

**E-500 / E-500 OR
E-300 / KR-75**

.....
INTELLIGENT KEYBOARDS
64 - VOICE POLYPHONY

MIDI Implementation

Section 1. Receive data

■ Channel Voice Messages

● Note off

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

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

- * For Drum Parts, these messages are received when Rx.NOTE OFF = ON for each Instrument.
- * The velocity values of Note Off messages are ignored.

● Note on

Status	2nd bytes	3rd byte
9nH	kkH	vvH

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

- * Not received when Rx.NOTE MESSAGE = OFF. (Initial value is ON)
- * For Drum Parts, not received when Rx.NOTE ON = OFF for each Instrument.

● Polyphonic Key Pressure

Status	2nd bytes	3rd byte
AnH	kkH	vvH

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

- * Not received when Rx.POLY PRESSURE (PA) = OFF. (Initial value is ON)
- * The resulting effect is determined by System Exclusive messages. With the initial settings, there will be no effect.

● Control Change

- * When Rx.CONTROL CHANGE = OFF, all control change messages except for Channel Mode messages will be ignored.
- * The value specified by a Control Change message will not be reset even by a Program Change, etc.

○ Bank Select (Controller number 0, 32)

Status	2nd bytes	3rd byte
BnH	00H	mmH
BnH	20H	llH

n = MIDI channel number : 0H-FH (ch.1-ch.16)
 mm, ll = Bank number : 00H, 00H-7FH, 7FH (bank.1-bank.16384), Initial Value = 00 00H (bank.1)

- * Not received when Rx.BANK SELECT = OFF. "Rx.BANK SELECT" is set to OFF by "Turn General MIDI System On," and set to ON by "GS RESET." (Power-on default value is ON.)
- * Bank Select processing will be suspended until a Program Change message is received.
- * The GS format "Variation number" is the value of the Bank Select MSB (Controller number 0) expressed in decimal.

○ Modulation (Controller number 1)

Status	2nd bytes	3rd byte
BnH	01H	vvH

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

- * Not received when Rx.MODULATION = OFF. (Initial value is ON)
- * The resulting effect is determined by System Exclusive messages. With the initial settings, this is Pitch Modulation Depth.

○ Portamento Time (Controller number 5)

Status	2nd bytes	3rd byte
BnH	05H	vvH

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

- * This adjusts the rate of pitch change when Portamento is ON or when using the Portamento Control. A value of 0 results in the fastest change.

○ Data Entry (Controller number 6, 38)

Status	2nd bytes	3rd byte
BnH	06H	mmH
BnH	26H	llH

n = MIDI channel number : 0H-FH (ch.1-ch.16)
 mm, ll = the value of the parameter specified by RPN/NRPN

○ Volume (Controller number 7)

Status	2nd bytes	3rd byte
BnH	07H	vvH

n = MIDI channel number : 0H-FH (ch.1-ch.16)
 vv = Volume : 00H-7FH (0-127), Initial Value = 64H (100)

- * Volume messages are used to adjust the volume balance of each Part.
- * Not received when Rx.VOLUME = OFF. (Initial value is ON)

○ Pan (Controller number 10)

Status	2nd bytes	3rd byte
BnH	0AH	vvH

n = MIDI channel number : 0H-FH (ch.1-ch.16)
 vv = pan : 00H-40H-7FH (Left-Center-Right), Initial Value = 40H (Center)

- * For Rhythm Parts, this is a relative adjustment of each Instrument's pan setting.
- * Not received when Rx.PANPOT = OFF. (Initial value is ON)

○ Expression (Controller number 11)

Status	2nd bytes	3rd byte
BnH	0BH	vvH

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

- * It can be used independently from Volume messages. Expression messages are used for musical expression within a performance; e.g., expression pedal movements, crescendo and decrescendo.
- * Not received when Rx.EXPRESSION = OFF. (Initial value is ON)

○ Hold 1 (Controller number 64)

Status	2nd bytes	3rd byte
BnH	40H	vvH

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

- * Not received when Rx.HOLD1 = OFF. (Initial value is ON)

○ Portamento (Controller number 65)

Status	2nd bytes	3rd byte
BnH	41H	vvH

n = MIDI channel number : 0H-FH (ch.1-ch.16)
 vv = Control value : 00H-7FH (0-127) 0-63 = OFF, 64-127 = ON

- * Not received when Rx.PORTAMENTO = OFF. (Initial value is ON)

○ Sostenuito (Controller number 66)

Status	2nd bytes	3rd byte
BnH	42H	vvH

n = MIDI channel number : 0H-FH (ch.1-ch.16)
 vv = Control value : 00H-7FH (0-127) 0-63 = OFF, 64-127 = ON

- * Not received when Rx.SOSTENUTO = OFF. (Initial value is ON)

Soft (Controller number 67)

Status	2nd bytes	3rd byte
BnH	43H	vvH

n = MIDI channel number : 0H-FH (ch.1-ch.16)
 vv = Control value : 00H-7FH (0-127) 0-63 = OFF, 64-127 = ON

* Not received when Rx.SOFT = OFF. (Initial value is ON)

Portamento control (Controller number 84)

Status	2nd bytes	3rd byte
BnH	54H	kkH

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

- * A Note-on received immediately after a Portamento Control message will change continuously in pitch, starting from the pitch of the Source Note Number.
- * If a voice is already sounding for a note number identical to the Source Note Number, this voice will continue sounding (i.e., legato) and will, when the next Note-on is received, smoothly change to the pitch of that Note-on.
- * The rate of the pitch change caused by Portamento Control is determined by the Portamento Time value.

Example 1.

On MIDI (Description)	Result
90 3C 40 (Note on C4)	C4 on
B0 54 3C (Portamento Control from C4)	no change (C4 voice still sounding)
90 40 40 (Note on E4)	glide from C4 to E4
80 3C 40 (Note off C4)	no change
80 40 40 (Note off E4)	E4 off

Example 2.

On MIDI (Description)	Result
B0 54 3C (Portamento Control from C4)	no change
90 40 40 (Note on E4)	E4 is played with glide from C4 to E4
80 40 40 (Note off E4)	E4 off

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

Status	2nd bytes	3rd byte
BnH	5BH	vvH

n = MIDI channel number : 0H-FH (ch.1-ch.16)
 vv = Control value : 00H-7FH (0-127), Initial Value = 28H (40)

* This message adjusts the Reverb Send Level of each Part.

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

Status	2nd bytes	3rd byte
BnH	5DH	vvH

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

* This message adjusts the Chorus Send Level of each Part.

NRPN MSB/LSB (Controller number 98, 99)

Status	2nd bytes	3rd byte
BnH	63H	mmH
BnH	62H	llH

n = MIDI channel number : 0H-FH (ch.1-ch.16)
 mm = upper byte of the parameter number specified by NRPN
 ll = lower byte of the parameter number specified by NRPN

- * NRPN can be received when Rx.NRPN = ON. "Rx.NRPN" is set to OFF by power-on reset or by receiving "Turn General MIDI System On," and it is set to ON by "GS RESET."
- * The value set by NRPN will not be reset even if Program Change or Reset All Controllers is received.

NRPN

The NRPN (Non Registered Parameter Number) message allows an extended range of control changes to be used.

To use these messages, you must first use NRPN MSB and NRPN LSB messages to specify the parameter to be controlled, and then use Data Entry messages to specify the value of the specified parameter. Once an NRPN parameter has been specified, all Data Entry messages received on that channel will modify the value of that parameter. To prevent acci-

dents, it is recommended that you set RPN Null (RPN Number = 7FH/7FH) when you have finished setting the value of the desired parameter. Refer to Section 4. Supplementary material "Examples of actual MIDI messages" <Example 4> (page 16). On the GS devices, Data entry LSB (llH) of NRPN is ignored; so it is no problem to send Data entry MSB (mmH) only (without Data entry LSB).

On the E-500 / E-500 OR / E-300 / KR-75, NRPN can be used to modify the following parameters.

NRPN	Data entry	Description
MSB LSB	MSB	
01H 08H	mmH	Vibrato rate (relative change on specified channel) mm : 0EH-40H-72H (-50 - 0 - +50)
01H 09H	mmH	Vibrato depth (relative change on specified channel) mm : 0EH-40H-72H (-50 - 0 - +50)
01H 0AH	mmH	Vibrato delay (relative change on specified channel) mm : 0EH-40H-72H (-50 - 0 - +50)
01H 20H	mmH	TVF cutoff frequency (relative change on specified channel) mm : 0EH-40H-72H (-50 - 0 - +50)
01H 21H	mmH	TVF resonance (relative change on specified channel) mm : 0EH-40H-72H (-50 - 0 - +50)
01H 63H	mmH	TVF&TVA Env.Attack time (relative change on specified channel) mm : 0EH-40H-72H (-50 - 0 - +50)
01H 64H	mmH	TVF&TVA Env.Decay time (relative change on specified channel) mm : 0EH-40H-72H (-50 - 0 - +50)
01H 66H	mmH	TVF&TVA Env.Release time (relative change on specified channel) mm : 0EH-40H-72H (-50 - 0 - +50)
18H rrH	mmH	Pitch coarse of drum instrument (relative change on specified drum instrument) rr : key number of drum instrument mm : 00H-40H-7FH (-63 - 0 - +63 semitone)
1AH rrH	mmH	TVA level of drum instrument (absolute change on specified drum instrument) rr : key number of drum instrument mm : 00H-7FH (zero-maximum)
1CH rrH	mmH	Panpot of drum instrument (absolute change on specified drum instrument) rr : key number of drum instrument mm : 00H, 01H-40H-7FH (Random, Left-Center-Right)
1DH rrH	mmH	Reverb send level of drum instrument (absolute change on specified drum instrument) rr : key number of drum instrument mm : 01H-7FH (zero-maximum)
1EH rrH	mmH	Chorus send level of drum instrument (absolute change on specified drum instrument) rr : key number of drum instrument mm : 01H-7FH (zero-maximum)

- * Parameters marked "relative change" will change relative to the preset value.
- * Parameters marked "absolute change" will be set to the absolute value of the parameter, regardless of the preset value.

