Model: JUNO-DS61/DS88
Date: Feb 15, 2018

Version: 1.01

1. Data Reception (Sound Source Section)

• Channel Voice Messages

* Not received in Performance mode when the Receive Switch parameter (PERFORM EDIT:LEVEL/CH:RxSw or PART EDIT:LEVEL/CH:Rx Switch) is OFF.

• Note off

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

* Not received when the Tone Env Mode parameter (PATCH EDIT:CTRL:Env Mode or DRUM KIT EDIT:COMMON:Tone Env Mode) is NO-SUS.

Note on

Status 2nd byte 3rd byte
9nH kkH vvH
n = MIDI channel number:

Polyphonic Key Pressure

Status 2nd byte 3rd byte AnH kkH vvH

n = MIDI channel number: 0H - FH (ch.1 - 16) kk = note number: 00H - 7FH (0 - 127) vv = Polyphonic Key Pressure: 00H - 7FH (0 - 127)

* Not received in Performance mode when the Receive Polyphonic Key Pressure parameter (PERFORM EDIT:MIDI:PA or PART EDIT:MIDI:PAFT) is OFF.

Control Change

- * If the corresponding Controller number is selected for the Matrix Control 1-4 Source parameter (PATCH EDIT:MTRX CTRL1-4:Control 1-4 Source), the corresponding effect will occur.
- * If a Controller number that corresponds to the System Control 1-4 Source parameter (SYSTEM:CONTROL:Sys Ctrl 1-4 Source) is selected, the specified effect will apply if the Matrix Control 1-4 Source parameter (PATCH EDIT:MTRX CTRL1-4:Control 1-4 Source) is set to SYS CTRL1, SYS CTRL2, SYS CTRL3 or SYS CTRL4.

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 - 16)

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

* Not received in Performance mode when the Receive Bank Select parameter (PERFORM EDIT:MIDI:BS or PART EDIT:MIDI:BS) is OFF.

The Performances, Patterns, Patches, and Drum Kits corresponding to each Bank Select are as follows.

BANK :	SELECT		PROGRA	MA		GROUP		NUMBER	
MSB	LSB		NUMBE	R					
	+	+-			+-		-+-		
000		1	001 -	128		GM Patch		0001 -	0256
:									
063			001 -	128		GM Patch		0001 -	0256
085	000		001 -	128		User Performance		001 -	128
	001		001 -	128		User Pattern	1	001 -	128
	064		001 -	064		Preset Performance	1	001 -	064
	065		001 -	032		Preset Pattern	1	001 -	032
086	000		001 -	008		User Drum	1	R501 -	R508
	064		001 -	021		Preset Drum	1	0001 -	0021
	065		001 -	009		DS Drum		0001 -	0009

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| 0501 - 0628
         | 001 - 128 | User Patch
087 | 000
   001
                                    | 0629 - 0756
| 0001 - 0128
           | 001 - 128 | User Patch
          | 001 - 128 | Preset Patch
   064
   065
          | 001 - 128 | Preset Patch
                                    | 0129 - 0256
   1 :
          | | :
| 001 - 064 | Preset patch
| 001 - 128 | DS patch
                  | :
                               | :
| 1025 - 1088
| 0001 - 0128
   072
   | 073
   074
          | 001 - 056 | DS patch
                                     | 0129 - 0184
                                  | 0001 -
          092 | 000 -
                                    | 0001 -
| 0001 - 0009
093 | 000 -
          | 001 - 057 | GM Drum
120 |
121 | 000 -
         | 001 - 128 | GM Patch
                                     | 0001 - 0256
The Expansion Sounds corresponding to each Bank Select are as follows.
        | PROGRAM | GROUP
BANK SELECT
MSB | LSB
           | NUMBER |
093 | 001 | 001 - 050 | Expansion Patch (EXP04) | 0001 - 0050
093 | 002 | 001 - 128 | Expansion Patch (EXP06) | 0001 - 0128
092 | 002 | 001 - 012 | Expansion Drum (EXP06) | 0001 - 0012
----+------
093 | 003 | 001 - 128 | Expansion Patch (EXP08) | 0001 - 0128
093 | 007 | 001 - 128 | Expansion Patch (EXP10) | 0001 - 0128
_____
093 | 011 | 001 - 128 | Expansion Patch (EXP02) | 0001 - 0128
  | :
                                     | 0385 - 0406
093 | 015 | 001 - 128 | Expansion Patch (EXP01) | 0001 - 0128
093 | 023 | 001 - 100 | Expansion Patch (EXP07) | 0001 - 0100
093 | 024 | 001 - 042 | Expansion Patch (EXP09) | 0001 - 0042
093 | 026 | 001 - 050 | Expansion Patch (EXP05) | 0001 - 0050
O Modulation (Controller number 1)
Status 2nd byte 3rd byte BnH 01H vvH
                 vvH
n = MIDI channel number:
                            0H - FH (ch.1 - 16)
vv = Modulation depth:
                             00H - 7FH (0 - 127)
* Not received in Performance mode when the Receive Modulation parameter (PERFORM EDIT:MIDI:MD or PART EDIT:MIDI:MOD) is
O Breath type (Controller number 2)
Status 2nd byte 3rd byte BnH 02H vvH
n = MIDI channel number:
                             0H - FH (ch.1 - 16)
vv = Control value:
                             00H - 7FH (0 - 127)
O Foot type (Controller number 4)
Status 2nd byte 3rd byte
     04H
                 vvH
n = MIDI channel number:
                            OH - FH (ch.1 - 16)
vv = Control value:
                             00H - 7FH (0 - 127)
O Portamento Time (Controller number 5)
```

OH - FH (ch.1 - 16)

00H - 7FH (0 - 127)

Status 2nd byte 3rd byte

n = MIDI channel number:

vv = Portamento Time:

VVH

BnH 05H

^{*} In Performance mode, the Part Portamento Time parameter (PERFORM EDIT:PITCH:Time or PART EDIT:PITCH:Porta Time) will change.

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O Data Entry (Controller number 6, 38)
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Status 2nd byte 3rd byte BnH 06H mmH

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

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

11H

mm = MSB, 11 = LSB

26H

BnH

O Volume (Controller number 7)
Status 2nd byte 3rd byte
BnH 07H vvH

n = MIDI channel number: 0H - FH (ch.1 - 16) vv = Volume: 00H - 7FH (0 - 127)

* Not received in Performance mode when the Receive Volume parameter (PERFORM EDIT:MIDI:VO or PART EDIT:MIDI:VOL) is OFF.

* In Performance mode, the Part Level parameter (PERFORM EDIT:LEVEL/CH:Level or PART EDIT:LEVEL/CH:Level) will change.

O Panpot (Controller number 10) Status 2nd byte 3rd byte BnH 0AH vvH

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

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

- * Not received in Performance mode when the Receive Pan parameter (PERFORM EDIT:MIDI:PN or PART EDIT:MIDI:PAN) is OFF.
- * In Performance mode, the Part Pan parameter (PERFORM EDIT:LEVEL/CH:Pan or PART EDIT:LEVEL/CH:Pan) will change.

O Expression (Controller number 11)
Status 2nd byte 3rd byte
RnH 0BH vvH

n = MIDI channel number: 0H - FH (ch.1 - 16) vv = Expression: 00H - 7FH (0 - 127)

- * Not received when the Tone Receive Expression parameter (PATCH EDIT:CTRL:Rx Expression or DRUM KIT EDIT:COMMON:Tone Rx Expression) is OFF.
- * Not received in Performance mode when the Receive Expression parameter (PERFORM EDIT:MIDI:EX or PART EDIT:MIDI:EXP) is OFF.

O Hold 1 (Controller number 64)
Status 2nd byte 3rd byte
BnH 40H vvH

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

vv = Control value: 00H - 7FH (0 - 127) 0-63 = OFF, 64-127 = ON

- * Not received when the Tone Receive Hold-1 parameter (PATCH EDIT:CTRL:Rx Hold-1 or DRUM KIT EDIT:COMMON:Tone Rx Hold-1) is OFF.
- * Not received in Performance mode when the Receive Hold-1 parameter (PERFORM EDIT:MIDI:HD or PART EDIT:MIDI:HOLD) is OFF.
- * When the Tone Redamper Switch parameter (PATCH EDIT:CTRL:Redamper Sw) is turned ON, 128 discrete steps are recognized for the value.

O Portamento (Controller number 65)
Status 2nd byte 3rd byte
RnH 41H yvH

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

vv = Control value: 00H - 7FH (0 - 127) 0 - 63 = OFF, 64 - 127 = ON

* In Performance mode, the Part Portamento Switch parameter (PERFORM EDIT:PITCH:Porta or PART EDIT:PITCH:Porta Switch) will change.

O Sostenuto (Controller number 66)
Status 2nd byte 3rd byte
BnH 42H vvH

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

VV = Control value: 00H - 7FH (0 - 127) 0 - 63 = OFF, 64 - 127 = ON

O Soft (Controller number 67) Status 2nd byte 3rd byte BnH 43H vvH

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

vv = Control value: 00H - 7FH (0 - 127) 0 - 63 = OFF, 64 - 127 = ON

 ${\sf O}$ Legato Foot Switch (Controller number 68)

Status 2nd byte 3rd byte BnH 44H vvH

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

vv = Control value: 00H - 7FH (0 - 127) 0 - 63 = OFF, 64 - 127 = ON

^{*} In Performance mode, the Part Legato Switch parameter (PERFORM EDIT:PITCH:Legt or PART EDIT:PITCH:Legato Switch) will change.

```
O Hold-2 (Controller number 69)
Status 2nd byte 3rd byte
       45H
                       VVH
n = MIDI channel number:
                                      0H - FH (ch.1 - 16)
                                       00H - 7FH (0 - 127)
vv = Control value:
* A hold movement isn't done.
O Resonance (Controller number 71)
Status 2nd byte
                      3rd byte
BnH
       47H
                        VVH
                                      0H - FH (ch.1 - 16)
n = MIDI channel number:
vv= Resonance value (relative change): 00H - 40H - 7FH (-64 - 0 - +63)
* In Performance mode, the Part Resonance Offset parameter (PERFORM EDIT:OFFSET:Reso or PART EDIT:OFFSET:Reso Offset) 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)
* In Performance mode, the Part Release Time Offset parameter (PERFORM EDIT:OFFSET:Release or PART EDIT:OFFSET:Release
 Offset) will change.
O Attack time (Controller number 73)
Status 2nd byte 3rd byte
                       VVH
       49H
n = MIDI channel number:
                                      0H - FH (ch.1 - 16)
vv = Attack time value (relative change): 00H - 40H - 7FH (-64 - 0 - +63)
* In Performance mode, the Part Attack Time Offset parameter (PERFORM EDIT:OFFSET:Attack or PART EDIT:OFFSET:Attack Offset)
 will change.
O Cutoff (Controller number 74)
Status 2nd byte 3rd byte
       4AH
                       VVH
n = MIDI channel number:
                                      0H - FH (ch.1 - 16)
vv = Cutoff value (relative change):
                                      00H - 40H - 7FH (-64 - 0 - +63)
* In Performance mode, the Part Cutoff Offset parameter (PERFORM EDIT:OFFSET:Cutoff or PART EDIT:OFFSET:Cutoff Offset) will
O Decay Time (Controller number 75)
Status 2nd byte 3rd byte
       4BH
                       vvH
n = MIDI channel number: OH - FH (ch.1 - 16)
vv = Decay Time value (relative change): 00H - 40H - 7FH (-64 - 0 - +63)
* In Performance mode, the Part Decay Time Offset parameter (PERFORM EDIT:OFFSET:Decay or PART EDIT:OFFSET:Decay Offset)
 will change.
O Vibrato Rate (Controller number 76)
Status 2nd byte 3rd byte
                       vvH
0H - FH (ch.1 - 16)
       4CH
n = MIDI channel number:
vv = Vibrato Rate value (relative change): 00H - 40H - 7FH (-64 - 0 - +63)
* In Performance mode, the Part Vibrato Rate parameter (PERFORM EDIT:VIBRATO:Rate or PART EDIT:VIBRATO:Vibrato Rate) will
O Vibrato Depth (Controller number 77)
Status 2nd byte 3rd byte
                        vvH
        4 DH
n = MIDI channel number:
                                      0H - FH (ch.1 - 16)
vv = Vibrato Depth Value (relative change): 00H - 40H - 7FH (-64 - 0 - +63)
* In Performance mode, the Part Vibrato Depth parameter (PERFORM EDIT:VIBRATO:Depth or PART EDIT:VIBRATO:Vibrato Depth)
 will change.
O Vibrato Delay (Controller number 78)
Status 2nd byte
                      3rd byte
       4EH
                       vvH
n = MIDI channel number: 0H - FH (ch.1 - 16)
vv = Vibrato Delay value (relative change): 00H - 40H - 7FH (-64 - 0 - +63)
```

* In Performance mode, the Part Vibrato Delay parameter (PERFORM EDIT:VIBRATO:Delay or PART EDIT:VIBRATO:Vibrato Delay) will change.

O General Purpose Controller 5 (Controller number 80)

Status 2nd byte 3rd byte 50H vvH

n = MIDI channel number: 0H - FH (ch.1 - 16) vv = Control value: 00H - 7FH (0 - 127)

* The Tone Level parameter (PATCH EDIT:TVA:Tone Level or SAMPLE EDIT:TVA:Tone Level) of Tone 1 will change.

O General Purpose Controller 6 (Controller number 81)

Status 2nd byte 3rd byte vvH 51 H

n = MIDI channel number: OH - FH (ch.1 - 16) vv = Control value: 00H - 7FH (0 - 127)

* The Tone Level parameter (PATCH EDIT:TVA:Tone Level) of Tone 2 will change.

O General Purpose Controller 7 (Controller number 82)

Status 2nd byte 3rd byte 52H

0H - FH (ch.1 - 16) n = MIDI channel number: vv = Control value: 00H - 7FH (0 - 127)

* The Tone Level parameter (PATCH EDIT:TVA:Tone Level) of Tone 3 will change.

O General Purpose Controller 8 (Controller number 83)

Status 2nd byte 3rd byte BnH 53H VVH

n = MIDI channel number: 0H - FH (ch.1 - 16) vv = Control value: 00H - 7FH (0 - 127)

* The Tone Level parameter (PATCH EDIT:TVA:Tone Level) of Tone 4 will change.

O Portamento control (Controller number 84)

Status 2nd byte 3rd byte

- * 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 Effect 1 (Reverb Send Level) (Controller number 91)

Status 2nd byte 3rd byte 5BH VVH

n = MIDI channel number: 0H - FH (ch.1 - 16) vv = Reverb Send Level: 00H - 7FH (0 - 127)

* In Performance mode, the Part Reverb Send Level parameter (PERFORM EDIT:OUTPUT:Rev or PART EDIT:OUTPUT:Rev Send Level)

O Effect 3 (Chorus Send Level) (Controller number 93)

Status 2nd byte 3rd byte vvH BnH 5DH

n = MIDI channel number: 0H - FH (ch.1 - 16) vv = Chorus Send Level: 00H - 7FH (0 - 127)

* In Performance mode, the Part Chorus Send Level parameter (PERFORM EDIT:OUTPUT:Cho or PART EDIT:OUTPUT:Cho Send Level) will change.

O RPN MSB/LSB (Controller number 100, 101)

Status 2nd byte 3rd byte 65H BnH mmH 11H BnH 64 H

n = MIDI channel number: 0H - FH (ch.1 - 16) mm = upper byte (MSB) of parameter number specified by RPN 11 = 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

MSB, LSB MSB, LSB Notes

00H, 00H mmH, 11H Pitch Bend Sensitivity

mm: 00H - 18H (0 - 24 semitones)
ll: ignored (processed as 00H)

Up to 2 octave can be specified in semitone steps.

* In Performance mode, the Part Pitch Bend Range parameter (PERFORM EDIT:PITCH:Bend or PART EDIT:PITCH:Bend Range) will change.

00H, 01H mmH, 11H Channel Fine Tuning

mm, 11: 20 00H - 40 00H - 60 00H

(-4096 x 100 / 8192 - 0 - +4096 x 100 / 8192 cent)

* In Performance mode, the Part Fine Tune parameter (PERFORM EDIT:PITCH:Fine or PART EDIT:PITCH:Fine Tune) will change.

00H, 02H mmH, 11H Channel Coarse Tuning

mm: 10H - 40H - 70H (-48 - 0 - +48 semitones)

11: ignored (processed as 00H)

* In Performance mode, the Part Coarse Tune parameter (PERFORM EDIT:PITCH:Crs or PART EDIT:PITCH:Coarse Tune) will change.

00H, 05H mmH, 11H Modulation Depth Range

mm, 11: 00 00H - 00 06H (0 - 16384 x 600 / 16384 cent)

* Not received in Patch mode.

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, 11: ignored

Program Change

Status 2nd byte CnH ppH

CnH ppH
n = MIDI channel number:

OH - FH (ch.1 - 16)

pp = Program number: 00H - 7FH (prog.1 - prog.128)

* Not received in Performance mode when the Receive Program Change parameter (PERFORM EDIT:MIDI:PC or PART EDIT:MIDI:PC) is OFF.

● Channel Pressure

Status 2nd byte

DnH vvH

n = MIDI channel number: 0H - FH (ch.1 - 16) vv = Channel Pressure: 00H - 7FH (0 - 127)

* Not received in Performance mode when the Receive Channel Pressure parameter (PERFORM EDIT:MIDI:CA or PART EDIT:MIDI:CAFT) is OFF.

Pitch Bend Change

Status 2nd byte 3rd byte EnH 11H mmH

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

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

- * Not received when the Tone Receive Bender parameter (PATCH EDIT:CTRL:Rx Bender) is OFF.
- * Not received in Performance mode when the Receive Bender parameter (PERFORM EDIT:MIDI:PB or PART EDIT:MIDI:BEND) is OFF.
- lacktriangle Channel Mode Messages
- * Not received in Performance mode when the Receive Switch parameter (PERFORM EDIT:LEVEL/CH:RxSw or PART EDIT:LEVEL/CH:Rx Switch) is OFF.
- All Sounds Off (Controller number 120)

Status 2nd byte 3rd byte

BnH 78H 00H

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

- * When this message is received, all notes currently sounding on the corresponding channel will be turned off.
- Reset All Controllers (Controller number 121)

Status 2nd byte 3rd byte

BnH 79H 00H

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

 $[\]star$ When this message is received, the following controllers will be set to their reset values.

Controller Reset value
Pitch Bend Change +/-0 (center)
Polyphonic Key Pressure 0 (off)
Channel Pressure 0 (off)
Modulation 0 (off)
Breath Type 0 (min)
Expression 127 (max)

However the controller will be at minimum.

Hold 1 0 (off) Sostenuto 0 (off)

RPN unset; previously set data will not change NRPN unset; previously set data will not change

All Notes Off (Controller number 123)
 Status 2nd byte 3rd byte
 BnH 7BH 00H

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

- * When All Notes Off is received, all notes on the corresponding channel will be turned off. However, if Hold 1 or Sostenuto is ON, the sound will be continued until these are turned off.
- OMNI OFF (Controller number 124) Status 2nd byte 3rd byte BnH 7CH 00H

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

- * The same processing will be carried out as when All Notes Off is received.
- OMNI ON (Controller number 125)
 Status 2nd byte 3rd byte
 BnH 7DH 00H

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

- * The same processing will be carried out as when All Notes Off is received. OMNI ON will not be turned on.
- MONO (Controller number 126)Status 2nd byte 3rd byteBnH 7EH mmH

n = MIDI channel number: 0H - FH (ch.1 - 16) mm = mono number: 00H - 10H (0 - 16)

- * The same processing will be carried out as when All Notes Off is received.
- * In Performance mode, the Part Mono/Poly parameter (PERFORM EDIT:PITCH:Mono or PART EDIT:PITCH:Mono/Poly) will change.
- POLY (Controller number 127)
 Status 2nd byte 3rd byte
 BnH 7FH 00H

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

- * The same processing will be carried out as when All Notes Off is received.
- * In Performance mode, the Part Mono/Poly parameter (PERFORM EDIT:PITCH:Mono or PART EDIT:PITCH:Mono/Poly) will change.
- System Realtime Messages
- 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.
- lacksquare System Exclusive Message

Status Data byte Status FOH iiH, ddH,,eeH F7H

FOH: 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).

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

● Universal Non-realtime System Exclusive Messages

O Identity Request Message

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

Byte Explanation F0H Exclusive status

7EH ID number (Universal Non-realtime Message)

dev Device ID (dev: 10H, 7FH)
06H Sub ID#1 (General Information)
01H Sub ID#2 (Identity Request)
F7H EOX (End Of Exclusive)

* When this message is received, Identity Reply message (p. 16) will be transmitted.

O GM1 System On

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

Byte Explanation F0H Exclusive status

7EH ID number (Universal Non-realtime Message)

7FH Device ID (Broadcast)

09H Sub ID#1 (General MIDI Message) 01H Sub ID#2 (General MIDI 1 On) F7H EOX (End Of Exclusive)

* When this messages is received, this instrument will turn to the Performance mode.

O GM2 System On

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

Byte Explanation F0H Exclusive status

7EH ID number (Universal Non-realtime Message)

7FH Device ID (Broadcast)

09H Sub ID#1 (General MIDI Message) 03H Sub ID#2 (General MIDI 2 On) F7H EOX (End Of Exclusive)

 * When this messages is received, this instrument will turn to the Performance mode.

O GM System Off

 Status
 Data byte
 Status

 FOH
 7EH, 7F, 09H, 02H
 F7H

Byte Explanation FOH Exclusive status

7EH ID number (Universal Non-realtime Message)

7FH Device ID (Broadcast)

09H Sub ID#1 (General MIDI Message) 02H Sub ID#2 (General MIDI Off) F7H EOX (End Of Exclusive)

 \star When this messages is received, this instrument will return to the Performance mode.

• Universal Realtime System Exclusive Messages

O Master Volume

Status Data byte Status FOH 7FH, 7FH, 04H, 01H, 11H, mmH F7H

Byte Explanation

FOH Exclusive status

7FH ID number (universal realtime message)

7FH Device ID (Broadcast)
04H Sub ID#1 (Device Control)
01H Sub ID#2 (Master Volume)
11H Master Volume lower byte
mmH Master Volume upper byte
F7H EOX (End Of Exclusive)

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

```
O Master Fine Tuning
Status Data byte
                                                 Status
       7FH, 7FH, 04H, 03H, 11H, mmH
                                                 F7H
FOH
     Explanation
Byte
FOH
       Exclusive status
7FH
       ID number (universal realtime message)
7FH
      Device ID (Broadcast)
     Sub ID#1 (Device Control)
04H
03H
       Sub ID#2 (Master Fine Tuning)
    Master Fine Tuning LSB
11H
     Master Fine Tuning MSB
mmH
F7H
     EOX (End Of Exclusive)
mm, 11: 00 00H - 40 00H - 7F 7FH (-100 - 0 - +99.9 [cents])
* The Master Tune parameter (SYSTEM: SOUND: Master Tune) will change.
O Master Coarse Tuning
Status Data byte
                                                 Status
FOH
       7FH, 7FH, 04H, 04H, 11H, mmH
                                                 F7
Byte
      Explanation
FOH
       Exclusive status
7FH
       ID number (universal realtime message)
7FH
       Device ID (Broadcast)
04H
       Sub ID#1 (Device Control)
     Sub ID#2 (Master Coarse Tuning)
04H
11H Master Coarse Tuning LSB
     Master Coarse Tuning MSB
EOX (End Of Exclusive)
mmH
F7H
11H: ignored (processed as 00H)
mmH: 28H - 40H - 58H (-24 - 0 - +24 [semitones])
* The Master Key Shift parameter (SYSTEM:SOUND:Master Key Shift) will change.
• Global Parameter Control
* Not received in Patch mode.
O Reverb Parameters
Status Data byte
                                                 Status
       7FH, 7FH, 04H, 05H, 01H, 01H,
FOH
                                                 F7H
       01H, 01H, 01H, ppH, vvH
     Explanation
Bvte
FOH
     Exclusive status
7FH
       ID number (universal realtime message)
       Device ID (Broadcast)
7FH
04H
       Sub ID#1 (Device Control)
05H Sub ID#2 (Global Parameter Control)
01H
       Slot path length
01H
       Parameter ID width
01H
       Value width
01H
      Slot path MSB
       Slot path LSB (Effect 0101: Reverb)
01H
ррН
       Parameter to be controlled.
       Value for the parameter.
VVH
                     Reverb Type
       pp=0
        vv=00H
                        Small Room
        vv=01H
                       Medium Room
       vv=02H
                       Large Room
        vv=03H
                      Medium Hall
                       Large Hall
Plate
        vv=04H
        vv=08H
       pp=1
                       Reverb Time
        vv=00H - 7FH 0 - 127
       EOX (End Of Exclusive)
```

```
O Chorus Parameters
Status Data byte
                                                  Status
       7FH, 7FH, 04H, 05H, 01H, 01H,
                                                  F7H
        01H, 01H, 02H, ppH, vvH
Byte
       Explanation
FOH
       Exclusive status
7FH
       ID number (universal realtime message)
7FH
       Device ID (Broadcast)
04H
       Sub ID#1 (Device Control)
      Sub ID#2 (Global Parameter Control)
05H
01H
      Slot path length
01H
       Parameter ID width
01H
       Value width
01H
       Slot path MSB
02H
     Slot path LSB (Effect 0102: Chorus)
        Parameter to be controlled.
ррН
VVH
        Value for the parameter.
       pp=0
                       Chorus Type
        \nabla \nabla = 0
                       Chorus1
        vv=1
                        Chorus2
                        Chorus3
        vv=2
        vv=3
                        Chorus4
        vv=4
                       FB Chorus
        vv=5
                        Flanger
        pp=1
                        Mod Rate
        vv=00H - 7FH 0 - 127
        pp=2
                       Mod Depth
        vv=00H - 7FH
                        0 - 127
        pp=3
                        Feedback
        vv=00H - 7FH
                      0 - 127
        pp=4
                        Send To Reverb
        vv=00H - 7FH
                        0 - 127
        EOX (End Of Exclusive)
F7H
O Channel Pressure
Status Data byte
                                                  Status
FOH
        7FH, 7FH, 09H, 01H, 0nH, ppH, rrH
                                                  F7H
Byte
       Explanation
FOH
       Exclusive status
7FH
       ID number (universal realtime message)
7FH
     Device ID (Broadcast)
09H
     Sub ID#1 (Controller Destination Setting)
       Sub ID#2 (Channel Pressure)
01H
       MIDI Channel (00 - 0F)
0nH
       Controlled parameter
ррН
rrH
       Controlled range
        pp=0 Pitch Control
rr=28H - 58H -24 - +24 [semitones]
pp=1 Filter Cutoff Control
        pp=0
        rr=00H - 7FH -9600 - +9450 [cents]
                      Amplitude Control 0 - 200%
        pp=2
        rr=00H - 7FH
                       LFO Pitch Depth
        pp=3
        rr=00H - 7FH 0 - 600 [cents]
                        LFO Filter Depth
        pp=4
        rr=00H - 7FH
                        0 - 2400 [cents]
        pp=5
                       LFO Amplitude Depth
        rr=00H - 7FH
                       0 - 100%
F7H
        EOX (End Of Exclusive)
```

