb		Offset	Address	Description		
	00 1A	0000	cccc						
	00 1B	0000	dddd	Pitch Env Level0 (513 - 1535)	#	00 00	0000	aaaa	
				-511 - +511		00 01	0000	bbbb	TVA Env Time1 Velocity Sens (28 - 228)
#	00 1C	0000	aaaa						-100 - +100
	00 1D	0000	bbbb		#	00 02	0000	aaaa	
	00 1E	0000	cccc			00 03	0000	bbbb	TVA Env Time4 Velocity Sens (28 - 228)
	00 1F	0000	dddd	Pitch Env Level1 (513 - 1535)					-100 - +100
				-511 - +511	#	00 04	0000	aaaa	
#	00 20	0000	aaaa			00 05	0000	bbbb	
	00 21	0000	bbbb			00 06	0000	cccc	
	00 22	0000	cccc			00 07	0000	dddd	TVA Env Time1 (0 - 1023)
	00 23	0000	dddd	Pitch Env Level2 (513 - 1535)					0 - 1023
				-511 - +511	#	00 08	0000	aaaa	
#	00 24	0000	aaaa			00 09	0000	bbbb	
	00 25	0000	bbbb			00 0A	0000	cccc	
	00 26	0000	cccc			00 0B	0000	dddd	TVA Env Time2 (0 - 1023)
	00 27	0000	dddd	Pitch Env Level3 (513 - 1535)					0 - 1023
				-511 - +511	#	00 0C	0000	aaaa	
#	00 28	0000	aaaa			00 0D	0000	bbbb	
	00 29	0000	bbbb			00 0E	0000	cccc	
	00 2A	0000	cccc			00 0F	0000	dddd	TVA Env Time3 (0 - 1023)
	00 2B	0000	dddd	Pitch Env Level4 (513 - 1535)					0 - 1023
				-511 - +511	#	00 10	0000	aaaa	
	00 2C	0000	0aaa	Pitch Env Velocity Curve (0 - 7)		00 11	0000	bbbb	
				0 - 7		00 12	0000	cccc	
00 00 00 2D | Total Size						00 13	0000	dddd	TVA Env Time4 (0 - 1023)
* [Partial Filter Env]									0 - 1023
Offset	Address	Description			#	00 14	0000	aaaa	
						00 15	0000	bbbb	
	00 00	0aaa	aaaa	TVF Env Depth (1 - 127)		00 16	0000	cccc	
				-63 - +63		00 17	0000	dddd	TVA Env Level1 (0 - 1023)
	00 01	0000	0aaa	TVF Env Velocity Curve (0 - 7)					0 - 1023
				0 - 7	#	00 18	0000	aaaa	
#	00 02	0000	aaaa			00 19	0000	bbbb	
	00 03	0000	bbbb	TVF Env Velocity Sens (28 - 228)		00 1A	0000	cccc	
				-100 - +100		00 1B	0000	dddd	TVA Env Level2 (0 - 1023)
#	00 04	0000	aaaa						0 - 1023
	00 05	0000	bbbb	TVF Env T1 Velocity Sens (28 - 228)	#	00 1C	0000	aaaa	
				-100 - +100		00 1D	0000	bbbb	
#	00 06	0000	aaaa			00 1E	0000	cccc	
	00 07	0000	bbbb	TVF Env T4 Velocity Sens (28 - 228)		00 1F	0000	dddd	TVA Env Level3 (0 - 1023)
				-100 - +100					0 - 1023
#	00 08	0000	aaaa		00 00 00 20 | Total Size				
	00 09	0000	bbbb		* [Tone Common]				
	00 0A	0000	cccc						
	00 0B	0000	dddd	TVF Env Time1 (0 - 1023)					

Offset	Address	Description
	00 00	0aaa aaaa | Name (32 - 127)
	00 01	0aaa aaaa | Name (32 - 127) [ASCII]
	00 02	0aaa aaaa | Name (32 - 127)
	00 03	0aaa aaaa | Name (32 - 127) [ASCII]
	00 04	0aaa aaaa | Name (32 - 127)
	00 05	0aaa aaaa | Name (32 - 127) [ASCII]
	00 06	0aaa aaaa | Name (32 - 127)
	00 07	0aaa aaaa | Name (32 - 127) [ASCII]
	00 08	0aaa aaaa | Name (32 - 127)
	00 09	0aaa aaaa | Name (32 - 127) [ASCII]
	00 0A	0aaa aaaa | Name (32 - 127)
	00 0B	0aaa aaaa | Name (32 - 127) [ASCII]
	00 0C	0aaa aaaa | Name (32 - 127)
	00 0D	0aaa aaaa | Name (32 - 127) [ASCII]
	00 0E	0aaa aaaa | Name (32 - 127)
	00 0F	0aaa aaaa | Name (32 - 127) [ASCII]
	00 10	00aa aaaa | (*)Category (0 - 50)
#	00 11	0000 aaaa
	00 12	0000 bbbb
	00 13	0000 cccc
	00 14	0000 dddd | Reserved (0 - 0)
	00 15	0aaa aaaa | Level (0 - 127)
	00 16	0aaa aaaa | Pan (0 - 127)
	00 17	0000 000a | Priority (0 - 1)
	00 18	0aaa aaaa | Tone Coarse Tune (16 - 112)
	00 19	0aaa aaaa | Tone Fine Tune (14 - 114)
	00 1A	0aaa aaaa | Octave Shift (-50 - +50 [cent])
	00 1B	0000 00aa | Stretch Tune Depth (0 - 3)
	00 1C	0aaa aaaa | Analog Feel (0 - 127)
	00 1D	0000 000a | Mono/Poly (0 - 1)
	00 1E	0000 000a | Legato Switch (0 - 1)
	00 1F	0000 aaaa | Legato Retrigger Interval (0 - 13)
	00 20	0000 000a | Portamento Switch (0 - 1)
	00 21	0000 000a | Portamento Mode (0 - 1)
	00 22	0000 000a | Portamento Type (0 - 1)
	00 23	0000 000a | Portamento Start (0 - 1)
#	00 24	0000 aaaa
	00 25	0000 bbbb
	00 26	0000 cccc
	00 27	0000 dddd | Portamento Time (0 - 1023)
	00 28	00aa aaaa | Bend Range Up (0 - 48)
	00 29	00aa aaaa | Bend Range Down (0 - 48)
	00 2A	0000 000a | Bend Mode (0 - 1)
	00 2B	0aaa aaaa | Soft Level Sens (0 - 100)
#	00 2C	0000 aaaa
	00 2D	0000 bbbb | Reserved (0 - 0)
#	00 2E	0000 aaaa
	00 2F	0000 bbbb | Reserved (0 - 0)
#	00 30	0000 aaaa
	00 31	0000 bbbb | Reserved (0 - 0)
	00 32	0000 aaaa
	00 33	0000 bbbb | Reserved (0 - 0)
	00 34	0000 00aa | Portamento Curve Type (1 - 3)
	00 35	0000 000a | Partial LFO Phase Lock (0 - 1)
		OFF, ON
	00 00 00 36	Total Size

(*) When selecting the COMMON, PR-A, PR-B, PR-C, PR-D, PR-X or the installed EXZ tones, the range is (0-49).