RPN MSB/LSB (Controller number 100, 101)

Status	2nd bytes	3rd byte
BnH	65H	mmH
BnH	64H	llH

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

- * Not received when Rx.RPN = OFF. (Initial value is ON)
- * The value specified by RPN will not be reset even by messages such as Program Change or Reset All Controller.

RPN

The RPN (Registered Parameter Number) messages are expanded control changes, and each function of an RPN is described by the MIDI Standard.

To use these messages, you must first use RPN MSB and RPN LSB messages to specify the parameter to be controlled, and then use Data Entry messages to specify the value of the specified parameter. Once an RPN parameter has been specified, all Data Entry messages received on that channel will modify the value of that parameter. To prevent accidents, it is recommended that you set RPN Null (RPN Number = 7FH/7FH) when you have finished setting the value of the desired parameter. Refer to Section 4. "Examples of actual MIDI messages" <Example 4> (page 16).

On the E-500 / E-500 OR / E-300 / KR-75, RPN can be used to modify the following parameters.

RPN	Data entry	Explanation
<u>MSB LSB</u> 00H 00H	<u>MSB LSB</u> mmH —	Pitch Bend Sensitivity mm : 00H-181H (0-24 semitones), Initial Value = 02H (2 semitones) ll : ignored (processed as 00h) specify up to 2 octaves in semitone steps
00H 01H	mmH llH	Master Fine Tuning mm, ll : 00 00H - 40 00H - 7F 7FH (-100 - 0 - +99.99 cents), Initial Value = 40 00H (0 cent) ll : ignored (processed as 00h) specify up to 2 octaves in semitone steps Refer to 4. Supplementary material, "About tuning" (P.17)
00H 02H	mmH —	Master Coarse Tuning mm : 28H - 40H - 58H (-24 - 0 - +24 semitones), Initial Value = 40H (0 cent) ll : ignored (processed as 00h)
7FH 7FH	— —	RPN null Set condition where RPN and NRPN are unspecified. The data entry messages after set RPN null will be ignored. (No Data entry messages are required after RPN null). Settings already made will not change. mm, ll : ignored

● Program Change

Status	2nd bytes
CnH	ppH

n = MIDI channel number : 0H-FH (ch.1-ch.16)
pp = Program number : 00H-7FH (prog.1-prog.128)

- * Not received when Rx.PROGRAM CHANGE = OFF. (Initial value is ON)
- * After a Program Change message is received, the sound will change beginning with the next Note-on. Voices already sounding when the Program Change message was received will not be affected.
- * For Drum Parts, Program Change messages will not be received on bank numbers 129-16384 (the value of Control Number 0 is other than 0 (00H)).

● Channel Pressure

Status	2nd bytes
DnH	vvH

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

- * Not received when Rx.CH PRESSURE (CA6) = OFF. (Initial value is ON)
- * The resulting effect is determined by System Exclusive messages. With the initial settings there will be no effect.

● Pitch Bend Change

Status	2nd byte	3rd bytes
EnH	llH	mmH

n = MIDI channel number : 0H-FH (ch.1-ch.16)
mm, ll = Pitch Bend value : 00 00H - 40 00H - 7F 7FH (-8192 - 0 - +8191)

- * Not received when Rx.PITCH BEND = OFF. (Initial value is ON)
- * The resulting effect is determined by System Exclusive messages. With the initial settings the effect is Pitch Bend.

■ Channel Mode Messages

● All Sounds Off (Controller number 120)

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

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

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

● Reset All Controllers (Controller number 121)

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

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

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

Controller	Reset value
Pitch Bend Change	+0 (Center)
Polyphonic Key Pressure	0 (off)
Channel Pressure	0 (off)
Modulation	0 (off)
Expression	127 (max)
Hold 1	0 (off)
Portamento	0 (off)
Sostenuto	0 (off)
Soft	0 (off)
RPN	unset; previously set data will not change
NRPN	unset; previously set data will not change

● All Notes Off (Controller number 123)

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

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

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

● OMNI OFF (Controller number 124)

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

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

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

● OMNI ON (Controller number 125)

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

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

- * OMNI ON is only recognized as "All notes off"; the Mode doesn't change (OMNI OFF remains).

● MONO (Controller number 126)

Status	2nd byte	3rd bytes
BnH	7EH	mmH

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

- * The same processing will be carried out as when All Sounds Off and All Notes Off is received, and the corresponding channel will be set to Mode 4 (M = 1) regardless of the value of "mono number."

● POLY (Controller number 127)

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

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

- * The same processing will be carried out as when All Sounds Off and All Notes Off is received, and the corresponding channel will be set to Mode 3.

■ System Realtime Message

● Active Sensing

Status
FEH

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

■ System Exclusive Message

Status	Data byte	Status
F0H	iiH, ddH,, ee1	F7H

F0H System Exclusive Message status

ii = ID number

an ID number (manufacturer ID) to indicate the manufacturer whose Exclusive message this is. Roland's manufacturer ID is 41H.

ID numbers 7EH and 7FH are extensions of the MIDI standard; Universal Non-realtime Messages (7EH) and Universal Realtime Messages (7FH).

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

F7H: EOX (End Of Exclusive)

The System Exclusive Messages received by the E-500 / E-500 OR / E-300 / KR-75 are; messages related to mode settings, Universal Realtime System Exclusive messages and Data Set (DT1).

● System exclusive messages related to mode settings

These messages are used to initialize a device to GS or General MIDI mode, or change the operating mode. When creating performance data, a "Turn General MIDI System On" message should be inserted at the beginning of a General MIDI score, and a "GS Reset" message at the beginning of a GS music data. Each song should contain only one mode message as appropriate for the type of data. (Do not insert two or more mode setting messages in a single song.)

"Turn General MIDI System On" and "Turn General MIDI System Off" use Universal Non-realtime Message format. "GS Reset" use Roland system exclusive format "Data Set 1 (DT1)."

● Turn General MIDI System On

This is a command message that resets the internal settings of the unit to the General MIDI initial state (General MIDI System-Level 1). After receiving this message E-500 / E-500 OR / E-300 / KR-75, will automatically be set to the proper condition for correctly playing a General MIDI score.

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

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

* When this message is received, Rx.BANK SELECT will be OFF and Rx.NRPN will be OFF.

* There must be an interval of at least 50 ms between this message and the next message.

● General MIDI System Off

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

Byte	Explanation
F0H	Exclusive status
7EH	ID number (Universal Non-realtime Message)
7FH	Device ID (Broadcast)
09H	sub-ID#1 (General MIDI message)
02H	sub-ID#2 (General MIDI Off)
40H	EOX (End of exclusive)

* There must be an interval of at least 50 ms between this message and the next.

○ GS reset

GS Reset is a command message that resets the internal settings of a device to the GS initial state. This message will appear at the beginning of GS music data, and a GS device that receives this message will automatically be set to the proper state to correctly playback GS music data.

Status	Data byte	Status
F0H	41H, 10H, 42H, 12H, 40H, 00H, 7FH, 00H, 41H	F7H

Byte	Explanation
F0H	Exclusive status
41H	ID number (Roland)
10H	Device ID (dev: 00H-1FH (1-32), Initial value is 10H (17))
42H	Model ID (GS)
12H	Command ID (DT1)
40H	Address MSB
00H	Address
7FH	Address LSB
00H	Data (GS reset)
41H	Checksum
F7H	EOX (End Of Exclusive)

* When this message is received, Rx.NRPN will be ON.

* There must be an interval of at least 50 ms between this message and the next.

○ Exit GS mode

Status	Data byte	Status
F0H	41H, 10H, 42H, 12H, 40H, 00H, 7FH, 7FH, 42H	F7H

Byte	Explanation
F0H	Exclusive status
41H	ID number (Roland)
10H	Device ID
42H	Model ID (GS)
12H	Command ID (DT1)
40H	Address MSB
00H	:
7FH	Address LSB
7FH	Data (Exit GS mode)
42H	Checksum
F7H	EOX (End of exclusive)

* There must be an interval of at least 50 ms between this message and the next.

● Universal Realtime System Exclusive Messages

● Master volume

Status	Data byte	Status
F0H	7FH, 7FH, 04H, 01H, 11H, mmH	F7H

Byte	Explanation
F0H	Exclusive status
7FH	ID number (universal realtime message)
7FH	Device ID (Broadcast)
04H	Sub ID#1 (Device Control messages)
01H	Sub ID#2 (Master Volume)
11H	Master volume lower byte
mmH	Master volume upper byte
F7H	EOX (End Of Exclusive)

* The lower byte (11H) of Master Volume will be handled as 00H.

● Identity Request Message

Status	Data byte	Status
F0H	7FH, 10H, 06H, 01H	F7H

Byte	Explanation
F0H	Exclusive status
7FH	ID number (universal realtime message)
10H	Device ID
06H	Sub ID#1 (General Information)
01H	Sub ID#2 (Identity Request)
F7H	EOX (End Of Exclusive)

* The "dev" is own device number or 7FH (Broadcast)

● Data transmission

E-500 / E-500 OR / E-300 / KR-75 can receive the various parameters using System Exclusive messages.

The exclusive message of GS format data has a model ID of 42H and a device ID of 10H (17), and it is common to all the GS devices.

○ Data set 1 DT1

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

Status	Data byte	Status
F0H	41H, 10H, 42H, 12H, aaH, bbH, ccH, ddH, ... eeH, sum	F7H

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

- * The amount of data that can be transmitted at one time depends on the type of data, and data can be received only from the specified starting address and size. Refer to the Address and Size given in Section 3 (page 5).
- * Data larger than 128 bytes must be divided into packets of 128 bytes or less. If "Data Set 1" is transmitted successively, there must be an interval of at least 40 ms between packets.
- * Regarding the checksum please refer to section 4 (page 16).