```
O Controller
Status Data byte
                                                Status
      7FH, 7FH, 09H, 03H, 0nH, ccH, ppH, rrH
Bvt.e
       Explanation
FOH
       Exclusive status
7FH
      ID number (universal realtime message)
7FH
      Device ID (Broadcast)
       Sub ID#1 (Controller Destination Setting)
09н
03H
       Sub ID#2 (Control Change)
     MIDI Channel (00 - 0F)
0nH
ссН
      Controller number (01 - 1F, 40 - 5F)
ррН
       Controlled parameter
rrH
       Controlled range
       pp=0 Pitch Control
       rr=28H - 58H -24 - +24 [semitones]
                      Filter Cutoff Control
       pp=1
        rr=00H - 7FH
                       -9600 - +9450 [cents]
       pp=2
                      Amplitude Control
       rr=00H - 7FH 0 - 200%
       pp=3
                       LFO Pitch Depth
                     0 - 600 [cents]
        rr=00H - 7FH
                       LFO Filter Depth
       pp=4
        rr=00H - 7FH 0 - 2400 [cents]
                       LFO Amplitude Depth
       pp=5
        rr=00H - 7FH
                       0 - 100%
F7H
       EOX (End Of Exclusive)
O Scale/Octave Tuning Adjust
Status Data byte
                                                Status
FOH
       7EH, 7FH, 08H, 08H, ffH, ggH, hhH, ssH... F7
Bvte
       Explanation
FOH
       Exclusive status
7EH
      ID number (Universal Non-realtime Message)
7FH
     Device ID (Broadcast)
      Sub ID#1 (MIDI Tuning Standard)
08H
08H
       Sub ID#2 (scale/octave tuning 1-byte form)
ffH
       Channel/Option byte 1
       bits 0 to 1 = channel 15 to 16
       bit 2 to 6 = Undefined
ggH
       Channel byte 2
       bits 0 to 6 = channel 8 to 14
hhH
       Channel byte 3
       bits 0 to 6 = channel 1 to 7
ssH
       12 byte tuning offset of 12 semitones from C to B
       00H = -64 [cents]
       40H = 0 [cents] (equal temperament)
       7FH = +63 [cents]
       EOX (End Of Exclusive)
F7H
O Key-based Instrument Controllers
Status Data byte
                                                Status
FOH
       7FH, 7FH, 0AH, 01H, 0nH, kkH, nnH, vvH
                                                F7H
Byte
       Explanation
       Exclusive status
7FH
       ID number (universal realtime message)
7FH
     Device ID (Broadcast)
0AH
     Sub ID#1 (Key-Based Instrument Control)
01H
       Sub ID#2 (Controller)
       MIDI Channel (00 - 0FH)
OnH
       Key Number
kkH
nnH
       Control Number
vvH
       Value
       nn=07H
                       Level
       vv=00H - 7FH 0 - 200% (Relative)
       nn=0AH
                      Pan
                     Left - Right (Absolute)
       vv=00H - 7FH
       nn=5BH
                       Reverb Send
       vv=00H - 7FH 0 - 127 (Absolute)
       nn=5D
                       Chorus Send
       vv=00H - 7FH
                       0 - 127 (Absolute)
F7H
       EOX (End Of Exclusive)
```

^{*} This parameter affects drum instruments only.

Data Transmission

This instrument can use exclusive messages to exchange many varieties of internal settings with other devices. The model ID of the exclusive messages used by this instrument is 00H 00H 3AH.

O 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
        41H, dev, 00H, 00H, 3AH, 11H, aaH, bbH,
FOH
                                                  F7H
        ccH, ddH, ssH, ttH, uuH, vvH, sum
Bvte
       Remarks
       Exclusive status
FOH
41H
       ID number (Roland)
dev
       device ID (dev: 10H, 7FH)
ООН
       model ID #1 (JUNO-DS61/DS88)
00H
       model ID #2 (JUNO-DS61/DS88)
       model ID #3 (JUNO-DS61/DS88)
ЗАН
11H
        command ID (RQ1)
       address MSB
ааН
bbH
       address
       address
ссН
ddH
        address LSB
       size MSB
ssH
       size
ttH
uuH
       size
VVH
        size LSB
       checksum
sum
F7H
       EOX (End Of Exclusive)
```

- * The size of data that can be transmitted at one time is fixed for each type of data. And data requests must be made with a fixed starting address and size. Refer to the address and size given in "Parameter Address Map" (p. 19).
- * For the checksum, refer to p. 64.

```
O Data set 1 (DT1)
Status Data byte
                                                   Status
        41H, dev, 00H, 00H, 3AH, 12H, aaH, bbH,
                                                   F7H
        ccH, ddH, eeH, ... ffH, sum
Byte
       Explanation
       Exclusive status
FOH
41H
       ID number (Roland)
dev
        Device ID (dev: 10H, 7FH)
00H
        Model ID #1 (JUNO-DS61/DS88)
00H
       Model ID #2 (JUNO-DS61/DS88)
3 A H
       Model ID #3 (JUNO-DS61/DS88)
12H
        Command ID (DT1)
ааН
        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
ссН
       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.
ееН
        Data: the actual data to be sent. Multiple bytes of data are transmitted in order starting from the address.
ffH
       Data
        Checksum
Sum
F7H
        EOX (End Of Exclusive)
```

- * The amount of data that can be transmitted at one time depends on the type of data, and data will be transmitted from the specified starting address and size. Refer to the address and size given in "Parameter Address Map" (p. 19).
- * Data larger than 256 bytes will be divided into packets of 256 bytes or less, and each packet will be sent at an interval of about 20 ms.
- * Regarding the checksum, please refer to p. 64.

```
Status Data byte
                                                   Status
FOH
        41H, dev, 42H, 12H, aaH, bbH, ccH,
                                                   F7H
        ddH, ... eeH, sum
Byte
        Explanation
FOH
       Exclusive status
41H
       ID number (Roland)
dev
       Device ID (dev: 10H, 7FH)
42H
       Model ID (GS)
12H
       Command ID (DT1)
        Address MSB: upper byte of the starting address of the transmitted data
ааН
```

```
Address: middle byte of the starting address of the transmitted data
bbH
ссН
        Address LSB: lower byte of the starting address of the transmitted data
       Data: the actual data to be transmitted. Multiple bytes of data are transmitted starting from the address.
ddH
eeH
       Data
sum
       Checksum
F7H
       EOX (End Of Exclusive)
```

- * The amount of data that can be transmitted at one time depends on the type of data, and data will be transmitted from the specified starting address and size. Refer to the address and size given in "Parameter Address Map" (p. 19).
- * Data larger than 256 bytes will be divided into packets of 256 bytes or less, and each packet will be sent at an interval of about 20 ms.
- * Regarding the checksum, please refer to p. 64.

2. Data Transmission (Sound Source Section)

■ Channel Voice Messages

● Note off

Status 2nd byte 3rd byte 8nH kkH vvH VVH 8nH kkH

n = MIDI channel number: 0H - FH (ch.1 - 16) kk = note number: 00H - 7FH (0 - 127) vv = note off velocity: 00H - 7FH (0 - 127)

• Note on

9nH kkH vvH

n = MIDI channel number: 0H - FH (ch.1 - 16) 00H - 7FH (0 - 127) kk = note number: vv = note on velocity: 01H - 7FH (1 - 127)

• Control Change

* By selecting a controller number that corresponds to the setting of parameters of controllers, the JUNO-DS61/DS88 can transmit any control change message.

O Bank Select (Controller number 0, 32) Status 2nd byte 3rd byte BnH 00H mmH

20H 11H

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

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

* These messages are transmitted when Patch, Drum Kit, Performance, or Pattern is selected.

O Modulation (Controller number 1) Status 2nd byte 3rd byte 01H VVH

n = MIDI channel number: OH - FH (ch.1 - 16) vv = Modulation depth: 00H - 7FH (0 - 127)

O Breath type (Controller number 2) Status 2nd byte 3rd byte VVH BnH 02H

n = MIDI channel number: 0H - FH (ch.1 - 16) vv = Control value: 00H - 7FH (0 - 127)

O Portamento Time (Controller number 5) Status 2nd byte 3rd byte 05H VVH

n = MIDI channel number: OH - FH (ch.1 - 16) vv = Portamento Time: 00H - 7FH (0 - 127)

O Data Entry (Controller number 6, 38) Status 2nd byte 3rd byte BnH oc. 26H 06H mmH 11H

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

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

mm = MSB, 11 = LSB

O Volume (Controller number 7) Status 2nd byte 3rd byte 07H

0H - FH (ch.1 - 16) n = MIDI channel number: vv = Volume: 00H - 7FH (0 - 127)

```
O Panpot (Controller number 10)
Status 2nd byte 3rd byte BnH 0AH vvH
```

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

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

O Expression (Controller number 11) Status 2nd byte 3rd byte BnH OBH VVH

n = MIDI channel number: 0H - FH (ch.1 - 16) 00H - 7FH (0 - 127) vv = Expression:

O Hold 1 (Controller number 64) Status 2nd byte 3rd byte BnH 40H VVH

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

vv = Control value: 00H - 7FH (0 - 127) 0-63 = 0FF, 64-127 = 0N

* If the Continuous Hold Pedal parameter (SYSTEM:PEDAL:Continuous Hold Pedal) is set to OFF on the JUNO-DS61/DS88, only 00H (OFF) or 7FH (ON) can be transmitted as the value of the control.

O Portamento (Controller number 65) Status 2nd byte 3rd byte BnH 41H vvH

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

00H - 7FH (0 - 127) 0 - 63 = OFF, 64 - 127 = ONvv = Control value:

O Resonance (Controller number 71) Status 2nd byte 3rd byte BnH 47H vvH n = MIDI channel number:

OH - FH (ch.1 - 16)

vv= Resonance value (relative change): 00H - 40H - 7FH (-64 - 0 - +63)

O Release Time (Controller number 72) Status 2nd byte 3rd byte BnH 48H

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

vv = Release Time value (relative change): 00H - 40H - 7FH (-64 - 0 - +63)

O Attack time (Controller number 73) Status 2nd byte 3rd byte BnH 49H

VVH OH - FH (ch.1 - 16) n = MIDI channel number:

vv = Attack time value (relative change): 00H - 40H - 7FH (-64 - 0 - +63)

O Cutoff (Controller number 74) Status 2nd byte 3rd byte BnH 4AH

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

vv = Cutoff value (relative change): 00H - 40H - 7FH (-64 - 0 - +63)

O General Purpose Controller 5 (Controller number 80)

Status 2nd byte 3rd byte
BnH 50H vvH

n = MIDI channel number: 0H - FH (ch.1 - 16) vv = Control value: 00H - 7FH (0 - 127)

O General Purpose Controller 6 (Controller number 81)

O General Purpose control.

Status 2nd byte 3rd byte
751H vvH

n = MIDI channel number: 0H - FH (ch.1 - 16) vv = Control value: 00H - 7FH (0 - 127)

O General Purpose Controller 7 (Controller number 82)

Status 2nd byte 3rd byte BnH 52H vvH

n = MIDI channel number: 0H - FH (ch.1 - 16) 00H - 7FH (0 - 127) vv = Control value:

O General Purpose Controller 8 (Controller number 83)

Status 2nd byte 3rd byte BnH 53H vvH VVH

n = MIDI channel number: OH - FH (ch.1 - 16) 00H - 7FH (0 - 127) vv = Control value:

O Portamento control (Controller number 84)

Status 2nd byte 3rd byte BnH 54H kkH

0H - FH (ch.1 - 16) n = MIDI channel number: kk = source note number: 00H - 7FH (0 - 127)

• Program Change Status 2nd byte

CnH ppH

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

00H - 7FH (prog.1 - prog.128) pp = Program number:

* These messages are transmitted when Patch, Drum Kit, Performance, or Pattern is selected.

• Channel Pressure

Status 2nd byte DnH vvH

n = MIDI channel number: 0H - FH (ch.1 - 16) 00H - 7FH (0 - 127) vv = Channel Pressure:

Pitch Bend Change

Status 2nd byte 3rd byte EnH 11H mmH

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

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

■ Channel Mode Messages

O MONO (Controller number 126) Status 2nd byte 3rd byte BnH 7EH mmH

n = MIDI channel number: 0H - FH (ch.1 - 16) mm = mono number: 00H - 10H (0 - 16)

O POLY (Controller number 127) Status 2nd byte 3rd byte BnH 7FH 00H

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

■ System Realtime Messages

• Timing Clock

Status F8H

* Transmitted when the Sync Mode parameter (DAW CONTROL:DAW:Sync Mode) is set to SLAVE and the Sync Output parameter (DAW CONTROL: DAW: Sync Output) is set to ON.

● Continue

Status

FBH

* Transmitted when the Control Map parameter (DAW CONTROL:DAW:Control Map) is set to USER.

• Stop

Status

* Transmitted when the Control Map parameter (DAW CONTROL:DAW:Control Map) is set to USER.

• Active Sensing

Status

FEH

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

■ System Exclusive Messages

Universal Non-realtime System Exclusive Message and Data Set 1 (DT1) are the only System Exclusive messages transmitted by the JUNO-DS61/DS88.

● Universal Non-realtime System Exclusive Message

O Identity Reply Message (JUNO-DS61/DS88)

Receiving Identity Request Message (p. 8), the JUNO-DS61/DS88 send this message.

Status Data byte Status
FOH 7EH, dev, 06H, 02H, 41H, 3AH, 02H, F7H
00H, 00H, 00H, 03H, 00H, 00H

Byte Explanation FOH Exclusive status

7EH ID number (Universal Non-realtime Message)

10H Device ID (dev: 10H)

06H Sub ID#1 (General Information)
02H Sub ID#2 (Identity Reply)
41H ID number (Roland)

3AH 02H Device family code
02H 00H Device family number code
00H 03H 00H 00H Software revision level
F7H EOX (End of Exclusive)

• Data Transmission

O Data set 1 (DT1)

Status Data byte Status
FOH 41H, dev, 00H, 00H, 3AH, 12H, aaH, bbH, F7H
ccH, ddH, eeH, ... ffH, sum

Byte Explanation

FOH Exclusive status

41H ID number (Roland)

dev Device ID (dev: 10H, 7FH)

00H Model ID #1 (JUNO-DS61/DS88)

00H Model ID #2 (JUNO-DS61/DS88)

3AH Model ID #3 (JUNO-DS61/DS88)

12H Command ID (DT1)

aaH Address MSB: upper byte of the starting address of the data to be sent bbH Address: upper middle byte of the starting address of the data to be sent ccH Address: lower middle byte of the starting address of the data to be sent ddH Address LSB: lower byte of the starting address of the data to be sent.

eeH Data: the actual data to be sent. Multiple bytes of data are transmitted in order starting from the address.

: : ffH Data sum Checksum

F7H EOX (End Of Exclusive)

^{*} The amount of data that can be transmitted at one time depends on the type of data, and data will be transmitted from the specified starting address and size. Refer to the address and size given in "Parameter Address Map" (p. 19).

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

3. Data Reception (Sequencer Section)

3.1 Messages recorded during recording

■ Channel Voice Messages

● Note off

Status 2nd byte 3rd byte kkH vvH kkH 00H 8nH 9nH

0H - FH (ch.1 - 16) n = MIDI channel number: 00H - 7FH (0 - 127) kk = note number: 00H - 7FH (0 - 127) vv = note off velocity:

Note on

Status 2nd byte 3rd byte
9nH kkH vvH

n = MIDI channel number: 0H - FH (ch.1 - 16) 00H - 7FH (0 - 127) kk = note number: vv = note on velocity: 01H - 7FH (1 - 127)

• Control Change

Status 2nd byte 3rd byte BnH 01H vvH VVH

n = MIDI channel number: 0H - FH (ch.1 - ch.16) kk = Control number: 00н - 78н (0 - 120) 00H - 7FH (0 - 127) vv = value:

* kk = 00H and kk = 20H are not recorded.

• Channel Aftertouch

Status 2nd byte VVH

0H - FH (ch.1 - 16) 00H - 7FH (0 - 127) n = MIDI channel number: vv = Channel Aftertouch:

Pitch Bend Change

• Pitch bend .

Status 2nd byte 3rd byce mmH 3rd byte

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

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

■ 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 - 16)

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

• Reset All Controllers (Controller number 121)

Status 2nd byte 3rd byte 79H 00H

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

• Omni Off (Controller number 124) Status 2nd byte 3rd byte BnH 7CH 00H

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

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

• Omni On (Controller number 125) Status 2nd byte 3rd byte 7DH 00H

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

 $^{^{\}star}$ The same processing will be done as when an All Note Off message is received.

● Mono (Controller number 126) Status 2nd byte 3rd byte

BnH 7EH mmH

n = MIDI channel number: 0H - FH (ch.1 - 16) mm = mono number: 00H - 10H (0 - 16)

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

Poly (Controller number 127)Status 2nd byte 3rd byteBnH 7FH 00H

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

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

■ System Exclusive Messages

Status Data byte Status FOH iiH, ddH,, eeH F7H

FOH: System Exclusive message status

ii=ID number: This is the ID number (manufacturer ID) that specifies the manufacturer whose exclusive message

this is. Roland's manufacturer ID is 41H. ID numbers 7EH and 7FH are defined in an expansion of the MIDI standard as Universal Non-real-time messages (7EH) and Universal Realtime Messages (7FH).

dd,..., ee = data: 00H - 7FH (0 - 127)

F7H: EOX (End of System Exclusive)

 * GM1 System On, GM2 System On and GM System Off is not recorded.

* MIDI Machine Control and MIDI Time code is not recorded.

3.2 Messages acknowledged for synchronization

- System Realtime Messages
- Timing Clock

Status F8H

* Received when the Sync Mode parameter (SYSTEM:SYNC/TEMPO:Sync Mode) is set to SLAVE.

● Start

Status

FAH

- * Received when the Sync Mode parameter (SYSTEM:SYNC/TEMPO:Sync Mode) is set to SLAVE.
- Continue Status

FBH

- * The same processing will be carried out as when Start is received.
- * Received when the Sync Mode parameter (SYSTEM:SYNC/TEMPO:Sync Mode) is set to SLAVE.
- Stop

Status

FCH

 * Received when the Sync Mode parameter (SYSTEM:SYNC/TEMPO:Sync Mode) is set to SLAVE.

4. Data transmission (Sequencer Section)

There are no messages to be transmitted.

5. Parameter Address Map

- * Transmission of "#" marked address is divided to some packets. For example, ABH in hexadecimal notation will be divided to OAH and OBH, and is sent/received in this order.
- \star "< \star " marked address or parameters are ignored when the JUNO-DS61/DS88 received them.

5.1 JUNO-DS61/DS88 (ModelID = 00H 00H 3AH)

```
| Start
    Address |
                             Description
| 01 00 00 00 | Setup
| 02 00 00 00 | System
| 10 00 00 00 | Temporary Performance (Pattern)
| 11 00 00 00 | Temporary Patch/Drum (Performance Mode Part 1)
| 11 20 00 00 | Temporary Patch/Drum (Performance Mode Part 2)
        : 1
| 14 60 00 00 | Temporary Patch/Drum (Performance Mode Part 16)
| 1E 00 00 00 | Temporary Rhythm Pattern
| 1E 11 00 00 | Temporary Arpeggio
| 1E 13 00 00 | Temporary Rhythm Group
| 1E 15 00 00 | Temporary Vocal Effect
| 1F 00 00 00 | Temporary Patch/Drum (Patch Mode Part 1)
| 1F 20 00 00 | Temporary Patch/Drum (Patch Mode Part 2)
| 20 00 00 00 | User Performance (01)
| 20 01 00 00 | User Performance (02)
| 20 7F 00 00 | User Performance (128)
|-----
| 21 00 00 00 | User Pattern (01)
| 21 01 00 00 | User Pattern (02)
     : |
| 21 7F 00 00 | User Pattern (128)
| 30 00 00 00 | User Patch (001)
| 30 01 00 00 | User Patch (002)
| 31 7F 00 00 | User Patch (256)
| 40 00 00 00 | User Drum Kit (001)
| 40 10 00 00 | User Drum Kit (002)
         : |
| 40 70 00 00 | User Drum Kit (008)
| 60 00 00 00 | User Vocal Effect (001)
| 60 00 01 00 | User Vocal Effect (002)
| 60 00 13 00 | User Vocal Effect (020)
| Offset |
    Address |
                             Description
| 00 00 00 | System Common
| 00 40 00 | System Controller
* Temporary Patch/Drum
+-----
   Address |
                             Description
| 00 00 00 | Temporary Patch
| 10 00 00 | Temporary Drum
```

* Performance (Pattern) | Offset Description 00 00 00 | Performance Common 00 02 00 | Performance Common MFX1 00 04 00 | Performance Common Chorus 00 06 00 | Performance Common Reverb 00 08 00 | Performance Common MFX2 00 0A 00 | Performance Common MFX3 00 10 00 | Performance MIDI (Channel 1) 00 11 00 | Performance MIDI (Channel 2) 00 1F 00 | Performance MIDI (Channel 16) 00 20 00 | Performance Part (Part 1) 00 21 00 | Performance Part (Part 2) 00 2F 00 | Performance Part (Part 16) 00 50 00 | Performance Zone (Channel 1) 00 51 00 | Performance Zone (Channel 2) 00 5F 00 | Performance Zone (Channel 16) 00 60 00 | Performance Controller * Patch | Offset | Address | Description 00 00 00 | Patch Common 00 02 00 | Patch Common MFX 00 04 00 | Patch Common Chorus 00 06 00 | Patch Common Reverb 00 10 00 | Patch TMT (Tone Mix Table) 00 20 00 | Patch Tone (Tone 1) 00 22 00 | Patch Tone (Tone 2) 00 24 00 | Patch Tone (Tone 3) 00 26 00 | Patch Tone (Tone 4) * Drum | Offset | Address | Description 00 00 00 | Drum Common 00 02 00 | Drum Common MFX 00 04 00 | Drum Common Chorus 00 06 00 | Drum Common Reverb | 00 10 00 | Drum Tone (Key # 21) 00 12 00 | Drum Tone (Key # 22) 01 3E 00 | Drum Tone (Key # 108) * Arpeggio (Rhythm Pattern) | Address | Description 00 00 00 | Arpeggio Common 00 10 00 | Arpeggio Pattern (Note 1) 00 11 00 | Arpeggio Pattern (Note 2) 00 1F 00 | Arpeggio Pattern (Note 16)

Description

00 00 00 | Rhythm Group

20

* Vocal Effect

+	+	-
Offset	1	
Address	Description	
	+	
00 00 00	Vocal Effect	

00 01 00 02 00 03 00 04 00 05 00 06 00 07 00 08 00 09	0aaa aaaa 0aaa aaaa 0aaa aaaa 0aaa aaaa 0aaa aaaa 0aaa aaaa 0aaa aaaa	Sound Mode
00 01 00 02 00 03 00 04 00 05 00 06 00 07 00 08 00 09	0aaa aaaa 0aaa aaaa 0aaa aaaa 0aaa aaaa 0aaa aaaa 0aaa aaaa 0aaa aaaa	PATCH, PERFORM, GM1, GM2, GM2, GM2, GM2, GM3, GM2, GM3, GM2, GM3, GM2, GM3, GM3, GM2, GM3, GM3, GM3, GM3, GM3, GM3, GM3, GM3
00 02 00 03 00 04 00 05 00 06 00 07 00 08 00 09	0aaa aaaa 0aaa aaaa 0aaa aaaa 0aaa aaaa 0aaa aaaa 0aaa aaaa 0aaa aaaa	Performance Bank Select LSB (CC# 32) (0 - 1: Performance Program Number (PC) (0 - 1: Kbd Patch Bank Select MSB (CC# 0) (0 - 1: Kbd Patch Bank Select LSB (CC# 32) (0 - 1: Kbd Patch Program Number (PC) (0 - 1: Rhy Patch Bank Select MSB (CC# 0) (0 - 1: Rhy Patch Bank Select LSB (CC# 32) (0 - 1: Rhy Patch Bank Select LSB (CC# 32) (0 - 1: Rhy Patch Program Number (PC) (0 - 1:
00 03 00 04 00 05 00 06 00 07 00 08 00 09	Oaaa aaaa Oaaa aaaa Oaaa aaaa Oaaa aaaa Oaaa aaaa Oaaa aaaa	Performance Program Number (PC) (0 - 1: Kbd Patch Bank Select MSB (CC# 0) (0 - 1: Kbd Patch Bank Select LSB (CC# 32) (0 - 1: Kbd Patch Program Number (PC) (0 - 1: Rhy Patch Bank Select MSB (CC# 0) (0 - 1: Rhy Patch Bank Select LSB (CC# 32) (0 - 1: Rhy Patch Program Number (PC) (0 - 1:
00 04 00 05 00 06 00 07 00 08 00 09	Oaaa aaaa Oaaa aaaa Oaaa aaaa Oaaa aaaa Oaaa aaaa	Kbd Patch Bank Select MSB (CC# 0) (0 - 1: Kbd Patch Bank Select LSB (CC# 32) (0 - 1: Kbd Patch Program Number (PC) (0 - 1: Rhy Patch Bank Select MSB (CC# 0) (0 - 1: Rhy Patch Bank Select LSB (CC# 32) (0 - 1: Rhy Patch Program Number (PC) (0 - 1:
00 05 00 06 00 07 00 08 00 09	0aaa aaaa 0aaa aaaa 0aaa aaaa 0aaa aaaa	Kbd Patch Bank Select LSB (CC# 32)
00 06 00 07 00 08 00 09 	Oaaa aaaa Oaaa aaaa Oaaa aaaa	Kbd Patch Program Number (PC)
00 07 00 08 00 09 + 00 0A	Oaaa aaaa Oaaa aaaa Oaaa aaaa	Rhy Patch Bank Select MSB (CC# 0) (0 - 1: Rhy Patch Bank Select LSB (CC# 32) (0 - 1: Rhy Patch Program Number (PC) (0 - 1:
00 08 00 09 	0aaa aaaa 0aaa aaaa	Rhy Patch Bank Select LSB (CC# 32)
00 09 + + + + + + + + + + + + + + + + + + +	0aaa aaaa 	Rhy Patch Program Number (PC) (0 - 1:
+		+
i	0000 000a	Lawrence Co. 11 - 1
		•
00 OB I	0000 000a	BYPASS, (MFX2 Switch (0 -
00 02 1	0000 0004	BYPASS,
00 OC	0000 000a	MFX3 Switch (0 -
I		BYPASS, (
00 0D	0000 000a	Chorus Switch (0 -
I		OFF,
00 OE	0000 000a	Reverb Switch (0 - OFF, 0
00 OF	0000 000a	(reserve) <*>
		(reserve) <*>
		(reserve) <*>
00 12	0000 aaaa	Transpose Value
		-5
00 13	0000 0aaa	Octave Shift (61 -
		-3 -
+ 00 14 I	0000 0aaa	+ (reserve) <*>
00 15	0000 00aa	Knob Select (0 -
00 16	0000 000a	(reserve) <*>
00 17	Oaaa aaaa	Arp/Ptn Grid (0 -
I		04_, 08_, 08L, 08H, 08
I		16_, 16L, 16H, 1
00 18	Oaaa aaaa	Arp/Ptn Duration (0 -
I		30, 40, 50, 60, 70, 80,
00 19 I	0000 000a	100, 120, F Arpeggio Switch
00 10 1	3000 0004	OFF, (
00 1A	Oaaa aaaa	(reserve) <*>
00 1B	Oaaa aaaa	Arpeggio Style (0 - 1:
1		1 - 1:
00 1C	Oaaa aaaa	Arpeggio Motif (0 - 1
I		UP/L, UP/H, UP/_, dn/L, dn
I		dn/_, Ud/L, Ud/H, Ud/_, rn
00 1D	0000 0aaa	rn/_, PHRA: Arpeggio Octave Range (61 -
i		-3
00 1E	0000 000a	Arpeggio Hold (0 -
। । ना ೧೧	Oaaa aaaa	OFF, (Arpeggio Accent Rate (0 - 1)
		Arpeggio Velocity (0 - 1:
30 20 1	,	REAL, 1 - 1:
00 21	0000 000a	Rhythm Pattern Sw (0 -
00 22 1	Naaa sees	OFF, (
	0000 aaaa	
		 Rhythm Pattern Style
' 		1 - 2