* [Tone PMT]

Offset	Address	Description
	00 00	0000 00aa | Velocity Control (0 - 3)
	00 01	0000 000a | PMT Level Curve (0 - 1)
	00 02	0000 000a | Partial Switch (0 - 1)
	00 03	0aaa aaaa | KeyRange Lower (0 - 127)
	00 04	0aaa aaaa | KeyRange Upper (0 - 127)
	00 05	0aaa aaaa | KeyFade Lower (0 - 127)
	00 06	0aaa aaaa | KeyFade Upper (0 - 127)
	00 07	0aaa aaaa | VeloRange Lower (1 - 127)
	00 08	0aaa aaaa | VeloRange Upper (1 - 127)
	00 09	0aaa aaaa | VeloFade Lower (0 - 127)
	00 0A	0aaa aaaa | VeloFade Upper (0 - 127)
	00 0B	0000 000a | Partial Switch (0 - 1)
	00 0C	0aaa aaaa | KeyRange Lower (0 - 127)
	00 0D	0aaa aaaa | KeyRange Upper (0 - 127)
	00 0E	0aaa aaaa | KeyFade Lower (0 - 127)
	00 0F	0aaa aaaa | KeyFade Upper (0 - 127)
	00 10	0aaa aaaa | VeloRange Lower (1 - 127)
	00 11	0aaa aaaa | VeloRange Upper (1 - 127)
	00 12	0aaa aaaa | VeloFade Lower (0 - 127)
	00 13	0aaa aaaa | VeloFade Upper (0 - 127)
	00 14	0000 000a | Partial Switch (0 - 1)
	00 15	0aaa aaaa | KeyRange Lower (0 - 127)
	00 16	0aaa aaaa | KeyRange Upper (0 - 127)
	00 17	0aaa aaaa | KeyFade Lower (0 - 127)
	00 18	0aaa aaaa | KeyFade Upper (0 - 127)
	00 19	0aaa aaaa | VeloRange Lower (1 - 127)
	00 1A	0aaa aaaa | VeloRange Upper (1 - 127)
	00 1B	0aaa aaaa | VeloFade Lower (0 - 127)
	00 1C	0aaa aaaa | VeloFade Upper (0 - 127)
	00 1D	0000 000a | Partial Switch (0 - 1)
	00 1E	0aaa aaaa | KeyRange Lower (0 - 127)
	00 1F	0aaa aaaa | KeyRange Upper (0 - 127)
	00 20	0aaa aaaa | KeyFade Lower (0 - 127)
	00 21	0aaa aaaa | KeyFade Upper (0 - 127)
	00 22	0aaa aaaa | VeloRange Lower (1 - 127)
	00 23	0aaa aaaa | VeloRange Upper (1 - 127)
	00 24	0aaa aaaa | VeloFade Lower (0 - 127)
	00 25	0aaa aaaa | VeloFade Upper (0 - 127)
	00 00 00 26	Total Size

* [Tone Partial]

Offset	Address	Description
	00 00	0aaa aaaa Level (0 - 127)
	00 01	0aaa aaaa Coarse Tune (16 - 112)

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00 00 01 00	Total Size
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* [Tone Synth Common]

Offset	Address	Description	
00 00	0000 000a	Unison Switch	(0 - 1)
			OFF, ON
00 01	0000 aaaa	Unison Size	(2 - 8)
			2 - 8
00 02	0aaa aaaa	Unison Detune	(0 - 100)
			0 - 100
00 03	0aaa aaaa	Bend Range Fine Up	(0 - 100)
			0 - 100
00 04	0aaa aaaa	Bend Range Fine Down	(0 - 100)
			0 - 100
# 00 05	0000 aaaa		
00 06	0000 bbbb	Pitch Drift	(0 - 255)
			0 - 255
00 07	0000 aaaa	Pitch Drift Cycle Number	(0 - 8)
			FREE,1,2,3,4,5,6,7,8
00 08	0aaa aaaa	Condition	(0 - 100)
			0 - 100
00 00 00 09	Total Size		

* [Tone Synth PMT]

Offset	Address	Description	
00 00	0000 0aaa	Structure1-2	(0 - 4)
			OFF, SYNC, RING, XMOD, XMOD2
00 01	0000 0aaa	Structure3-4	(0 - 4)
			OFF, SYNC, RING, XMOD, XMOD2
00 02	0aaa aaaa	RING1-2 Level	(0 - 127)
			0 - 127
00 03	0aaa aaaa	RING3-4 Level	(0 - 127)
			0 - 127
00 04	0aaa aaaa	RING OSC1 Level	(0 - 127)
			0 - 127
00 05	0aaa aaaa	RING OSC2 Level	(0 - 127)
			0 - 127
00 06	0aaa aaaa	RING OSC3 Level	(0 - 127)
			0 - 127
00 07	0aaa aaaa	RING OSC4 Level	(0 - 127)
			0 - 127
# 00 08	0000 aaaa		
00 09	0000 bbbb		
00 0A	0000 cccc		
00 0B	0000 dddd	CrossMod1-2 Depth	(0 - 10800)
			0 - 10800 [cent]
# 00 0C	0000 aaaa		
00 0D	0000 bbbb		
00 0E	0000 cccc		
00 0F	0000 dddd	CrossMod3-4 Depth	(0 - 10800)
			0 - 10800 [cent]
00 10	0aaa aaaa	CrossMod OSC1 Level	(0 - 127)
			0 - 127
00 11	0aaa aaaa	CrossMod OSC2 Level	(0 - 127)
			0 - 127
00 12	0aaa aaaa	CrossMod OSC3 Level	(0 - 127)
			0 - 127
00 13	0aaa aaaa	CrossMod OSC4 Level	(0 - 127)
			0 - 127
00 14	0000 000a	Partial Phase Lock	(0 - 1)
			OFF, ON
00 15	0aaa aaaa	CrossMod2 1-2 Depth	(0 - 127)
			0 - 127
00 16	0aaa aaaa	CrossMod2 3-4 Depth	(0 - 127)
			0 - 127
00 00 00 17	Total Size		

* [Tone Synth Partial]

Offset	Address	Description	
00 00	0000 0aaa	OSC Type	(0 - 4)
			PCM, VA, PCM-Sync, SuperSAW, Noise
00 01	0000 aaaa	VA Waveform	(0 - 8)
			SAW, SQR, TRI, SIN, RAMP, JUNO, TRI2, TRI3, SIN2
# 00 02	0000 aaaa		
00 03	0000 bbbb		
00 04	0000 cccc		
00 05	0000 dddd	PCM-Sync Wave Number	(0 - 16383)
			0 - 16383
00 06	0aaa aaaa	Pulse Width	(0 - 127)
			0 - 127