Section 2. Transmit data

Channel Voice Messages -

■ Note off

Status	Second	Third
8nH	kkH	40H

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

■ Note on

Status	Second	Third
9nH	kkH	vvH

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

■ Control change

Bank select

Status	Second	Third
BnH	00H	mmH
BnH	20H	llH

n=MIDI channel number : 0H - FH (ch.1 - ch.16)
mm, ll=Bank number : 00H,00H - 7FH,7FH (bank1 - bank16384)

Modulation (not for KR-75)

Status	Second	Third
BnH	01H	vvH

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

Volume

Status	Second	Third
BnH	07H	vvH

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

Hold1

Status	Second	Third
BnH	40H	vvH

n=MIDI channel number : 0H - FH (ch.1 - ch.16)
vv=Control Value : 00H - 7FH (0 - 127) 0-63=OFF, 64-127=ON

Soft

Status	Second	Third
BnH	43H	vvH

n=MIDI channel number : 0H - FH (ch.1 - ch.16)
vv=Control Value : 00H - 7FH (0 - 127) 0-63=OFF, 64-127=ON

Sostenuto

Status	Second	Third
BnH	42H	vvH

n=MIDI channel number : 0H - FH (ch.1 - ch.16)
vv=Control Value : 00H - 7FH (0 - 127) 0-63=OFF, 64-127=ON

■ Effect1 depth (Reverb send level)

Status	Second	Third
BnH	5BH	vvH

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

■ Effect3 depth (Chorus send level)

Status	Second	Third
BnH	5DH	vvH

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

■ Program change

Status	Second
CnH	ppH

n=MIDI channel number : 0H - FH (ch.1 - ch.16)
pp=Program number : 00H - 7FH (prog.1 - prog.128)

■ Pitch bend change

Status	Second	Third
EnH	llH	mmH

n=MIDI channel number : 0H - FH (ch.1 - ch.16)
mm, ll=Value : 00 00H - 40 00H - 7F 7FH (-8192 - 0 - +8191)

■ System Realtime Message

● Active sensing

Status
FEH

- * This will be transmitted constantly at intervals of approximately 250 ms.

■ System exclusive messages

● Identity Reply

Status	Data byte	Status
F0H	7EH, 10H, 06H, 02H, 41H, 42H, 00H, 01H, 03H, 00H, 01H, 00H, 00H, F7H	F7H

Byte	Explanation
F0H	Exclusive status
7EH	ID number (universal non-realtime message)
10H	Device ID (use the same as the device ID of Roland)
06H	Sub ID#1 (General Information)
02H	Sub ID#2 (Identity Reply)
41H	ID number (Roland)
42H	Device family code (LSB)
00H	Device family code (MSB)
01H	Device family number code (LSB)
03H	Device family number code (MSB)
00H	Software revision level
01H	Software revision level
00H	Software revision level
00H	Software revision level
F7H	EOX (End of Exclusive)

● Lyrics Data Transmission

When a "TUNE1000" song with lyrics is played, the E-500 /E-500 OR / E-300 / KR-75 sends on its MIDI Out the following "Lyrics Sys Ex":

Address(H)	Size(H)	Data(H)	Description
7F 00 00	00 00 7F	00 - 0F	LYRICS 1st Line Display
7F 01 00	00 00 7F	00 - 0F	LYRICS 2nd Line Display
7F 02 00	00 00 7F	00 - 0F	LYRICS 3rd Line Display
7F 08 00	00 00 7F	00 - 0F	LYRICS 1st Line syllable Highlight
7F 09 00	00 00 7F	00 - 0F	LYRICS 2nd Line syllable Highlight
7F 0A 00	00 00 7F	00 - 0F	LYRICS 3rd Line syllable Highlight

Lyrics data are sent in nibbles format:

Bit 7 = 0
 Bit 6 = 0
 Bit 5 = 0
 Bit 4 = 0
 Bit 3 =
 Bit 2 =
 Bit 1 =
 Bit 0 =

Less significant nibble is sent first.

Section 3. Parameter Address Map (Model ID = 42H)

This map indicates address, size, Data (range), Parameter, Description, and Default Value of parameters which can be transferred using and "Data set 1 (DT1)."

All the numbers of address, size, Data, and Default Value are indicated in 7-bit Hexadecimal-form.

■ Address Block map

An outlined address map of the Exclusive Communication is as follows:

Address (H)	Block	
40 00 00	SYSTEM PARAMETERS	Individual
40 01 3F	PART PARAMETERS (x = 0-F)	Individual
40 1x 00		
40 2x 5A	DRUM SETUP PARAMETERS (m = 0-1)	Individual
41 m0 00		
41 m8 7F		
48 00 00	SYSTEM PARAMETERS	Bulk
48 01 10	PART PARAMETERS	Bulk
48 1D 0F	DRUM SETUP PARAMETER (m = 0-1)	Bulk
49 m0 00		
49 mE 17		

There are two ways in which GS data is transmitted: Individual Parameter Transmission in which individual parameters are transmitted one by one, and Bulk Dump Transmission in which a large amount of data is transmitted at once.

■ Individual Parameters

Individual Parameter Transmission transmits data (or requests data) for one parameter as one exclusive message (one packet of "F0 F7").

In Individual Parameter Transmission, you must use the Address and Size listed in the following "Parameter Address Map." Addresses marked at "#" cannot be used as starting addresses.

● System Parameters

Parameters related to the system of the device are called System Parameters.

Address (1H)	Size (1H)	Data (1H)	Parameter	Description	Default Value (1H)	Description
40 00 00	00 00 04	0018-07E8	MASTER TUNE	-100.0 - +100.0 [cent]	00 04 00 00	0 [cent]
40 00 01#				Use nibblized data.		
40 00 02#						
40 00 03#						
* Refer to section 4. Supplementary material. "About tuning" (page 17).						
40 00 04	00 00 01	00-7F	MASTER VOLUME	0-127	7F	127
			(= F0 7F 7F 04 01 00 vv F7)			
40 00 05	00 00 01	28-58	MASTER KEY-SHIFT	-24 - +24 [semitones]	40	0 [semitones]
40 00 06	00 00 01	01-7F	MASTER PAN	-63 (LEFT) - +63 (RIGHT)	40	0 (CENTER)
40 00 7F	00 00 01	00	MODE SET	00 = GS Reset (Rx. only) 127 = Exit GS	***	
* Refer to "System exclusive messages related to Mode settings" (page 4).						
40 01 10	00 00 10	00-40	VOICE RESERVE	Part 10 (Drum Part)	02	2
40 01 11#				Part 1	06	6
40 01 12#				Part 2	02	2
40 01 13#				Part 3	02	2
40 01 14#				Part 4	02	2
40 01 15#				Part 5	02	2
40 01 16#				Part 6	02	2
40 01 17#				Part 7	02	2
40 01 18#				Part 8	02	2
40 01 19#				Part 9	02	2
40 01 1A#				Part 11	00	0
40 01 :#				:		
40 01 1F#				Part 16	00	0
* The sum total of voices in the voice reserve function must be equal to or less than the number of the maximum polyphony. The maximum polyphony of the E-500 / E-500 OR / E-300 / KR-75 is 64. For compatibility with other GS models, it is recommended that the maximum polyphony be equal or less than 24.						
40 01 30	00 00 01	00-07	REVERB MACRO	00: Room 1 01: Room 2 02: Room 3 03: Hall 1 04: Hall 2 05: Plate 06: Delay 07: Panning Delay	04	Hall 2
40 01 31	00 00 01	00-07	REVERB CHARACTER	0-7	04	4
40 01 32	00 00 01	00-07	REVERB PRE-LPF	0-7	00	0
40 01 33	00 00 01	00-7F	REVERB LEVEL	0-127	40	64
40 01 34	00 00 01	00-7F	REVERB TIME	0-127	40	64
40 01 35	00 00 01	00-7F	REVERB DELAY FEEDBACK	0-127	00	0
* REVERB MACRO is a macro parameter that allows global setting of reverb parameters. When you select the reverb type with REVERB MACRO, each reverb parameter will be set to the most suitable value.						
* REVERB CHARACTER is a parameter that changes the reverb algorithm. The value of REVERB CHARACTER corresponds to the REVERB MACRO of the same number.						
40 01 38	00 00 01	00-07	CHORUS MACRO	00: Chorus 1 01: Chorus 2 02: Chorus 3 03: Chorus 4 04: Feedback Chorus 05: Flanger 06: Short Delay 07: Short Delay (FB)	02	Chorus 3
40 01 39	00 00 01	00-07	CHORUS PRE-LPF	0-7	00	0
40 01 3A	00 00 01	00-7F	CHORUS LEVEL	0-127	40	64
40 01 3B	00 00 01	00-7F	CHORUS FEEDBACK	0-127	08	8
40 01 3C	00 00 01	00-7F	CHORUS DELAY	0-127	50	80
40 01 3D	00 00 01	00-7F	CHORUS RATE	0-127	03	3
40 01 3E	00 00 01	00-7F	CHORUS DEPTH	0-127	13	19
40 01 3F	00 00 01	00-7F	CHORUS SEND LEVEL TO REVERB	0-127	00	0
* CHORUS MACRO is a macro parameter that allows global setting of chorus parameters. When you use CHORUS MACRO to select the chorus type, each chorus parameter will be set to the most suitable value.						
40 03 00	00 00 02	00 - 7F	EFX TYPE (MSB, LSB)	00 00 - 7F 7F	00 01	Thru
* Refer to EFX Type Table (P.10)						
* This EFX Type is current EFX type of this system. When part EFX type is same to this EFX type, that part connect to EFX.						
40 03 03	00 00 01	00 - 7F	EFX Parameter 1			
40 03 04	00 00 01	00 - 7F	EFX Parameter 2			
40 03 05	00 00 01	00 - 7F	EFX Parameter 3			
40 03 06	00 00 01	00 - 7F	EFX Parameter 4			
40 03 07	00 00 01	00 - 7F	EFX Parameter 5			
40 03 08	00 00 01	00 - 7F	EFX Parameter 6			
40 03 09	00 00 01	00 - 7F	EFX Parameter 7			
40 03 0A	00 00 01	00 - 7F	EFX Parameter 8			

40 03 0B	00 00 01	00 - 7F	EFX Parameter 9			
40 03 0C	00 00 01	00 - 7F	EFX Parameter 10			
40 03 0D	00 00 01	00 - 7F	EFX Parameter 11			
40 03 0E	00 00 01	00 - 7F	EFX Parameter 12			
40 03 0F	00 00 01	00 - 7F	EFX Parameter 13			
40 03 10	00 00 01	00 - 7F	EFX Parameter 14			
40 03 11	00 00 01	00 - 7F	EFX Parameter 15			
40 03 12	00 00 01	00 - 7F	EFX Parameter 16			
40 03 13	00 00 01	00 - 7F	EFX Parameter 17			
40 03 14	00 00 01	00 - 7F	EFX Parameter 18			
40 03 15	00 00 01	00 - 7F	EFX Parameter 19			
40 03 16	00 00 01	00 - 7F	EFX Parameter 20			
* Each parameter will be changed by EFX type. Refer to EFX Parameter Map. (P.10)						
40 03 17	00 00 01	00 - 7F	EFX Send Level to Reverb			
* Set to 0 when EFX type is changed.						
40 03 18	00 00 01	00 - 7F	EFX Send Level to Chorus			
* Set to 0 when EFX type is changed.						
40 03 1A	00 00 01	00 - 7F	EFX Depth	Dry 100% - EFX 100%	7F	
40 03 1B	00 00 01	00 - 7F	EFX Control Source 1	00: OFF 01 - 5F: Control Change No. 71: CAf 72: Bender	00	
40 03 1C	00 00 01	00 - 7F	EFX Control Depth 1		40	-100% - +100%
40 03 1D	00 00 01	00 - 7F	EFX Control Source 2	*Refer to EFX Control Source 1	00	
40 03 1E	00 00 01	00 - 7F	EFX Control Depth 2		40	-100% - +100%
* Marked #1 or #2 can be controlled by EFX CONTROL SOURCE 1 or 2.						