00 26	Oaaa aaaa	Rhythm Pattern Group Number	(0 - 29)
		 Rhythm Pattern Accent Rate Rhythm Pattern Velocity	1 - 30 (0 - 100) (1 - 127)
00 29	+ 0000 000a	 (reserve) <*>	
		(reserve) <*>	1
00 32		 (reserve) <*>	
00 33	00aa aaaa	Arpeggio Step	(0 - 32)
	 +	l 	AUTO, 1 - 32
00 00 00 34	Total Size		İ
+			+
* System Common	n 		+
Offset	I		·
Address		Description	
# 00 00	0000 aaaa	 	
	0000 bbbb		1
	0000 cccc 0000 dddd	 Master Tune	(24 - 2024)
I	I		100.0 [cent]
00 04	00aa aaaa 	Master Key Shift	(40 - 88) -24 - +24
00 05	' Oaaa aaaa	Master Level	(0 - 127)
00 06	0000 000a	Scale Tune Switch	(0 - 1)
00 07	 0000 000a	 Patch Remain	OFF, ON (0 - 1)
1			OFF, ON
00 08	0000 000a 	Mix/Parallel <*>	, PARALLEL
00 09	+ 000a aaaa	Performance Control Channel	(0 - 16)
I	I		1 - 16, OFF
00 0A	0000 aaaa 	Kbd Patch Rx/Tx Channel	(0 - 15) 1 - 16
00 0B	0000 aaaa	(reserve) <*>	
00 OC	+ 0aaa aaaa	Patch Scale Tune for C	(0 - 127)
 00 0D	 Oaaa aaaa	 Patch Scale Tune for C#	-64 - +63 (0 - 127)
			-64 - +63
00 0E	Uaaa aaaa 	Patch Scale Tune for D 	(0 - 127) -64 - +63
00 OF	Oaaa aaaa	Patch Scale Tune for D#	(0 - 127) -64 - +63
00 10	 Oaaa aaaa	 Patch Scale Tune for E	(0 - 127)
00 11		 Patch Scale Tune for F	-64 - +63
1 00 11	Vaaa aaaa 	raten scare rune ror r	(0 - 127) -64 - +63
00 12	Oaaa aaaa	Patch Scale Tune for F#	(0 - 127)
00 13	 Oaaa aaaa	 Patch Scale Tune for G	-64 - +63 (0 - 127)
Ī	l		-64 - +63
00 14	Uaaa aaaa 	Patch Scale Tune for G# 	(0 - 127) -64 - +63
00 15	Oaaa aaaa	Patch Scale Tune for A	(0 - 127)
00 16	 Oaga aaaa	 Patch Scale Tune for A#	-64 - +63 (0 - 127)
			-64 - +63
00 17	Oaaa aaaa 	Patch Scale Tune for B 	(0 - 127) -64 - +63
00.10	+	L System Control 1 Source	'
1 00 18	ı vaaa aaaa 	System Control 1 Source 	(0 - 97) ., CC33 - CC95,
1			BEND, AFT
00 19	Uaaa aaaa 	System Control 2 Source OFF, CC01 - CC31	(0 - 97) , CC33 - CC95,
		l	BEND, AFT
00 1A	Oaaa aaaa 	System Control 3 Source OFF, CC01 - CC31	(0 - 97) , CC33 - CC95,
I			BEND, AFT
00 1B	Oaaa aaaa	System Control 4 Source	(0 - 97)
	! 	OFF, CC01 - CC31	BEND, AFT

	+	+		
İ	00 1C	0000 000a	Receive Program Change	(0 - 1)
1	1	I		OFF, ON
1	00 1D	0000 000a	Receive Bank Select	(0 - 1)
1	1	I		OFF, ON
	+			
000	00 00 1E	Total Size		Ī
+				+

Offcot	ı	
Offset Address	 	Description
00 00	0000 000a	Transmit Program Change (0 - 1) OFF, ON
00 01	0000 000a	Transmit Bank Select (0 - 1) OFF, ON
00 02	 Oaaa aaaa 	Keyboard Velocity
00 03	 0000 00aa 	Keyboard Velocity Curve (1 - 3) LIGHT, MEDIUM, HEAVY
00 04	' 0aaa aaaa +	(reserve) <*>
00 05	0000 0aaa 	Hold Pedal Polarity (0 - 1) STANDARD, REVERSE
00 06	0000 000a 	Continuous Hold Pedal (0 - 1) OFF, ON
00 07	 000a aaaa	Control Pedal Assign (0 - 24)
		MODULATION, PORTA-TIME, VOLUME, PAN, EXPRESSION, HOLD, PORTAMENTO, SOSTENUTO, RESONANCE, RELEASE-TIME, ATTACK-TIME, CUTOFF, DECAY-TIME, VIB-RATE, VIB-DEPTH, VIB-DELAY, CHO-SEND-LEVEL, REV-SEND-LEVEL, AFTERTOUCH, START/STOP, TAP-TEMPO, PROG-UP, PROG-DOWN, FAV-UP, FAV-DOWN
00 08	0000 0aaa 	Control Pedal Polarity (0 - 1) STANDARD, REVERSE
		(reserve) <*>
:	I	(reserve) <*>
00 10	+ Oaaa aaaa 	Knob 1 Assign (0 - 104) OFF, CC01 - CC31, OFF, CC33 - CC95, BEND, AFT,
00 11	 - 0aaa aaaa -	EQ-LOW-FREQ, EQ-LOW-GAIN, EQ-MID-FREQ, EQ-MID-GAIN, EQ-MID-Q, EQ-HIGH-FREQ, EQ-HIGH-GAIN (0 - 104) OFF, CC01 - CC31, OFF, CC33 - CC95, BEND, AFT, EQ-LOW-FREQ, EQ-LOW-GAIN, EQ-MID-FREQ, EQ-MID-GAIN, EQ-MID-Q,
00 12	 0aaa aaaa 	EQ-HIGH-FREQ, EQ-HIGH-GAIN (0 - 104) OFF, CC01 - CC31, OFF, CC33 - CC95, BEND, AFT, EQ-LOW-FREQ, EQ-LOW-GAIN, EQ-MID-FREQ, EQ-MID-GAIN, EQ-MID-Q, EQ-HIGH-FREQ, EQ-HIGH-GAIN
00 13	0aaa aaaa 	Knob 4 Assign (0 - 104) OFF, CC01 - CC31, OFF, CC33 - CC95, BEND, AFT, EQ-LOW-FREQ, EQ-LOW-GAIN, EQ-MID-FREQ, EQ-MID-GAIN, EQ-MID-Q, EQ-HIGH-FREQ, EQ-HIGH-GAIN
		(reserve) <*>
00 15	Oaaa aaaa 	(reserve) <*>
00 4D	0000 000a +	(reserve) <*>

Offset Address		Description	
00 00	Oaaa aaaa	Performance Name 1	(32 - 127
00 01	Naas soos	 Performance Name 2	32 - 127 [ASCII] (32 - 127
00 01	Vada adaa	Performance Name 2	32 - 127 [ASCII]
00 02	Oaaa aaaa	Performance Name 3	(32 - 127
00 03	Oaaa aaaa	 Performance Name 4	32 - 127 [ASCII] (32 - 127
			32 - 127 [ASCII]
00 04	Oaaa aaaa	Performance Name 5	(32 - 127 32 - 127 [ASCII]
00 05	Oaaa aaaa	Performance Name 6	(32 - 127
00 06	Оааа аааа	 Performance Name 7	32 - 127 [ASCII] (32 - 127
			32 - 127 [ASCII]
00 07	Oaaa aaaa	Performance Name 8	(32 - 127 32 - 127 [ASCII]
00 08	Oaaa aaaa	 Performance Name 9	(32 - 127
00.09	Naaa aaaa	 Performance Name 10	32 - 127 [ASCII] (32 - 127
00 05	vaaa aaaa	Tellormance Name 10	32 - 127 [ASCII]
00 0A	Oaaa aaaa	Performance Name 11	(32 - 127
00 OB	Oaaa aaaa	 Performance Name 12	32 - 127 [ASCII] (32 - 127
			32 - 127 [ASCII]
00 OC	00aa aaaa	Solo Part Select	(0 - 16
00 00	0002 2222	 MFX1 Control Channel	OFF, 1 - 16 (0 - 16
00 00	0000 0000	Mrx1 Concrot Channel	1 - 16, OFF
		(reserve) <*> (reserve) <*>	
		+ (Teperve) <>	
00 10	Oaaa aaaa	Voice Reserve 1	(0 - 64 0 - 63, FULL
00 11	Oaaa aaaa	 Voice Reserve 2	(0 - 64
00 10	0	 Waite	0 - 63, FULL
00 12	Vada adaa	Voice Reserve 3 	(0 - 64 0 - 63, FULL
00 13	Oaaa aaaa	Voice Reserve 4	(0 - 64 0 - 63, FULL
00 14	Oaaa aaaa	Voice Reserve 5	(0 - 64
00 15	Naaa aaaa	 Voice Reserve 6	0 - 63, FULL (0 - 64
00 15	vaaa aaaa	Voice Reserve 0	0 - 63, FULL
00 16	Oaaa aaaa	Voice Reserve 7	(0 - 64 0 - 63, FULL
00 17	Oaaa aaaa	Voice Reserve 8	(0 - 64
00 19	0222 2222	 Voice Reserve 9	0 - 63, FULL
00 18	vaad addd	 AOTCE VESETAE 3	(0 - 64 0 - 63, FULL
00 19	Oaaa aaaa	Voice Reserve 10	(0 - 64 0 - 63 FILL
00 1A	Oaaa aaaa	 Voice Reserve 11	0 - 63, FULL (0 - 64
00 15	0222 255	Voigo Posarva 12	0 - 63, FULL
ON IR	vaad addd	Voice Reserve 12 	(0 - 64 0 - 63, FULL
00 1C	Oaaa aaaa	Voice Reserve 13	(0 - 64
00 1D	Oaaa aaaa	 Voice Reserve 14	0 - 63, FULL (0 - 64
00 1=	0	 	0 - 63, FULL
UU 1E	vaaa aaaa	Voice Reserve 15 	(0 - 64 0 - 63, FULL
00 1F	Oaaa aaaa	Voice Reserve 16	(0 - 64
00 20	Oaaa aaaa	 (reserve) <*>	0 - 63, FULL
00 21	Oaaa aaaa	(reserve) <*>	
00 2F		 (reserve) <*>	
		•	
00 30	uuaa aaaa	MFX1 Source 	(0 - 16 PERFORM, 1 - 16
		MFX2 Source	(0 - 16

00 32	00aa aaaa	MFX3 Source	(0 - 16)
	I		PERFORM, 1 - 16
00 33	00aa aaaa	Chorus Source	(0 - 16)
	I		PERFORM, 1 - 16
00 34	00aa aaaa	Reverb Source	(0 - 16)
	I		PERFORM, 1 - 16
		MFX2 Control Channel	(0 - 16)
		MEY2 Control Channel	1 - 16, OFF
00 36	UUaa aaaa '	MFX3 Control Channel	(0 - 16)
00 37	I 0000 aaaa	 MFX Structure	1 - 16, OFF (0 - 15)
00 37	0000 aaaa	MFX Structure	1 - 16
	' +	' 	
00 00 00 38	Total Size		
Performance (
0.55			
Offset		Danamintian	
Address	 +	Description	
00 00	Oaaa aaaa		(0 - 80)
		MFX Dry Send Level	(0 - 127)
		MFX Chorus Send Level	(0 - 127)
00 03	Oaaa aaaa	MFX Reverb Send Level	(0 - 127)
		MFX Output Assign <*>	
	I	l	A,,,
	+	+	
00 05	Oaaa aaaa	MFX Control 1 Source	(0 - 101)
	 -	OFF,	CC01 - CC31, CC33 - CC95,
00.00		MEV Comband 1 C	BEND, AFT, SYS1 - SYS4
00 06	Uaaa aaaa '	MFX Control 1 Sens	(1 - 127)
00 07	l 	MEV Control 2 Course	-63 - +63
00 07	Vada aaaa 	MFX Control 2 Source	(0 - 101) CC01 - CC31, CC33 - CC95,
	I I	011,	BEND, AFT, SYS1 - SYS4
00 08	l Oaaa aaaa	 MFX Control 2 Sens	(1 - 127)
			-63 - +63
00 09	Oaaa aaaa	MFX Control 3 Source	(0 - 101)
	I	OFF,	CC01 - CC31, CC33 - CC95,
	I		BEND, AFT, SYS1 - SYS4
00 0A	Oaaa aaaa	MFX Control 3 Sens	(1 - 127)
	I		-63 - +63
00 OB	Oaaa aaaa	MFX Control 4 Source	(0 - 101)
		OFF,	CC01 - CC31, CC33 - CC95,
00 00	l 0222 2222	 MFX Control 4 Sens	BEND, AFT, SYS1 - SYS4
00 00	Vada dada 	MFA CONCIOL 4 Sens	(1 - 127) -63 - +63
	, +	· +	
00 0D		MFX Control Assign 1	(0 - 16)
	I	1	OFF, 1 - 16
00 OE	000a aaaa	MFX Control Assign 2	(0 - 16)
	I		OFF, 1 - 16
		MFX Control Assign 3	(0 - 16)
			OFF, 1 - 16
00 10	000a aaaa	MFX Control Assign 4	(0 - 16)
4 00 11	1 0000		OFF, 1 - 16
	0000 aaaa 0000 bbbb		
	0000 ccc		
		 MFX Parameter 1	(12768 - 52768)
	I	I	-20000 - +20000
# 00 15	0000 aaaa		
	0000 bbbb		
	0000 cccc		
	0000 dddd	MFX Parameter 2	(12768 - 52768)
			-20000 - +20000
	0000 aaaa		
	0000 bbbb		
	0000 cccc 0000 dddd	 MFX Parameter 3	(12768 - 52768)
	0000 aaaa 	LILV LATAMECET 2	-20000 - +20000
	 0000 aaaa		
	0000 bbbb		
	0000 cccc		
		MEY Devented 1	(10700 =0700)
	0000 dddd	Mrx Parameter 4	(12768 - 52768)
	0000 dddd 	MFX Parameter 4	-20000 - +20000

#	00 21	0000 aaaa	I	I
		0000 bbbb		I
		0000 cccc		
		0000 dddd	MFX Parameter 5	(12768 - 52768)
				-20000 - +20000
#		0000 aaaa	'	
	'	0000 bbbb	'	
ı		0000 cccc		(1056) 50560
I			MFX Parameter 6	(12768 - 52768)
#	00.20	 0000 aaaa	'	-20000 - +20000
1 #		0000 aaaa 0000 bbbb		I I
ı		0000 ccc		
1			 MFX Parameter 7	(12768 - 52768)
1				-20000 - +20000
#	00 2D	 0000 aaaa	'	20000 120000 1
1		0000 dadd		
i		0000 cccc		
i			MFX Parameter 8	(12768 - 52768)
I				-20000 - +20000
#	00 31	0000 aaaa	I	
1		0000 bbbb	I	I
		0000 cccc	I	I
1		0000 dddd	MFX Parameter 9	(12768 - 52768)
1			I	-20000 - +20000
#	00 35	0000 aaaa	I	I
1		0000 bbbb	I	I
		0000 cccc	I	I
1		0000 dddd	MFX Parameter 10	(12768 - 52768)
		I	I	-20000 - +20000
#		0000 aaaa		I
		0000 bbbb		I
		0000 cccc		I
		0000 dddd	MFX Parameter 11	(12768 - 52768)
1	00 05			-20000 - +20000
#		0000 aaaa		
I		0000 bbbb		
		0000 cccc	 MFX Parameter 12	(12769 52769)
ı		1 0000 aaaa	MFA Palametel 12	(12768 - 52768) -20000 - +20000
1#	00 41	 0000 aaaa	! !	-20000 - 120000
"		0000 dada		,
i		0000 cccc		'
			MFX Parameter 13	(12768 - 52768)
i			I	-20000 - +20000
#	00 45	0000 aaaa	I	
1		0000 bbbb	I	I
1		0000 cccc	I	I
1		0000 dddd	MFX Parameter 14	(12768 - 52768)
		l	I	-20000 - +20000
#	00 49	0000 aaaa	I	I
1		0000 bbbb	I	I
1		0000 cccc		I
1		0000 dddd	MFX Parameter 15	(12768 - 52768)
1		l	I	-20000 - +20000
#		0000 aaaa		I
1		0000 bbbb		I
1		0000 cccc		
1		ı uuuu dddd	MFX Parameter 16	(12768 - 52768)
1 #	00 51	1 0000	I	-20000 - +20000
#		0000 aaaa 0000 bbbb		
I I		2222 0000		l I
1			 MFX Parameter 17	(12768 - 52768)
İ				-20000 - +20000
#	00 55	 0000 aaaa		
1		0000 dadd		·
1		0000 cccc		·
			MFX Parameter 18	(12768 - 52768)
1		I	I	-20000 - +20000
#	00 59	0000 aaaa	I	
1		0000 bbbb		i
		0000 cccc	I	I
1		0000 dddd	MFX Parameter 19	(12768 - 52768)
1		I	I	-20000 - +20000
#		0000 aaaa		I
		0000 bbbb		I
		0000 cccc	I	I
				26

		0000 dddd	MFX Parameter 20	(12768 - 52768)
#	00 61	 0000 aaaa	I I	-20000 - +20000
#				
		0000 bbbb		
		0000 cccc	 MFX Parameter 21	(12768 - 52768)
		1	Mrx Parameter 21	-20000 - +20000
#	00 65	0000 aaaa		
		0000 bbbb	I	
		0000 cccc	I	
		0000 dddd	MFX Parameter 22	(12768 - 52768)
		I	l	-20000 - +20000
#		0000 aaaa		
		0000 bbbb	l	
		0000 cccc		
		0000 dddd	MFX Parameter 23	(12768 - 52768)
,,	00 65	1 0000		-20000 - +20000
#		0000 aaaa 0000 bbbb		
		2222 0000		
			 MFX Parameter 24	(12768 - 52768)
		i oooo aaaa	rra ratametet 24	-20000 - +20000
#	00 71	 0000 aaaa		20000 - 120000
		0000 aaaa		
		0000 EEEE		
			MFX Parameter 25	(12768 - 52768)
		I		-20000 - +20000
#	00 75	0000 aaaa	I	
		0000 bbbb	I	
		0000 cccc	l	
		0000 dddd	MFX Parameter 26	(12768 - 52768)
		I	l	-20000 - +20000
#		0000 aaaa		
		0000 bbbb		
		0000 cccc		/10760 50760)
		UUUU aaaa	MFX Parameter 27	(12768 - 52768) -20000 - +20000
#	00 70	 0000 aaaa		-20000 - +20000
#		0000 aaaa		
		0000 BBBB		
			 MFX Parameter 28	(12768 - 52768)
				-20000 - +20000
#	01 01	0000 aaaa		
		0000 bbbb	I	
		0000 cccc	l .	
		0000 dddd	MFX Parameter 29	(12768 - 52768)
		I	l	-20000 - +20000
#		0000 aaaa		
		0000 bbbb		
		0000 cccc		
		0000 dddd	MFX Parameter 30	(12768 - 52768)
ш	01 00	1 0000		-20000 - +20000
#		0000 aaaa 0000 bbbb		
		2222 0000		
			 MFX Parameter 31	(12768 - 52768)
				-20000 - +20000
#	01 0D	0000 aaaa		
		0000 dddd		
		0000 cccc		
			MFX Parameter 32	(12768 - 52768)
		I	I	-20000 - +20000
		+		

Off	set Address	 	Description	
	00 00	0000 aaaa	Chorus Type	(0 - 3
			Chorus Level	(0 - 127
	00 02	0000 00aa	Chorus Output Assign <*>	
	00 03	 0000 00aa	Chorus Output Select	A,,, (0 - 2
				MAIN, REV, MAIN+REV
#	00 04	0000 aaaa	'	
		0000 bbbb		
		0000 cccc		
		0000 dddd	Chorus Parameter 1	(12768 - 52768 -20000 - +20000
#	00 08	0000 aaaa		20000 120000
		0000 bbbb	I	
		0000 cccc		
		0000 dddd	Chorus Parameter 2	(12768 - 52768 -20000 - +20000
#	00 OC	0000 aaaa		20000 120000
		0000 bbbb	I	
		0000 cccc		
		0000 dddd	Chorus Parameter 3	(12768 - 52768 -20000 - +20000
#	00 10	0000 aaaa		20000
		0000 bbbb		
		0000 cccc		(107/0 507/2
		UUUU dddd	Chorus Parameter 4	(12768 - 52768 -20000 - +20000
#	00 14	0000 aaaa	I	
		0000 bbbb	I	
		0000 cccc		
		0000 dddd	Chorus Parameter 5	(12768 - 52768 -20000 - +20000
#	00 18	0000 aaaa		-20000 - +20000
		0000 bbbb	I	
		0000 cccc	I	
		0000 dddd	Chorus Parameter 6	(12768 - 52768 -20000 - +20000
#	00 1C	0000 aaaa		-20000 - +20000
		0000 bbbb	I	
		0000 cccc		
		0000 dddd	Chorus Parameter 7	(12768 - 52768 -20000 - +20000
#	00 20	0000 aaaa		-20000 - +20000
		0000 bbbb		
		0000 cccc	I	
		0000 dddd	Chorus Parameter 8	(12768 - 52768
#	00.24	1 0000 222		-20000 - +20000
#		0000 aaaa 0000 bbbb		
		0000 ccc		
			Chorus Parameter 9	(12768 - 52768
			1	-20000 - +20000
#		0000 aaaa		
		0000 bbbb		
			Chorus Parameter 10	(12768 - 52768
		1	I	-20000 - +20000
#		0000 aaaa		
		0000 bbbb		
			Chorus Parameter 11	(12768 - 52768
			I	-20000 - +20000
#		0000 aaaa		
		0000 bbbb		
		0000 cccc	Chorus Parameter 12	(12768 - 52768
		l nonn aaaa	Chorus rarameter 12	-20000 - +20000
#	00 34	0000 aaaa	I	
		0000 bbbb		
		0000 cccc		
		0000 dddd	Chorus Parameter 13	(12768 - 52768
		 0000 aaaa	1	-20000 - +20000

 		0000 bbbb 0000 ccc		
 		0000 dddd	Chorus Parameter 14	(12768 - 52768) -20000 - +20000
#	00 3C	0000 aaaa		
		0000 bbbb		
		0000 cccc		
		0000 dddd	Chorus Parameter 15	(12768 - 52768)
				-20000 - +20000
#	00 40	0000 aaaa		
		0000 bbbb		
		0000 cccc		
		0000 dddd	Chorus Parameter 16	(12768 - 52768)
				-20000 - +20000
#	00 44	0000 aaaa		
		0000 bbbb		
		0000 cccc		
		0000 dddd	Chorus Parameter 17	(12768 - 52768)
		l		-20000 - +20000
#	00 48	0000 aaaa		
		0000 bbbb		
		0000 cccc		
		0000 dddd	Chorus Parameter 18	(12768 - 52768)
				-20000 - +20000
#	00 4C	0000 aaaa		
		0000 bbbb		
		0000 cccc		
		0000 dddd	Chorus Parameter 19	(12768 - 52768)
		l		-20000 - +20000
#		0000 aaaa		
		0000 bbbb		
		0000 cccc		
		0000 dddd	Chorus Parameter 20	(12768 - 52768)
		 -		-20000 - +20000
00	00 00 54	 Total Size		

* Performance Common Reverb

	agrintion		Address
	scription		Address
(0 -	Type	0000 aaaa	00 00
(0 - 12	Level	Oaaa aaaa	00 01
	Output Assign <*>	0000 00aa	00 02
A,,,		1	
		0000 aaaa	00 03
		dddd 0000	I
		0000 cccc	I
(12768 - 5276	Parameter 1	0000 dddd	I
-20000 - +2000		1	I
		0000 aaaa	00 07
		dddd 0000	I
		0000 cccc	1
(12768 - 5276	Parameter 2	0000 dddd	I
-20000 - +2000		I	I
		0000 aaaa	
		dddd 0000	I
		0000 cccc	
(12768 - 5276	Parameter 3	0000 dddd	ı
-20000 - +2000		I	I
		0000 aaaa	
		dddd 0000	
		0000 cccc	
(12768 - 5276	Parameter 4	0000 dddd	
-20000 - +2000		0000	00 10
		0000 aaaa	
		dddd 0000	
(10760 507	D	0000 cccc	
(12768 - 5276	rarameter 5	0000 dddd	
-20000 - +2000		0000 2225 1	00 17 1
		0000 aaaa	
		dddd 0000	
/10760 507/	Darameter 6	0000 cccc	
(12768 - 5276	rarameter b	0000 dddd	
-20000 - +2000 29		ı	'

#	00		0000 aaaa 0000 bbbb		
		1	0000 cccc	I	
			0000 dddd	Reverb Parameter 7	(12768 - 52768) -20000 - +20000
#	00	1F	0000 aaaa	I	
		1	0000 bbbb	I	
		1	0000 cccc	I	
		1	0000 dddd	Reverb Parameter 8	(12768 - 52768)
				 -	-20000 - +20000
#	00		0000 aaaa		
			0000 bbbb 0000 cccc		
				 Reverb Parameter 9	(12768 - 52768)
			oooo aaaa	Neverb rarameter 5	-20000 - +20000
#	00	27	0000 aaaa		
		-	0000 bbbb	I	
		1	0000 cccc	I	
			0000 dddd	Reverb Parameter 10	(12768 - 52768) -20000 - +20000
#	00	2B	0000 aaaa	I	
		1	0000 bbbb	I	
		- 1	0000 cccc	I	
			0000 dddd	Reverb Parameter 11	(12768 - 52768)
#	00	ا ۱۲	0000 aaaa	I I	-20000 - +20000
'	00		0000 aaaa		
			0000 cccc		
				Reverb Parameter 12	(12768 - 52768)
		1		I	-20000 - +20000
#	00		0000 aaaa		
			0000 bbbb		
			0000 cccc	 Reverb Parameter 13	(10760
			0000 aaaa	Keverb Parameter 13	(12768 - 52768) -20000 - +20000
#	00	37	0000 aaaa	I	
		1	0000 bbbb	I	
		-	0000 cccc	I	
		-	0000 dddd	Reverb Parameter 14	(12768 - 52768)
#	0.0	30 1	0000 aaaa		-20000 - +20000
т	00		0000 aaaa		
			0000 cccc	'	
				Reverb Parameter 15	(12768 - 52768)
		1		I	-20000 - +20000
#	00		0000 aaaa		
			0000 bbbb		
			0000 cccc		(10760 50760)
			0000 aaaa	Reverb Parameter 16	(12768 - 52768) -20000 - +20000
#	00	43 1	0000 aaaa		20000 120000
	•		0000 bbbb		
			0000 cccc		
		ĺ	0000 dddd	Reverb Parameter 17	(12768 - 52768)
	0.5	4-	0000	I	-20000 - +20000
#	00		0000 aaaa		
			0000 bbbb 0000 cccc		
				 Reverb Parameter 18	(12768 - 52768)
		i		l	-20000 - +20000
‡	00		0000 aaaa		
			dddd 0000		
			0000 cccc		(10700 -0700)
			uuuu adad	Reverb Parameter 19	(12768 - 52768) -20000 - +20000
‡	00	4F	0000 aaaa		20000 120000
			0000 bbbb		
		1	0000 cccc	I	
		- 1	0000 dddd	Reverb Parameter 20	(12768 - 52768)
		ا		l 	-20000 - +20000