00 07	0aaa aaaa	PWM Depth	(1 - 127)
			-63 - +63
00 08	0aaa aaaa	SuperSAW Detune	(0 - 127)
			0 - 127
00 09	0000 00aa	Click Type	(0 - 3)
			SOFT, HARD, NATURAL, OFF
# 00 0A	0000 aaaa		
00 0B	0000 bbbb		
00 0C	0000 cccc		
00 0D	0000 dddd	HPF Cutoff	(0 - 1023)
			0 - 1023
00 0E	0000 000a	Filter Type	(0 - 1)
			TVF, VCF
00 0F	0000 00aa	Filter Slope	(0 - 2)
			-12, -18, -24 [dB/Oct]
00 10	0000 000a	ADSREnv Switch	(0 - 1)
			OFF, ON
00 11	0aaa aaaa	Fat	(0 - 127)
			0 - 127
00 12	0000 00aa	VCF Type	(0 - 3)
			1,2,3,4
# 00 13	0000 aaaa		
00 14	0000 bbbb	OSC Attenuator	(0 - 255)
			0 - 255
00 15	0aaa aaaa	Cutoff Keyfollow Base Point	(0 - 127)
			0 - 127
00 16	0000 000a	VA Waveform Invert Switch	(0 - 1)
			OFF, ON
00 17	0aaa aaaa	TVF Env Fine Depth	(1 - 127)
			-63 - +63
00 18	0000 000a	PENV LFO Trigger Switch	(0 - 1)
			OFF, ON
00 19	0000 000a	FENV LFO Trigger Switch	(0 - 1)
			OFF, ON
00 1A	0000 000a	AENV LFO Trigger Switch	(0 - 1)
			OFF, ON
00 1B	0aaa aaaa	Pitch Down Depth	(0 - 120)
			0 - 120
00 1C	0aaa aaaa	reserved	(0 - 127)
00 1D	0aaa aaaa	VA Init Phase	(0 - 72)
			0 - 360
00 00 00 1E	Total Size		

* [MDLSYN0]

Offset	Address	Description	
# 00 00	0000 aaaa		
00 01	0000 bbbb	Model	(0 - 4)
			---, JP8, JX8P, JUNO106, SH101
00 02	0000 aaaa	LFO WAVE FORM	(0 - 10)
			SIN, TRI, SAW-UP,
			SAW-DW, SQR, RND, TRP, S&H, CHS, VSIN, STEP
# 00 03	0000 aaaa		
00 04	0000 bbbb		
00 05	0000 cccc		
00 06	0000 dddd	LFO RATE	(0 - 1023)
# 00 07	0000 aaaa		
00 08	0000 bbbb		
00 09	0000 cccc		
00 0A	0000 dddd	LFO DELAY TIME	(0 - 1023)
# 00 0B	0000 aaaa		
00 0C	0000 bbbb	OSC1 MOD	(28 - 228)
			-100 - 100
# 00 0D	0000 aaaa		
00 0E	0000 bbbb	OSC1 PITCH ENV DEPTH	(28 - 228)
			-100 - 100
00 0F	0000 00aa	OSC1 DEST SELECT	(0 - 2)
			OSC1, BOTH, OSC2
00 10	0000 000a	OSC1 ENVT SELECT	(0 - 1)
			1,2
# 00 11	0000 aaaa		
00 12	0000 bbbb		
00 13	0000 cccc		
00 14	0000 dddd	OSC1 WAVE FORM	(0 - 27)
			PW, SAW, SUB1OCT1, SUB2OCT1, SUB2OCT2, NOISE,
			PW, SAW, SUB1OCT1, NOISE, SIN, TRI, SAW, PW,
			SQR, NOISE, SAW, PULSE, SQR, NOISE, TRI, SAW+TRI,
			SAW, SQR, SQR2, SQR3, WHITE NOISE, PINK NOISE
00 15	0000 0aaa	OSC1 FEET	(0 - 4)
			32',16',8',4',2'
00 16	0aaa aaaa	OSC1 COARSE TUNE	(16 - 112)
			-48 - 48
00 17	0aaa aaaa	OSC1 FINE TUNE	(14 - 114)
			-50 - 50
00 18	0aaa aaaa	OSC1 LOW FREQ PITCH	(0 - 127)
00 19	0000 000a	OSC1 MODE	(0 - 1)
			NORMAL, LOW FREQ
00 1A	0aaa aaaa	OSC1 PWM DEPTH	(1 - 127)
			-63 - 63
00 1B	0aaa aaaa	OSC1 PULSE WIDTH	(0 - 127)
00 1C	0000 00aa	OSC1 PULSE WIDTH MODE	(0 - 2)
			LFO, MANUAL, ENV
# 00 1D	0000 aaaa		
00 1E	0000 bbbb	OSC2 MOD	(28 - 228)