● Part Parameters

E-500 /E-500 OR / E-300 / KR-75 has 16 parts. Parameters that can be set individually for each Part are called Part parameters.

If you use exclusive messages to set Part parameters, specify the address by Block number rather than Part Number (normally the same number as the MIDI channel). The Block number can be specified as one of 16 blocks, from 0 (H) to F (H).

The relation between Part number and Block number is as follows.

x...BLOCK NUMBER (0-F),	Part 1 (MIDI ch = 1) x = 1
	Part 2 (MIDI ch = 2) x = 2
	: : :
	Part 9 (MIDI ch = 9) x = 9
	Part10 (MIDI ch = 10) x = 0
	Part11 (MIDI ch = 11) x = A
	Part12 (MIDI ch = 12) x = B
	: : :
	Part16 (MIDI ch = 16) x = F

Address (H)	Size (H)	Data (H)	Parameter	Description	Default Value (H)	Description
40 1x 00	00 00 02	00-7F	TONER NUMBER	CC#00 VALUE 0-127	00	0
40 1x 01#		00-7F		P.C. VALUE 1-128	00	1
40 1x 02	00 00 01	00-10	Rx. CHANNEL	1-16, OFF	Same as the Part Number	
40 1x 03	00 00 01	00-01	Rx. PITCH BEND	OFF/ON	01	ON
40 1x 04	00 00 01	00-01	Rx. CH PRESSURE (CAf)	OFF/ON	01	ON
40 1x 05	00 00 01	00-01	Rx. PROGRAM CHANGE	OFF/ON	01	ON
40 1x 06	00 00 01	00-01	Rx. CONTROL CHANGE	OFF/ON	01	ON
40 1x 07	00 00 01	00-01	Rx. POLY PRESSURE (PAf)	OFF/ON	01	ON
40 1x 08	00 00 01	00-01	Rx. NOTE MESSAGE	OFF/ON	01	ON
40 1x 09	00 00 01	00-01	Rx. RPN	OFF/ON	01	ON
40 1x 0A	00 00 01	00-01	Rx. NRPN	OFF/ON	00 (01*)	OFF (ON*)
* Rx. NRPN is set to OFF by power-on or by receiving "Turn General MIDI System On," and it will be set ON when "GS RESET" is received.						
40 1x 0B	00 00 01	00-01	Rx. MODULATION	OFF/ON	01	ON
40 1x 0C	00 00 01	00-01	Rx. VOLUME	OFF/ON	01	ON
40 1x 0D	00 00 01	00-01	Rx. PANPOT	OFF/ON	01	ON
40 1x 0E	00 00 01	00-01	Rx. EXPRESSION	OFF/ON	01	ON
40 1x 0F	00 00 01	00-01	Rx. HOLD1	OFF/ON	01	ON
40 1x 10	00 00 01	00-01	Rx. PORTAMENTO	OFF/ON	01	ON
40 1x 11	00 00 01	00-01	Rx. SOSTENUTO	OFF/ON	01	ON
40 1x 12	00 00 01	00-01	Rx. SOFT	OFF/ON	01	ON
40 1x 13	00 00 01	00-01	MONO/POLY MODE	Mono/Poly	01	Poly
(= CC# 126 01 / CC# 127 00)						
40 1x 14	00 00 01	00-02	ASSIGN MODE	0 = SINGLE 1 = LIMITED-MULTI 2 = FULL-MULTI	00 at x = 0 01 at x ≠ 0	SINGLE at x = 0 LIMITED-MULTI at x ≠ 0
* ASSIGN MODE is the parameter that determines how voice assignment will be handled when sounds overlap on identical note numbers in the same channel (i.e., repeatedly struck notes). This is initialized to a mode suitable for each Part, so for general purposes there is no need to change this.						
40 1x 15	00 00 01	00-02	USE FOR RHYTHM PART	0 = OFF 1 = MAP'1 2 = MAP'2	00 at x ≠ 0 01 at x = 0	OFF at x ≠ 0 MAP'1 at x = 0

* This parameter sets the Drum Map of the Part used as the Drum Part. E-500 /E-500 OR / E-300 / KR-75 can simultaneously (in different Parts) use up to two Drum Maps (MAP1, MAP2). With the initial settings, Part10 (MIDI CH = 10, x = 0) is set to MAP1 (1), and other Parts are set to normal instrumental Parts (OFF (0)).

40 1x 16	00 00 01	28-58	PITCH KEY SHIFT	-24 - +24 [semitones]	40	0 [semitones]
40 1x 17	00 00 02	08-F8	PITCH OFFSET FINE	-12.0 - +12.0 [Hz]	08 00	0 [Hz]
40 1x 18#			Use nibblized data.			

* PITCH OFFSET FINE allows you to alter, by a specified frequency amount, the pitch at which notes will sound. This parameter differs from the conventional Fine Tuning (RPN #1) parameter in that the amount of frequency alteration (in Hertz) will be identical no matter which note is played. When a multiple number of Parts, each of which has been given a different setting for PITCH OFFSET FINE, are sounded by means of an identical note number, you can obtain a Celeste effect.

40 1x 19	00 00 01	00-7F	PART LEVEL (= CC# 7)	0-127	64	100
40 1x 1A	00 00 01	00-7F	VELOCITY SENSE DEPTH	0-127	40	64
40 1x 1B	00 00 01	00-7F	VELOCITY SENSE OFFSET	0-127	40	64
40 1x 1C	00 00 01	00-7F	PART PANPOT (= CC# 10, except RANDOM)	-64 (RANDOM), -63 (LEFT) - +63 (RIGHT)	40	0 (CENTER)
40 1x 1D	00 00 01	00-7F	KEY RANGE LOW	(C-1)-(G9)	00	C-1
40 1x 1E	00 00 01	00-7F	KEY RANGE HIGH	(C-1)-(G9)	7F	G 9
40 1x 1F	00 00 01	00-5F	CC1 CONTROLLER NUMBER	0-95	10	16
40 1x 20	00 00 01	00-5F	CC2 CONTROLLER NUMBER	0-95	11	17
40 1x 21	00 00 01	00-7F	CHORUS SEND LEVEL (= CC# 93)	0-127	00	0
40 1x 22	00 00 01	00-7F	REVERB SEND LEVEL (= CC# 91)	0-127	28	40

40 1x 23	00 00 01	00-01	Rx. BANK SELECT	OFF/ON	01 (00*)	ON (OFF*)
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* Rx. BANK SELECT is set to ON by power-on or by receiving "GS RESET," and will be set OFF when "Turn General MIDI System On" is received.

40 1x 24	00 00 01	00-01	Rx. BANK SELECT LSB	OFF/ON	00	OFF
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* E-500 /E-500 OR / E-300 / KR-75 can recognise Bank Select LSB (4011-4311) even if this message is OFF.

40 1x 25	00 00 01	00-01	TONE REMAIN	OFF/ON	01	ON
40 1x 28	00 00 03	00-7F	Bank Select LSB Range	LSB (from)	40	40H
40 1x 29#				LSB (to)	43	43H

40 1x 30	00 00 01	0E-72	TONE MODIFY 1 Vibrato rate (= NRP# 8)	-50 - +50	40	0
40 1x 31	00 00 01	0E-72	TONE MODIFY 2 Vibrato depth (= NRP# 9)	-50 - +50	40	0
40 1x 32	00 00 01	0E-72	TONE MODIFY 3 TVF cutoff frequency (= NRP# 32)	-50 - +50	40	0
40 1x 33	00 00 01	0E-72	TONE MODIFY 4 TVF resonance (= NRP# 33)	-50 - +50	40	0
40 1x 34	00 00 01	0E-72	TONE MODIFY 5 TVF&TVA Env.attack (= NRP# 99)	-50 - +50	40	0
40 1x 35	00 00 01	0E-72	TONE MODIFY 6 TVF&TVA Env.decay (= NRP# 100)	-50 - +50	40	0
40 1x 36	00 00 01	0E-72	TONE MODIFY 7 TVF&TVA Env.release (= NRP# 102)	-50 - +50	40	0
40 1x 37	00 00 01	0E-72	TONE MODIFY 8 Vibrato delay (= NRP# 10)	-50 - +50	40	0

40 1x 40	00 00 0C	00-7F	SCALE TUNING C	-64 - +63 [cent]	40	0 [cent]
40 1x 41#		00-7F	SCALE TUNING C#	-64 - +63 [cent]	40	0 [cent]
40 1x 42#		00-7F	SCALE TUNING D	-64 - +63 [cent]	40	0 [cent]
40 1x 43#		00-7F	SCALE TUNING D#	-64 - +63 [cent]	40	0 [cent]
40 1x 44#		00-7F	SCALE TUNING E	-64 - +63 [cent]	40	0 [cent]
40 1x 45#		00-7F	SCALE TUNING F	-64 - +63 [cent]	40	0 [cent]
40 1x 46#		00-7F	SCALE TUNING F#	-64 - +63 [cent]	40	0 [cent]
40 1x 47#		00-7F	SCALE TUNING G	-64 - +63 [cent]	40	0 [cent]
40 1x 48#		00-7F	SCALE TUNING G#	-64 - +63 [cent]	40	0 [cent]
40 1x 49#		00-7F	SCALE TUNING A	-64 - +63 [cent]	40	0 [cent]
40 1x 4A#		00-7F	SCALE TUNING A#	-64 - +63 [cent]	40	0 [cent]
40 1x 4B#		00-7F	SCALE TUNING B	-64 - +63 [cent]	40	0 [cent]

* SCALE TUNING is a function that allows fine adjustment to the pitch of each note in the octave. The pitch of each identically-named note in all octaves will change simultaneously. A setting of ±60 cent (40H) is equal temperament. Refer to section 4. Supplementary material, "The Scale Tune Feature"(p-17).