* Performance MIDI

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

	* Performance 1	Part		
-	Offset Address	 	Description	
	00 00	0000 aaaa	Receive Channel	(0 - 15)
	00 01	 0000 000a	 Receive Switch	1 - 16 (0 - 1)
	 	 0000 0000	 (reserve) <*>	OFF, ON
	 	 0000 0000 	 (reserve) <*>	
	00 04	+	+ Patch Bank Select MSB (CC# 0)	(0 - 127)
			Patch Bank Select LSB (CC# 32)	(0 - 127)
	00 06	Oaaa aaaa	Patch Program Number (PC)	(0 - 127)
	00 07	Oaaa aaaa	Part Level (CC# 7)	(0 - 127)
			Part Pan (CC# 10)	(0 - 127)
	I		l	L64 - 63R
	00 09	Oaaa aaaa	Part Coarse Tune (RPN# 2)	(16 - 112)
	00.07		 Part Fine Tune (RPN# 1)	-48 - +48 (14 - 114)
	00 0A	vaaa aaaa	rait rine lune (KrN# 1)	-50 - +50
	00 0B	 0000 00aa	Part Mono/Poly (MONO ON/POLY ON)	(0 - 2)
	I		MC	ONO, POLY, PATCH
	00 OC	0000 00aa	Part Legato Switch (CC# 68)	(0 - 2)
	00.05	0000 0000	 Part Pitch Bend Range (RPN# 0)	OFF, ON, PATCH (0 - 25)
	I 00 0D	UUUa aaaa 	Part Pitch Bend Range (RPN# 0)	0 - 24, PATCH
	00 0E	 0000 00aa	Part Portamento Switch (CC# 65)	(0 - 2)
	I	1	l	OFF, ON, PATCH
	# 00 OF	0000 aaaa		
		dddd 0000	Part Portamento Time (CC# 5)	(0 - 128)
	I 00 11	l I Oaaa aaaa l	 Part Cutoff Offset (CC# 74)	0 - 127, PATCH (0 - 127)
				-64 - +63
	00 12	Oaaa aaaa	Part Resonance Offset (CC# 71)	(0 - 127)
	l	1	l	-64 - +63
	00 13	Oaaa aaaa	Part Attack Time Offset (CC# 73)	(0 - 127)
	I 00 14	l Oaaa aaaa l	 Part Release Time Offset (CC# 72)	-64 - +63 (0 - 127)
				-64 - +63
			2	1

00 15 0000 0aaa Part Octave Shift	(61 - 67)
	-3 - +3
00 16 0aaa aaaa Part Velocity Sens Offset	(1 - 127)
	-63 - +63
00 18 0aaa aaaa (reserve) <*>	
:	'
00 1A 0aaa aaaa (reserve) <*>	Ī
00 1B 0000 000a Mute Switch	(0 - 1)
	OFF, MUTE
00 1C 0aaa aaaa Part Dry Send Level	(0 - 127)
00 1D 0aaa aaaa Part Chorus Send Level (CC# 93)	
00 1E 0aaa aaaa Part Reverb Send Level (CC# 91) 00 1F 0000 aaaa Part Output Assign	(0 - 127)
	,,
1, 2,,, -	
	PATCH
00 20 0000 00aa Part Output MFX Select	(0 - 2)
MFX:	1, MFX2, MFX3
00 21 0aaa aaaa Part Decay Time Offset (CC# 75)	
	-64 - +63
00 22 022 Days 1 Part Vibrata Pata (CC# 76)	(0 - 127)
00 22 0aaa aaaa Part Vibrato Rate (CC# 76)	-64 - +63
00 23 0aaa aaaa Part Vibrato Depth (CC# 77)	(0 - 127)
	-64 - +63
00 24 Oaaa aaaa Part Vibrato Delay (CC# 78)	(0 - 127)
	-64 - +63
00 25 0aaa aaaa Part Scale Tune for C	(0 - 127)
	-64 - +63
00 26 0aaa aaaa Part Scale Tune for C#	(0 - 127) -64 - +63
	(0 - 127)
	-64 - +63
00 28 Oaaa aaaa Part Scale Tune for D#	(0 - 127)
	-64 - +63
00 29 Oaaa aaaa Part Scale Tune for E	(0 - 127)
	-64 - +63
00 2A Oaaa aaaa Part Scale Tune for F	(0 - 127)
	-64 - +63
00 2B 0aaa aaaa Part Scale Tune for F#	(0 - 127)
	-64 - +63 (0 - 127)
	-64 - +63
00 2D 0aaa aaaa Part Scale Tune for G#	(0 - 127)
	-64 - +63
00 2E Oaaa aaaa Part Scale Tune for A	(0 - 127)
	-64 - +63
00 2F Oaaa aaaa Part Scale Tune for A#	(0 - 127)
	-64 - +63
00 30 0aaa aaaa Part Scale Tune for B	(0 - 127)
	-64 - +63

* Performance Zone

+				+
Offset				1
Addre	ess		Description	1
	+			
00	00	0000 0aaa	Zone Octave Shift	(61 - 67)
1		I		-3 - +3
00	01	0000 000a	Zone Switch	(0 - 1)
1		1		OFF, ON
00	02	0000 000a	(reserve) <*>	1
# 00	03	0000 aaaa		1
1		0000 bbbb	(reserve) <*>	1
1	:	1		1
# 00	0A	0000 aaaa		
1		0000 bbbb	(reserve) <*>	
1		1		1
	+	+		
00	0C	Oaaa aaaa	Keyboard Range Lower	(0 - 127)
1		I		C-1 - UPPER
00	0D	Oaaa aaaa	Keyboard Range Upper	(0 - 127)
1		1		LOWER - G9
	+	+		
00	0E	0000 000a	(reserve) <*>	
00	0F	0000 000a	(reserve) <*>	
I	:	I		
00	1A	0000 000a	(reserve) <*>	
	+			
00 00 00	1B	Total Size		
+				+

* Performance Controller

Offset Address	 Description	
	0000 000a (reserve) <*> 0aaa aaaa (reserve) <*> 	
İ	Oaaa aaaa (reserve) <*> 	
	0000 adaa Arpegg10 Zone Number 	ZONE1 - ZONE16
:	Oaaa aaaa (reserve) <*> 	
	+ 0000 aaaa 0000 bbbb Recommended Tempo	(20 - 250)
	0000 000a (reserve) <*> 0000 00aa (reserve) <*>	
00 59 	0000 000a (reserve) <*>	'

* Arpeggio Common

Offset Address	 Description	
	0000 aaaa 0000 bbbb End Step	(1 - 32)
00 02	Oaaa aaaa Arpeggio Name 1	(32 - 127)
00 03	Oaaa aaaa Arpeggio Name 2 	(32 - 127)
00 04	Oaaa aaaa Arpeggio Name 3 	(32 - 127)
00 05 	Oaaa aaaa Arpeggio Name 4 	(32 - 127)
I	Oaaa aaaa Arpeggio Name 5 	(32 - 127)
00 07 	Oaaa aaaa Arpeggio Name 6 	(32 - 127)

00 08	Oaaa aaaa	Arpeggio Name	7	(32 - 127)
00 09	Oaaa aaaa	 Arpeggio Name	8	(32 - 127)
00 0A	 Oaaa aaaa	 Arpeggio Name	9	(32 - 127)
00 0B	 Oaaa aaaa	 Arpeggio Name	10	(32 - 127)
00 0C	Oaaa aaaa	 Arpeggio Name	11	(32 - 127)
00 0D	Oaaa aaaa	 Arpeggio Name	12	(32 - 127)
00 0E	Oaaa aaaa	 Arpeggio Name	13	(32 - 127)
00 OF	Oaaa aaaa	 Arpeggio Name	14	(32 - 127)
00 10	 Oaaa aaaa	 Arpeggio Name	15	(32 - 127)
00 11	 Oaaa aaaa	 Arpeggio Name	16	(32 - 127)
	- 			
00 00 00 12	Total Size			

* Arpeggio Pattern

Ofi	fset Address		Description	
		+		
#	00 00	0000 aaaa		1
		0000 bbbb	Original Note	(0 - 128)
#	00 02	0000 aaaa		
		0000 dddd		(0 - 128)
#		0000 aaaa	_	
		0000 bbbb		(0 - 128)
#	00 06	0000 aaaa		I
		0000 bbbb	Step3 Data	(0 - 128)
#	00 08	0000 aaaa		I
		0000 bbbb	Step4 Data	(0 - 128)
#		0000 aaaa		
		0000 bbbb	Step5 Data	(0 - 128)
#		0000 aaaa		
		0000 bbbb	_	(0 - 128)
#		0000 aaaa		(0 100)
ш		0000 bbbb	_	(0 - 128)
#		0000 aaaa		(0 100)
#		0000 bbbb 0000 aaaa	_	(0 - 128)
#		0000 aaaa 0000 bbbb		(0 - 128)
#		0000 BBBB	_	(0 120)
"			Step10 Data	(0 - 128)
#		0000 aaaa	*	
			Step11 Data	(0 - 128)
#	00 18	0000 aaaa		
		0000 bbbb	Step12 Data	(0 - 128)
#	00 1A	0000 aaaa		I
		0000 bbbb	Step13 Data	(0 - 128)
#	00 1C	0000 aaaa		
			Step14 Data	(0 - 128)
#		0000 aaaa		
			Step15 Data	(0 - 128)
#		0000 aaaa		(0 100)
ш			Step16 Data	(0 - 128)
#		0000 aaaa	Step17 Data	(0 - 128)
#		0000 bbbb 0000 aaaa	-	(0 - 120)
π			Step18 Data	(0 - 128)
#		0000 aaaa	-	
			Step19 Data	(0 - 128)
#		0000 aaaa	_	. , , ,
		0000 bbbb	Step20 Data	(0 - 128)
#	00 2A	0000 aaaa		I
		0000 bbbb	Step21 Data	(0 - 128)
#	00 2C	0000 aaaa		I
			Step22 Data	(0 - 128)
#		0000 aaaa		I
		0000 bbbb	Step23 Data	(0 - 128)

#	00 30	0000 aaaa	1
		0000 bbbb Step24 Data	(0 - 128)
#	00 32	0000 aaaa	I
		0000 bbbb Step25 Data	(0 - 128)
#	00 34	0000 aaaa	
		0000 bbbb Step26 Data	(0 - 128)
#	00 36	0000 aaaa	
1		0000 bbbb Step27 Data	(0 - 128)
#		0000 aaaa	
1		0000 bbbb Step28 Data	(0 - 128)
#		0000 aaaa	
		0000 bbbb Step29 Data	(0 - 128)
#		0000 aaaa	
		0000 bbbb Step30 Data	(0 - 128)
#		0000 aaaa	
1		0000 bbbb Step31 Data	(0 - 128)
#		0000 aaaa	
		0000 bbbb Step32 Data	(0 - 128)
		+	
00	UU UU 42	Total Size	
+			+

* Rhythm Group

Offset Address		Description	
	-+		
00 00	Oaaa aaaa	Rhythm Group Name 1	(32 - 127)
00 01	Oaaa aaaa	Rhythm Group Name 2	(32 - 127)
00 02	Oaaa aaaa	Rhythm Group Name 3	(32 - 127)
00 03	Oaaa aaaa	Rhythm Group Name 4	(32 - 127)
00 04	Oaaa aaaa	Rhythm Group Name 5	(32 - 127)
00 05	Oaaa aaaa	 Rhythm Group Name 6	(32 - 127)
00 06	Oaaa aaaa	 Rhythm Group Name 7	(32 - 127)
00 07	Oaaa aaaa	Rhythm Group Name 8	(32 - 127)
00 08	 Oaaa aaaa	 Rhythm Group Name 9	(32 - 127)
00 09	Oaaa aaaa	 Rhythm Group Name 10	(32 - 127)
00 0A	 Oaaa aaaa	 Rhythm Group Name 11	(32 - 127)
00 OB	 Oaaa aaaa	 Rhythm Group Name 12	(32 - 127)
00 OC	 Oaaa aaaa	 Rhythm Group Name 13	(32 - 127)
00 OD	Oaaa aaaa	 Rhythm Group Name 14	(32 - 127)
00 OE	Oaaa aaaa	 Rhythm Group Name 15	(32 - 127)
00 OF	Oaaa aaaa	 Rhythm Group Name 16 	(32 - 127)
00 10	-+ Oaaa aaaa	+ Recommended Rhythm Bank Select MSB	(0 - 127)
		Recommended Rhythm Bank Select LSB	
		Recommended Rhythm Program Number	
00 13	-+	+ (reserve) <*>	
00 14	Oaaa aaaa	(reserve) <*>	
		Pad 1 Velocity	(1 - 127)
00 16	0000 000a	(reserve) <*>	
# 00 17	0000 aaaa	I	
	0000 bbbb	Pad 1 Rhythm Pattern Number	(0 - 255)
00 19	Oaaa aaaa	(reserve) <*>	
00 1A	Oaaa aaaa	(reserve) <*>	
00 1B	Oaaa aaaa	Pad 2 Velocity	(1 - 127)
00 1C	0000 000a	(reserve) <*>	
# 00 1D	0000 aaaa	I	
	0000 bbbb	Pad 2 Rhythm Pattern Number	(0 - 255)
00 1F	Oaaa aaaa	(reserve) <*>	
00 20	Oaaa aaaa	(reserve) <*>	
		35	

# 00 :	23 25 26 27 28 29 28 20 20 21 22 25	0000 aaaa 0000 bbbb 0aaa aaaa 0aaa aaaa 0aaa aaaa 0000 000a 0000 aaaa 0000 bbbb 0aaa aaaa 0aaa aaaa	Pad 3 Rhythm Pattern Number (reserve) <*> (reserve) <*> Pad 4 Velocity (reserve) <*> Pad 4 Rhythm Pattern Number (reserve) <*> (reserve) <*> Pad 5 Velocity	(1 - 127)
	25 26 27 28 29 28 22 2D 2E 2F	0000 bbbb 0aaa aaaa 0aaa aaaa 0aaa aaaa 0000 000a 0000 aaaa 0000 bbbb 0aaa aaaa 0aaa aaaa	Pad 3 Rhythm Pattern Number (reserve) <*> (reserve) <*> Pad 4 Velocity (reserve) <*> Pad 4 Rhythm Pattern Number (reserve) <*> (reserve) <*> Pad 5 Velocity	(1 - 127)
00 : 00 : 1	25 26 27 28 29 2B 2C 2D 2E 2F	Oaaa aaaa Oaaa aaaa Oaaa aaaa OOOO OOOO	<pre>(reserve) <*> (reserve) <*> Pad 4 Velocity (reserve) <*> Pad 4 Rhythm Pattern Number (reserve) <*> (reserve) <*> Pad 5 Velocity</pre>	(1 - 127)
00 : 00 : 1	26 27 28 29 2B 2C 2D 2E 2F	Oaaa aaaa Oaaa aaaa OOOO OOOa OOOO aaaa OOOO bbbb Oaaa aaaa Oaaa aaaa	<pre>(reserve) <*> Pad 4 Velocity (reserve) <*> Pad 4 Rhythm Pattern Number (reserve) <*> (reserve) <*> Pad 5 Velocity</pre>	(0 - 255)
00 : 00 : 1 00 : 1 1 1 1 1 1 1 1 1	27 28 29 2B 2C 2D 2E 2F	Oaaa aaaa OOOO OOOO OOOO bbbb Oaaa aaaa Oaaa aaaa Oaaa aaaa	Pad 4 Velocity (reserve) <*> Pad 4 Rhythm Pattern Number (reserve) <*> (reserve) <*> Pad 5 Velocity	(0 - 255)
00 : 00 :	28 29 2B 2C 2D 2E 2F	0000 000a 0000 aaaa 0000 bbbb 0aaa aaaa 0aaa aaaa	<pre>(reserve) <*> Pad 4 Rhythm Pattern Number (reserve) <*> (reserve) <*> Pad 5 Velocity</pre>	(0 - 255)
# 00 : 1 00 : 1 00 : 2	29 2B 2C 2D 2E 2F	0000 aaaa 0000 bbbb 0aaa aaaa 0aaa aaaa	Pad 4 Rhythm Pattern Number (reserve) <*> (reserve) <*> Pad 5 Velocity	1
 00 :	2B 2C 2D 2E 2F	0000 bbbb 0aaa aaaa 0aaa aaaa	Pad 4 Rhythm Pattern Number (reserve) <*> (reserve) <*> Pad 5 Velocity	1
00 2	2B 2C 2D 2E 2F	Oaaa aaaa Oaaa aaaa	(reserve) <*> (reserve) <*> Pad 5 Velocity	1
00 2	2C 2D 2E 2F	Oaaa aaaa Oaaa aaaa	(reserve) <*> Pad 5 Velocity	(1 - 127)
	2D 2E 2F	Oaaa aaaa	Pad 5 Velocity	(1 - 127)
1 00 :	2E 2F		-	(1 - 127)
	2F	0000 000a		(+ +4/)
00 2			(reserve) <*>	
# 00 :		0000 aaaa		
1	1	0000 bbbb	Pad 5 Rhythm Pattern Number	(0 - 255)
00	31	Oaaa aaaa	(reserve) <*>	
00	32	Oaaa aaaa	(reserve) <*>	
00	33	Oaaa aaaa	Pad 6 Velocity	(1 - 127)
00	34	0000 000a	(reserve) <*>	
# 00 3	35	0000 aaaa		
1		0000 bbbb	Pad 6 Rhythm Pattern Number	(0 - 255)
00	37	Oaaa aaaa	(reserve) <*>	
00	38	Oaaa aaaa	(reserve) <*>	
00	39	Oaaa aaaa	Pad 7 Velocity	(1 - 127)
00	3A	0000 000a	(reserve) <*>	
# 00 3	3B	0000 aaaa		
1	- 1	0000 bbbb	Pad 7 Rhythm Pattern Number	(0 - 255)
00	3D	Oaaa aaaa	(reserve) <*>	1
00	3E	Oaaa aaaa	(reserve) <*>	1
00	3F	Oaaa aaaa	Pad 8 Velocity	(1 - 127)
00	40	0000 000a	(reserve) <*>	I
# 00	41	0000 aaaa		1
1		0000 bbbb	Pad 8 Rhythm Pattern Number	(0 - 255)
00	43	Oaaa aaaa	(reserve) <*>	
00	44	Oaaa aaaa	(reserve) <*>	1
1	:	I		I
# 00	71	0000 aaaa		
I			(reserve) <*>	I
00 00 00		Total Size		

* Vocal Effect

Offset	I		i
Address		Description	1
00 00	Oaaa aaaa	Vocal Effect Name 1	(32 - 127)
00 01	 Oaaa aaaa	Vocal Effect Name 2	(32 - 127)
00 02	 Oaaa aaaa 	Vocal Effect Name 3	(32 - 127)
00 03	ı Oaaa aaaa 	Vocal Effect Name 4	(32 - 127)
00 04	 Oaaa aaaa 	Vocal Effect Name 5	(32 - 127)
00 05	 Oaaa aaaa 	Vocal Effect Name 6	(32 - 127)
00 06	 Oaaa aaaa 	Vocal Effect Name 7	(32 - 127)
00 07	Oaaa aaaa 	Vocal Effect Name 8	(32 - 127)
00 08	ı Oaaa aaaa 	Vocal Effect Name 9	(32 - 127)
00 09	ı Oaaa aaaa 	Vocal Effect Name 10	(32 - 127)
00 0A	Oaaa aaaa 	Vocal Effect Name 11	(32 - 127)
00 OB	 Oaaa aaaa 	 Vocal Effect Name 12 	(32 - 127)
00 OC	0000 00aa	+ Vocal Effect Type	(0 - 1)
00 OD	 0000 000a	 (reserve) <*>	Vocoder, Auto-Pitch
	+	 	

		Recommended Patch Bank Select MSB (0 - 127)
		Recommended Patch Bank Select LSB (0 - 127) Recommended Patch Program Number (0 - 127)
1	Vada adaa +	Recommended Fatch Flogram Number (0 = 127)
00 11	Oaaa aaaa	Level (0 - 127)
	Oaaa aaaa	
		L64 - 63R
00 13	Oaaa aaaa	(reserve) <*>
1	1	I
00 14	Oaaa aaaa	(reserve) <*>
1	I	1
00 15	0000 0aaa	(reserve) <*>
1	I	
	+	
00 16	0000 0aaa	Auto Pitch Type (0 - 4)
	I	SOFT, HARD, ELECTRIC1, ELECTRIC2, ROBOT
00 17	0000 000a	Auto Pitch Scale (0 - 1)
		CHROMATIC, Maj (Min)
00 18	UUUa aaaa	Auto Pitch Key (0 - 23)
		C, Db, D, Eb, E, F, F#, G,
		Ab, A, Bb, B, Cm, C#m, Dm, D#m, Em, Fm, F#m, Gm, G#m, Am, Bbm, Bm
1 00 19 1	0000 2222 1	Auto Pitch Note (0 - 11)
1 00 13 1	0000 aaaa	C, C#, D, D#, E, F,
	i	F#, G, G#, A, A#, B
00 1A I	000a aaaa l	Auto Pitch Gender (0 - 20)
		-10 - +10
00 1B	0000 00aa	Auto Pitch Octave (0 - 2)
1	1	-1 - +1
00 1C	Oaaa aaaa	Auto Pitch Balance (0 - 100)
1	I	D100:0W - D0:100W
	+	
00 1D	0000 00aa	Vocoder Envelope (0 - 2)
	I	SHARP, SOFT, LONG
		Vocoder Mic Sens (0 - 127)
		Vocoder Synth Level (0 - 127)
		Vocoder Mic Mix Level (0 - 127)
00 21	0000 aaaa	Vocoder Mic HPF (0 - 13)
		BYPASS,
		1000, 1250, 1600, 2000, 2500,
		3150, 4000, 5000, 6300, 8000, 10000, 12500, 16000 [Hz]
	ا +	10000, 12300, 16000 [HZ]
00 22	Oaaa aaaa	Part Level (0 - 127)
00 00 00 23	Total Size	
+		+

* Patch Common

Patch Common			
Offset Address		Description	
00 00	Oaaa aaaa	Patch Name 1	(32 - 127)
	I	I	32 - 127 [ASCII]
00 01	Oaaa aaaa	Patch Name 2	(32 - 127)
00.00			32 - 127 [ASCII]
00 02	Uaaa aaaa	Patch Name 3	(32 - 127)
00.03	1 0	Datah Nama 4	32 - 127 [ASCII] (32 - 127)
00 03	Vada dada	Patch Name 4	(32 - 127) 32 - 127 [ASCII]
00 04	I Naaa aaaa	Patch Name 5	(32 - 127)
00 01		l raceir Name 3	32 - 127 [ASCII]
00 05	l Oaaa aaaa	Patch Name 6	(32 - 127)
	1		32 - 127 [ASCII]
00 06	Oaaa aaaa	Patch Name 7	(32 - 127)
	I	I	32 - 127 [ASCII]
00 07	Oaaa aaaa	Patch Name 8	(32 - 127)
	I	l	32 - 127 [ASCII]
00 08	Oaaa aaaa	Patch Name 9	(32 - 127)
	1	l	32 - 127 [ASCII]
00 09	Oaaa aaaa	Patch Name 10	(32 - 127)
	1	l	32 - 127 [ASCII]
00 0A	Oaaa aaaa	Patch Name 11	(32 - 127)
00.0-			32 - 127 [ASCII]
00 OB	Uaaa aaaa	Patch Name 12	(32 - 127)
00 00	1 0000 0000	l Datab Catagory	32 - 127 [ASCII]
00 00	vaaa aaaa	Patch Category	(0 - 127)

			+
	00 OD	1 0000 000	a (reserve) <*>
		-+	+
1	00 00		a Patch Level (0 - 127)
	00 OF	Uaaa aaa	a Patch Pan (0 - 127)
			L64 - 63R
	00 10	0000 000	a Patch Priority (0 - 1)
I		1	LAST, LOUDEST
i	00 11	I Naaa aaa	a Patch Coarse Tune (16 - 112)
	00 11	Vaaa aaa	
I			-48 - +48
	00 12	Oaaa aaa	a Patch Fine Tune (14 - 114)
			-50 - +50
I	00 13	I 0000 0aa	a Octave Shift (61 - 67)
i		1	-3 - +3
	00 14		
I	00 14	0000 00a	a Stretch Tune Depth (0 - 3)
			OFF, 1 - 3
	00 15	Oaaa aaa	a Analog Feel (0 - 127)
	00 16	0000 000	a Mono/Poly (0 - 1)
ı		1	MONO, POLY
	00 17	1 0000 000	
	00 17	1 0000 000	a Legato Switch (0 - 1)
			OFF, ON
1	00 18	0000 000	a Legato Retrigger (0 - 1)
		1	OFF, ON
I	00 19	1 0000 000	a Portamento Switch (0 - 1)
I			OFF, ON
1	00 1-	1 0000 000	
I	UU 1A	1 0000 000	a Portamento Mode (0 - 1)
		1	NORMAL, LEGATO
	00 1B	0000 000	a Portamento Type (0 - 1)
		1	RATE, TIME
I	00 1c	1 0000 000	a Portamento Start (0 - 1)
i.	0	1	PITCH, NOTE
1	00 1-	1 0	
1			a Portamento Time (0 - 127)
	00 1E	0000 000	a (reserve) <*>
#	00 1F	0000 aaa	a
		0000 bbb	b (reserve) <*>
	00 21	0000 000	a (reserve) <*>
		-+	+
1	00 22	l Naaa aaa	a Cutoff Offset (1 - 127)
1	00 22	1 0444 444	-63 - +63
	00 00	1	
	00 23	Uaaa aaa	a Resonance Offset (1 - 127)
		1	-63 - +63
	00 24	Oaaa aaa	a Attack Time Offset (1 - 127)
			-63 - +63
1	00 25	Oaaa aaa	a Release Time Offset (1 - 127)
	00 23		
I	00 25	I	-63 - +63
 		 0aaa aaa	
 		 Oaaa aaa	Velocity Sens Offset (1 - 127)
 		Oaaa aaa	
 	00 26	 -+	a Velocity Sens Offset (1 - 127) -63 - +63
 	00 26	 -+	a Velocity Sens Offset (1 - 127) -63 - +63 -+
 	00 26	 -+	a Velocity Sens Offset (1 - 127) -63 - +63 -+
 	00 26	 -+	a Velocity Sens Offset (1 - 127) -63 - +63 -+
 	00 26	 -+	a Velocity Sens Offset (1 - 127) -63 - +63 -+
 	00 26	 -+	a Velocity Sens Offset (1 - 127) -63 - +63
 	00 26	 -+	a Velocity Sens Offset (1 - 127) -63 - +63
 	00 26	 -+	a Velocity Sens Offset
 	00 26	0000 aaa	a Velocity Sens Offset
 	00 26 00 27 00 28 00 29	0000 aaa 	a Velocity Sens Offset
 	00 26 00 27 00 28 00 29	0000 aaa 	a Velocity Sens Offset
 	00 26 00 27 00 28 00 29 00 2A	0000 aaa 0000 aaa 	a Velocity Sens Offset
 	00 26 00 27 00 28 00 29	0000 aaa 0000 aaa 	a Velocity Sens Offset
 	00 26 00 27 00 28 00 29 00 2A	0000 aaa 0000 aaa 	a Velocity Sens Offset
, 	00 26 00 27 00 28 00 29 00 2A	0000 aaa 0000 aaa 	a Velocity Sens Offset
 	00 26 00 27 00 28 00 29 00 2A	0000 aaa 0000 aaa 	a Velocity Sens Offset
 	00 26 00 27 00 28 00 29 00 2A	0000 aaa 0000 aaa 	a Velocity Sens Offset
 	00 26 00 27 00 28 00 29 00 2A 00 2B	0000 aaa 00aa aaaa 00aa aaa a Velocity Sens Offset	
	00 26 00 27 00 28 00 29 00 2A 00 2B	0000 aaa 00aa aaaa 00aa aaa a Velocity Sens Offset	
	00 26 00 27 00 28 00 29 00 2A 00 2B	0000 aaa 00aa aaaa 00aa aaa a Velocity Sens Offset	
 	00 26 00 27 00 28 00 29 00 2A 00 2B	0000 aaa 00aa aaaa 00aa aaa a Velocity Sens Offset	
	00 26 00 27 00 28 00 29 00 2A 00 2B	0000 aaa 00aa aaaa 00aa aaa a Velocity Sens Offset	
	00 26 00 27 00 28 00 29 00 2A 00 2B	0000 aaa 00aa aaaa 00aa aaa a Velocity Sens Offset	
	00 26 00 27 00 28 00 29 00 2A 00 2B	0000 aaa 00aa aaaa 00aa aaa a Velocity Sens Offset	
	00 26 00 27 00 28 00 29 00 2A 00 2B	0000 aaa 00aa aaaa 00aa aaa a Velocity Sens Offset	
	00 26 00 27 00 28 00 29 00 2A 00 2B	0000 aaa 00aa aaaa 00aa aaa a Velocity Sens Offset	
	00 26 00 27 00 28 00 29 00 2A 00 2B	0000 aaa 00aa aaaa 00aa aaa a Velocity Sens Offset	
	00 26 00 27 00 28 00 29 00 2A 00 2B	0000 aaa 00aa aaaa 00aa aaa a Velocity Sens Offset	
	00 26 00 27 00 28 00 29 00 2A 00 2B	0000 aaa 00000 0000 0000 0000 0000 0000 0000 0000 0000 00	a Velocity Sens Offset
	00 26 00 27 00 28 00 29 00 2A 00 2B	0000 aaa 00000 0000 0000 0000 0000 0000 0000 0000 0000 00	a Velocity Sens Offset
	00 26 00 27 00 28 00 29 00 2A 00 2B	0000 aaa 00000 0000 0000 0000 0000 0000 0000 0000 0000 00	a Velocity Sens Offset
	00 26 00 27 00 28 00 29 00 2A 00 2B	0000 aaa 00000 00000 00000 00000 00000 00000 00000 00000 00	a Velocity Sens Offset
	00 26 00 27 00 28 00 29 00 2A 00 2B	0000 aaa 00000 00000 00000 00000 00000 00000 00000 00000 00	a Velocity Sens Offset
	00 26 00 27 00 28 00 29 00 2A 00 2B	0000 aaa 00000 00000 00000 00000 00000 00000 00000 00000 00	a Velocity Sens Offset