#	00 1F	0000 aaaa		-100 - 100		00 65	0000 bbbb	AMP MOD	(-100 - 100)	
	00 20	0000 bbbb	OSC2 PITCH ENV DEPTH	(28 - 228)		00 66	0000 00aa	AMP MOD STEP	(0 - 3)	
				-100 - 100		00 67	0000 00aa	AMP ENV SELECT	(0 - 3)	
#	00 21	0000 aaaa						ENV F&A, ENV2, G-AMP, G-ENV2		
	00 22	0000 bbbb				00 68	0000 aaaa			
	00 23	0000 cccc				00 69	0000 bbbb			
	00 24	0000 dddd	OSC2 WAVE FORM	(0 - 27)		00 6A	0000 cccc			
			PW, SAW, SUB1OCT1, SUB2OCT1, SUB2OCT2, NOISE,			00 6B	0000 dddd	ENV1 ATTACK	(0 - 1023)	
			PW, SAW, SUB1OCT1, NOISE, SIN, TRI, SAW, PW,		#	00 6C	0000 aaaa			
			SQR, NOISE, SAW, PULSE, SQR, NOISE, TRI, SAW+TRI,			00 6D	0000 bbbb			
			SAW, SQR, SQR2, SQR3, WHITE NOISE, PINK NOISE			00 6E	0000 cccc			
	00 25	0000 0aaa	OSC2 FEET	(0 - 4)		00 6F	0000 dddd	ENV1 DECAY	(0 - 1023)	
			32',16',8',4',2'		#	00 70	0000 aaaa			
	00 26	0aaa aaaa	OSC2 COARSE TUNE	(16 - 112)		00 71	0000 bbbb			
			-48 - 48			00 72	0000 cccc			
	00 27	0aaa aaaa	OSC2 FINE TUNE	(14 - 114)		00 73	0000 dddd	ENV1 SUSTAIN	(0 - 1023)	
			-50 - 50		#	00 74	0000 aaaa			
	00 28	0aaa aaaa	OSC2 LOW FREQ PITCH	(0 - 127)		00 75	0000 bbbb			
	00 29	0000 000a	OSC2 MODE	(0 - 1)		00 76	0000 cccc			
			NORMAL, LO FREQ			00 77	0000 dddd	ENV1 RELEASE	(0 - 1023)	
	00 2A	0aaa aaaa	OSC2 PULSE WIDTH	(0 - 127)	#	00 78	0000 aaaa			
#	00 2B	0000 aaaa				00 79	0000 bbbb	ENV1 KEY FOLLOW	(28 - 228)	
	00 2C	0000 bbbb	OSC3 MOD	(28 - 228)				ENV1 KEY FOLLOW STEP	(0 - 6)	
			-100 - 100		#	00 7A	0000 0aaa			
#	00 2D	0000 aaaa				00 7B	0000 aaaa			
	00 2E	0000 bbbb	OSC3 PITCH ENV DEPTH	(28 - 228)		00 7C	0000 bbbb			
			-100 - 100			00 7D	0000 cccc			
#	00 2F	0000 aaaa				00 7E	0000 dddd	ENV2 ATTACK	(0 - 1023)	
	00 30	0000 bbbb			#	00 7F	0000 aaaa			
	00 31	0000 cccc				01 00	0000 bbbb			
	00 32	0000 dddd	OSC3 WAVE FORM	(0 - 27)		01 01	0000 cccc			
			PW, SAW, SQR 1OCT, SQR 2OCT, SH SubOSC, NOISE,			01 02	0000 dddd	ENV2 DECAY	(0 - 1023)	
			PW, SAW, SQR 1OCT, NOISE, SIN, TRI, SAW, PW,		#	01 03	0000 aaaa			
			SQR, NOISE, SAW, PULSE, SQR, NOISE, TRI, SAW+TRI,			01 04	0000 bbbb			
			SAW, SQR, SQR2, SQR3, WHITE NOISE, PINK NOISE			01 05	0000 cccc			
	00 33	0000 0aaa	OSC3 FEET	(0 - 4)		01 06	0000 dddd	ENV2 SUSTAIN	(0 - 1023)	
			32',16',8',4',2'		#	01 07	0000 aaaa			
	00 34	0aaa aaaa	OSC3 COARSE TUNE	(16 - 112)		01 08	0000 bbbb			
			-48 - 48			01 09	0000 cccc			
	00 35	0aaa aaaa	OSC3 FINE TUNE	(14 - 114)		01 0A	0000 dddd	ENV2 RELEASE	(0 - 1023)	
			-50 - 50			01 0B	0000 00aa	ENV2 MODE	(0 - 2)	
	00 36	0aaa aaaa	OSC3 LOW FREQ PITCH	(0 - 127)	#			GATE+TRIG, GATE, LFO		
	00 37	0000 000a	OSC3 MODE	(0 - 1)		01 0C	0000 aaaa			
			NORMAL, LO FREQ			01 0D	0000 bbbb	ENV2 KEY FOLLOW	(28 - 228)	
	00 38	0000 000a	NOISE	(0 - 1)					-100 - 100	
			WHITE, PINK			01 0E	0000 00aa	ENV2 KEY FOLLOW STEP	(0 - 3)	
#	00 39	0000 aaaa				01 0F	0000 00aa	DYNAMICS PITCH	(0 - 3)	
	00 3A	0000 bbbb				01 10	0000 00aa	DYNAMICS FILTER	(0 - 3)	
	00 3B	0000 cccc			#	01 11	0000 00aa	DYNAMICS AMP	(0 - 3)	
	00 3C	0000 dddd	MOD DEPTH	(0 - 10800)		01 12	0000 aaaa			
	00 3D	0000 00aa	MOD MODE	(0 - 3)		01 13	0000 bbbb	PITCH DRIFT	(0 - 255)	
			OFF, SYNC, RING, X-MOD			01 14	0000 00aa	BENDER PITCH DEPTH STEP	(0 - 3)	
#	00 3E	0000 aaaa							2,3,4,7	
	00 3F	0000 bbbb	OSC1 LEVEL	(0 - 255)		01 15	0aaa aaaa	BENDER FILTER DEPTH	(1 - 127)	
#	00 40	0000 aaaa							-63 - 63	
	00 41	0000 bbbb	OSC2 LEVEL	(0 - 255)		01 16	0aaa aaaa	MODULATION LFO DEPTH	(1 - 127)	
#	00 42	0000 aaaa							-63 - 63	
	00 43	0000 bbbb	OSC3 LEVEL	(0 - 255)	#	01 17	0000 aaaa			
#	00 44	0000 aaaa				01 18	0000 bbbb			
	00 45	0000 bbbb	NOISE LEVEL	(0 - 255)		01 19	0000 cccc			
	00 46	0aaa aaaa	MIXER ENV DEPTH	(1 - 127)	#	01 1A	0000 dddd	BENDER PITCH DEPTH	(0 - 4800)	
			-63 - 63			01 1B	0000 aaaa			
	00 47	0000 000a	MIXER ENV SELECT	(0 - 1)		01 1C	0000 bbbb			
			1,2			01 1D	0000 cccc			
	00 48	0000 00aa	MIXER DYNAMICS	(0 - 3)		01 1E	0000 dddd	PORTAMENT TIME	(0 - 1023)	
	00 49	0000 00aa	FILTER TYPE	(0 - 3)		01 1F	0000 00aa	PORTAMENT MODE	(0 - 2)	
	00 4A	0000 00aa	FILTER HPF STEP	(0 - 3)				OFF, ON, AUTO		
#	00 4B	0000 aaaa				01 20	0000 00aa	KEY MODE	(0 - 3)	
	00 4C	0000 bbbb						POLY, SOLO, UNISON, SL-UNISON		
	00 4D	0000 cccc				01 21	0000 000a	PARAMETER EXPANSION SWITCH	(0 - 1)	
	00 4E	0000 dddd	FILTER HPF	(0 - 1023)				OFF, ON		
#	00 4F	0000 aaaa				01 22	0aaa aaaa	CONDITION	(0 - 100)	
	00 50	0000 bbbb							0 - 100	
	00 51	0000 cccc				01 23	0000 00aa	PORTAMENT CURVE TYPE	(0 - 3)	
	00 52	0000 dddd	FILTER FREQ	(0 - 1023)				ORIGINAL, LINER, EXP1, EXP2		
#	00 53	0000 aaaa				01 24	0aaa aaaa	AFTER TOUCH SENS LFO	(1 - 127)	
	00 54	0000 bbbb							-63 - 63	
	00 55	0000 cccc				01 25	0aaa aaaa	AFTER TOUCH SENS FREQ	(1 - 127)	
	00 56	0000 dddd	FILTER RESO	(0 - 1023)					-63 - 63	
#	00 57	0000 aaaa				01 26	0aaa aaaa	AFTER TOUCH SENS LEVEL	(1 - 127)	
	00 58	0000 bbbb							-63 - 63	
	00 59	0000 cccc								
	00 5A	0000 dddd	FILTER ENV DEPTH	(1 - 2047)						
			-1023 - 1023							
	00 5B	0000 000a	FILTER ENV SELECT	(0 - 1)						
			1,2							
	00 5C	0000 00aa	FILTER SLOPE	(0 - 2)						
			-12dB, -18dB, -24dB							
#	00 5D	0000 aaaa								
	00 5E	0000 bbbb								
	00 5F	0000 cccc								
	00 60	0000 dddd	FILTER KEY FOLLOW	(824 - 1224)						
			-200 - 200							
#	00 61	0000 aaaa				00 02	0aaa aaaa	OSC1 FINE TUNE	(14 - 114)	
	00 62	0000 bbbb	FILTER MOD	(28 - 228)					-50 - 50	
			-100 - 100		#	00 03	0000 aaaa			
	00 63	0aaa aaaa	AMP LEVEL	(0 - 127)		00 04	0000 bbbb	OSC1 LEVEL	(0 - 255)	
#	00 64	0000 aaaa				00 05	0aaa aaaa	OSC1 PW PWM	(0 - 127)	