40 2x 00	00 00 01	28-58	MOD PITCH CONTROL	-24 - +24 [semitone]	40	0 [semitones]
40 2x 01	00 00 01	00-7F	MOD TVF CUTOFF CONTROL	-9600 - +9600 [cent]	40	0 [cent]
40 2x 02	00 00 01	00-7F	MOD AMPLITUDE CONTROL	-100.0 - +100.0 [%]	40	0 [%]
40 2x 03	00 00 01	00-7F	MOD LFO1 RATE CONTROL	-10.0 - +10.0 [Hz]	40	0 [Hz]
40 2x 04	00 00 01	00-7F	MOD LFO1 PITCH DEPTH	0-600 [cent]	0A	47 [cent]
40 2x 05	00 00 01	00-7F	MOD LFO1 TVF DEPTH	0-2400 [cent]	00	0 [cent]
40 2x 06	00 00 01	00-7F	MOD LFO1 TVA DEPTH	0-100.0 [%]	00	0 [%]
40 2x 07	00 00 01	00-7F	MOD LFO2 RATE CONTROL	-10.0 - +10.0 [Hz]	40	0 [Hz]
40 2x 08	00 00 01	00-7F	MOD LFO2 PITCH DEPTH	0-600 [cent]	00	0 [cent]
40 2x 09	00 00 01	00-7F	MOD LFO2 TVF DEPTH	0-2400 [cent]	00	0 [cent]
40 2x 0A	00 00 01	00-7F	MOD LFO2 TVA DEPTH	0-100.0 [%]	00	0 [%]
40 2x 10	00 00 01	40-58	BEND PITCH CONTROL	0-24 [semitone]	42	2 [semitones]
40 2x 11	00 00 01	00-7F	BEND TVF CUTOFF CONTROL	-9600 - +9600 [cent]	40	0 [cent]

40 2x 12	00 00 01	00-7F	BEND AMPLITUDE CONTROL	-100.0 - +100.0 [%]	40	0 [%]
40 2x 13	00 00 01	00-7F	BEND LFO1 RATE CONTROL	-10.0 - +10.0 [Hz]	40	0 [Hz]
40 2x 14	00 00 01	00-7F	BEND LFO1 PITCH DEPTH	0-600 [cent]	00	0 [cent]
40 2x 15	00 00 01	00-7F	BEND LFO1 TVF DEPTH	0-2400 [cent]	00	0 [cent]
40 2x 16	00 00 01	00-7F	BEND LFO1 TVA DEPTH	0-100.0 [%]	00	0 [%]
40 2x 17	00 00 01	00-7F	BEND LFO2 RATE CONTROL	-10.0 - +10.0 [Hz]	40	0 [Hz]
40 2x 18	00 00 01	00-7F	BEND LFO2 PITCH DEPTH	0-600 [cent]	00	0 [cent]
40 2x 19	00 00 01	00-7F	BEND LFO2 TVF DEPTH	0-2400 [cent]	00	0 [cent]
40 2x 1A	00 00 01	00-7F	BEND LFO2 TVA DEPTH	0-100.0 [%]	00	0 [%]
40 2x 20	00 00 01	28-58	CAf PITCH CONTROL	-24 - +24 [semitone]	40	0 [semitones]
40 2x 21	00 00 01	00-7F	CAf TVF CUTOFF CONTROL	-9600 - +9600 [cent]	40	0 [cent]
40 2x 22	00 00 01	00-7F	CAf AMPLITUDE CONTROL	-100.0 - +100.0 [%]	40	0 [%]
40 2x 23	00 00 01	00-7F	CAf LFO1 RATE CONTROL	-10.0 - +10.0 [Hz]	40	0 [Hz]
40 2x 24	00 00 01	00-7F	CAf LFO1 PITCH DEPTH	0-600 [cent]	00	0 [cent]
40 2x 25	00 00 01	00-7F	CAf LFO1 TVF DEPTH	0-2400 [cent]	00	0 [cent]
40 2x 26	00 00 01	00-7F	CAf LFO1 TVA DEPTH	0-100.0 [%]	00	0 [%]
40 2x 27	00 00 01	00-7F	CAf LFO2 RATE CONTROL	-10.0 - +10.0 [Hz]	40	0 [Hz]
40 2x 28	00 00 01	00-7F	CAf LFO2 PITCH DEPTH	0-600 [cent]	00	0 [cent]
40 2x 29	00 00 01	00-7F	CAf LFO2 TVF DEPTH	0-2400 [cent]	00	0 [cent]
40 2x 2A	00 00 01	00-7F	CAf LFO2 TVA DEPTH	0-100.0 [%]	00	0 [%]
40 2x 30	00 00 01	28-58	PAf PITCH CONTROL	-24 - +24 [semitone]	40	0 [semitones]
40 2x 31	00 00 01	00-7F	PAf TVF CUTOFF CONTROL	-9600 - +9600 [cent]	40	0 [cent]
40 2x 32	00 00 01	00-7F	PAf AMPLITUDE CONTROL	-100.0 - +100.0 [%]	40	0 [%]
40 2x 33	00 00 01	00-7F	PAf LFO1 RATE CONTROL	-10.0 - +10.0 [Hz]	40	0 [Hz]
40 2x 34	00 00 01	00-7F	PAf LFO1 PITCH DEPTH	0-600 [cent]	00	0 [cent]
40 2x 35	00 00 01	00-7F	PAf LFO1 TVF DEPTH	0-2400 [cent]	00	0 [cent]
40 2x 36	00 00 01	00-7F	PAf LFO1 TVA DEPTH	0-100.0 [%]	00	0 [%]
40 2x 37	00 00 01	00-7F	PAf LFO2 RATE CONTROL	-10.0 - +10.0 [Hz]	40	0 [Hz]
40 2x 38	00 00 01	00-7F	PAf LFO2 PITCH DEPTH	0-600 [cent]	00	0 [cent]
40 2x 39	00 00 01	00-7F	PAf LFO2 TVF DEPTH	0-2400 [cent]	00	0 [cent]
40 2x 3A	00 00 01	00-7F	PAf LFO2 TVA DEPTH	0-100.0 [%]	00	0 [%]
40 2x 40	00 00 01	28-58	CC1 PITCH CONTROL	-24 - +24 [semitone]	40	0 [semitones]
40 2x 41	00 00 01	00-7F	CC1 TVF CUTOFF CONTROL	-9600 - +9600 [cent]	40	0 [cent]
40 2x 42	00 00 01	00-7F	CC1 AMPLITUDE CONTROL	-100.0 - +100.0 [%]	40	0 [%]
40 2x 43	00 00 01	00-7F	CC1 LFO1 RATE CONTROL	-10.0 - +10.0 [Hz]	40	0 [Hz]
40 2x 44	00 00 01	00-7F	CC1 LFO1 PITCH DEPTH	0-600 [cent]	00	0 [cent]
40 2x 45	00 00 01	00-7F	CC1 LFO1 TVF DEPTH	0-2400 [cent]	00	0 [cent]
40 2x 46	00 00 01	00-7F	CC1 LFO1 TVA DEPTH	0-100.0 [%]	00	0 [%]
40 2x 47	00 00 01	00-7F	CC1 LFO2 RATE CONTROL	-10.0 - +10.0 [Hz]	40	0 [Hz]
40 2x 48	00 00 01	00-7F	CC1 LFO2 PITCH DEPTH	0-600 [cent]	00	0 [cent]
40 2x 49	00 00 01	00-7F	CC1 LFO2 TVF DEPTH	0-2400 [cent]	00	0 [cent]
40 2x 4A	00 00 01	00-7F	CC1 LFO2 TVA DEPTH	0-100.0 [%]	00	0 [%]
40 2x 50	00 00 01	28-58	CC2 PITCH CONTROL	-24 - +24 [semitone]	40	0 [semitones]
40 2x 51	00 00 01	00-7F	CC2 TVF CUTOFF CONTROL	-9600 - +9600 [cent]	40	0 [cent]
40 2x 52	00 00 01	00-7F	CC2 AMPLITUDE CONTROL	-100.0 - +100.0 [%]	40	0 [%]
40 2x 53	00 00 01	00-7F	CC2 LFO1 RATE CONTROL	-10.0 - +10.0 [Hz]	40	0 [Hz]
40 2x 54	00 00 01	00-7F	CC2 LFO1 PITCH DEPTH	0-600 [cent]	00	0 [cent]
40 2x 55	00 00 01	00-7F	CC2 LFO1 TVF DEPTH	0-2400 [cent]	00	0 [cent]
40 2x 56	00 00 01	00-7F	CC2 LFO1 TVA DEPTH	0-100.0 [%]	00	0 [%]
40 2x 57	00 00 01	00-7F	CC2 LFO2 RATE CONTROL	-10.0 - +10.0 [Hz]	40	0 [Hz]
40 2x 58	00 00 01	00-7F	CC2 LFO2 PITCH DEPTH	0-600 [cent]	00	0 [cent]
40 2x 59	00 00 01	00-7F	CC2 LFO2 TVF DEPTH	0-2400 [cent]	00	0 [cent]
40 2x 5A	00 00 01	00-7F	CC2 LFO2 TVA DEPTH	0-100.0 [%]	00	0 [%]

40 4x 23 00 00 02 00 - 7F PART EFX TYPE (MSB, LSB) 00 00

* This EFX type is same to EFX type of Patch Parameter. When this EFX type is same to EFX type of Patch parameter, the part connect to EFX.