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PIT-LF02, TVF-LF01, TVF-LF02, |
                                        TVA-LF01, TVA-LF02, PAN-LF01, |
                                      PAN-LFO2, LFO1-RATE, LFO2-RATE, |
                                           PIT-ATK, PIT-DCY, PIT-REL, |
                                           TVF-ATK, TVF-DCY, TVF-REL, |
                                           TVA-ATK, TVA-DCY, TVA-REL,
                                    TMT, FXM, MFX1, MFX2, MFX3, MFX4 |
00 2F | Oaaa aaaa | Matrix Control 1 Sens 2
                                                          (1 - 127) |
                                                          -63 - +63 |
00 30 | 00aa aaaa | Matrix Control 1 Destination 3
                                                            (0 - 33) |
                                       OFF, PCH, CUT, RES, LEV, PAN, |
                                             DRY, CHO, REV, PIT-LFO1, |
                                        PIT-LFO2, TVF-LFO1, TVF-LFO2, |
                                        TVA-LF01, TVA-LF02, PAN-LF01, |
                                      PAN-LFO2, LFO1-RATE, LFO2-RATE,
                                           PIT-ATK, PIT-DCY, PIT-REL, |
                                           TVF-ATK, TVF-DCY, TVF-REL, |
                                           TVA-ATK, TVA-DCY, TVA-REL, |
                                    TMT, FXM, MFX1, MFX2, MFX3, MFX4
00 31 | Oaaa aaaa | Matrix Control 1 Sens 3
                                                           (1 - 127) |
                                                           -63 - +63 I
00 32 | 00aa aaaa | Matrix Control 1 Destination 4
                                                           (0 - 33) |
                                        OFF, PCH, CUT, RES, LEV, PAN, |
                                            DRY, CHO, REV, PIT-LFO1, |
                                        PIT-LFO2, TVF-LFO1, TVF-LFO2, |
                                        TVA-LF01, TVA-LF02, PAN-LF01, |
                                      PAN-LFO2, LFO1-RATE, LFO2-RATE, |
                                           PIT-ATK, PIT-DCY, PIT-REL, |
                                           TVF-ATK, TVF-DCY, TVF-REL, |
                                           TVA-ATK, TVA-DCY, TVA-REL, |
                                    TMT, FXM, MFX1, MFX2, MFX3, MFX4
00 33 | Oaaa aaaa | Matrix Control 1 Sens 4
                                                          (1 - 127) |
                                                          -63 - +63 I
                          _____
00 34 | Oaaa aaaa | Matrix Control 2 Source
                                                          (0 - 109)
                                      OFF, CC01 - CC31, CC33 - CC95, |
                                    BEND, AFT, SYS1 - SYS4, VELOCITY, |
                                       KEYFOLLOW, TEMPO, LF01, LF02, |
                                         PIT-ENV, TVF-ENV, TVA-ENV |
00 35 | 00aa aaaa | Matrix Control 2 Destination 1
                                                     (0 - 33) |
                                       OFF, PCH, CUT, RES, LEV, PAN, |
                                            DRY, CHO, REV, PIT-LFO1, |
                                        PIT-LFO2, TVF-LFO1, TVF-LFO2, |
                                        TVA-LF01, TVA-LF02, PAN-LF01, |
                                      PAN-LFO2, LFO1-RATE, LFO2-RATE, |
                                           PIT-ATK, PIT-DCY, PIT-REL, |
                                           TVF-ATK, TVF-DCY, TVF-REL, |
                                          TVA-ATK, TVA-DCY, TVA-REL, |
                                    TMT, FXM, MFX1, MFX2, MFX3, MFX4
00 36 | Oaaa aaaa | Matrix Control 2 Sens 1
                                                           (1 - 127) |
                                                           -63 - +63 |
00 37 | 00aa aaaa | Matrix Control 2 Destination 2
                                                           (0 - 33)
                                        OFF, PCH, CUT, RES, LEV, PAN, |
                                            DRY, CHO, REV, PIT-LFO1, |
                                        PIT-LFO2, TVF-LFO1, TVF-LFO2, |
                                        TVA-LF01, TVA-LF02, PAN-LF01, |
                                      PAN-LFO2, LFO1-RATE, LFO2-RATE, |
                                          PIT-ATK, PIT-DCY, PIT-REL, |
                                           TVF-ATK, TVF-DCY, TVF-REL, |
                                          TVA-ATK, TVA-DCY, TVA-REL, |
                                    TMT, FXM, MFX1, MFX2, MFX3, MFX4 |
00 38 | Oaaa aaaa | Matrix Control 2 Sens 2
                                                           (1 - 127)
                                                           -63 - +63 |
00 39 | 00aa aaaa | Matrix Control 2 Destination 3
                                                            (0 - 33) |
                                       OFF, PCH, CUT, RES, LEV, PAN, |
                                            DRY, CHO, REV, PIT-LFO1, |
                                        PIT-LFO2, TVF-LFO1, TVF-LFO2, |
                                        TVA-LF01, TVA-LF02, PAN-LF01, |
                                      PAN-LFO2, LFO1-RATE, LFO2-RATE, |
                                          PIT-ATK, PIT-DCY, PIT-REL, |
                                           TVF-ATK, TVF-DCY, TVF-REL, |
                                          TVA-ATK, TVA-DCY, TVA-REL, |
                                    TMT, FXM, MFX1, MFX2, MFX3, MFX4 |
00 3A | Oaaa aaaa | Matrix Control 2 Sens 3
                                                           (1 - 127)
                                                           -63 - +63 |
00 3B | 00aa aaaa | Matrix Control 2 Destination 4
                                                           (0 - 33)
                                        OFF, PCH, CUT, RES, LEV, PAN, |
                                             DRY, CHO, REV, PIT-LF01, |
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PIT-LF02, TVF-LF01, TVF-LF02, |
                                       TVA-LF01, TVA-LF02, PAN-LF01, |
                                      PAN-LFO2, LFO1-RATE, LFO2-RATE, |
                                          PIT-ATK, PIT-DCY, PIT-REL, |
                                          TVF-ATK, TVF-DCY, TVF-REL, |
                                          TVA-ATK, TVA-DCY, TVA-REL, |
                                    TMT, FXM, MFX1, MFX2, MFX3, MFX4 |
00 3C | Oaaa aaaa | Matrix Control 2 Sens 4
                                                          (1 - 127) |
                                                         -63 - +63 |
     1
00 3D | Oaaa aaaa | Matrix Control 3 Source
                                                          (0 - 109) I
                                      OFF, CC01 - CC31, CC33 - CC95, |
                                    BEND, AFT, SYS1 - SYS4, VELOCITY, |
                                       KEYFOLLOW, TEMPO, LF01, LF02, |
                                         PIT-ENV, TVF-ENV, TVA-ENV |
00 3E | 00aa aaaa | Matrix Control 3 Destination 1
                                                    (0 - 33) |
                                       OFF, PCH, CUT, RES, LEV, PAN, |
                                            DRY, CHO, REV, PIT-LFO1, |
                                       PIT-LFO2, TVF-LFO1, TVF-LFO2, |
                                       TVA-LF01, TVA-LF02, PAN-LF01, |
                                      PAN-LFO2, LFO1-RATE, LFO2-RATE, |
                                          PIT-ATK, PIT-DCY, PIT-REL,
                                          TVF-ATK, TVF-DCY, TVF-REL, |
                                          TVA-ATK, TVA-DCY, TVA-REL, |
                                    TMT, FXM, MFX1, MFX2, MFX3, MFX4
00 3F | Oaaa aaaa | Matrix Control 3 Sens 1
                                                          (1 - 127) |
                                                          -63 - +63 |
00 40 | 00aa aaaa | Matrix Control 3 Destination 2
                                                           (0 - 33) |
                                       OFF, PCH, CUT, RES, LEV, PAN, |
                                            DRY, CHO, REV, PIT-LFO1, |
                                       PIT-LFO2, TVF-LFO1, TVF-LFO2, |
                                       TVA-LF01, TVA-LF02, PAN-LF01,
                                      PAN-LFO2, LFO1-RATE, LFO2-RATE, |
                                          PIT-ATK, PIT-DCY, PIT-REL, |
                                          TVF-ATK, TVF-DCY, TVF-REL, |
                                          TVA-ATK, TVA-DCY, TVA-REL, |
                                    TMT, FXM, MFX1, MFX2, MFX3, MFX4 |
00 41 | Oaaa aaaa | Matrix Control 3 Sens 2
                                                          (1 - 127) |
                                                          -63 - +63 |
00 42 | 00aa aaaa | Matrix Control 3 Destination 3
                                                           (0 - 33) |
                                       OFF, PCH, CUT, RES, LEV, PAN, |
                                            DRY, CHO, REV, PIT-LFO1, |
                                       PIT-LFO2, TVF-LFO1, TVF-LFO2, |
                                       TVA-LF01, TVA-LF02, PAN-LF01, |
                                      PAN-LFO2, LFO1-RATE, LFO2-RATE, |
                                          PIT-ATK, PIT-DCY, PIT-REL, |
                                          TVF-ATK, TVF-DCY, TVF-REL, |
                                          TVA-ATK, TVA-DCY, TVA-REL, |
                                   TMT, FXM, MFX1, MFX2, MFX3, MFX4
00 43 | Oaaa aaaa | Matrix Control 3 Sens 3
                                                          (1 - 127) |
                                                          -63 - +63 |
00 44 | 00aa aaaa | Matrix Control 3 Destination 4
                                                           (0 - 33)
                                       OFF, PCH, CUT, RES, LEV, PAN, |
                                            DRY, CHO, REV, PIT-LFO1, |
                                       PIT-LFO2, TVF-LFO1, TVF-LFO2, |
                                       TVA-LF01, TVA-LF02, PAN-LF01, |
                                      PAN-LFO2, LFO1-RATE, LFO2-RATE, |
                                          PIT-ATK, PIT-DCY, PIT-REL, |
                                          TVF-ATK, TVF-DCY, TVF-REL, |
                                          TVA-ATK, TVA-DCY, TVA-REL, |
                                   TMT, FXM, MFX1, MFX2, MFX3, MFX4 |
00 45 | Oaaa aaaa | Matrix Control 3 Sens 4
                                                          (1 - 127)
                                                          -63 - +63 I
 -----|
00 46 | Oaaa aaaa | Matrix Control 4 Source
                                                          (0 - 109) |
                                      OFF, CC01 - CC31, CC33 - CC95, |
                                    BEND, AFT, SYS1 - SYS4, VELOCITY, |
                                       KEYFOLLOW, TEMPO, LFO1, LFO2, |
                                         PIT-ENV, TVF-ENV, TVA-ENV |
00 47 | 00aa aaaa | Matrix Control 4 Destination 1 (0 - 33) |
                                       OFF, PCH, CUT, RES, LEV, PAN, |
                                            DRY, CHO, REV, PIT-LFO1, |
                                        PIT-LFO2, TVF-LFO1, TVF-LFO2, |
                                       TVA-LF01, TVA-LF02, PAN-LF01, |
                                      PAN-LFO2, LFO1-RATE, LFO2-RATE, |
                                          PIT-ATK, PIT-DCY, PIT-REL, |
                                          TVF-ATK, TVF-DCY, TVF-REL, |
                                          TVA-ATK, TVA-DCY, TVA-REL, |
```

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TMT, FXM, MFX1, MFX2, MFX3, MFX4
       00 48 | 0aaa aaaa | Matrix Control 4 Sens 1
                                                                 (1 - 127) |
                                                                  -63 - +63 |
       00 49 | 00aa aaaa | Matrix Control 4 Destination 2
                                                                  (0 - 33) |
                                               OFF, PCH, CUT, RES, LEV, PAN, |
                                                    DRY, CHO, REV, PIT-LFO1,
                                               PIT-LFO2, TVF-LFO1, TVF-LFO2,
                                               TVA-LF01, TVA-LF02, PAN-LF01, |
                                             PAN-LFO2, LFO1-RATE, LFO2-RATE, |
                                                  PIT-ATK, PIT-DCY, PIT-REL, |
                                                  TVF-ATK, TVF-DCY, TVF-REL, |
                                                  TVA-ATK, TVA-DCY, TVA-REL, |
                                           TMT, FXM, MFX1, MFX2, MFX3, MFX4
       00 4A | Oaaa aaaa | Matrix Control 4 Sens 2
                                                                  (1 - 127) \mid
                                                                  -63 - +63 I
       00 4B | 00aa aaaa | Matrix Control 4 Destination 3
                                                                  (0 - 33) |
                                              OFF, PCH, CUT, RES, LEV, PAN, |
                                                    DRY, CHO, REV, PIT-LFO1, |
                                               PIT-LFO2, TVF-LFO1, TVF-LFO2, |
                                               TVA-LF01, TVA-LF02, PAN-LF01, |
                                             PAN-LFO2, LFO1-RATE, LFO2-RATE, |
                                                  PIT-ATK, PIT-DCY, PIT-REL, |
                                                  TVF-ATK, TVF-DCY, TVF-REL, |
                                                  TVA-ATK, TVA-DCY, TVA-REL, |
                                           TMT, FXM, MFX1, MFX2, MFX3, MFX4
       00 4C | 0aaa aaaa | Matrix Control 4 Sens 3
                                                                  (1 - 127) |
                                                                  -63 - +63 |
       00 4D | 00aa aaaa | Matrix Control 4 Destination 4
                                                                  (0 - 33) |
                                               OFF, PCH, CUT, RES, LEV, PAN, |
                                                    DRY, CHO, REV, PIT-LFO1, |
                                               PIT-LFO2, TVF-LFO1, TVF-LFO2, |
                                               TVA-LF01, TVA-LF02, PAN-LF01, |
                                             PAN-LFO2, LFO1-RATE, LFO2-RATE, |
                                                  PIT-ATK, PIT-DCY, PIT-REL, |
                                                  TVF-ATK, TVF-DCY, TVF-REL, |
                                                  TVA-ATK, TVA-DCY, TVA-REL, |
                                           TMT, FXM, MFX1, MFX2, MFX3, MFX4 |
       00 4E | 0aaa aaaa | Matrix Control 4 Sens 4
                                                                  (1 - 127) |
                                                                  -63 - +63 |
       00 4F | 0000 000a | Part Modulation Switch
                                                                    (0 - 1) |
                                                                    OFF, ON |
| 00 00 00 50 | Total Size
 Patch Common MFX
| Offset
    Address |
                               Description
      00 00 | Oaaa aaaa | MFX Type
                                                                   (0 - 80)
       00 01 | 0aaa aaaa | MFX Dry Send Level
                                                                   (0 - 127) |
                                                                   (0 - 127) I
       00 02 | 0aaa aaaa | MFX Chorus Send Level
       00 03 | 0aaa aaaa | MFX Reverb Send Level
                                                                   (0 - 127) |
      00 04 | 0000 00aa | MFX Output Assign <*>
                                                          A, ---, ---, |
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00 05 | Oaaa aaaa | MFX Control 1 Source (0 - 101)OFF, CC01 - CC31, CC33 - CC95, | BEND, AFT, SYS1 - SYS4 | 00 06 | Oaaa aaaa | MFX Control 1 Sens (1 - 127)-63 - +63 I 00 07 | 0aaa aaaa | MFX Control 2 Source (0 - 101) I OFF, CC01 - CC31, CC33 - CC95, | BEND, AFT, SYS1 - SYS4 | 00 08 | 0aaa aaaa | MFX Control 2 Sens (1 - 127) | -63 - +63 | 00 09 | 0aaa aaaa | MFX Control 3 Source (0 - 101) | OFF, CC01 - CC31, CC33 - CC95, | BEND, AFT, SYS1 - SYS4 | 00 0A | 0aaa aaaa | MFX Control 3 Sens (1 - 127) | -63 - +63 | (0 - 101) | 00 0B | Oaaa aaaa | MFX Control 4 Source OFF, CC01 - CC31, CC33 - CC95, | BEND, AFT, SYS1 - SYS4 | 00 OC | Oaaa aaaa | MFX Control 4 Sens (1 - 127) | -63 - +63 |

1		L		
1	00 00	. 000a aaaa	MFX Control Assign 1	(0 - 16)
1		0004 4444		OFF, 1 - 16
1				
	00 OE	UUUa aaaa	MFX Control Assign 2	(0 - 16)
1				OFF, 1 - 16
1	00 OF	000a aaaa	MFX Control Assign 3	(0 - 16)
1				OFF, 1 - 16
I	00 10	000a aaaa	MFX Control Assign 4	(0 - 16)
I				OFF, 1 - 16
#	00 11	0000 aaaa		I
		0000 bbbb		I
1		0000 cccc		I
1		0000 dddd	MFX Parameter 1	(12768 - 52768)
1				-20000 - +20000
#	00 15	0000 aaaa		I
		0000 bbbb		I
1		0000 cccc		I
i		0000 dddd	MFX Parameter 2	(12768 - 52768)
i		· 		-20000 - +20000
#	00 19	0000 aaaa		
1 "		0000 aaaa		
1		0000 ccc		·
1			MFX Parameter 3	(12768 - 52768)
1			IIIV LATAMECET 2	-20000 - +20000
1 #	00 15			-20000 - +20000
#		0000 aaaa		
1		0000 bbbb		
1		0000 ccc		
1		0000 dddd	MFX Parameter 4	(12768 - 52768)
				-20000 - +20000
#	00 21	0000 aaaa		
1		0000 bbbb		
		0000 cccc		I
		0000 dddd	MFX Parameter 5	(12768 - 52768)
				-20000 - +20000
#	00 25	0000 aaaa		I
		0000 bbbb		I
1		0000 cccc		I
i		0000 dddd	MFX Parameter 6	(12768 - 52768)
i				-20000 - +20000 I
#	00 29	0000 aaaa		
1 "		0000 aaaa		
		0000 ccc		
1			MFX Parameter 7	(12768 - 52768)
1		0000 aaaa	MFA FALAMETEL /	-20000 - +20000
1 #	00 30	 0000 aaaa		-20000 - +20000
#		0000 aaaa 0000 bbbb		
1				I
		0000 cccc		(1076) - 5076)
			MFX Parameter 8	(12768 - 52768)
				-20000 - +20000
#		0000 aaaa		
1		0000 bbbb		I
		0000 cccc		I
		0000 dddd	MFX Parameter 9	(12768 - 52768)
				-20000 - +20000
#	00 35	0000 aaaa		I
		0000 bbbb		
		0000 cccc		
1		0000 dddd	MFX Parameter 10	(12768 - 52768)
				-20000 - +20000
#	00 39	0000 aaaa		Ī
1		0000 bbbb		·
I		0000 cccc		İ
I			MFX Parameter 11	(12768 - 52768)
1				-20000 - +20000
1#	US 00	0000 aaaa		
1		0000 aaaa		
ı		0000 ccc		
1			MFX Parameter 12	(12768 - 52768)
1			MEN FALAMOURE IZ	-20000 - +20000
1 #	00 41	0000		-20000 - +20000
#		0000 aaaa		
1		0000 bbbb		
1		0000 ccc		/10=10
1		0000 dddd	MFX Parameter 13	(12768 - 52768)
				-20000 - +20000
#		0000 aaaa		
		0000 bbbb		
1		0000 cccc		I
1		0000 dddd	MFX Parameter 14	(12768 - 52768)
				40

1		I	ı	-20000 - +20000
#	00 49	 0000 aaaa		20000 120000 1
1		0000 bbbb		
1		0000 cccc	I	I
1		0000 dddd	MFX Parameter 15	(12768 - 52768)
1		I	l	-20000 - +20000
#		0000 aaaa		I
		0000 bbbb		
		0000 cccc		(10760 50760)
1		, ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	MFX Parameter 16	(12768 - 52768) -20000 - +20000
1#	00 51	 0000 aaaa		20000 120000 1
1		0000 bbbb		
Ì		0000 cccc	I	İ
		0000 dddd	MFX Parameter 17	(12768 - 52768)
		I	l	-20000 - +20000
#		0000 aaaa		I
		0000 bbbb		
1		0000 cccc	 MFX Parameter 18	(12768 - 52768)
1		1	MFX FATAMETEL 10	-20000 - +20000
1#	00 59	 0000 aaaa		1
		0000 bbbb		·
		0000 cccc	l	I
		0000 dddd	MFX Parameter 19	(12768 - 52768)
		I		-20000 - +20000
#		0000 aaaa		
		0000 bbbb		
1		0000 cccc	 MFX Parameter 20	(12768 - 52768)
1		1	MFX Falametel 20	-20000 - +20000
#	00 61	' 0000 aaaa		1
		0000 bbbb		·
		0000 cccc	l	I
		0000 dddd	MFX Parameter 21	(12768 - 52768)
1				-20000 - +20000
#		0000 aaaa		
1		0000 bbbb 0000 cccc		l l
1			 MFX Parameter 22	(12768 - 52768)
i			IIII Tarameder 22	-20000 - +20000
#	00 69	0000 aaaa		·
1		0000 bbbb	l	I
1		0000 cccc		I
1		0000 dddd	MFX Parameter 23	(12768 - 52768)
1 #	00 CD	 0000 aaaa		-20000 - +20000
#		0000 aaaa 0000 bbbb		I I
		0000 BBBB		,
i			MFX Parameter 24	(12768 - 52768)
I		l	l	-20000 - +20000
#	00 71	0000 aaaa	l	I
		0000 bbbb		I
		0000 cccc		(1076)
1		0000 dddd 	MFX Parameter 25	(12768 - 52768) -20000 - +20000
#	00 75	 0000 aaaa		-20000 - +20000
1		0000 aaaa		
		0000 cccc		
1		0000 dddd	MFX Parameter 26	(12768 - 52768)
		I		-20000 - +20000
#		0000 aaaa		I
		0000 bbbb		
I		0000 cccc	 MFX Parameter 27	(12768 - 52768)
l l		i vvvv daad I	HEA FALANGUEL 2/	-20000 - +20000
#	00 7D	 0000 aaaa		10000
1		0000 bbbb		
1		0000 cccc	l	1
1		0000 dddd	MFX Parameter 28	(12768 - 52768)
1		I	I	-20000 - +20000
#		0000 aaaa		
1		0000 bbbb		
I I		0000 dddd	 MFX Parameter 29	(12768 - 52768)
		, 5556 aaaa 		-20000 - +20000
#	01 05	 0000 aaaa		
		0000 bbbb		ĺ
				13

1		0000 cccc	I
		0000 dddd MFX Parameter 30	(12768 - 52768)
			-20000 - +20000
#	01 09	0000 aaaa	1
		0000 bbbb	1
		0000 cccc	1
1		0000 dddd MFX Parameter 31	(12768 - 52768)
1			-20000 - +20000
#	01 0D	0000 aaaa	1
1		dddd 0000	1
1		0000 cccc	1
1		0000 dddd MFX Parameter 32	(12768 - 52768)
1			-20000 - +20000
		-+	
1 00 0	0 01 11	Total Size	i
+		·	+

* Patch Common Chorus

Offset Address		Description	
+ 00 00	0000 aaaa	Chorus Type	
		Chorus Level	(0 - 127
00 02	0000 00aa	Chorus Output Assign <*>	
I	I		A,,,
00 03	0000 00aa	Chorus Output Select	(0 - 2
I	I		MAIN, REV, MAIN+REV
+ + 00 04 I	+ 0000 aaaa		
	0000 dddd		
	0000 cccc		
		Chorus Parameter 1	(12768 - 52768
·			-20000 - +20000
00 08	0000 aaaa		
ĺ	0000 bbbb		
ĺ	0000 cccc		
		Chorus Parameter 2	(12768 - 52768
ĺ	ĺ		-20000 - +20000
00 OC I	0000 aaaa		
I	dddd 0000		
I	0000 cccc		
I	0000 dddd	Chorus Parameter 3	(12768 - 52768
I	I		-20000 - +20000
	0000 aaaa		
	dddd 0000		
	0000 cccc		
	0000 dddd	Chorus Parameter 4	(12768 - 52768
			-20000 - +20000
	0000 aaaa		
	0000 bbbb		
		Chorus Parameter 5	(12768 - 52768
	0000 aaaa	Chorus rarameter 5	-20000 - +20000
ں ا 00 18 ا	0000 aaaa		20000 120000
	0000 bbbb		
	0000 cccc		
		Chorus Parameter 6	(12768 - 52768