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#	00 06	0000 00aa	OSC1 PW MODE	(0 - 3)		00 3F	0000 bbbb		
			MANUAL, LFO2, P-ENV, F-ENV			00 40	0000 cccc		
	00 07	0000 aaaa				00 41	0000 dddd	LFO1 RATE	(0 - 1023)
	00 08	0000 bbbb			#	00 42	0000 aaaa		
	00 09	0000 cccc				00 43	0000 bbbb		
	00 0A	0000 dddd	OSC1 DELAY TIME	(0 - 1023)		00 44	0000 cccc		
	00 0B	0000 000a	OSC1 DELAY TIME SYNC	(0 - 1)		00 45	0000 dddd	LFO1 DELAY TIME	(0 - 1023)
			OFF, ON		#	00 46	0000 aaaa		
	00 0C	000a aaaa	OSC1 DELAY TIME (Note)	(0 - 21)		00 47	0000 bbbb	LFO1 PITCH DEPTH	(28 - 228)
			1/64T, 1/64, 1/32T, 1/32, 1/16T, 1/32., 1/16,						-100 - 100
			1/8T, 1/16., 1/8, 1/4T, 1/8., 1/4, 1/2T, 1/4.,	#	00 48	0000 aaaa			
			1/2, 1T, 1/2., 1, 2T, 1., 2		00 49	0000 bbbb	LFO1 FILTER DEPTH	(28 - 228)	
	00 0D	0aaa aaaa	OSC1 PAN	(0 - 127)					-100 - 100
			L64 - 63R		#	00 4A	0000 aaaa		
	00 0E	0aaa aaaa	OSC1 ALTERNATE PAN DEPTH	(0 - 127)		00 4B	0000 bbbb	LFO1 AMP DEPTH	(28 - 228)
			L64 - 63R						-100 - 100
	00 0F	0000 0aaa	OSC2 WAVEFORM	(0 - 6)		00 4C	0000 0aaa	LFO1 PITCH DESTINATION SELECT	(0 - 6)
			SAW, SQR, TRI, SIN, JUNO, SuperSAW, NOISE					ALL, OSC1, OSC2, OSC3, OSC4, OSC12, OSC34	
	00 10	0aaa aaaa	OSC2 COARSE TUNE	(40 - 88)		00 4D	0000 000a	LFO1 SYNC SWITCH	(0 - 1)
			-24 - 24					OFF, ON	
	00 11	0aaa aaaa	OSC2 FINE TUNE	(14 - 114)		00 4E	0000 000a	LFO1 KEY TRIGGER	(0 - 1)
			-50 - 50					OFF, ON	
#	00 12	0000 aaaa				00 4F	0aaa aaaa	LFO1 PAN DEPTH	(1 - 127)
	00 13	0000 bbbb	OSC2 LEVEL	(0 - 255)					-63 - 63
	00 14	0aaa aaaa	OSC2 PW PWM	(0 - 127)		00 50	0000 aaaa	LFO2 WAVE FORM	(0 - 9)
	00 15	0000 00aa	OSC2 PW MODE	(0 - 3)				SIN, TRI, SAW-UP, SAW-DW, SQR, RND, TRP, S&H, CHS,	
			MANUAL, LFO2, P-ENV, F-ENV					VSIN	
#	00 16	0000 aaaa				00 51	000a aaaa	LFO2 RATE (Note)	(0 - 22)
	00 17	0000 bbbb						1/64T, 1/64, 1/32T, 1/32, 1/16T, 1/32., 1/16,	
	00 18	0000 cccc						1/8T, 1/16., 1/8, 1/4T, 1/8., 1/4, 1/2T, 1/4.,	
	00 19	0000 dddd	OSC2 DELAY TIME	(0 - 1023)				1/2, 1T, 1/2., 1, 2T, 1., 2, 4	
	00 1A	0000 000a	OSC2 DELAY TIME SYNC	(0 - 1)	#	00 52	0000 aaaa		
			OFF, ON			00 53	0000 bbbb		
	00 1B	000a aaaa	OSC2 DELAY TIME (Note)	(0 - 21)		00 54	0000 cccc		
			1/64T, 1/64, 1/32T, 1/32, 1/16T, 1/32., 1/16,			00 55	0000 dddd	LFO2 RATE	(0 - 1023)
			1/8T, 1/16., 1/8, 1/4T, 1/8., 1/4, 1/2T, 1/4.,	#	00 56	0000 aaaa			
			1/2, 1T, 1/2., 1, 2T, 1., 2		00 57	0000 bbbb			
	00 1C	0aaa aaaa	OSC2 PAN	(0 - 127)		00 58	0000 cccc		
			L64 - 63R			00 59	0000 dddd	LFO2 DELAY TIME	(0 - 1023)
	00 1D	0aaa aaaa	OSC2 ALTERNATE PAN DEPTH	(0 - 127)	#	00 5A	0000 aaaa	LFO2 PITCH DEPTH	(28 - 228)
			L64 - 63R			00 5B	0000 bbbb		-100 - 100
	00 1E	0000 0aaa	OSC3 WAVEFORM	(0 - 6)		00 5C	0000 aaaa		
			SAW, SQR, TRI, SIN, JUNO, SuperSAW, NOISE	#	00 5D	0000 bbbb	LFO2 FILTER DEPTH	(28 - 228)	
	00 1F	0aaa aaaa	OSC3 COARSE TUNE	(40 - 88)					-100 - 100
			-24 - 24			00 5E	0000 aaaa		
	00 20	0aaa aaaa	OSC3 FINE TUNE	(14 - 114)	#	00 5F	0000 bbbb	LFO2 AMP DEPTH	(28 - 228)
			-50 - 50						-100 - 100
#	00 21	0000 aaaa				00 60	0000 0aaa	LFO2 PITCH DESTINATION SELECT	(0 - 6)
	00 22	0000 bbbb	OSC3 LEVEL	(0 - 255)				ALL, OSC1, OSC2, OSC3, OSC4, OSC12, OSC34	
	00 23	0aaa aaaa	OSC3 PW PWM	(0 - 127)		00 61	0000 000a	LFO2 SYNC SWITCH	(0 - 1)
	00 24	0000 00aa	OSC3 PW MODE	(0 - 3)				OFF, ON	
			MANUAL, LFO2, P-ENV, F-ENV			00 62	0000 000a	LFO2 KEY TRIGGER	(0 - 1)
#	00 25	0000 aaaa						OFF, ON	
	00 26	0000 bbbb				00 63	0aaa aaaa	LFO2 PAN DEPTH	(1 - 127)
	00 27	0000 cccc							-63 - 63
	00 28	0000 dddd	OSC3 DELAY TIME	(0 - 1023)		00 64	0000 aaaa		
	00 29	0000 000a	OSC3 DELAY TIME SYNC	(0 - 1)	#	00 65	0000 bbbb		
			OFF, ON			00 66	0000 cccc		
	00 2A	000a aaaa	OSC3 DELAY TIME (Note)	(0 - 21)		00 67	0000 dddd	PITCH ENV1 ATTACK	(0 - 1023)
			1/64T, 1/64, 1/32T, 1/32, 1/16T, 1/32., 1/16,			00 68	0000 aaaa		
			1/8T, 1/16., 1/8, 1/4T, 1/8., 1/4, 1/2T, 1/4.,	#	00 69	0000 bbbb			
			1/2, 1T, 1/2., 1, 2T, 1., 2		00 6A	0000 cccc			
	00 2B	0aaa aaaa	OSC3 PAN	(0 - 127)		00 6B	0000 dddd	PITCH ENV1 DECAY	(0 - 1023)
			L64 - 63R			00 6C	0000 aaaa		
	00 2C	0aaa aaaa	OSC3 ALTERNATE PAN DEPTH	(0 - 127)	#	00 6D	0000 bbbb		
			L64 - 63R			00 6E	0000 cccc		
	00 2D	0000 0aaa	OSC4 WAVEFORM	(0 - 6)		00 6F	0000 dddd	PITCH ENV1 SUSTAIN	(0 - 1023)
			SAW, SQR, TRI, SIN, JUNO, SuperSAW, NOISE			00 70	0000 aaaa		
	00 2E	0aaa aaaa	OSC4 COARSE TUNE	(40 - 88)	#	00 71	0000 bbbb		
			-24 - 24			00 72	0000 cccc		
	00 2F	0aaa aaaa	OSC4 FINE TUNE	(14 - 114)		00 73	0000 dddd	PITCH ENV1 RELEASE	(0 - 1023)
			-50 - 50		#	00 74	0000 aaaa		
#	00 30	0000 aaaa				00 75	0000 bbbb	PITCH ENV1 DEPTH	(28 - 228)
	00 31	0000 bbbb	OSC4 LEVEL	(0 - 255)					-100 - 100
	00 32	0aaa aaaa	OSC4 PW PWM	(0 - 127)		00 76	0000 aaaa		
	00 33	0000 00aa	OSC4 PW MODE	(0 - 3)	#	00 77	0000 bbbb	PITCH ENV1 VELOCITY SENS	(28 - 228)
			MANUAL, LFO2, P-ENV, F-ENV						-100 - 100
#	00 34	0000 aaaa				00 78	0000 00aa	PITCH ENV1 DESTINATION SELECT	(0 - 2)
	00 35	0000 bbbb						OSC1, BOTH, OSC2	
	00 36	0000 cccc				00 79	0000 aaaa		
	00 37	0000 dddd	OSC4 DELAY TIME	(0 - 1023)	#	00 7A	0000 bbbb	PITCH ENV1 KEY FOLLOW	(28 - 228)
	00 38	0000 000a	OSC4 DELAY TIME SYNC	(0 - 1)					-100 - 100
			OFF, ON		#	00 7B	0000 aaaa		
	00 39	000a aaaa	OSC4 DELAY TIME (Note)	(0 - 21)		00 7C	0000 bbbb		
			1/64T, 1/64, 1/32T, 1/32, 1/16T, 1/32., 1/16,			00 7D	0000 cccc		
			1/8T, 1/16., 1/8, 1/4T, 1/8., 1/4, 1/2T, 1/4.,			00 7E	0000 dddd	PITCH ENV2 ATTACK	(0 - 1023)
			1/2, 1T, 1/2., 1, 2T, 1., 2		#	00 7F	0000 aaaa		
	00 3A	0aaa aaaa	OSC4 PAN	(0 - 127)		01 00	0000 bbbb		
			L64 - 63R			01 01	0000 cccc		
	00 3B	0aaa aaaa	OSC4 ALTERNATE PAN DEPTH	(0 - 127)		01 02	0000 dddd	PITCH ENV2 DECAY	(0 - 1023)
			L64 - 63R			01 03	0000 aaaa		
	00 3C	0000 aaaa	LFO1 WAVE FORM	(0 - 9)	#	01 04	0000 bbbb		
			SIN, TRI, SAW-UP, SAW-DW, SQR, RND, TRP, S&H, CHS,			01 05	0000 cccc		
			VSIN			01 06	0000 dddd	PITCH ENV2 SUSTAIN	(0 - 1023)
	00 3D	000a aaaa	LFO1 RATE (Note)	(0 - 22)	#	01 07	0000 aaaa		
			1/64T, 1/64, 1/32T, 1/32, 1/16T, 1/32., 1/16,			01 08	0000 bbbb		
			1/8T, 1/16., 1/8, 1/4T, 1/8., 1/4, 1/2T, 1/4.,			01 09	0000 cccc		
			1/2, 1T, 1/2., 1, 2T, 1., 2, 4			01 0A	0000 dddd	PITCH ENV2 RELEASE	(0 - 1023)
#	00 3E	0000 aaaa							