● Drum Setup Parameters

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

Address (H)	Size (H)	Data (H)	Parameter	Description
41 m1 rr	00 00 01	00-7F	PLAY NOTE NUMBER	Pitch coarse
41 m2 rr	00 00 01	00-7F	LEVEL (= NRP# 26)	TVA level
41 m3 rr	00 00 01	00-7F	ASSIGN GROUP NUMBER	Non, 1-127
41 m4 rr	00 00 01	00-7F	PANPOT (= NRP# 28, except RANDOM)	-64 (RANDOM), -63 (LEFT) - +63 (RIGHT)
41 m5 rr	00 00 01	00-7F	REVERB SEND LEVEL (= NRP# 29)	0.0-1.0 Multiplicand of the part reverb depth
41 m6 rr	00 00 01	00-7F	CHORUS SEND LEVEL (= NRP# 30)	0.0-1.0 Multiplicand of the part chorus depth
41 m7 rr	00 00 01	00-01	Rx. NOTE OFF	OFF/ON
41 m8 rr	00 00 01	00-01	Rx. NOTE ON	OFF/ON

* When the Drum Set is changed, DRUM SETUP PARAMETER values will all be initialized.

■ Bulk Dump

Bulk Dump allows you to transmit a large amount of data at once, and is convenient for storing settings for the entire unit on a computer or sequencer.

To make E-500 / E-500 OR / E-300 / KR-75 Dump transmission, send it a "Bulk Dump Request" message. For Bulk Dump Request, you must use the Address and Size listed in the following "Parameter Map." Addresses marked at "#" cannot be used as starting addresses. Bulk Dump data which include large amount of data (more than 128 bytes) will sent out in separate packets at an interval of about 40 ms. In this case, the subsequent packets may contain the address marked "#."

To send several packets of large DT1 messages at a time, insert intervals of at least 40 ms. in between those packets.

● System and Part Parameters

Address (H)	Size (H)	Description	Number of packets
48 00 00 48 1D 0F#	00 1D 10 #	ALL	70 packets
48 00 00 48 00 0F#	00 00 10 #	SYSTEM 1	1 packet
48 00 10 48 01 0F#	00 01 00 #	SYSTEM 2	1 packet
48 01 10 48 02 6F#	00 01 60 #	BLOCK 0	2 packets
48 02 70 48 04 4F#	00 01 60 #	BLOCK 1	2 packets
48 04 50 48 06 2F#	00 01 60 #	BLOCK 2	2 packets
48 06 30 48 08 0F#	00 01 60 #	BLOCK 3	2 packets
48 08 10 48 09 6F#	00 01 60 #	BLOCK 4	2 packets
48 09 70 48 0B 4F#	00 01 60 #	BLOCK 5	2 packets
48 0B 50 48 0D 2F#	00 01 60 #	BLOCK 6	2 packets
48 0D 30 48 0F 0F#	00 01 60 #	BLOCK 7	2 packets
48 0F 10 48 10 6F#	00 01 60 #	BLOCK 8	2 packets
48 10 70 48 12 4F#	00 01 60 #	BLOCK 9	2 packets
48 12 50 48 14 2F#	00 01 60 #	BLOCK A	2 packets
48 14 30 48 16 0F#	00 01 60 #	BLOCK B	2 packets
48 16 10 48 17 6F#	00 01 60 #	BLOCK C	2 packets
48 17 70 48 19 4F#	00 01 60 #	BLOCK D	2 packets
48 19 50 48 1B 2F#	00 01 60 #	BLOCK E	2 packets
48 1B 30 48 1D 0F#	00 01 60 #	BLOCK F	2 packets

● DRUM SETUP PARAMETERS

m: map number (0 = MAP1, 1 = MAP2)

Address (H)	Size (H)	Description	Number of packets
49 m0 00 49 m1 7F	00 02 00	PLAY NOTE NUMBER	2 packets
49 m2 00 49 m3 7F	00 02 00	LEVEL	2 packets
49 m4 00 49 m5 7F	00 02 00	ASSIGN GROUP NUMBER	2 packets
49 m6 00 49 m7 7F	00 02 00	PANPOT	2 packets
49 m8 00 49 m9 7F	00 02 00	REVERB SEND LEVEL	2 packets
49 mA 00 49 mB 7F	00 02 00	CHORUS SEND LEVEL	2 packets
49 mC 00 49 MD 7F	00 02 00	Rx. NOTE ON/OFF	2 packets
49 ME 00 49 ME 17	00 00 18	DRUM MAP NAME	1 packet

● EFX Type Table

MSB	LSB	Type
01	00	Equalizer
01	01	Spectrum
01	02	Enhancer
01	10	Overdrive
01	11	Distortion
01	20	Phaser
01	21	Auto Wah
01	22	Roatry
01	23	Stereo Flanger
01	24	Step Flanger
01	30	Compressor
01	31	Limiter
01	40	Hexa Chorus
01	41	Tremolo Chorus
01	42	Stereo Chorus
01	43	Space D
01	50	Stereo Delay
01	51	Modulation Delay
01	52	Triple Tap Delay
01	53	Quadruple Tap Delay
01	54	Time Controlable Delay
01	55	Reverb
01	56	Gate Reverb
01	60	2 Voice Pitch Shifter
01	61	Feedback Pitch Shifter
02	00	Overdrive -> Chorus
02	01	Overdrive -> Flanger
02	02	Overdrive -> Delay
02	03	Distortion -> Chorus
02	04	Distortion -> Flanger
02	05	Distortion -> Delay
02	06	Enhancer -> Chorus
02	07	Enhancer -> Flanger
02	08	Enhancer -> Delay
02	09	Chorus -> Delay
02	0A	Flanger -> Delay
02	0B	Chorus -> Flanger
11	00	Chorus / Delay
11	01	Flanger / Delay
11	02	Chorus / Flanger

● EFX Parameter Map

* Marked #1 or #2 can be controlled by EFX CONTROL SOURCE1 or 2.

01H, 00H: Equalizer

No.	Parameter	Value	Default
1	Low Frequency	00 - 01	01
2	Low Gain	31 - 4F	45
3	High Frequency	00 - 01	01
4	High Gain	31 - 4F	30
5	Mid 1 Frequency	00 - 7F	4D
6	Mid 1 Q	00 - 04	00
7	Mid 1 Gain	41 - 4F	48
8	Mid 2 Frequency	00 - 7F	3A
9	Mid 2 Q	00 - 04	00
10	Mid 2 Gain	41 - 4F	38
20	Level (#1)	00 - 7F	7F

01H, 01H: Spectrum

No	Parameter	Value	Default
1	Band 1 Gain (200Hz)	31 - 4F	45
2	Band 2 Gain (500Hz)	31 - 4F	47
3	Band 3 Gain (1000Hz)	31 - 4F	4A
4	Band 4 Gain (1250Hz)	31 - 4F	48
5	Band 5 Gain (200Hz)	31 - 4F	44
6	Band 6 Gain (3150Hz)	31 - 4F	40
7	Band 7 Gain (4000Hz)	31 - 4F	3C
8	Band 8 Gain (5000Hz)	31 - 4F	3B
9	Width	00 - 04	01
19	Pan (#1)	00 - 7F	40
20	Level (#2)	00 - 7F	7F

01H, 02H: Enhancer

No	Parameter	Value	Default
1	Sense (#1)	00 - 7F	7F
2	Mix (#2)	00 - 7F	40
17	EQ Low Gain (200Hz)	31 - 4F	40
18	EQ High Gain (4000Hz)	31 - 4F	40
20	Level	00 - 7F	7F

01H, 10H: Overdrive

No	Parameter	Value	Default
1	Drive (#1)	00 - 7F	30
2	Amp Type	00 - 03	01
17	EQ Low Gain (200Hz)	31 - 4F	3B
18	EQ High Gain (4000Hz)	31 - 4F	45
19	Pan (#2)	00 - 7F	40
20	Level	00 - 7F	60

01H, 11H: Distortion

No	Parameter	Value	Default
1	Drive (#1)	00 - 7F	4C
2	Amp Type	00 - 03	03
17	EQ Low Gain (200Hz)	31 - 4F	45
18	EQ High Gain (4000Hz)	31 - 4F	36
19	Pan (#2)	00 - 7F	40
20	Level	00 - 7F	54

01H, 20H: Phaser

No	Parameter	Value	Default
1	Manual (#1)	00 - 7F	24
2	Rate (#2)	00 - 7D	10
3	Depth	00 - 7F	40
4	Resonance	00 - 7F	10
5	Mix	00 - 7F	7F
19	Pan (#2)	00 - 7F	40
20	Level	00 - 7F	54

01H, 21H: Auto Wah

No	Parameter	Value	Default
1	Filter Type	00 - 01	01
2	Sense	00 - 7F	00
3	Manual (#1)	00 - 7F	44
4	Peak	00 - 7F	3E
5	Rate (#2)	00 - 7F	28
6	Depth	00 - 7F	48
20	Level	00 - 7F	60

01H, 22H: Rotary

No	Parameter	Value	Default
1	Low Rate-Slow	00 - 7F	06
2	Low Rate-Fast	00 - 7F	71
3	Low Accel	00 - 7F	18
4	Low Level	00 - 7F	7F
5	High Rate-Slow	00 - 7F	11
6	High Rate-Fast	00 - 7F	78
7	High Accel	00 - 7F	58
8	High Level	00 - 7F	40
9	Separation	00 - 7F	60
10	Color	00 - 7F	00
11	Speed (#1)	00 - 7F	00
20	Level (#2)	00 - 7F	7F

01H, 23H: Stereo Flanger

No	Parameter	Value	Default
1	Pre Filter	00 - 02	00
2	Cutoff Frequency	00 - 7F	00
3	Pre Delay	00 - 7F	10
4	Rate (#1)	00 - 7F	0B
5	Depth	00 - 7F	14
6	Feedback (#2)	00 - 7F	64
7	Phase	00 - 7F	5A
16	Balance	00 - 7F	40
17	EQ Low Gain (200Hz)	31 - 4F	40
18	EQ High Gain (4000Hz)	31 - 4F	40
20	Level (#2)	00 - 7F	7F