i	i		-20000 - +20000
00 1C	0000 aaaa		
I	dddd 0000		
I	0000 cccc		
I	0000 dddd	Chorus Parameter 7	(12768 - 52768
. I			-20000 - +20000
	0000 aaaa		
	0000 bbbb		
	0000 cccc		/10760 5076
		Chorus Parameter 8	(12768 - 52768 -20000 - +20000
	0000 2222		-20000 - +20000
	0000 aaaa 0000 bbbb		
	1 2222 0000		
		Chorus Parameter 9	(12768 - 52768
1	0000 aaaa		-20000 - +20000
ا ا 00 28 ا	0000 aaaa		20000 120000
	0000 dddd		
	0000 cccc		

			1	-20000 - +20000
#	00 2C	0000 aaaa	I	
		0000 bbbb	I	
		0000 cccc	I	
			Chorus Parameter 11	(12768 - 52768)
			I	-20000 - +20000
#	00 30	0000 aaaa	I	
		0000 bbbb	I	
		0000 cccc	I	
		0000 dddd	Chorus Parameter 12	(12768 - 52768)
			I	-20000 - +20000
#	00 34	0000 aaaa	I	
		0000 bbbb	I	
		0000 cccc	I	
		0000 dddd	Chorus Parameter 13	(12768 - 52768)
			I	-20000 - +20000
#	00 38	0000 aaaa	I	
		0000 bbbb		
		0000 cccc	I	
		0000 dddd	Chorus Parameter 14	(12768 - 52768)
			I	-20000 - +20000
#	00 3C	0000 aaaa	I	
		0000 bbbb	I	
		0000 cccc	I	
		0000 dddd	Chorus Parameter 15	(12768 - 52768)
			I	-20000 - +20000
#	00 40	0000 aaaa	I	
		0000 bbbb	I	
		0000 cccc	I	
		0000 dddd	Chorus Parameter 16	(12768 - 52768)
			I	-20000 - +20000
#	00 44	0000 aaaa	I	
		0000 bbbb	I	
		0000 cccc	I	
		0000 dddd	Chorus Parameter 17	(12768 - 52768)
			I	-20000 - +20000
#	00 48	0000 aaaa	I	
		0000 bbbb		
		0000 cccc	I	
		0000 dddd	Chorus Parameter 18	(12768 - 52768)
			I	-20000 - +20000
#	00 4C	0000 aaaa	I	
		0000 bbbb	I	
		0000 cccc	I	
		0000 dddd	Chorus Parameter 19	(12768 - 52768)
			I	-20000 - +20000
#	00 50	0000 aaaa	I	
		0000 bbbb	I	
		0000 cccc	I	
		0000 dddd	Chorus Parameter 20	(12768 - 52768)
			I	-20000 - +20000
		Total Size		

* Patch Common Reverb

Offset				
Addı	ress	Desc	cription	
00	00	0000 aaaa Reverb Ty	rpe	(0 - 5)
0.0		Oaaa aaaa Reverb Le	-	(0 - 127)
0.0	02	0000 00aa Reverb Ou	utput Assign <*>	,
		į		A,,,
# 00	03	0000 aaaa		
		dddd 0000		
		0000 cccc		
		0000 dddd Reverb Pa	arameter 1	(12768 - 52768)
		T		-20000 - +20000
# 00	07	0000 aaaa		
		0000 bbbb		
		0000 cccc		
		0000 dddd Reverb Pa	arameter 2	(12768 - 52768)
		i		-20000 - +20000
# 00	0B	0000 aaaa		
		dddd 0000		
		0000 cccc		

I	I	0000 dddd	Reverb Parameter 3	(12768 - 52768)
	00 00 1	0000		-20000 - +20000
#		0000 aaaa 0000 bbbb		I
i		0000 ccc		
i			Reverb Parameter 4	(12768 - 52768)
1	I		l	-20000 - +20000
#		0000 aaaa		I
		0000 bbbb 0000 cccc		
ı			 Reverb Parameter 5	(12768 - 52768)
i		oooo aaaa	Nevers rarameter e	-20000 - +20000
#	00 17	0000 aaaa	l	I
1		0000 bbbb		I
		0000 cccc	 Reverb Parameter 6	(10760 50760)
ı		0000 dada	Keverb Farameter 6	(12768 - 52768) -20000 - +20000
#	00 1B	0000 aaaa	I	
1	I	0000 bbbb	l	I
1		0000 cccc		
		0000 dddd	Reverb Parameter 7	(12768 - 52768) -20000 - +20000
1#	00 1F	0000 aaaa		-20000 - +20000
Ī	Ī	0000 bbbb	l	I
		0000 cccc		I
		0000 dddd	Reverb Parameter 8	(12768 - 52768)
#	00 23 1	0000 aaaa	 	-20000 - +20000
"		0000 dddd 0000 bbbb		
	1	0000 cccc	l .	I
1	1	0000 dddd	Reverb Parameter 9	(12768 - 52768)
	00 07 1	0000		-20000 - +20000
#		0000 aaaa 0000 bbbb		
i		0000 ccc		·
1	I	0000 dddd	Reverb Parameter 10	(12768 - 52768)
1				-20000 - +20000
#		0000 aaaa 0000 bbbb		I
		0000 cccc		, , , , , , , , , , , , , , , , , , ,
İ			Reverb Parameter 11	(12768 - 52768)
1	I		l	-20000 - +20000
#		0000 aaaa 0000 bbbb		
ı		0000 0000		
i	·		Reverb Parameter 12	(12768 - 52768)
1	I		l	-20000 - +20000
#		0000 aaaa		
1		0000 bbbb 0000 cccc		
			 Reverb Parameter 13	(12768 - 52768)
1	Ī		I	-20000 - +20000
#		0000 aaaa		I
1		0000 bbbb 0000 cccc		
1			 Reverb Parameter 14	(12768 - 52768)
Ī	i		I	-20000 - +20000
#		0000 aaaa		I
1		0000 bbbb		<u> </u>
I		0000 cccc 0000 dddd	 Reverb Parameter 15	(12768 - 52768)
i				-20000 - +20000
#		0000 aaaa		I
1		0000 bbbb		<u> </u>
I		0000 cccc	 Reverb Parameter 16	(12768 - 52768)
İ		0000 dada		-20000 - +20000
#	00 43	0000 aaaa	I	
1		dddd 0000		I
1		0000 cccc		/107/0 507/0 :
I	I	uuuu addd	Reverb Parameter 17 	(12768 - 52768) -20000 - +20000
#	00 47	0000 aaaa		
1		0000 bbbb		
I		0000 cccc		
1		0000 dddd	Reverb Parameter 18	(12768 - 52768) -20000 - +20000
#	00 4B I	0000 aaaa		20000 - 720000
	1		-	16

 		Reverb Parameter 19	(12768 - 52768) -20000 - +20000 (12768 - 52768) -20000 - +20000
+	Total Size 		+
* Patch TMT (To	one Mix Table	÷)	
+	 I		+
Address	 -	Description	į
00 00	 0000 aaaa	Structure Type 1 & 2	(0 - 9)
00 01		Booster 1 & 2	1 - 10 (0 - 3)
00 02	 0000 aaaa	Structure Type 3 & 4	+6, +12, +18 [dB] (0 - 9)
00 03	 0000 00aa	Booster 3 & 4	1 - 10 (0 - 3)
	 ++	·	+6, +12, +18 [dB]
00 04	0000 00aa 	TMT Velocity Control OFF,	(0 - 3) ON, RANDOM, CYCLE
00 05	 0000 000a	TMT1 Tone Switch	(0 - 1)
00 06	 Oaaa aaaa	TMT1 Keyboard Range Lower	OFF, ON (0 - 127)
00 07	 Oaaa aaaa 	TMT1 Keyboard Range Upper	C-1 - UPPER (0 - 127) LOWER - G9
		TMT1 Keyboard Fade Width Lower	(0 - 127)
		TMT1 Keyboard Fade Width Upper TMT1 Velocity Range Lower	(0 - 127) (1 - 127)
I			1 - UPPER
00 0B	0aaa aaaa 	TMT1 Velocity Range Upper	(1 - 127) LOWER - 127
		TMT1 Velocity Fade Width Lower TMT1 Velocity Fade Width Upper	(0 - 127) (0 - 127)
	+	TMT2 Tone Switch	(0 - 1)
 00 0F	 Oaaa aaaa	TMT2 Keyboard Range Lower	OFF, ON (0 - 127)
00 10	 Oaaa aaaa	TMT2 Keyboard Range Upper	C-1 - UPPER (0 - 127)
00 11	 Oaaa aaaa	TMT2 Keyboard Fade Width Lower	LOWER - G9 (0 - 127)
		TMT2 Keyboard Fade Width Upper	(0 - 127)
00 13	0aaa aaaa 	TMT2 Velocity Range Lower	(1 - 127) 1 - UPPER
00 14	Oaaa aaaa	TMT2 Velocity Range Upper	(1 - 127)
00 15	 Oaaa aaaa	TMT2 Velocity Fade Width Lower	LOWER - 127 (0 - 127)
00 16	Oaaa aaaa	TMT2 Velocity Fade Width Upper	(0 - 127)
1		TMT3 Tone Switch	(0 - 1) OFF, ON
00 18	· Oaaa aaaa 	TMT3 Keyboard Range Lower	(0 - 127) C-1 - UPPER
00 19	 0aaa aaaa 	TMT3 Keyboard Range Upper	(0 - 127) LOWER - G9
00 1A	Oaaa aaaa	TMT3 Keyboard Fade Width Lower	(0 - 127)
		TMT3 Velocity Pages Lever	(0 - 127)
00 1C	vaaa aaaa 	TMT3 Velocity Range Lower	(1 - 127) 1 - UPPER
00 1D	0aaa aaaa 	TMT3 Velocity Range Upper	(1 - 127) LOWER - 127
		TMT3 Velocity Fade Width Lower	(0 - 127)
	0aaa aaaa ++	TMT3 Velocity Fade Width Upper	(0 - 127)
00 20	0000 000a 	TMT4 Tone Switch	(0 - 1) OFF, ON
00 21	Oaaa aaaa	TMT4 Keyboard Range Lower	(0 - 127)

		1			C-1 - UPPER
	00 22	Oaaa aaaa	TMT4	Keyboard Range Upper	(0 - 127)
		1	1		LOWER - G9
				Keyboard Fade Width Lower	(0 - 127)
				Keyboard Fade Width Upper Velocity Range Lower	(0 - 127) (1 - 127)
	00 23	Vada aaaa	IMI4 	velocity kange Lower	1 - UPPER
	00 26	Oaaa aaaa	TMT4	Velocity Range Upper	(1 - 127)
		1			LOWER - 127
				Velocity Fade Width Lower	(0 - 127)
				Velocity Fade Width Upper	(0 - 127)
00 00		Total Size			
Patch	Tone				
Offse	 t				
A	ddress	+		Description	
	00 00	Oaaa aaaa	Tone	Level	(0 - 127)
	00 01	Oaaa aaaa	Tone	Coarse Tune	(16 - 112)
	00.55		-		-48 - +48
	υυ 02	Oaaa aaaa	Tone	Fine Tune	(14 - 114) -50 - +50
	00 03	000a aaaa	 Tone	Random Pitch Depth	(0 - 30)
				-	, 5, 6, 7, 8, 9
				10, 20, 30, 40,	50, 60, 70, 80
			i		, 300, 400, 500
				600, 700, 800,	900, 1000, 1100
	00 04	Oaaa aaaa	l Tone	Pan	1200 (0 - 127
	00 04	0444 4444	l rone	raii	L64 - 63R
	00 05	000a aaaa	Tone	Pan Keyfollow	(54 - 74
		1			-100 - +100
				Random Pan Depth	(0 - 63
	00 07	Oaaa aaaa	Tone	Alternate Pan Depth	(1 - 127
	00 08	0000 000a	l Tone	Env. Mode	L63 - 63R (0 - 1)
	00 00	0000 000a	l rone		NO-SUS, SUSTAIN
	00 09	0000 00aa	Tone		(0 - 3)
		I I	í I	NORMAL, HOLD,	KEY-OFF-NORMAL KEY-OFF-DECAY
#	00 0A	0000 aaaa	I		
		dddd 0000	Tone		(0 - 149
		1		0 - 127	, MUSICAL-NOTES
	00 OC	Oaaa aaaa	l Tone	Dry Send Level	(0 - 127
				Chorus Send Level (MFX)	(0 - 127
				Reverb Send Level (MFX)	(0 - 127
				Chorus Send Level (non MFX)	(0 - 127
				Reverb Send Level (non MFX)	(0 - 127
	UU 11	UUUU aaaa	T'one	Output Assign	(0 - 12
			l	1, 2,,,	,,,
			+		
	00 12	0000 000a	Tone	Receive Bender	
		i i	l		(0 - 1 OFF, ON
	00 13	 0000 000a	l Tone	Receive Expression	(0 - 1 OFF, ON (0 - 1 OFF, ON
	00 13	0000 000a	Tone Tone	Receive Expression Receive Hold-1	(0 - 1 OFF, ON (0 - 1 OFF, ON (0 - 1 OFF, ON
	00 13	0000 000a	Tone Tone	Receive Expression Receive Hold-1 Receive Pan Mode	(0 - 1) OFF, ON (0 - 1) OFF, ON (0 - 1) OFF, ON (0 - 1) TINUOUS, KEY-ON
	00 13 00 14 00 15	0000 000a	Tone Tone Tone	Receive Expression Receive Hold-1 Receive Pan Mode	(0 - 1 OFF, ON (0 - 1 OFF, ON (0 - 1 OFF, ON (0 - 1 TINUOUS, KEY-ON (0 - 1 OFF, ON
	00 13 00 14 00 15 00 16		Tone Tone Tone Tone	Receive Expression Receive Hold-1 Receive Pan Mode CON	(0 - 1 OFF, ON (0 - 1 OFF, ON (0 - 1 OFF, ON (0 - 1 TINUOUS, KEY-ON (0 - 1 OFF, ON
	00 13 00 14 00 15 00 16	0000 000a 0000 00	Tone Tone Tone Tone Tone Tone	Receive Expression Receive Hold-1 Receive Pan Mode CON Redamper Switch Control 1 Switch 1	(0 - 1 OFF, ON (0 - 1 OFF, ON (0 - 1 OFF, ON (0 - 1 OFF, ON (0 - 1 OFF, ON (0 - 2 OFF, ON, REVERSE
	00 13 00 14 00 15 00 16 00 17 00 18	0000 000a 000000 0000 000a 0000 000a 0000 000a 0000 00	Tone Tone Tone Tone Tone Tone	Receive Expression Receive Hold-1 Receive Pan Mode CON Redamper Switch Control 1 Switch 1 Control 1 Switch 2	(0 - 1 OFF, ON (0 - 1 OFF, ON (0 - 1 OFF, ON (0 - 1 OFF, ON (0 - 1 OFF, ON (0 - 2 OFF, ON, REVERSE (0 - 2 OFF, ON, REVERSE
	00 13 00 14 00 15 00 16 00 17 00 18	0000 000a 000000 0000 000a 0000 000a 0000 000a 0000 00	Tone Tone Tone Tone Tone Tone	Receive Expression Receive Hold-1 Receive Pan Mode CON Redamper Switch Control 1 Switch 1 Control 1 Switch 2 Control 1 Switch 3	(0 - 1 OFF, ON (0 - 1 OFF, ON (0 - 1 OFF, ON (0 - 1 OFF, ON (0 - 1 OFF, ON (0 - 2 OFF, ON, REVERSE (0 - 2 OFF, ON, REVERSE (0 - 2
	00 13 00 14 00 15 00 16 00 17 00 18 00 19	0000 000a 000000 0000 000a 00000 000a 00000 000a 00000	Tone Tone Tone Tone Tone Tone Tone Tone	Receive Expression Receive Hold-1 Receive Pan Mode CON Redamper Switch Control 1 Switch 1 Control 1 Switch 2 Control 1 Switch 3 Control 1 Switch 4	(0 - 1 OFF, ON (0 - 1 OFF, ON (0 - 1 OFF, ON (0 - 1 OFF, ON (0 - 1 OFF, ON (0 - 2 OFF, ON, REVERSE (0 - 2 OFF, ON, REVERSE (0 - 2 OFF, ON, REVERSE (0 - 2 OFF, ON, REVERSE (0 - 2
	00 13 00 14 00 15 00 16 00 17 00 18 00 19 00 1A	0000 000a 00000 000a 0000000 00000000	Tone Tone Tone Tone Tone Tone Tone Tone	Receive Expression Receive Hold-1 Receive Pan Mode CON Redamper Switch Control 1 Switch 1 Control 1 Switch 2 Control 1 Switch 3 Control 1 Switch 4 Control 2 Switch 1	(0 - 1 OFF, ON (0 - 1 OFF, ON (0 - 1 OFF, ON (0 - 1

I		I		OFF, ON, REVERSE
i	00 1D	 0000 00aa	Tone Control 2 Switch 3	(0 - 2)
		I		OFF, ON, REVERSE
	00 1E	0000 00aa	Tone Control 2 Switch 4	(0 - 2) OFF, ON, REVERSE
	00 1F	 0000 00aa	 Tone Control 3 Switch 1	(0 - 2)
1		I		OFF, ON, REVERSE
1	00 20	0000 00aa	Tone Control 3 Switch 2	(0 - 2)
	00 21	 0000 00aa	 Tone Control 3 Switch 3	OFF, ON, REVERSE (0 - 2)
	00 21			OFF, ON, REVERSE
1	00 22	0000 00aa	Tone Control 3 Switch 4	(0 - 2)
	00 22		 Tone Control 4 Switch 1	OFF, ON, REVERSE (0 - 2)
	00 25	0000 00aa 		OFF, ON, REVERSE
1	00 24	0000 00aa	Tone Control 4 Switch 2	(0 - 2)
	00.05			OFF, ON, REVERSE
1	00 25	0000 00aa 	Tone Control 4 Switch 3	(0 - 2) OFF, ON, REVERSE
i	00 26	0000 00aa	Tone Control 4 Switch 4	(0 - 2)
1		I		OFF, ON, REVERSE
	00 27	+ 0000 00aa	+ Wave Group Type	(0 - 3)
i				EXP, SAMP, MSAM
#		0000 aaaa		
		0000 bbbb		
1		0000 cccc 0000 dddd	 Wave Group ID	(0 - 16384)
1			I	OFF, 1 - 16384
#		0000 aaaa		
		0000 bbbb 0000 cccc		
			 Wave Number L (Mono)	(0 - 16384)
1		I		OFF, 1 - 16384
#		0000 aaaa		
1		0000 bbbb 0000 cccc		
İ			Wave Number R	(0 - 16384)
		I		OFF, 1 - 16384
	00 34	0000 00aa 		(0 - 3) 0, +6, +12 [dB]
İ	00 35	 0000 000a	Wave FXM Switch	(0 - 1)
1				OFF, ON
1	00 36	0000 00aa 	Wave FXM Color	(0 - 3) 1 - 4
i	00 37	' 000a aaaa	Wave FXM Depth	(0 - 16)
1	00 38	0000 000a	Wave Tempo Sync	(0 - 1)
1	00 39	l I OOaa aaaa	 Wave Pitch Keyfollow	OFF, ON (44 - 84)
1	00 33		wave freeh heyrofrew	-200 - +200
			·	(50 50)
	UU JA	_I uuua aaaa 	Pitch Env Depth 	(52 - 76) -12 - +12
1	00 3B	Oaaa aaaa	Pitch Env Velocity Sens	(1 - 127)
	UU 3C	 Naae ecco	 Pitch Env Time 1 Velocity Sens	-63 - +63 (1 - 127)
	30 30	, ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	11001 DIV TIME I VETOCICY Sells	-63 - +63
I	00 3D	Oaaa aaaa	Pitch Env Time 4 Velocity Sens	(1 - 127)
 	00 3E	l l 000a aaaa	 Pitch Env Time Keyfollow	-63 - +63 (54 - 74)
İ	30 01			-100 - +100
1			Pitch Env Time 1	(0 - 127)
1			Pitch Env Time 2 Pitch Env Time 3	(0 - 127) (0 - 127)
I I			Pitch Env Time 3 Pitch Env Time 4	(0 - 127) (0 - 127)
1			Pitch Env level 0	(0 - 127) (1 - 127)
Ì	30 10			-63 - +63
	00 44	Oaaa aaaa	Pitch Env Level 1	(1 - 127)
	00 45	ı Oaaa aaaa	 Pitch Env Level 2	-63 - +63 (1 - 127)
1			l	-63 - +63
	00 46	Oaaa aaaa	Pitch Env Level 3	(1 - 127)
	00 47	ı Oaaa aaaa	 Pitch Env Level 4	-63 - +63 (1 - 127)
1		I		-63 - +63
	00 48	+	+ TVF Filter Type	(0 - 6)
	30 40			F, HPF, PKG, LPF2,
1		I		LPF3

	l Oaaa aaaa	TVF Cutoff Frequency	(0 - 127)
I UU 4A		TVF Cutoff Keyfollow	(44 - 84)
	UUaa aaaa	1 IVE CUCOIL REVIOLION	,
			-200 - +200
00 4B	0000 0aaa	TVF Cutoff Velocity Curve	(0 - 7)
	1	I	FIXED, 1 - 7
00 40	1 0	I MINI Controls Wallaniton Comp	
00 40	Uaaa aaaa	TVF Cutoff Velocity Sens	(1 - 127)
			-63 - +63
00 4D	Oaaa aaaa	TVF Resonance	(0 - 127)
		TVF Resonance Velocity Sens	(1 - 127)
00 41	Vaaa aaaa	IVE RESOLUTION VELOCITY SELIS	
			-63 - +63
00 4F	Oaaa aaaa	TVF Env Depth	(1 - 127)
	1	I .	-63 - +63
00 50	1 0000 0	I MITTER TO THE PART OF THE PA	
00 50	UUUU Uaaa	TVF Env Velocity Curve	(0 - 7)
			FIXED, 1 - 7
00 51	Oaaa aaaa	TVF Env Velocity Sens	(1 - 127)
	1	1	-63 - +63
00 50	1 0	I MITTO TO COMPANY TO THE CONTROL OF	
00 52	Vada adda	TVF Env Time 1 Velocity Sens	(1 - 127)
			-63 - +63
00 53	Oaaa aaaa	TVF Env Time 4 Velocity Sens	(1 - 127)
	1	1	-63 - +63
00 54	000a aaaa	TVF Env Time Keyfollow	(54 - 74)
			-100 - +100
00 55	l Oaaa aaaa	TVF Env Time 1	(0 - 127)
		TVF Env Time 2	(0 - 127)
00 57	Oaaa aaaa	TVF Env Time 3	(0 - 127)
00 58	Oaaa aaaa	TVF Env Time 4	(0 - 127)
		TVF Env Level 0	(0 - 127)
			,
00 5A	Uaaa aaaa	TVF Env Level 1	(0 - 127)
00 5B	Oaaa aaaa	TVF Env Level 2	(0 - 127)
00.50	l Oaaa aaaa	TVF Env Level 3	(0 - 127)
		TVF Env Level 4	(0 - 127)
	-+	+	
00 5E	000a aaaa	Bias Level	(54 - 74)
	1	I.	-100 - +100
00 5	1 0	I miles meetities	
00 5F	Uaaa aaaa	Bias Position	(0 - 127)
			C-1 - G9
00 60	I 0000 00aa	Bias Direction	(0 - 3)
	1		, LOWER&UPPER, ALL
00 61	0000 0aaa	TVA Level Velocity Curve	(0 - 7)
			FIXED, 1 - 7
00 62	l Oaaa aaaa	TVA Level Velocity Sens	(1 - 127)
** *-	1	,	
		I	-63 - +63
00 63	Oaaa aaaa	TVA Env Time 1 Velocity Sens	(1 - 127)
		I .	-63 - +63
00 64	I Naaa aaaa	TVA Env Time 4 Velocity Sens	(1 - 127)
00 01	, vaaa aaaa	TVA BILV TIME 4 VETOCICY Della	
			-63 - +63
00 65	000a aaaa	TVA Env Time Keyfollow	(54 - 74)
	1	I .	-100 - +100
00.00	1 0	I MYZA E Mi 1	
		TVA Env Time 1	(0 - 127)
00 67	Oaaa aaaa	TVA Env Time 2	(0 - 127)
00 68	Oaaa aaaa	TVA Env Time 3	(0 - 127)
		TVA Env Time 4	(0 - 127)
			,
		TVA Env Level 1	(0 - 127)
	Udda dddd		
00 6A		TVA Env Level 2	(0 - 127)
00 6A 00 6B	Oaaa aaaa		
00 6A 00 6B	Oaaa aaaa	TVA Env Level 2 TVA Env Level 3	(0 - 127) (0 - 127)
00 6A 00 6B 00 6C	0aaa aaaa 0aaa aaaa -+	TVA Env Level 3	(0 - 127)
00 6A 00 6B 00 6C	0aaa aaaa 0aaa aaaa -+		
00 6A 00 6B 00 6C	0aaa aaaa 0aaa aaaa -+	TVA Env Level 3 	(0 - 127)
00 6A 00 6B 00 6C	0aaa aaaa 0aaa aaaa -+	TVA Env Level 3 	(0 - 127) (0 - 12) AW-UP, SAW-DW, SQR,
00 6A 00 6B 00 6C	0aaa aaaa 0aaa aaaa -+	TVA Env Level 3 	(0 - 127) (0 - 12) AW-UP, SAW-DW, SQR, BEND-DW, TRP, S&H,
00 6A 00 6B 00 6C	0aaa aaaa 0aaa aaaa 0000 aaaa 	TVA Env Level 3 	(0 - 127) (0 - 12) AW-UP, SAW-DW, SQR,
00 6A 00 6B 00 6C	0aaa aaaa 0aaa aaaa -+	TVA Env Level 3 	(0 - 127) (0 - 12) AW-UP, SAW-DW, SQR, BEND-DW, TRP, S&H,
00 6A 00 6B 00 6C	0aaa aaaa 0aaa aaaa 0000 aaaa 	TVA Env Level 3 	(0 - 127) (0 - 12) AW-UP, SAW-DW, SQR, BEND-DW, TRP, S&H,
00 6A 00 6B 00 6C	0aaa aaaa 0aaa aaaa 	TVA Env Level 3 	(0 - 127)
00 6A 00 6B 00 6C 00 6D	0aaa aaaa	TVA Env Level 3	(0 - 127) (0 - 12) AW-UP, SAW-DW, SQR, BEND-DW, TRP, S&H, CHS, VSIN, STEP (0 - 149) 127, MUSICAL-NOTES
00 6A 00 6B 00 6C 00 6D	0aaa aaaa	TVA Env Level 3 	(0 - 127)
00 6A 00 6B 00 6C 00 6D	0aaa aaaa	TVA Env Level 3 	(0 - 127) (0 - 12) AW-UP, SAW-DW, SQR, BEND-DW, TRP, S&H, CHS, VSIN, STEP (0 - 149) 127, MUSICAL-NOTES
00 6A 00 6B 00 6C 00 6D # 00 6E	0aaa aaaa	TVA Env Level 3 LF01 Waveform SIN, TRI, S RND, BEND-UP, LF01 Rate 0 - LF01 Offset	(0 - 127) (0 - 12) AW-UP, SAW-DW, SQR, BEND-DW, TRP, S&H, CHS, VSIN, STEP (0 - 149) 127, MUSICAL-NOTES (0 - 4) -50, 0, +50, +100
00 6A 00 6B 00 6C 00 6D # 00 6E	0aaa aaaa	TVA Env Level 3	(0 - 127) AW-UP, SAW-DW, SQR, BEND-DW, TRP, S&H, CHS, VSIN, STEP (0 - 149) 127, MUSICAL-NOTES (0 - 4) -50, 0, +50, +100 (0 - 127)
# 00 6E 00 71 00 72	0aaa aaaa	TVA Env Level 3 LF01 Waveform	(0 - 127) AW-UP, SAW-DW, SQR, BEND-DW, TRP, S&H, CHS, VSIN, STEP (0 - 149) 127, MUSICAL-NOTES (0 - 4) -50, 0, +50, +100 (0 - 127) (0 - 127)
# 00 6E 00 71 00 72	0aaa aaaa	TVA Env Level 3	(0 - 127) AW-UP, SAW-DW, SQR, BEND-DW, TRP, S&H, CHS, VSIN, STEP (0 - 149) 127, MUSICAL-NOTES (0 - 4) -50, 0, +50, +100 (0 - 127)
# 00 6E # 00 70	0aaa aaaa	TVA Env Level 3 LF01 Waveform	(0 - 127) (0 - 12) AW-UP, SAW-DW, SQR, BEND-DW, TRP, S&H, CHS, VSIN, STEP (0 - 149) 127, MUSICAL-NOTES (0 - 4) -50, 0, +50, +100 (0 - 127) (0 - 127) (54 - 74)
# 00 6E # 00 70 00 73	Oaaa aaaa	TVA Env Level 3 LF01 Waveform SIN, TRI, S RND, BEND-UP,	(0 - 127) (0 - 12) AW-UP, SAW-DW, SQR, BEND-DW, TRP, S&H, CHS, VSIN, STEP (0 - 149) 127, MUSICAL-NOTES (0 - 4) -50, 0, +50, +100 (0 - 127) (0 - 127) (54 - 74) -100 - +100
# 00 6E # 00 70 00 73	Oaaa aaaa	TVA Env Level 3 LF01 Waveform	(0 - 127) (0 - 12) AW-UP, SAW-DW, SQR, BEND-DW, TRP, S&H, CHS, VSIN, STEP (0 - 149) 127, MUSICAL-NOTES (0 - 4) -50, 0, +50, +100 (0 - 127) (0 - 127) (54 - 74)
# 00 6E # 00 70 00 73	Oaaa aaaa	TVA Env Level 3 LF01 Waveform	(0 - 127) (0 - 12) AW-UP, SAW-DW, SQR, BEND-DW, TRP, S&H, CHS, VSIN, STEP (0 - 149) 127, MUSICAL-NOTES (0 - 4) -50, 0, +50, +100 (0 - 127) (0 - 127) (54 - 74) -100 - +100
# 00 6E # 00 70 00 71 00 72 00 74	Oaaa aaaa	TVA Env Level 3 LF01 Waveform	(0 - 127) AW-UP, SAW-DW, SQR, BEND-DW, TRP, S&H, CHS, VSIN, STEP (0 - 149) 127, MUSICAL-NOTES (0 - 4) -50, 0, +50, +100 (0 - 127) (0 - 127) (54 - 74) -100 - +100 (0 - 3) T, OFF-IN, OFF-OUT
# 00 6E # 00 70 00 71 00 73 00 74 00 75	Oaaa aaaa	TVA Env Level 3 LF01 Waveform	(0 - 127) AW-UP, SAW-DW, SQR, BEND-DW, TRP, S&H, CHS, VSIN, STEP (0 - 149) 127, MUSICAL-NOTES (0 - 4) -50, 0, +50, +100 (0 - 127) (0 - 127) (54 - 74) -100 - +100 (0 - 3) T, OFF-IN, OFF-OUT (0 - 127)
# 00 6E # 00 70 00 71 00 73 00 74 00 75	Oaaa aaaa	TVA Env Level 3 LF01 Waveform	(0 - 127)
# 00 6E # 00 70 00 71 00 73 00 74 00 75	Oaaa aaaa	TVA Env Level 3 LF01 Waveform	(0 - 127) AW-UP, SAW-DW, SQR, BEND-DW, TRP, S&H, CHS, VSIN, STEP (0 - 149) 127, MUSICAL-NOTES (0 - 4) -50, 0, +50, +100 (0 - 127) (0 - 127) (54 - 74) -100 - +100 (0 - 3) T, OFF-IN, OFF-OUT (0 - 127)
# 00 6E # 00 70 00 71 00 73 00 74 00 75 00 76	Oaaa aaaa	TVA Env Level 3 LF01 Waveform	(0 - 127)
# 00 6E # 00 70 00 71 00 73 00 74 00 75 00 76	Oaaa aaaa	TVA Env Level 3 LF01 Waveform	(0 - 127)
# 00 6E # 00 70 00 71 00 74 00 75 00 76	Oaaa aaaa	TVA Env Level 3	(0 - 127)
# 00 6E # 00 70 00 71 00 74 00 75 00 77	Oaaa aaaa	TVA Env Level 3 LF01 Waveform	(0 - 127)

(1 - 127)	LF01 TVA Depth	Oaaa aaaa	79	00
-63 - +63				
(1 - 127)	LFO1 Pan Depth	Oaaa aaaa	7A	0.0
-63 - +63				
(0 - 12)	LFO2 Waveform	0000 aaaa	7B	0.0
SIN, TRI, SAW-UP, SAW-DW, SQR,				
RND, BEND-UP, BEND-DW, TRP, S&H,				
CHS, VSIN, STEP				
		0000 aaaa		00
(0 - 149)	LFO2 Rate	0000 bbbb		
0 - 127, MUSICAL-NOTES				
(0 - 4)	LFO2 Offset	0000 0aaa	7E	00
-100, -50, 0, +50, +100				
(0 - 127)	LFO2 Rate Detune			
(0 - 127)	LFO2 Delay Time			
	LFO2 Delay Time K	000a aaaa	01	01
-100 - +100				
(0 - 3)	LFO2 Fade Mode	0000 00aa	02	01
ON-IN, ON-OUT, OFF-IN, OFF-OUT			I	
(0 - 127)	LFO2 Fade Time			
(0 - 1)	LF02 Key Trigger	0000 000a	04	01
OFF, ON			- 1	
(1 - 127)	LFO2 Pitch Depth	Oaaa aaaa	05	01
-63 - +63				
(1 - 127)	LFO2 TVF Depth	Oaaa aaaa	06	01
-63 - +63				
(1 - 127)	LFO2 TVA Depth	Oaaa aaaa	07	01
-63 - +63				
(1 - 127)	LFO2 Pan Depth	Oaaa aaaa	08	01
-63 - +63			I	
			+	
(0 - 1)	LFO Step Type			
(28 - 100)	LFO Step1	Oaaa aaaa	UAI	01
-36 - +36	T 770 . 01 0	0	١	0.1
(28 - 100)	LFO Step2	Oaaa aaaa	OB I	01
-36 - +36	T 770 . 01 2	0	١	0.1
(28 - 100)	LFO Step3	Oaaa aaaa	00	01
-36 - +36 (28 - 100)	T EO 0+1	0	١	0.1
-36 - +36	Tio scep4	Oaaa aaaa	ן עט	01
	TEO Ctops	0	ا ۱۰۰	0.1
(28 - 100)	TIO SCEDS	Oaaa aaaa	OF	UI
-36 - +36 (28 - 100)	TEO Stone	0222 2555	ا شان	0.1
(28 - 100)	тто эгера	Oaaa aaaa	01.	UI
-36 - +36 (28 - 100)	TEO Stor7	0222 2555	10 '	0.1
· · · · · · · · · · · · · · · · · · ·	тто эгер/	Oaaa aaaa	T 0	UI
-36 - +36 (28 - 100)	TEO Ctomo	0222 2555	11 '	0.1
(28 - 100)	тто эгерд	Oaaa aaaa	тт	UI
-36 - +36 (38 100)	TEO 0+0	0	10 '	0.1
(28 - 100)	TRO Steba	Oaaa aaaa	12	01
-36 - +36 (22 - 100)	TEO 0+10	0	10 1	0.1
(28 - 100)	TRO Stebio	Oaaa aaaa	⊥3	01
-36 - +36	T TO 01 - 111	0	1 4 .	0.5
(28 - 100)	LFO Step11	Oaaa aaaa	14	01
-36 - +36 (22 - 100)	TEO 0+10	0	1 - 1	0.1
(28 - 100) -36 - +36	LEO Step12	Oaaa aaaa	12	01
		0	10.	0.1
		Oaaa aaaa	Тρ	UI
(28 - 100)	LFO Step13			
(28 - 100) -36 - +36	-	0	1.7	
(28 - 100) -36 - +36 (28 - 100)	-	Oaaa aaaa	17	01
(28 - 100) -36 - +36 (28 - 100) -36 - +36	LFO Step14		I	
(28 - 100) -36 - +36 (28 - 100) -36 - +36 (28 - 100)	LFO Step14	Oaaa aaaa	I	
(28 - 100) -36 - +36 (28 - 100) -36 - +36 (28 - 100) -36 - +36	LFO Step14	Oaaa aaaa	18	01
(28 - 100) -36 - +36 (28 - 100) -36 - +36 (28 - 100)	LFO Step14		18	01

* Drum Common

Address	 -	Description	
00 00	0aaa aaaa	Drum Name 1	(32 - 127)
			32 - 127 [ASCII]
00 01	Oaaa aaaa	Drum Name 2	(32 - 127)
			32 - 127 [ASCII]
00 02	Oaaa aaaa	Drum Name 3	(32 - 127)
			32 - 127 [ASCII]
00 03	Oaaa aaaa	Drum Name 4	(32 - 127)
			32 - 127 [ASCII]
00 04	Oaaa aaaa	Drum Name 5	(32 - 127)
			32 - 127 [ASCII]
00 05	Oaaa aaaa	Drum Name 6	(32 - 127)
			32 - 127 [ASCII]
00 06	Oaaa aaaa	Drum Name 7	(32 - 127)
			32 - 127 [ASCII]
00 07	Oaaa aaaa	Drum Name 8	(32 - 127)
			32 - 127 [ASCII]
00 08	Oaaa aaaa	Drum Name 9	(32 - 127)
			32 - 127 [ASCII]
00 09	Oaaa aaaa	Drum Name 10	(32 - 127)
			32 - 127 [ASCII]
00 0A	Oaaa aaaa	Drum Name 11	(32 - 127)
			32 - 127 [ASCII]
00 0B	Oaaa aaaa	Drum Name 12	(32 - 127)
			32 - 127 [ASCII]
00 OC	0aaa aaaa	Drum Level	(0 - 127)
00 0D	0000 000a	(reserve) <*>	
00 OE	0000 aaaa		
	0000 bbbb	(reserve) <*>	
00 10	0000 000a	(reserve) <*>	
00 11	+ 0000 aaaa	Drum Output Assign	(0 - 13)
			MFX, A,,,
		1, 2,	-,,,,,
	 +		TONE
00 00 00 12	Total Size		