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00 06	0aaa aaaa	MFX CtrlSrc 2	(0 - 100)		00 2F	0000 dddd	MFX Parameter 8	(12768 - 52768)
		OFF, MOD:CC01,BRETH:CC02,						-20000 - 20000
		CC03,FOOT:CC04,PTIME:CC05,DENT:CC06,VOL:CC07,	#	00 30	0000 aaaa			
		BAL:CC08,CC09,PAN:CC10,EXP:CC11,CC12,CC13,CC14,		00 31	0000 bbbb			
		CC15,GEN-1:CC16,GEN-2:CC17,GEN-3:CC18,GEN-4:CC19,		00 32	0000 cccc			
		CC20,CC21,CC22,CC23,CC24,CC25,CC26,CC27,CC28,		00 33	0000 dddd	MFX Parameter 9	(12768 - 52768)	
		CC29,CC30,CC31,CC33,CC34,CC35,CC36,CC37,DENT:CC38,						-20000 - 20000
		CC39,CC40,CC41,CC42,CC43,CC44,CC45,CC46,CC47,CC48,	#	00 34	0000 aaaa			
		CC49,CC50,CC51,CC52,CC53,CC54,CC55,CC56,CC57,CC58,		00 35	0000 bbbb			
		CC59,CC60,CC61,CC62,CC63,HOLD1:CC64,PORTA:CC65,		00 36	0000 cccc			
		SOSTE:CC66,SOFT:CC67,LEGAT:CC68,HOLD2:CC69,		00 37	0000 dddd	MFX Parameter 10	(12768 - 52768)	
		CC70,RESO:CC71,RELES:CC72,ATTAK:CC73,CUTOF:CC74,						-20000 - 20000
		DECAY:CC75,VRAITE:CC76,VDPTH:CC77,VDLY:CC78,CC79,	#	00 38	0000 aaaa			
		GEN-5:CC80,GEN-6:CC81,GEN-7:CC82,GEN-8:CC83,		00 39	0000 bbbb			
		PCTRL:CC84,CC85,CC86,CC87,CC88,CC89,CC90,		00 3A	0000 cccc			
		REV:CC91,TREM:CC92,CHO:CC93,CELS:CC94,PHASR:CC95,		00 3B	0000 dddd	MFX Parameter 11	(12768 - 52768)	
		BEND,AFT,SYS-CTRL1,SYS-CTRL2,SYS-CTRL3,SYS-CTRL4						-20000 - 20000
00 07	0aaa aaaa	MFX CtrlSens 2	(1 - 127)	#	00 3C	0000 aaaa		
		-63 - +63		00 3D	0000 bbbb			
00 08	0aaa aaaa	MFX CtrlSrc 3	(0 - 100)		00 3E	0000 cccc		
		OFF, MOD:CC01,BRETH:CC02,		00 3F	0000 dddd	MFX Parameter 12	(12768 - 52768)	
		CC03,FOOT:CC04,PTIME:CC05,DENT:CC06,VOL:CC07,						-20000 - 20000
		BAL:CC08,CC09,PAN:CC10,EXP:CC11,CC12,CC13,CC14,	#	00 40	0000 aaaa			
		CC15,GEN-1:CC16,GEN-2:CC17,GEN-3:CC18,GEN-4:CC19,		00 41	0000 bbbb			
		CC20,CC21,CC22,CC23,CC24,CC25,CC26,CC27,CC28,		00 42	0000 cccc			
		CC29,CC30,CC31,CC33,CC34,CC35,CC36,CC37,DENT:CC38,		00 43	0000 dddd	MFX Parameter 13	(12768 - 52768)	
		CC39,CC40,CC41,CC42,CC43,CC44,CC45,CC46,CC47,CC48,						-20000 - 20000
		CC49,CC50,CC51,CC52,CC53,CC54,CC55,CC56,CC57,CC58,	#	00 44	0000 aaaa			
		CC59,CC60,CC61,CC62,CC63,HOLD1:CC64,PORTA:CC65,		00 45	0000 bbbb			
		SOSTE:CC66,SOFT:CC67,LEGAT:CC68,HOLD2:CC69,		00 46	0000 cccc			
		CC70,RESO:CC71,RELES:CC72,ATTAK:CC73,CUTOF:CC74,		00 47	0000 dddd	MFX Parameter 14	(12768 - 52768)	
		DECAY:CC75,VRAITE:CC76,VDPTH:CC77,VDLY:CC78,CC79,						-20000 - 20000
		GEN-5:CC80,GEN-6:CC81,GEN-7:CC82,GEN-8:CC83,	#	00 48	0000 aaaa			
		PCTRL:CC84,CC85,CC86,CC87,CC88,CC89,CC90,		00 49	0000 bbbb			
		REV:CC91,TREM:CC92,CHO:CC93,CELS:CC94,PHASR:CC95,		00 4A	0000 cccc			
		BEND,AFT,SYS-CTRL1,SYS-CTRL2,SYS-CTRL3,SYS-CTRL4		00 4B	0000 dddd	MFX Parameter 15	(12768 - 52768)	
00 09	0aaa aaaa	MFX CtrlSens 3	(1 - 127)					-20000 - 20000
		-63 - +63	#	00 4C	0000 aaaa			
00 0A	0aaa aaaa	MFX CtrlSrc 4	(0 - 100)		00 4D	0000 bbbb		
		OFF, MOD:CC01,BRETH:CC02,		00 4E	0000 cccc			
		CC03,FOOT:CC04,PTIME:CC05,DENT:CC06,VOL:CC07,		00 4F	0000 dddd	MFX Parameter 16	(12768 - 52768)	
		BAL:CC08,CC09,PAN:CC10,EXP:CC11,CC12,CC13,CC14,						-20000 - 20000
		CC15,GEN-1:CC16,GEN-2:CC17,GEN-3:CC18,GEN-4:CC19,	#	00 50	0000 aaaa			
		CC20,CC21,CC22,CC23,CC24,CC25,CC26,CC27,CC28,		00 51	0000 bbbb			
		CC29,CC30,CC31,CC33,CC34,CC35,CC36,CC37,DENT:CC38,		00 52	0000 cccc			
		CC39,CC40,CC41,CC42,CC43,CC44,CC45,CC46,CC47,CC48,		00 53	0000 dddd	MFX Parameter 17	(12768 - 52768)	
		CC49,CC50,CC51,CC52,CC53,CC54,CC55,CC56,CC57,CC58,						-20000 - 20000
		CC59,CC60,CC61,CC62,CC63,HOLD1:CC64,PORTA:CC65,	#	00 54	0000 aaaa			
		SOSTE:CC66,SOFT:CC67,LEGAT:CC68,HOLD2:CC69,		00 55	0000 bbbb			
		CC70,RESO:CC71,RELES:CC72,ATTAK:CC73,CUTOF:CC74,		00 56	0000 cccc			
		DECAY:CC75,VRAITE:CC76,VDPTH:CC77,VDLY:CC78,CC79,		00 57	0000 dddd	MFX Parameter 18	(12768 - 52768)	
		GEN-5:CC80,GEN-6:CC81,GEN-7:CC82,GEN-8:CC83,						-20000 - 20000
		PCTRL:CC84,CC85,CC86,CC87,CC88,CC89,CC90,	#	00 58	0000 aaaa			
		REV:CC91,TREM:CC92,CHO:CC93,CELS:CC94,PHASR:CC95,		00 59	0000 bbbb			
		BEND,AFT,SYS-CTRL1,SYS-CTRL2,SYS-CTRL3,SYS-CTRL4		00 5A	0000 cccc			
00 0B	0aaa aaaa	MFX CtrlSens 4	(1 - 127)		00 5B	0000 dddd	MFX Parameter 19	(12768 - 52768)
		-63 - +63						-20000 - 20000
00 0C	0000 aaaa	MFX CtrlAsgn	(0 - 11)	#	00 5C	0000 aaaa		
00 0D	0000 aaaa	MFX CtrlAsgn	(0 - 11)		00 5D	0000 bbbb		
00 0E	0000 aaaa	MFX CtrlAsgn	(0 - 11)		00 5E	0000 cccc		
00 0F	0000 aaaa	MFX CtrlAsgn	(0 - 11)		00 5F	0000 dddd	MFX Parameter 20	(12768 - 52768)
#	00 10	0000 aaaa						-20000 - 20000
	00 11	0000 bbbb		#	00 60	0000 aaaa		
	00 12	0000 cccc			00 61	0000 bbbb		
	00 13	0000 dddd	MFX Parameter 1		00 62	0000 cccc		
			(12768 - 52768)		00 63	0000 dddd	MFX Parameter 21	(12768 - 52768)
			-20000 - 20000					-20000 - 20000
#	00 14	0000 aaaa						
	00 15	0000 bbbb		#	00 64	0000 aaaa		
	00 16	0000 cccc			00 65	0000 bbbb		
	00 17	0000 dddd	MFX Parameter 2		00 66	0000 cccc		
			(12768 - 52768)		00 67	0000 dddd	MFX Parameter 22	(12768 - 52768)
			-20000 - 20000					-20000 - 20000
#	00 18	0000 aaaa						
	00 19	0000 bbbb		#	00 68	0000 aaaa		
	00 1A	0000 cccc			00 69	0000 bbbb		
	00 1B	0000 dddd	MFX Parameter 3		00 6A	0000 cccc		
			(12768 - 52768)		00 6B	0000 dddd	MFX Parameter 23	(12768 - 52768)
			-20000 - 20000					-20000 - 20000
#	00 1C	0000 aaaa						
	00 1D	0000 bbbb		#	00 6C	0000 aaaa		
	00 1E	0000 cccc			00 6D	0000 bbbb		
	00 1F	0000 dddd	MFX Parameter 4		00 6E	0000 cccc		
			(12768 - 52768)		00 6F	0000 dddd	MFX Parameter 24	(12768 - 52768)
			-20000 - 20000					-20000 - 20000
#	00 20	0000 aaaa						
	00 21	0000 bbbb		#	00 70	0000 aaaa		
	00 22	0000 cccc			00 71	0000 bbbb		
	00 23	0000 dddd	MFX Parameter 5		00 72	0000 cccc		
			(12768 - 52768)		00 73	0000 dddd	MFX Parameter 25	(12768 - 52768)
			-20000 - 20000					-20000 - 20000
#	00 24	0000 aaaa						
	00 25	0000 bbbb		#	00 74	0000 aaaa		
	00 26	0000 cccc			00 75	0000 bbbb		
	00 27	0000 dddd	MFX Parameter 6		00 76	0000 cccc		
			(12768 - 52768)		00 77	0000 dddd	MFX Parameter 26	(12768 - 52768)
			-20000 - 20000					-20000 - 20000
#	00 28	0000 aaaa						
	00 29	0000 bbbb		#	00 78	0000 aaaa		
	00 2A	0000 cccc			00 79	0000 bbbb		
	00 2B	0000 dddd	MFX Parameter 7		00 7A	0000 cccc		
			(12768 - 52768)		00 7B	0000 dddd	MFX Parameter 27	(12768 - 52768)
			-20000 - 20000					-20000 - 20000
#	00 2C	0000 aaaa						
	00 2D	0000 bbbb		#	00 7C	0000 aaaa		
	00 2E	0000 cccc			00 7D	0000 bbbb		