01H, 24H: Step Flanger

No	Parameter	Value	Default
1	Pre Delay	00 - 7F	0A
2	Rate	00 - 7F	05
3	Depth	00 - 7F	5F
4	Feedback (#1)	00 - 7F	4F
5	Phase	00 - 7F	5A
6	Step Rate (#2)	00 - 7F	36
16	Balance	00 - 7F	40
17	EQ Low Gain (200Hz)	31 - 4F	40
18	EQ High Gain (4000Hz)	31 - 4F	40
20	Level (#2)	00 - 7F	7F

01H, 30H: Compressor

No	Parameter	Value	Default
1	Attack	00 - 7F	4A
2	Sustain	00 - 7F	64
3	Post Gain	00 - 7F	03
17	EQ Low Gain (200Hz)	31 - 4F	40
18	EQ High Gain (4000Hz)	31 - 4F	40
19	Pan (#1)	31 - 4F	40
20	Level (#2)	00 - 7F	68

01H, 31H: Limiter

No	Parameter	Value	Default
1	Threshold	00 - 7F	55
2	Ratio	00 - 7F	04
3	Release	00 - 7F	10
4	Post Gain	00 - 7F	03
17	EQ Low Gain (200Hz)	31 - 4F	40
18	EQ High Gain (4000Hz)	31 - 4F	40
19	Pan (#1)	31 - 4F	40
20	Level (#2)	00 - 7F	68

01H, 40H: Hexa Chorus

No	Parameter	Value	Default
1	Pre Delay	00 - 7F	18
2	Rate (#1)	00 - 7D	08
3	Depth	00 - 7F	4F
4	Pre Delay Dev.	00 - 20	05
5	Depth Dev.	2C - 54	42
6	Pan Dev.	00 - 20	16
16	Balance (#2)	00 - 7F	40
20	Level	00 - 7F	70

01H, 41H: Tremolo Chorus

No	Parameter	Value	Default
1	Pre Delay	00 - 7F	10
2	Rate	00 - 7D	08
3	Depth	00 - 7F	28
4	Trem. Phase	00 - 5A	28
5	Trem. Rate (#1)	00 - 7F	3C
6	Trem. Sep.	00 - 7F	7F
16	Balance (#2)	00 - 7F	7F
20	Level	00 - 7F	7F

01H, 42H: Stereo Chorus

No	Parameter	Value	Default
1	Pre Filter	00 - 02	00
2	Cutoff Frequency	00 - 7F	00
3	Pre Delay	00 - 7F	0A
4	Rate (#1)	00 - 7D	08
5	Depth	00 - 7F	38
7	Phase	00 - 5A	5A
16	Balance (#2)	00 - 7F	40
17	EQ Low Gain (200Hz)	31 - 4F	40
18	EQ High Gain (4000Hz)	31 - 4F	40
20	Level	00 - 7F	7F

-15dB - +15dB (40: 0dB), 1dB/1 Step
-15dB - +15dB (40: 0dB), 1dB/1 Step

01H, 43H: Space D

No	Parameter	Value	Default
1	Pre Delay	00 - 7F	20
2	Rate (#1)	00 - 7D	08
3	Depth	00 - 7F	68
4	Phase	00 - 5A	5A
16	Balance (#2)	00 - 7F	40
17	EQ Low Gain (200Hz)	31 - 4F	40
18	EQ High Gain (4000Hz)	31 - 4F	40
20	Level	00 - 7F	50

-15dB - +15dB (40: 0dB), 1dB/1 Step
-15dB - +15dB (40: 0dB), 1dB/1 Step

01H, 50H: Stereo Delay

No	Parameter	Value	Default
1	Delay Left	00 - 7E	5A
2	Delay Right	00 - 7E	6C
3	Feedback (#1)	0F - 71	58
4	Feedback Mode	00 - 01	01
5	Phase Left	00 - 01	00
6	Phase Right	00 - 01	00
8	HF Damp	00 - 7F	7F
16	Balance (#2)	00 - 7F	0E
17	EQ Low Gain (200Hz)	31 - 4F	40
18	EQ High Gain (4000Hz)	31 - 4F	40
20	Level	00 - 7F	7F

0: Normal, 1: Cross
0: Normal, 1: Invert
0: Normal, 1: Invert
7F: Bypass

-15dB - +15dB (40: 0dB), 1dB/1 Step
-15dB - +15dB (40: 0dB), 1dB/1 Step

01H, 51H: Modulation Delay

No	Parameter	Value	Default
1	Delay Left	00 - 7E	5A
2	Delay Right	00 - 7E	6C
3	Feedback	0F - 71	58
4	Feedback Mode	00 - 01	01
5	Mod: Rate (#1)	00 - 7D	0C
6	Mod: Depth	00 - 7F	15
7	Mod: Phase	00 - 5A	5A
8	HF Damp	00 - 7F	7F
16	Balance (#2)	00 - 7F	0E
17	EQ Low Gain (200Hz)	31 - 4F	40
18	EQ High Gain (4000Hz)	31 - 4F	40
20	Level	00 - 7F	7F

40: 0%, 2% / 1 Step
0: Normal, 1: Cross
5A: 180 degree
7F: Bypass

-15dB - +15dB (40: 0dB), 1dB/1 Step
-15dB - +15dB (40: 0dB), 1dB/1 Step

01H, 52H: Triple Tap Delay

No	Parameter	Value	Default
1	Delay Center	00 - 73	14
2	Delay Left	00 - 73	00
3	Delay Right	00 - 73	07
4	Feedback (#1)	0F - 71	4A
5	Center Level	00 - 7F	7F
6	Left Level	00 - 7F	7F
7	Right Level	00 - 7F	7F
8	HF Damp	00 - 7F	7F
16	Balance (#2)	00 - 7F	10
17	EQ Low Gain (200Hz)	31 - 4F	40
18	EQ High Gain (4000Hz)	31 - 4F	40
20	Level	00 - 7F	7F

40: 0%, 2% / 1 Step
7F: Bypass
-15dB - +15dB (40: 0dB), 1dB/1 Step
-15dB - +15dB (40: 0dB), 1dB/1 Step

01H, 53H: Quadruple Tap Delay

No	Parameter	Value	Default
1	Delay 1	00 - 73	28
2	Delay 2	00 - 73	07
3	Delay 3	00 - 73	14
4	Delay 4	00 - 73	00
5	Level 1	00 - 7F	7F
6	Level 2	00 - 7F	7F
7	Level 3	00 - 7F	7F
8	Level 4	00 - 7F	7F
9	Feedback (#1)	0F - 71	4C
10	HF Damp	00 - 7F	7F
16	Balance (#2)	00 - 7F	10
20	Level	00 - 7F	7F

40: 0%, 2% / 1 Step
7F: Bypass

01H, 54I: Time Controlable Delay

No	Parameter	Value	Default
1	Delay (#1)	00 - 73	3C
2	Acceleration	00 - 7F	40
3	Feedback (#2)	0F - 71	4E
4	HF Damp	00 - 7F	7F
5	Effect Pan	00 - 7F	40
16	Balance (#2)	00 - 7F	10
17	EQ Low Gain (200Hz)	31 - 4F	40
18	EQ High Gain (4000Hz)	31 - 4F	40
20	Level	00 - 7F	7F

40: 0%, 2% / 1 Step
7F: Bypass
-15dB - +15dB (40: 0dB), 1dB/1 Step
-15dB - +15dB (40: 0dB), 1dB/1 Step

01H, 55H: Reverb

No	Parameter	Value	Default
1	Type	00 - 05	02
2	Pre Delay	00 - 7F	18
3	Time (#1)	00 - 7F	40
4	HF Damp	00 - 7F	56
16	Balance (#2)	00 - 7F	40
17	EQ Low Gain (200Hz)	31 - 4F	40
18	EQ High Gain (4000Hz)	31 - 4F	40
20	Level	00 - 7F	7F

7F: Bypass
-15dB - +15dB (40: 0dB), 1dB/1 Step
-15dB - +15dB (40: 0dB), 1dB/1 Step

* Type: 0: Room1, 1: Room2, 2: Stage1, 3: Stage 2, 4: Hall1, 5: Hall2

01H, 56I: Gate Reverb

No	Parameter	Value	Default
1	Type	00 - 03	00
2	Pre Delay	00 - 7F	10
3	Gate Time	00 - 7F	30
16	Balance (#1)	00 - 7F	20
17	EQ Low Gain (200Hz)	31 - 4F	40
18	EQ High Gain (4000Hz)	31 - 4F	40
20	Level (#2)	00 - 7F	7F

-15dB - +15dB (40: 0dB), 1dB/1 Step
-15dB - +15dB (40: 0dB), 1dB/1 Step

* Type: 0: Normal, 1: Reverse, 2: Sweep1, 3: Sweep2

01H, 61H: 2 Voice Pitch Shifter

No	Parameter	Value	Default
1	Pitch Control 1 (#1)	28 - 4C	47
2	Pitch Fine 1	00 - 7F	3E
3	Pre Delay 1	00 - 7F	00
4	Effect Pan 1	00 - 7F	7F
5	Pitch Control 2 (#2)	28 - 4C	3B
6	Pitch Fine 2	00 - 7F	42

7	Pre Delay 2	00 - 7F	00
8	Effect Pan 2	00 - 7F	01
9	Mode	00 - 7F	00
10	Level Balance	00 - 7F	40
16	Balance	00 - 7F	40
20	Level	00 - 7F	5F

01H, 60H: Feedback Pitch Shifter

No	Parameter	Value	Default
1	Pitch Coarse (#1)	28 - 4C	47
2	Pitch Fine	00 - 7F	40
9	Feedback (#2)	0F - 71	4C
4	Pre Delay	00 - 7F	5F
5	Mode	00 - 04	02
6	Effect Pan	00 - 7F	40
16	Balance	00 - 7F	40
17	EQ Low Gain (200Hz)	31 - 4F	40
18	EQ High Gain (4000Hz)	31 - 4F	3A
20	Level	00 - 7F	5F