* Drum Common MFX

Offset Address		Description		
00 00	0aaa aaaa 1	MFX Type	(0 - 80	0)
00 01	Oaaa aaaa 1	MFX Dry Send Level	(0 - 127	7)
00 02	Oaaa aaaa 1	MFX Chorus Send Level	(0 - 127	7)
00 03	Oaaa aaaa 1	MFX Reverb Send Level	(0 - 127	7)
00 04	0000 00aa 1	MFX Output Assign <*>		
	I		A,,	-
00 05	Oaaa aaaa 1	MFX Control 1 Source	(0 - 101	1)
		OFF,	CC01 - CC31, CC33 - CC95	5,
I	1		BEND, AFT, SYS1 - SYS4	4
00 06	Oaaa aaaa 1	MFX Control 1 Sens	(1 - 127	7)
			-63 - +63	3
00 07	Oaaa aaaa 1	MFX Control 2 Source	(0 - 101	1)
I		OFF,	CC01 - CC31, CC33 - CC95	5,
I			BEND, AFT, SYS1 - SYS4	4
00 08	Oaaa aaaa 1	MFX Control 2 Sens	(1 - 127	7)
l			-63 - +63	3
00 09	Oaaa aaaa 1	MFX Control 3 Source	(0 - 101	1)
l		OFF,	CC01 - CC31, CC33 - CC95	5,
l			BEND, AFT, SYS1 - SYS4	4
00 0A	Oaaa aaaa 1	MFX Control 3 Sens	(1 - 127	7)
1			-63 - +63	3
00 OB	Oaaa aaaa 1	MFX Control 4 Source	(0 - 101	1)
	I	OFF,	CC01 - CC31, CC33 - CC95	
	I		BEND, AFT, SYS1 - SYS4	4
00 OC	Oaaa aaaa 1	MFX Control 4 Sens	(1 - 127	,
[I .		-63 - +63	3
00 0D	000a aaaa 1	MFX Control Assign 1	(0 - 16	6)

1	00 05 1	0002 2222	MFX Control Assign 2	OFF, 1 - 16
	00 05 1	UUUa aaaa	MEA CONCIOI ASSIGN 2	(0 - 16) OFF, 1 - 16
1	00 OF	000a aaaa	MFX Control Assign 3	(0 - 16)
1	00.10	000	MTW Cook and Dooring A	OFF, 1 - 16
1	00 10	000a aaaa	MFX Control Assign 4	(0 - 16) OFF, 1 - 16
#	00 11	0000 aaaa		011, 1 10
1	I	dddd 0000		1
		0000 ccc		
		0000 dddd 	MFX Parameter 1	(12768 - 52768) -20000 - +20000
#	00 15	0000 aaaa		20000 120000
	1	0000 bbbb		
		0000 cccc		
		0000 dddd	MFX Parameter 2	(12768 - 52768) -20000 - +20000
#	00 19	0000 aaaa		20000 120000
1	Ì	0000 bbbb		1
1		0000 ccc		
		0000 dddd 	MFX Parameter 3	(12768 - 52768) -20000 - +20000
#	00 1D	 0000 aaaa		-20000 - +20000
1	Ì	0000 bbbb		·
		0000 cccc		I
		0000 dddd	MFX Parameter 4	(12768 - 52768) -20000 - +20000
#	00 21	 0000 aaaa		-20000 - +20000
1	Ì	0000 bbbb		1
		0000 ccc		
		0000 dddd	MFX Parameter 5	(12768 - 52768) -20000 - +20000
#	00 25	 0000 aaaa		20000 120000
1	I	dddd 0000		I
		0000 ccc		(10760 50760)
ı		0000 aaaa	MFX Parameter 6	(12768 - 52768) -20000 - +20000
#	00 29	0000 aaaa		
1		dddd 0000		
		0000 cccc	MFX Parameter 7	(12768 - 52768)
1			MFX Talametel /	-20000 - +20000
#	00 2D	0000 aaaa		1
1		0000 bbbb		
1		0000 cccc	MFX Parameter 8	(12768 - 52768)
İ				-20000 - +20000
#	00 31	0000 aaaa		I
		0000 bbbb		
l I		0000 cccc 0000 dddd	MFX Parameter 9	(12768 - 52768)
i	i			-20000 - +20000 I
#		0000 aaaa		I
		0000 bbbb		
1			MFX Parameter 10	(12768 - 52768)
I	ĺ			-20000 - +20000
#		0000 aaaa		I
l I		0000 bbbb 0000 cccc		
İ			MFX Parameter 11	(12768 - 52768)
I	1			-20000 - +20000
#		0000 aaaa		1
		0000 bbbb 0000 cccc		
1			MFX Parameter 12	(12768 - 52768)
1	20 11	0000		-20000 - +20000
#		0000 aaaa 0000 bbbb		
İ		0000 cccc		
1			MFX Parameter 13	(12768 - 52768)
1	00 45	0000		-20000 - +20000
#		0000 aaaa 0000 bbbb		
Ī		0000 cccc		'
1	1	0000 dddd	MFX Parameter 14	(12768 - 52768)
 #	00 49 I	 0000 aaaa		-20000 - +20000
1 #	00 49	ooou adaa		

		0000 bbbb			1
		0000 cccc			
			MFX Parameter	15	(12768 - 52768)
					-20000 - +20000
#	00 4D	0000 aaaa			1
		0000 bbbb			1
1		0000 cccc			1
		0000 dddd	MFX Parameter	16	(12768 - 52768)
1			I		-20000 - +20000
#	00 51	0000 aaaa	l		1
1		0000 bbbb	I		1
1		0000 cccc	I		1
1		0000 dddd	MFX Parameter	17	(12768 - 52768)
i					-20000 - +20000
1#	00 55	0000 aaaa	I		
1		0000 dddd			i
1		0000 cccc			
1			ı MFX Parameter	1.0	(1276) [276]
1		, 0000 aaaa	, Mrx Parameter	18	(12768 - 52768)
1					-20000 - +20000
#		0000 aaaa			I
1		dddd 0000			I
1		0000 cccc			I
		0000 dddd	MFX Parameter	19	(12768 - 52768)
			l		-20000 - +20000
#	00 5D	0000 aaaa	I		
1		dddd 0000	I		
1		0000 cccc	I		
1		0000 dddd	MFX Parameter	20	(12768 - 52768)
1		l	I		-20000 - +20000
1#	00 61	0000 aaaa	I		i
I		0000 dddd			1
1		0000 cccc			
1			ı MFX Parameter	21	(12768 - 52768)
1		0000 aaaa	MFA FATAMETEL	21	-20000 - +20000
1 #	00 65	0000	l I		-20000 - +20000
#		0000 aaaa			
I		0000 bbbb			I
1		0000 cccc			1
1		0000 dddd	MFX Parameter	22	(12768 - 52768)
1					-20000 - +20000
#	00 69	0000 aaaa	l		1
		0000 bbbb	l		1
1		0000 cccc	l		1
1		0000 dddd	MFX Parameter	23	(12768 - 52768)
1			I		-20000 - +20000
#	00 6D	0000 aaaa	I		1
i		0000 bbbb			
i		0000 cccc			·
i			' MFX Parameter	24	(12768 - 52768)
1		0000 aaaa	HIX TATAMETEL	21	-20000 - +20000
1 #	00 71		l I		-20000 - +20000
#		0000 aaaa			
I		0000 bbbb			
I		0000 cccc			(100
I		0000 dddd	MFX Parameter	25	(12768 - 52768)
1			l		-20000 - +20000
#		0000 aaaa			
1		0000 bbbb	I		
1		0000 cccc	I		
1		0000 dddd	MFX Parameter	26	(12768 - 52768)
1		l	I		-20000 - +20000
#	00 79	0000 aaaa	I		i
I		0000 dddd 0000 bbbb			ı
i		0000 cccc			ı
i			 MFX Parameter	2.7	(12768 - 52768)
1		0000 aaaa	, rarameter		-20000 - +20000 I
1 #	00 75	0000	l I		-20000 - +20000
#		0000 aaaa			l ·
I		0000 bbbb			l .
I		0000 cccc		0.0	(10000
I		UUUU dddd	MFX Parameter	28	(12768 - 52768)
I			I		-20000 - +20000
#	01 01	0000 aaaa	I		
1		0000 bbbb	I		I
1		0000 cccc	I		I
1		0000 dddd	MFX Parameter	29	(12768 - 52768)
1		l	I		-20000 - +20000
#	01 05	0000 aaaa	I		I
1		0000 bbbb			i
I		0000 cccc			·
Ī			' MFX Parameter	30	(12768 - 52768)
					54

		1	1		-20000 - +20000
#	01 0	 9 0000 aaaa	 		-20000 - +20000
		0000 bbbb)		
		0000 ccc			
		0000 dddd	MFX Parameter 31		(12768 - 52768) -20000 - +20000
#	01 0	 			-20000 - +20000
"	01 0	0000 ddd			
		0000 ccc	:		
			l MFX Parameter 32		(12768 - 52768)
			l 		-20000 - +20000
00 0	0 01 1	l Total Siz			
		n Chorus			
	set Addres		Description		
	00 0	+) 0000 aaaa	Chorus Type		(0 - 3)
			Chorus Level		(0 - 127)
			Chorus Output As	sign <*>	
			1		A,,
	00 0	3 0000 00aa 	Chorus Output Se	elect	(0 - 2) MAIN, REV, MAIN+REV
	00.0	+	-+		
#	υυ 0	4 0000 aaaa 0000 bbbb			
		0000 ccc			
			l Chorus Parameter	1	(12768 - 52768)
			I		-20000 - +20000
#	00 0	3 0000 aaaa			
		0000 bbbb			
			: l Chorus Parameter	2	(12768 - 52768)
				-	-20000 - +20000
#	00 0	C 0000 aaaa	.		
		0000 bbbb			
		0000 ccc		. 2	/107/0 507/0
		ı uuuu ddda	Chorus Parameter	3	(12768 - 52768) -20000 - +20000
#	00 1	 	.		20000 - +20000
		0000 bbbb			
		0000 ccc			
		0000 dddd	Chorus Parameter	4	(12768 - 52768)
#	00 1	 4 0000 aaaa			-20000 - +20000
ır	00 1	0000 aaaa 0000 bbbb			
		0000 EEE			
		0000 dddd	l Chorus Parameter	5	(12768 - 52768)
			1		-20000 - +20000
#	00 1	3 0000 aaaa 0000 bbbb			
		2000			
			l Chorus Parameter	6	(12768 - 52768)
		İ	Ī		-20000 - +20000
#	00 1	C 0000 aaaa			
		0000 bbbb			
		0000 cccd	: l Chorus Parameter	7	(12768 - 52768)
				•	-20000 - +20000
#	00 2) 0000 aaaa	.		
		0000 bbbb			
		0000 ccc		. 0	/10500 =05.55
		UUUU dddc	Chorus Parameter	8	(12768 - 52768) -20000 - +20000
#	00 2	 4 0000 aaaa	·		-20000 - +20000
		0000 dddd			
		0000 ccc	:		
		0000 dddd	l Chorus Parameter	9	(12768 - 52768)
ш	00.0	2 1 0000			-20000 - +20000
#	00 2	0000 aaaa 0000 bbbb			
		0000 bbbc			
			l Chorus Parameter	10	(12768 - 52768)
		I	T		-20000 - +20000
#	00 2	C 0000 aaaa	- 1		
					55

1		0000 bbbb		
		0000 cccc		
		0000 dddd	Chorus Parameter 11	(12768 - 52768)
1				-20000 - +20000
#		0000 aaaa		
		0000 bbbb		
		0000 cccc		
		0000 dddd	Chorus Parameter 12	(12768 - 52768)
				-20000 - +20000
#		0000 aaaa		
		0000 bbbb		
		0000 cccc		
		0000 dddd	Chorus Parameter 13	(12768 - 52768)
				-20000 - +20000
#		0000 aaaa		
		0000 bbbb	'	
1		0000 cccc		(10000 5000)
1		UUUU dddd	Chorus Parameter 14	(12768 - 52768)
1	00.0-		I	-20000 - +20000
#		0000 aaaa		
		0000 bbbb		
		0000 cccc		(10760 50760)
		0000 aaaa	Chorus Parameter 15	(12768 - 52768)
 #	00 40			-20000 - +20000
#		0000 aaaa		
		0000 bbbb		
1		0000 cccc	 Chorus Parameter 16	(12768 - 52768)
1		, 0000 aaaa	Chorus Parameter 16	-20000 - +20000 I
1 #	00 44	 0000 aaaa	I I	-20000 - 120000
Ι π		0000 aaaa		
1		0000 ccc		
1			Chorus Parameter 17	(12768 - 52768)
1		1	I	-20000 - +20000
1#	00 48	 0000 aaaa	· 	20000 120000
1		0000 aaaa		
1		0000 cccc		
1			Chorus Parameter 18	(12768 - 52768)
i i				-20000 - +20000
#	00 4C	' 0000 aaaa		
1		0000 bbbb		i
1		0000 cccc		i
1			Chorus Parameter 19	(12768 - 52768)
		I	I	-20000 - +20000
#	00 50	0000 aaaa	I	
		0000 bbbb		i
		0000 cccc	I	
		0000 dddd	Chorus Parameter 20	(12768 - 52768)
		I	I	-20000 - +20000
		+		
00	00 00 54	Total Size		

* Drum Common Reverb

Offset Address	s	Descript	tion
00 00	0	0000 aaaa Reverb Type	(0 - 5)
00 01	1	Oaaa aaaa Reverb Level	(0 - 127)
00 02	2	0000 00aa Reverb Output	Assign <*>
	- 1		A,,
# 00 03	+ 3	0000 aaaa	
	- 1	dddd 0000	
	- 1	0000 cccc	
	- 1	0000 dddd Reverb Parame	eter 1 (12768 - 52768)
	- 1	I	-20000 - +20000
# 00 0	7	0000 aaaa	
	- 1	dddd 0000	
	- 1	0000 cccc	
	- 1	0000 dddd Reverb Parame	, , , , , , , , , , , , , , , , , , , ,
	- 1	I	-20000 - +20000
# 00 OI	В	0000 aaaa	
	- 1	dddd 0000	
	-	0000 cccc	
	- 1	0000 dddd Reverb Parame	, , , , , , , , , , , , , , , , , , , ,
	-		-20000 - +20000
# 00 01	F	0000 aaaa	

		0000 bbbb		I
		0000 cccc		I
		0000 dddd	Reverb Parameter 4	(12768 - 52768)
				-20000 - +20000
#		0000 aaaa		
		0000 bbbb		
1		0000 ccc	Reverb Parameter 5	(10700 50700)
		0000 aaaa	Reverb Parameter 5	(12768 - 52768) -20000 - +20000
#	00 17 1	 0000 aaaa		-20000 - 120000
1 "		0000 dddd		'
1		0000 cccc		i I
i			Reverb Parameter 6	(12768 - 52768)
i	i			-20000 - +20000
#	00 1B	0000 aaaa		
I	i	0000 bbbb		
İ	i	0000 cccc		
	i	0000 dddd	Reverb Parameter 7	(12768 - 52768)
	1			-20000 - +20000
#	00 1F	0000 aaaa		1
	I	0000 bbbb		1
	I	0000 cccc		I
	1	0000 dddd	Reverb Parameter 8	(12768 - 52768)
	I			-20000 - +20000
#		0000 aaaa		I
1		0000 bbbb		I
1		0000 ccc		
1	I	0000 dddd	Reverb Parameter 9	(12768 - 52768)
1				-20000 - +20000
#		0000 aaaa		
1		0000 bbbb		
		0000 cccc		(10700 50700)
1		0000 aaaa	Reverb Parameter 10	(12768 - 52768) -20000 - +20000
1 #	1 as nn	 0000 aaaa		-20000 - +20000
Ι π		0000 aaaa		
1		0000 ccc		'
i			Reverb Parameter 11	(12768 - 52768)
i	i			-20000 - +20000
#	00 2F I	0000 aaaa		
		0000 bbbb		
	i	0000 cccc		·
	1	0000 dddd	Reverb Parameter 12	(12768 - 52768)
	1			-20000 - +20000
#	00 33	0000 aaaa		1
1	I	0000 bbbb		1
1	1	0000 cccc		I
	1	0000 dddd	Reverb Parameter 13	(12768 - 52768)
	I			-20000 - +20000
#		0000 aaaa		
		0000 bbbb		l
		0000 ccc		(10700 50700)
I I			Reverb Parameter 14	(12768 - 52768) -20000 - +20000
1 #	በበ ସହ ।	0000 aaaa		-20000 - 720000
Iπ		0000 aaaa		
ı		0000 ccc		
ı			Reverb Parameter 15	(12768 - 52768)
i			5.111 1414M0001 10	-20000 - +20000
#	00 3F I	0000 aaaa		
1		0000 dddd 0000 bbbb		,
1		0000 cccc		I
1			Reverb Parameter 16	(12768 - 52768)
1	1			-20000 - +20000
#	00 43	0000 aaaa		I
1	1	dddd 0000		I
1	I	0000 cccc		I
	I	0000 dddd	Reverb Parameter 17	(12768 - 52768)
1				-20000 - +20000
#		0000 aaaa		
1		0000 bbbb		
1		0000 cccc		(10760 50760
1		UUUU addd	Reverb Parameter 18	(12768 - 52768)
1 #	00 45 1	0000		-20000 - +20000
#		0000 aaaa 0000 bbbb		l l
I I		0000 bbbb 5555 0000		
ı			Reverb Parameter 19	(12768 - 52768)
i			5.111 1414M0001 17	-20000 - +20000
#	00 4F I	0000 aaaa		
1		0000 bbbb		I

 	0000 cccc 0000 dddd	Reverb Parameter 20	(12768 - 52768) -20000 - +20000
00 00 00 53	+ Total Size		
* Drum Tone			
Offset Address	 	Description	
00 00	+ 0aaa aaaa	Tone Name 1	(32 - 127)
00 01	 Oaaa aaaa	 Tone Name 2	32 - 127 [ASCII] (32 - 127)
00 02	 Oaaa aaaa	Tone Name 3	32 - 127 [ASCII] (32 - 127)
Ī		Tone Name 4	32 - 127 [ASCII] (32 - 127)
I		Tone Name 5	32 - 127 [ASCII] (32 - 127)
I			32 - 127 [ASCII]
İ		Tone Name 6 	(32 - 127) 32 - 127 [ASCII]
00 06	0aaa aaaa 	Tone Name 7	(32 - 127) 32 - 127 [ASCII]
00 07 	Oaaa aaaa 	Tone Name 8 	(32 - 127) 32 - 127 [ASCII]
00 08	Oaaa aaaa 	Tone Name 9	(32 - 127) 32 - 127 [ASCII]
00 09	Oaaa aaaa	Tone Name 10	(32 - 127) 32 - 127 [ASCII]
00 0A	 Oaaa aaaa	Tone Name 11	(32 - 127)
00 0B	 Oaaa aaaa	Tone Name 12	32 - 127 [ASCII] (32 - 127)
	 +	 	32 - 127 [ASCII]
00 0C	0000 000a 	Assign Type 	(0 - 1) MULTI, SINGLE
00 0D	000a aaaa 	Mute Group 	(0 - 31) OFF, 1 - 31
00 0E	+ 0aaa aaaa	+ Tone Level	(0 - 127)
00 OF	Oaaa aaaa 	Tone Coarse Tune	(0 - 127) C-1 - G9
00 10	Oaaa aaaa 	Tone Fine Tune	(14 - 114) -50 - +50
00 11	 000a aaaa	Tone Random Pitch Depth	(0 - 30)
	 	10, 20, 30, 4	4, 5, 6, 7, 8, 9, 0, 50, 60, 70, 80,
[[100, 300, 400, 500, 1, 900, 1000, 1100,
00 12	 Oaaa aaaa	 Tone Pan	1200 (0 - 127)
00 13	 00aa aaaa	 Tone Random Pan Depth	L64 - 63R (0 - 63)
00 14	Oaaa aaaa 	Tone Alternate Pan Depth	(1 - 127) L63 - 63R
00 15	0000 000a 	Tone Env Mode	(0 - 1) NO-SUS, SUSTAIN
	+ Oaaa aaaa	+ Tone Dry Send Level	(0 - 127)
		Tone Chorus Send Level	(0 - 127)
		Tone Reverb Send Level	(0 - 127)
		Tone Chorus Send Level (non MFX)	
		Tone Reverb Send Level (non MFX)	
00 18	0000 aaaa 		(0 - 12) A,,,
 	 	1, 2,,, -	·,,,
00 1C	00aa aaaa	Tone Pitch Bend Range	(0 - 48)
		Tone Receive Expression	(0 - 1)
00 1E	 0000 000a	Tone Receive Hold-1	OFF, ON (0 - 1)
00 1F	 0000 000a	 Tone Receive Pan Mode	OFF, ON (0 - 1)
	 +	C	CONTINUOUS, KEY-ON

	00 20	0000 00aa	WMT Velocity Control (0 - 2) OFF, ON, RANDOM
	00 21	+ 0000 000a	+ WMT1 Wave Switch (0 - 1)
i I			OFF, ON (reserve) <*>
			I I
#		0000 aaaa 0000 bbbb	
l I		0000 cccc	 (reserve) <*>
#		0000 aaaa	I I
11	i	0000 bbbb	
		0000 cccc 0000 dddd	 WMT1 Wave Number L (Mono)
 #	00 2B	 0000 aaaa	OFF, 1 - 16384
I		0000 bbbb	
			WMT1 Wave Number R (0 - 16384)
	00 2F	0000 00aa	OFF, 1 - 16384 WMT1 Wave Gain
	00 30	 0000 000a	$\begin{array}{cccccccccccccccccccccccccccccccccccc$
 		l	OFF, ON (0 - 3)
			1 - 4
			WMT1 Wave FXM Depth $(0 - 16)$ WMT1 Wave Tempo Sync $(0 - 1)$
	00 34	 Oaaa aaaa	OFF, ON WMT1 Wave Coarse Tune (16 - 112)
	00 35	Naaa aaaa	-48 - +48 WMT1 Wave Fine Tune (14 - 114)
	i		-50 - +50
	00 36	Uaaa aaaa 	WMT1 Wave Pan (0 - 127) L64 - 63R
	00 37	0000 000a	\mid WMT1 Wave Random Pan Switch $(0$ - 1) \mid \mid OFF, ON \mid
	00 38	0000 00aa	WMT1 Wave Alternate Pan Switch (0 - 2) OFF, ON, REVERSE
			WMT1 Wave Level (0 - 127) WMT1 Velocity Range Lower (1 - 127)
			1 - UPPER
			DONAL 127
l			\mid WMT1 Velocity Fade Width Lower (0 - 127) \mid WMT1 Velocity Fade Width Upper (0 - 127) \mid
	00 3E	0000 000a	\mid WMT2 Wave Switch $(0-1)\mid$ OFF, ON \mid
 	00 3F	0000 00aa	(reserve) <*>
#		0000 aaaa	
1		0000 bbbb	
 		0000 dddd	(reserve) <*>
# 		0000 aaaa	
		0000 cccc	
1			WMT2 Wave Number L (Mono)
# 		0000 aaaa 0000 bbbb	
		0000 cccc	 WMT2 Wave Number R (0 - 16384)
			OFF, 1 - 16384 WMT2 Wave Gain (0 - 3)
	i		-6, 0, +6, +12 [dB]
			WMT2 Wave FXM Switch (0 - 1) OFF, ON
	00 4E	0000 00aa	WMT2 Wave FXM Color
 			WMT2 Wave FXM Depth
			OFF, ON
	00 31	vaaa addd	WMT2 Wave Coarse Tune

	00 52	Oaaa aaaa	WMT2 Wave Fine Tune
l	00 53	l Oaaa aaaa l	WMT2 Wave Pan (0 - 127)
i			L64 - 63R
	00 54	0000 000a	WMT2 Wave Random Pan Switch (0 - 1)
			OFF, ON
	00 55	0000 00aa	WMT2 Wave Alternate Pan Switch (0 - 2)
			OFF, ON, REVERSE
			WMT2 Wave Level (0 - 127)
	00 57	Oaaa aaaa	WMT2 Velocity Range Lower (1 - 127)
	00 50		1 - UPPER WMT2 Velocity Range Upper
l	00 36	Vaaa aaaa	WMT2 Velocity Range Upper (1 - 127) LOWER - 127
i	00 59	l Oaaa aaaa l	WMT2 Velocity Fade Width Lower (0 - 127)
İ			WMT2 Velocity Fade Width Upper (0 - 127)
			WMT3 Wave Switch (0 - 1)
			OFF, ON
	00 5C	0000 00aa	(reserve) <*>
#		0000 aaaa	•
l		0000 bbbb	•
1		0000 cccc	(reserve) <*>
			(teserve) <">
1#	00 61	0000 aaaa	
		0000 dada	•
		0000 cccc	•
Ī		0000 dddd	WMT3 Wave Number L (Mono) (0 - 16384)
1			OFF, 1 - 16384
#	00 65	0000 aaaa	
1		dddd 0000	
1		0000 cccc	•
		0000 dddd	WMT3 Wave Number R (0 - 16384)
	00.00		OFF, 1 - 16384
	00 69	0000 00aa	WMT3 Wave Gain
1	00.67	0000 0005	-6, 0, $+6$, $+12$ [dB] WMT3 Wave FXM Switch $(0-1)$
1	00 0A	0000 000a	OFF, ON
i	00 6B	0000 00aa	WMT3 Wave FXM Color (0 - 3)
İ			1 - 4
1	00 6C	000a aaaa	WMT3 Wave FXM Depth (0 - 16)
	00 6D	0000 000a	WMT3 Wave Tempo Sync (0 - 1)
			OFF, ON
1	00 6E	Oaaa aaaa	WMT3 Wave Coarse Tune (16 - 112)
	00 65		-48 - +48 -48 - +48
1	10 00	Vaaa aaaa	WMT3 Wave Fine Tune (14 - 114) -50 - +50
1	00 70	l Naaa aaaa l	WMT3 Wave Pan (0 - 127)
i			L64 - 63R
1	00 71	0000 000a	WMT3 Wave Random Pan Switch (0 - 1)
			OFF, ON
	00 72	0000 00aa	WMT3 Wave Alternate Pan Switch (0 - 2)
			OFF, ON, REVERSE
1			WMT3 Wave Level (0 - 127)
	00 74	Oaaa aaaa	WMT3 Velocity Range Lower (1 - 127)
1	00.75		1 - UPPER
ı	00 73	Vaaa aaaa	WMT3 Velocity Range Upper
1	00 76	l Oaaa aaaa l	WMT3 Velocity Fade Width Lower (0 - 127)
1			WMT3 Velocity Fade Width Upper (0 - 127)
i			WMT4 Wave Switch (0 - 1)
1			OFF, ON
	00 79	0000 00aa	(reserve) <*>
			1
#		0000 aaaa	
1		dddd 0000	•
1		0000 cccc	
I I		uuuu adad	(reserve) <*>
#	00 7E	 0000 aaaa	
1 11		0000 aaaa	
l		0000 cccc	
i			WMT4 Wave Number L (Mono) (0 - 16384)
		ı	OFF, 1 - 16384
#	01 02	0000 aaaa	l l
1		0000 bbbb	l l
1		0000 cccc	
1		0000 dddd	WMT4 Wave Number R (0 - 16384)
			60

1	1	I		OFF, 1 - 16384
01	06	0000 00aa	WMT4 Wave Gain	(0 - 3)
01	. 07	0000 000a	-6, WMT4 Wave FXM Switch	0, +6, +12 [dB] (0 - 1)
01	. 08	0000 00aa	WMT4 Wave FXM Color	OFF, ON (0 - 3)
				1 - 4
			WMT4 Wave FXM Depth WMT4 Wave Tempo Sync	(0 - 16)
İ	1			OFF, ON
01	0B	Oaaa aaaa	WMT4 Wave Coarse Tune	(16 - 112) -48 - +48
01	0C	Oaaa aaaa	WMT4 Wave Fine Tune	(14 - 114)
01	0D	Oaaa aaaa	WMT4 Wave Pan	-50 - +50 (0 - 127)
I I 01	OE I	0000 000a I	WMT4 Wave Random Pan Switch	L64 - 63R (0 - 1)
	Ī	I		OFF, ON
01	. OF	0000 00aa	WMT4 Wave Alternate Pan Switch O	(0 - 2) FF, ON, REVERSE
			WMT4 Wave Level	(0 - 127) (1 - 127)
01	1 1	ا المعمد ا	WMT4 Velocity Range Lower	1 - UPPER
01	12	Oaaa aaaa	WMT4 Velocity Range Upper	(1 - 127) LOWER - 127
01	13	Oaaa aaaa	WMT4 Velocity Fade Width Lower	(0 - 127)
01	14	0aaa aaaa	WMT4 Velocity Fade Width Upper	(0 - 127)
01	15	000a aaaa	Pitch Env Depth	(52 - 76)
01	16	Oaaa aaaa	Pitch Env Velocity Sens	-12 - +12 (1 - 127)
01	17	Oaaa aaaa	Pitch Env Time 1 Velocity Sens	-63 - +63 (1 - 127)
	1	I		-63 - +63 (1 137)
01	10 1	ا العقام العقام ا	Pitch Env Time 4 Velocity Sens	(1 - 127) -63 - +63
			Pitch Env Time 1 Pitch Env Time 2	(0 - 127) (0 - 127)
			Pitch Env Time 3	(0 - 127)
01	1C	Oaaa aaaa	Pitch Env Time 4	(0 - 127)
01	1D	Oaaa aaaa	Pitch Env Level 0	(1 - 127) -63 - +63
01	1E	Oaaa aaaa	Pitch Env Level 1	(1 - 127)
01	 1F	Oaaa aaaa	Pitch Env Level 2	-63 - +63 (1 - 127)
01	20 1	0222 2222	Pitch Env Level 3	-63 - +63 (1 - 127)
	. 20	ا ا	FICEN ENV Devel 3	-63 - +63
01 	21	Oaaa aaaa	Pitch Env Level 4	(1 - 127) -63 - +63
	22		TVF Filter Type	(0 - 6)
, 01	22			HPF, PKG, LPF2,
01	22	0000 0000	TVF Cutoff Frequency	LPF3 (0 - 127)
			TVF Cutoff Velocity Curve	(0 - 7)
	25	0222	TVE Cutoff Volocity Com	FIXED, 1 - 7
1 01	23	vaaa addd	TVF Cutoff Velocity Sens	(1 - 127) -63 - +63
			TVF Resonance TVF Resonance Velocity Sens	(0 - 127) (1 - 127)
01	. 21	ا المعمد المعمد ا	TVF RESONANCE VETOCITY Sens	-63 - +63
01	. 28	Oaaa aaaa	TVF Env Depth	(1 - 127) -63 - +63
01	29	0000 0aaa	TVF Env Velocity Curve Type	(0 - 7) FIXED, 1 - 7
01	2A	Oaaa aaaa	TVF Env Velocity Sens	(1 - 127)
I I 01	2B	Oaaa aaaa	TVF Env Time 1 Velocity Sens	-63 - +63 (1 - 127)
I I 01	2C I	Oaaa aaaa I	TVF Env Time 4 Velocity Sens	-63 - +63 (1 - 127)
1	1	I		-63 - +63
			TVF Env Time 1	(0 - 127)
			TVF Env Time 2 TVF Env Time 3	(0 - 127)
			TVF Env Time 3 TVF Env Time 4	(0 - 127) (0 - 127)
			TVF ENV LEVEL 0	(0 - 127)
			TVF Env Level 1	(0 - 127)
			_	

1	01	33	Oaaa aaaa	TVF Env Level 2	(0 - 127)
	01	34	Oaaa aaaa	TVF Env Level 3	(0 - 127)
	01	35	Oaaa aaaa	TVF Env Level 4	(0 - 127)
			+	+	
	01	36	0000 0aaa	TVA Level Velocity Curve	(0 - 7)
					FIXED, 1 - 7
	01	37	Oaaa aaaa	TVA Level Velocity Sens	(1 - 127)
					-63 - +63
	01	38	Oaaa aaaa	TVA Env Time 1 Velocity Sens	(1 - 127)
					-63 - +63
	01	39	Oaaa aaaa	TVA Env Time 4 Velocity Sens	(1 - 127)
					-63 - +63
	01	3A	Oaaa aaaa	TVA Env Time 1	(0 - 127)
	01	3B	Oaaa aaaa	TVA Env Time 2	(0 - 127)
	01	3C	Oaaa aaaa	TVA Env Time 3	(0 - 127)
	01	3D	Oaaa aaaa	TVA Env Time 4	(0 - 127)
	01	3E	Oaaa aaaa	TVA Env Level 1	(0 - 127)
	01	3F	Oaaa aaaa	TVA Env Level 2	(0 - 127)
	01	40	Oaaa aaaa	TVA Env Level 3	(0 - 127)
			+	+	
	01	41	0000 000a	One Shot Mode	(0 - 1)
					OFF, ON
	01	42	Oaaa aaaa	Relative Level	(0 - 127)
			l		-64 - +63
			+		
			Total Size		
+					+

6. Supplementary Material

lacksquare 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 $7~\mathrm{bits}$.

The following table shows how these correspond to decimal numbers.

+-	D I		++-		+-	++		+-		++		+-	+
+-	ا ت	Н	 ++=	D	 +-	H	D	 +-	H	 ++	D	 +-	H
i	0 1	00H	11	32	i	20H	64	i	40H	 H	96	I	60н
i	1	01H	H	33	i	21H	65	İ	41H	П	97	İ	61H
i	2	02H	H	34	i	22H	66	İ	42H	П	98	İ	62H
İ	3	03H		35	ĺ	23H	67	İ	43H	П	99	ĺ	63H
1	4	04H	$ \cdot $	36	1	24H	68	ı	44H	П	100		64H
	5	05H	$ \cdot $	37		25H	69	l	45H	П	101		65H
	6	06H	$ \cdot $	38		26H	70		46H	П	102		66H
	7	07H	$ \cdot $	39		27H	71		47H	П	103		67H
	8	08H	$ \ $	40		28H	72		48H		104		68H
	9	09H	$ \cdot $	41		29H	73		49H	П	105		69H
	10	0AH	$ \ $	42		2AH	74		4AH		106		6AH
	11	OBH	$ \ $	43		2BH	75		4BH		107		6BH
	12	0CH	$ \ $	44		2CH	76		4CH	$ \ $	108		6CH
	13	0DH	$ \ $	45		2DH	77		4 DH	$ \ $	109		6DH
	14	0EH	$ \cdot $	46		2EH	78		4EH	$ \ $	110		6EH
	15	OFH	$ \cdot $	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						76H
	23			55		37H	87						77H
	24			56		38H	88						78H
	25	19H		57		39H	89						79Н
	26	1AH		58		3AH	90		5AH				7AH
	27	1BH		59		3BH	91						7BH
	28	1CH		60		3CH	92				124		7CH
	29	1DH		61		3DH	93		5DH		125		7DH
	30	1EH		62		3EH	94		5EH		126		7EH
1	31	1FH	11	63		3FH	95	1	5FH	П	127		7FH
+-	+		++-		+-	+		-		++		т-	+

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 as bbH expressing two 7-bit bytes would indicate a value of as 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 $18 \times 128 + 52 = 2356$

<Example 3> 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 $(= 64 \times 12 + 80 = 8192)$ is 0, so this Pitch Bend Value is 28 00H - 40 00H $= 40 \times 12 + 80 - (64 \times 12 + 80) = 5120 - 8192 = -3072$

If the Pitch Bend Sensitivity is set to 2 semitones, -8192 (00 00H) will cause the pitch to change 200 cents, so in this case $-200 \times (-3072)$ / (-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 0DH for RPN parameter number 00 0DH 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 OCH = 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 fast-forwarded, the sequencer may not be able to transmit the correct status, and the sound generator will then misinterpret the data. Take care to give each event its own status.

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

^{*} TPQN: Ticks Per Quarter Note

■ Example of an Exclusive Message and Calculating a Checksum

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

lacktriangle 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 aabbooddH and the data or size is eeffH.