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	00 29	0000 bbbb			Drive / Amp	Overdrive	29
	00 2A	0000 cccc				Distortion	30
	00 2B	0000 dddd	Chorus Parameter 10	(12768 - 52768) -20000 - 20000		T-Scream	31
#	00 2C	0000 aaaa				Fuzz	86
	00 2D	0000 bbbb				Fattener	79
	00 2E	0000 cccc				HMS Distort	89
	00 2F	0000 dddd	Chorus Parameter 11	(12768 - 52768) -20000 - 20000		Saturator	84
#	00 30	0000 aaaa				W Saturator	85
	00 31	0000 bbbb				Gt Amp Sim	32
	00 32	0000 cccc				EP Amp Sim	81
	00 33	0000 dddd	Chorus Parameter 12	(12768 - 52768) -20000 - 20000	Comp / Limiter	Speaker Sim	10
						Compressor	33
						M/S Comp	78
						Limiter	34
#	00 34	0000 aaaa				Sustainer	35
	00 35	0000 bbbb				Transient	76
	00 36	0000 cccc				Gate	36
	00 37	0000 dddd	Chorus Parameter 13	(12768 - 52768) -20000 - 20000	Delay	Delay	37
						Mod Delay	38
#	00 38	0000 aaaa				2Tap PanDly	75
	00 39	0000 bbbb				3Tap PanDly	39
	00 3A	0000 cccc				4Tap PanDly	40
	00 3B	0000 dddd	Chorus Parameter 14	(12768 - 52768) -20000 - 20000		MultiTapDly	41
						Reverse Dly	42
#	00 3C	0000 aaaa				TimeCtrlDly	43
	00 3D	0000 bbbb				Tape Echo	44
	00 3E	0000 cccc				M/S Delay	80
	00 3F	0000 dddd	Chorus Parameter 15	(12768 - 52768) -20000 - 20000	Looper	DJFX Looper	82
						BFM Looper	83
#	00 40	0000 aaaa			Lo-fi	LOFI Comp	45
	00 41	0000 bbbb				Bit Crusher	46
	00 42	0000 cccc				Phonograph	91
	00 43	0000 dddd	Chorus Parameter 16	(12768 - 52768) -20000 - 20000	Pitch	PitchShiftr	47
						2V FShifter	48
#	00 44	0000 aaaa			Combination	OD->Chorus	49
	00 45	0000 bbbb				OD->Flanger	50
	00 46	0000 cccc				OD->Delay	51
	00 47	0000 dddd	Chorus Parameter 17	(12768 - 52768) -20000 - 20000		DS->Chorus	52
						DS->Flanger	53
#	00 48	0000 aaaa				DS->Delay	54
	00 49	0000 bbbb				OD/DS>T.Wah	55
	00 4A	0000 cccc				OD/DS>A.Wah	56
	00 4B	0000 dddd	Chorus Parameter 18	(12768 - 52768) -20000 - 20000		Gt->Chorus	57
						Gt->Flanger	58
#	00 4C	0000 aaaa				Gt->Phaser	59
	00 4D	0000 bbbb				Gt->Delay	60
	00 4E	0000 cccc				EP->Tremolo	61
	00 4F	0000 dddd	Chorus Parameter 19	(12768 - 52768) -20000 - 20000		EP->Chorus	62
						EP->Flanger	63
#	00 50	0000 aaaa				EP->Phaser	64
	00 51	0000 bbbb				EP->Delay	65
	00 52	0000 cccc				Enhncr->Cho	66
	00 53	0000 dddd	Chorus Parameter 20	(12768 - 52768) -20000 - 20000		Enhncr->Fl	67
						Enhncr->Dly	68
						Chorus->Dly	69
	00 00 00 54	Total Size				Flanger>Dly	70
						Chorus->Fl	71
						JD-Multi	93

* appendix 1

Category	Type	Value
Thru	Thru	0
Filter	Equalizer	1
	Mid-Side EQ	77
	Spectrum	2
	Isolator	3
	Low Boost	4
	SuperFilter	5
	MM Filter	88
	Step Filter	6
	Enhancer	7
	Exciter	92
	Auto Wah	8
	Humanizer	9
Phaser	Phaser	11
	SmallPhaser	12
	Script 90	13
	Script 100	90
	Step Phaser	14
	M StagePhsr	15
	Inf Phaser	16
Flanger	Flanger	24
	SBF-325	73
	StepFlanger	25
Chorus	Chorus	23
	Hexa-Chorus	26
	Trem Chorus	27
	Space-D	28
	CE-1	72
	SDD-320	74
	JUNO Chorus	87
Modulation	Ring Mod	17
	Tremolo	18
	Auto Pan	19
	Slicer	20
	Rotary	21
	VK Rotary	22

4. 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 x 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 bbH - 40 00H = aa x 128+bb - 64 x 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 x 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 x 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 x 16+3) x 16+9) x 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 00H (= 64 x 12+80 = 8192) is 0, so this Pitch Bend Value is

28 00H - 40 00H = 40 x 12+80 - (64 x 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 x (-3072) / (-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). (On GS sound generators 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 fastforwarded, 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 aabbccddH and the data or size is eeffH.

aa + bb + cc + dd + ee + ff = sum

sum ? 128 = quotient ... remainder

128 - remainder = checksum

<Example> Setting program level to 74 (DT1).

According to the Parameter Address Map, the start address of Temporary

Program is 01 00 00 00H, the offset address of Program common is 00 00 00H,

and the address of Program level is 00 10H. Therefore the address is;

```

01 00 00 00H
00 00 00H
+)      00 10H
-----
01 00 00 10H

```

Level 74 of the Program has the value of 4AH. So the system exclusive message should be sent is;

F0 41 10 00 00 00 65 12 01 00 00 10 4A ?? F7

(1) (2) (3) (4) (5) address data checksum (6)

(1) Exclusive Status (2) ID (Roland) (3) Device ID (17)

(4) Model ID (JUPITER-X/Xm) (5) Command ID (DT1) (6) End of Exclusive

Then calculate the checksum.

01H + 00H + 00H + 10H + 4AH = 1 + 0 + 0 + 16 + 74 = 91 (sum)

91 (sum) / 128 = 0 (quotient) ... 91 (remainder)

checksum = 128 ... 91 (remainder) = 37 = 25H

This means that F0 41 10 00 00 00 65 12 01 00 00 10 4A 25 F7 is the message should be sent.

ASCII Code Table

Program 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.