```
aa + bb + cc + dd + ee + ff = sum
sum / 128 = quotient ... remainder
128 - remainder = checksum
```

<Example> Setting CHORUS TYPE of PERFORMANCE COMMON to DELAY (DT1)

According to the "Parameter Address Map" (p. 19), the start address of Temporary Performance is 10 00 00 00H, the offset address of CHORUS at PERFORMANCE COMMON is 04 00H, and the address of CHORUS TYPE is 00 00H. Therefore the address of CHORUS TYPE of PERFORMANCE COMMON is;

10 00 00 00H 04 00H +) 00 00H

DELAY has the value of 02H.

So the system exclusive message should be sent is;

F0	41	10	00 00 3A	12	10 00 04 00	02	??	F7
(1)	(2)	(3)	(4)	(5)	address	data	checksum	(6)

(1) Exclusive Status

(2) ID (Roland)

(3) Device ID (17)

(4) Model ID (JUNO-DS61/DS88)

(5) Command ID (DT1)

(6) End of Exclusive

Then calculate the checksum.

This means that F0 41 10 00 00 3A 12 10 00 04 00 02 6A F7 is the message should be sent.

• The Scale Tune Feature (address: 40 1x 40)

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

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

O Equal Temperament

This method of tuning divides the octave into 12 equal parts. It is currently the most widely used form of tuning, especially in occidental music. On the JUNO-DS61/DS88, the default settings for the Scale Tune feature produce equal temperament.

O Just Temperament (Tonic of C)

The principal triads resound much more beautifully than with equal temperament, but this benefit can only be obtained in one key. If transposed, the chords tend to become ambiguous.

The example given involves settings for a key in which ${\tt C}$ is the keynote.

O Arabian Scale

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

Example Settings

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

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

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

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

■ ASCII Code Table

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

+-		+-		+	-++-		-+-		+		-++		+-		+		+
	D									Char		D				har	
i	32	i	20H		11	64					11	96				`	i
-	33	ı	21H	!	11	65		41H	I	A	\Box	97	I	61H		a	I
-	34	ı	22H	"	11	66		42H	I	В	\Box	98	I	62H		b	I
	35		23H	#	11	67		43H	1	С	$ \cdot $	99		63H		С	I
	36		24H	\$	11	68		44H		D	\Box	100		64H		d	1
	37		25H	8	11	69		45H	1	E	$ \cdot $	101		65H		е	1
	38		26H	&	11	70		46H	1	F	$ \cdot $	102		66H		f	1
	39		27H	,	11	71		47H		G	$ \cdot $	103		67H		g	
	40		28H	(11	72		48H		H	\Box	104		68H		h	1
	41		29H)	11	73		49H	1	I	$ \cdot $	105		69H		i	1
	42		2AH	*	11	74		4AH		J	$ \cdot $	106		6AH		j	
	43		2BH	+	11	75		4BH		K	$ \cdot $	107		6ВН		k	
	44		2CH	,		76		4CH		L	$ \cdot $	108		6CH		1	
	45		2DH	-	11	77		4DH		M	$ \cdot $	109		6DH		m	
	46		2EH			78		4EH		N	$ \cdot $	110		6EH		n	
	47		2FH	/	11	79		4FH		0	$ \cdot $	111		6FH		0	
	48		30H	0		80		50H		P	$ \cdot $	112		70H		р	
	49		31H	1		81		51H		Q	$ \cdot $	113		71H		q	
	50		32H	2	-11	82		52H		R	$ \cdot $	114		72H		r	
	51		33H	3		83		53H		S	$ \cdot $	115		73H		s	
	52		34H	4		84		54H		T	$ \cdot $	116		74H		t	
	53		35H	5	-11	85		55H		U	$ \cdot $	117		75H		u	
	54		36H	6	11	86		56H		V		118		76H		V	
	55		37H	7	11	87		57H		W		119		77H		W	
	56		38H	8	-11	88		58H		X	$ \cdot $	120		78H		Х	
	57		39H	9	11	89		59H		Y		121		79H		У	
	58		ЗАН	:	11	90		5AH		Z		122		7AH		Z	
	59		ЗВН	;	11	91		5BH		[$ \cdot $	123		7вн		{	
	60		3CH	<	11	92		5CH		\	$ \cdot $	124		7CH		-	
	61		3DH	=	11	93		5DH]	$ \cdot $	125		7DH		}	
	62		3EH	>	-11	94		5EH		^	-		+-		+		+
	63		3FH	?	11	95		5FH		_							

+----+
D: decimal

H: hexadecimal

* "SP" is space.

MIDI Implementation Chart

Date: Feb. 15, 2018 Version: 1.01

(Sound Source Section)

Punction Pransmitted Recognized Remarks	e controller 1 e controller 2 e controller 3 e controller 4
Channel Changed 1-16 Mode 3 Mode 5 M	e controller 1 e controller 2 e controller 3 e controller 4
Mode Messages Mono, Poly Mode 3, 4 (M=1) *2	e controller 1 e controller 2 e controller 3 e controller 4
Mode Messages Altered Mono, Poly *********************************** Mode 3, 4 (M=1) *2 Number: True Voice ************************************	e controller 1 e controller 2 e controller 3 e controller 4
Note Note Note Note Note Note Note Note Note Note Note Note Note Note Note Off Note Off Note Off O	e controller 1 e controller 2 e controller 3 e controller 4
Number : : True Voice	e controller 1 e controller 2 e controller 3 e controller 4
Valocity	e controller 1 e controller 2 e controller 3 e controller 4
Note Off	e controller 1 e controller 2 e controller 3 e controller 4
After Key's Touch Channel's	e controller 1 e controller 2 e controller 3 e controller 4
Touch Channel's 0	e controller 1 e controller 2 e controller 3 e controller 4
Pitch Bend	e controller 1 e controller 2 e controller 3 e controller 4
Control	e controller 1 e controller 2 e controller 3 e controller 4
Change	e controller 1 e controller 2 e controller 3 e controller 4
2 0	e controller 1 e controller 2 e controller 3 e controller 4
4 0 0 Foot type 5 0 0 Portamento time 6, 38 0 0 Data entry 7 0 0 *1 Volume 8 0 X Balance 10 0 0 *1 Expression 10 0 X General purpos 17 0 X General purpos 18 0 X General purpos 19 0 X General purpos 19 0 X General purpos 64 0 0 *1 Hold 65 0 0 Sostenuto 66 0 0 Sostenuto 67 0 0 Soft 68 0 0 Hold 70 0 X Sound variatio 71 0 0 Resonance 72 0 0 Resonance 74 0 0 Cutoff 75 0 0 Decay time 75 0 Decay time 76 10 Decay time 77 10 Decay time 78 0 Decay time 78 0 Decay time 78 0 Decay time 78 0 Decay time 78 0 Decay time 78 0 Decay time 78 Decay time 78 Decay time 79 Decay time 70 Decay time 70 Decay time 70 Decay time 70 Decay time 70 Decay time 71 Decay time 71 Decay time 72 Decay time 74 Decay time 75 Decay time 75 Decay time 75 Decay time 75 Decay time 70 Decay time 70 Decay time 71 Decay time 71 Decay time 72 Decay time 73 Decay time 74 Decay time 75 Decay time	e controller 1 e controller 2 e controller 3 e controller 4
S O O Portamento time Data entry	e controller 1 e controller 2 e controller 3 e controller 4
Data entry O	e controller 1 e controller 2 e controller 3 e controller 4
To O O X Wolume Balance	e controller 2 e controller 3 e controller 4
Balance	e controller 2 e controller 3 e controller 4
10 0 0	e controller 2 e controller 3 e controller 4
11 0 0	e controller 2 e controller 3 e controller 4
16 0	e controller 2 e controller 3 e controller 4
18 0	e controller 3 e controller 4
19 0	e controller 4
64 0 0 *1 Hold 1 Portamento 65 0 0 Sostenuto 66 0 0 Sostenuto 67 0 0 Soft Legato foot sw 69 0 0 Hold 2 Sound variation 71 0 0 Resonance 72 0 0 Release time 73 0 0 Attack time 75 0 0 Decay time	
65 0 0 Portamento 66 0 0 Sostenuto 67 0 0 Soft 68 0 0 Egato foot sw. 69 0 0 K Sound variation 71 0 0 Resonance 72 0 0 Release time 73 0 0 Attack time 74 0 0 Cutoff 75 0 0 Decay time	itch
66 0 0 Sostenuto 67 0 0 Soft 68 0 0 0 Hold 2 70 0	itch
67 0 0 Soft 68 0 0 Egato foot sw 69 0 0 WHold 2 70 0 X Sound variation 71 0 0 Resonance 72 0 0 Release time 73 0 0 Attack time 74 0 0 Cutoff 75 0 0 Decay time	itch
68 0 0 Legato foot sw 69 0 0 Whold 2 70 0 X Sound variation 71 0 0 Resonance 72 0 0 Release time 73 0 0 Attack time 74 0 0 Cutoff 75 0 0 Decay time	itch
69 0 0 Note that the second of	LUCII
70	
71 0 0 Resonance 72 0 0 Release time 73 0 0 Attack time 74 0 0 Cutoff 75 0 0 Decay time	n
72 0 0 Release time 73 0 0 Attack time 74 0 0 Cutoff 75 0 0 Decay time	1
73 0 0 Attack time 74 0 0 Cutoff 75 0 0 Decay time	
75 o o Decay time	
76 o o Vibrate rate	
77 o o Vibrate depth	
78 o o Vibrate delay	
80 o O (Tone 1 Level) General purpos	
81 o o (Tone 2 Level) General purpos 82 o o (Tone 3 Level) General purpos	
83 o (Tone 4 Level) General purpos	
84 o O Portamento con	
91 o o (Reverb) General purpos	
92 o x Tremolo	
93 o O (Chorus) General purpos	e effects 3
94 o x Celeste	
95 o x Phaser	
98, 99 x	
100, 101 x o RPN LSB, MSB	
Program o ************************************	
Gustam	
Exclusive x *1 x Program No.1-1	28
: Song Position x x	
System : Song Select x	
: Tune Request x x	
System : Clock o *3 x	·
Real Time : Commands o *3 x	
: All Sound Off o o	
: Reset All Controllers x	
Aux : Local On/Off x	
Messages : All Notes Off x o (123-127)	
: Active Sensing o	
: System Reset x x	
*1 o x is selectable.	
Notes *2 Recognized as M=1 even if M1.	
*3 o x is selectable only in the DAW CONTROL mode.	

O : Yes X : No

MIDI Implementation Chart

Date: Feb. 15, 2018 Version: 1.01

(Sequencer Section)

Function		Transmitted	Recognized	Remarks
Basic	Default	x	1-7, 10	There is not specific basic
Channel	Changed	x	x	channel
	Default	х	х	
Mode	Messages	x	x	
	Altered	******		
Note		х	0-127	
Number :	: True Voice	*****	0-127	
	Note On	x	0	
Velocity	Note Off	x	0	
After		x	x	
Touch	Key's Channel's	x x	0	
	Chamier 5			
Pitch Bend		x	0	
Control Change	0-119	x	0	
Program Change	: True Number	X *******	x	
System				
Exclusive		x	0	
Stretem	: Song Position	х	х	
System Common	: Song Select	x	x	
COMMICIT	: Tune Request	x	х	
System	: Clock	х	0 *1	
Real Time	: Commands	x	0 *1	
	: All Sound Off	х	0 *2	
	: Reset All Controllers			
	: Local On/Off	X	x	
	: All Notes Off	X	x *3	
Aux	: Omni Mode Off	X	0 *2	
Messages	: Omni Mode On	X	0 *2	
	: Mono Mode On	x	0 *2	
	: Poly Mode On	x	*2	
		x		
	: System Reset	X	x	
	. System reset		I**	l .
Notes		<pre>*1 o x is selectable. *2 First, a note-off messag this message itself is r</pre>	e is recorded for each note tecorded.	that is currently on; then
		*3 The All Notes Off messag for each note that is cu	e itself is not recorded; a rrently on.	note-off message is recorded

POLYMode 2 : OMNI ON, MONO POLYMode 4 : OMNI OFF, MONO Mode 1 : OMNI ON, Mode 3 : OMNI OFF,

O : Yes X : No