40: 0%, 2% / 1 Step

-15dB - +15dB (40: 0dB), 1dB/1 Step

02H, 00H: Overdrive -> Chorus

No	Parameter	Value	Default
1	OD: Drive	00 - 7F	30
2	OD: Pan (#1)	00 - 7F	40
6	Cho: Delay	00 - 7F	0D
7	Cho: Rate	00 - 7D	0A
8	Cho: Depth	00 - 7F	30
10	Cho: Balance (#2)	00 - 7F	40
20	Level	00 - 7F	50

02H, 01H: Overdrive -> Flanger

No	Parameter	Value	Default
1	OD: Drive	00 - 7F	30
2	OD: Pan (#1)	00 - 7F	40
6	Flg: Delay	00 - 7F	10
7	Flg: Rate	00 - 7F	05
8	Flg: Depth	00 - 7F	28
9	Flg: Feedback	0F - 71	68
10	Flg: Balance (#2)	00 - 7F	20
20	Level	00 - 7F	50

02H, 02H: Overdrive -> Delay

No	Parameter	Value	Default
1	OD: Drive	00 - 7F	30
2	OD: Pan (#1)	00 - 7F	40
6	Dly: Delay	00 - 7F	6E
7	Dly: Feedback	0F - 71	4E
8	Dly: HP Damp	00 - 7F	7F
10	Dly: Balance (#2)	00 - 7F	08
20	Level	00 - 7F	50

02H, 03H: Distortion -> Chorus

No	Parameter	Value	Default
1	DS: Drive	00 - 7F	30
2	DS: Pan (#1)	00 - 7F	40
6	Cho: Delay	00 - 7F	0A
7	Cho: Rate	00 - 7D	0C
8	Cho: Depth	00 - 7F	30
10	Cho: Balance (#2)	00 - 7F	40
20	Level	00 - 7F	48

02H, 04H: Distortion -> Flanger

No	Parameter	Value	Default
1	DS: Drive	00 - 7F	30
2	DS: Pan (#1)	00 - 7F	40
6	Flg: Delay	00 - 7F	0B
7	Flg: Rate	00 - 7F	0C
8	Flg: Depth	00 - 7F	28
9	Flg: Feedback	0F - 71	60
10	Flg: Balance (#2)	00 - 7F	20
20	Level	00 - 7F	48

40: 0%, 2% / 1 Step

02H, 05H: Distortion -> Delay

No	Parameter	Value	Default
1	DS: Drive	00 - 7F	30
2	DS: Pan (#1)	00 - 7F	40
6	Dly: Delay	00 - 7F	6E
7	Dly: Feedback	0F - 71	4E
8	Dly: HP Damp	00 - 7F	7F
10	Dly: Balance (#2)	00 - 7F	20
20	Level	00 - 7F	48

40: 0%, 2% / 1 Step

02H, 06H: Enhancer -> Chorus

No	Parameter	Value	Default
1	Enh: Sens. (#1)	00 - 7F	7F
2	Enh: Mix	00 - 7F	40
6	Cho: Delay	00 - 7F	40
7	Cho: Rate	00 - 7D	09
8	Cho: Depth	00 - 7F	48
10	Cho: Balance (#2)	00 - 7F	40
20	Level	00 - 7F	50

02H, 07H: Enhancer -> Flanger

No	Parameter	Value	Default
1	Enh: Sens. (#1)	00 - 7F	7F
2	Enh: Mix	00 - 7F	40
6	Flg: Delay	00 - 7F	10
7	Flg: Rate	00 - 7D	0B
8	Flg: Depth	00 - 7F	28
9	Flg: Feedback	0F - 71	63
10	Flg: Balance (#2)	00 - 7F	20
20	Level	00 - 7F	50

40: 0%, 2% / 1 Step

02H, 08H: Enhancer -> Delay

No	Parameter	Value	Default
1	Enh: Sens. (#1)	00 - 7F	7F
2	Enh: Mix	00 - 7F	40
6	Dly: Delay	00 - 7F	6E
7	Dly: Feedback	0F - 71	4E
8	Dly: HP Damp	00 - 7F	7F
10	Dly: Balance (#2)	00 - 7F	10
20	Level	00 - 7F	58

40: 0%, 2% / 1 Step

02H, 09H: Chorus -> Delay

No	Parameter	Value	Default
1	Cho: Delay	00 - 7F	0A
2	Cho: Rate	00 - 7D	09
3	Cho: Depth	00 - 7F	48
5	Cho: Balance (#1)	00 - 7F	40
6	Dly: Delay	00 - 7F	6E
7	Dly: Feedback	0F - 71	4E
8	Dly: HP Damp	00 - 7F	7F
10	Dly: Balance (#2)	00 - 7F	10
20	Level	00 - 7F	58

40: 0%, 2% / 1 Step

02H, 0AH: Flanger -> Delay

No	Parameter	Value	Default
1	Flg: Delay	00 - 7F	10
2	Flg: Rate	00 - 7D	0B
3	Flg: Depth	00 - 7F	28
4	Flg: Feedback (#1)	0F - 71	63
5	Flg: Balance	00 - 7F	40
6	Dly: Delay	00 - 7F	6E
7	Dly: Feedback	0F - 71	4E
8	Dly: HP Damp	00 - 7F	7F
10	Dly: Balance (#2)	00 - 7F	10
20	Level	00 - 7F	70

40: 0%, 2% / 1 Step

02H, 0BH: Chorus -> Flanger

No	Parameter	Value	Default
1	Cho: Delay	00 - 7F	0A
2	Cho: Rate	00 - 7D	09
3	Cho: Depth	00 - 7F	48
5	Cho: Balance (#1)	00 - 7F	40

6	Flg: Delay	00 - 7F	10	
7	Flg: Rate	00 - 7D	0B	
8	Flg: Depth	00 - 7F	28	
9	Flg: Feedback	0F - 71	63	40: 0%, 2% / 1 Step
10	Flg: Balance (#2)	00 - 7F	40	
20	Level	00 - 7F	70	

11H, 00H: Chorus / Delay

No	Parameter	Value	Default	
1	Cho: Delay	00 - 7F	1A	
2	Cho: Rate	00 - 7D	08	
3	Cho: Depth	00 - 7F	48	
5	Cho: Balance (#1)	00 - 7F	40	
6	Dly: Delay	00 - 7F	6E	
7	Dly: Feedback	0F - 71	4E	40: 0%, 2% / 1 Step
8	Dly: HP Damp	00 - 7F	7F	
10	Dly: Balance (#2)	00 - 7F	10	
20	Level	00 - 7F	60	

11H, 01H: Flanger / Delay

No	Parameter	Value	Default	
1	Flg: Delay	00 - 7F	10	
2	Flg: Rate	00 - 7D	0B	
3	Flg: Depth	00 - 7F	28	
4	Flg: Feedback	0F - 71	63	40: 0%, 2% / 1 Step
5	Flg: Balance (#1)	00 - 7F	40	
6	Dly: Delay	00 - 7F	6E	
7	Dly: Feedback	0F - 71	4E	40: 0%, 2% / 1 Step
8	Dly: HP Damp	00 - 7F	7F	
10	Dly: Balance (#2)	00 - 7F	10	
20	Level	00 - 7F	60	

11H, 02H: Chorus / Flanger

No	Parameter	Value	Default	
1	Cho: Delay	00 - 7F	10	
2	Cho: Rate	00 - 7D	08	
3	Cho: Depth	00 - 7F	48	
5	Cho: Balance (#1)	00 - 7F	40	
6	Flg: Delay	00 - 7F	10	
7	Flg: Rate	00 - 7D	0B	
8	Flg: Depth	00 - 7F	28	
9	Flg: Feedback	0F - 71	63	40: 0%, 2% / 1 Step
10	Flg: Balance (#2)	00 - 7F	40	
20	Level	00 - 7F	58	

Pre Delay Table

Value	(msec)	Value	(msec)	Value	(msec)	Value	(msec)
00H	0.0	20H	3.2	40H	14	60H	46
01H	0.1	21H	3.3	41H	15	61H	47
02H	0.2	22H	3.4	42H	16	62H	48
03H	0.3	23H	3.5	43H	17	63H	49
04H	0.4	24H	3.6	44H	18	64H	50
05H	0.5	25H	3.7	45H	19	65H	52
06H	0.6	26H	3.8	46H	20	66H	54
07H	0.7	27H	3.9	47H	21	67H	56
08H	0.8	28H	4.0	48H	22	68H	58
09H	0.9	29H	4.1	49H	23	69H	60
0AH	1.0	2AH	4.2	4AH	24	6AH	62
0BH	1.1	2BH	4.3	4BH	25	6BH	64
0CH	1.2	2CH	4.4	4CH	26	6CH	66
0DH	1.3	2DH	4.5	4DH	27	6DH	68
0EH	1.4	2EH	4.6	4EH	28	6EH	70
0FH	1.5	2FH	4.7	4FH	29	6FH	72
10H	1.6	30H	4.8	50H	30	70H	74
11H	1.7	31H	4.9	51H	31	71H	76
12H	1.8	32H	5.0	52H	32	72H	78
13H	1.9	33H	5.1	53H	33	73H	80
14H	2.0	34H	5.2	54H	34	74H	82
15H	2.1	35H	5.3	55H	35	75H	84
16H	2.2	36H	5.4	56H	36	76H	86
17H	2.3	37H	5.5	57H	37	77H	88
18H	2.4	38H	5.6	58H	38	78H	90
19H	2.5	39H	5.7	59H	39	79H	92
1AH	2.6	3AH	5.8	5AH	40	7AH	94
1BH	2.7	3BH	5.9	5BH	41	7BH	96
1CH	2.8	3CH	6.0	5CH	42	7CH	98
1DH	2.9	3DH	6.1	5DH	43	7DH	100
1EH	3.0	3EH	6.2	5EH	44	7EH	100
1FH	3.1	3FH	6.3	5FH	45	7FH	100

Long Delay Table(Triple Tap Delay, Quadple Delay)

Value	(msec)	Value	(msec)	Value	(msec)	Value	(msec)
00H	200	20H	360	40H	520	60H	810
01H	205	21H	365	41H	525	61H	820
02H	210	22H	370	42H	530	62H	830
03H	215	23H	375	43H	535	63H	840
04H	220	24H	380	44H	540	64H	850
05H	225	25H	385	45H	545	65H	860
06H	230	26H	390	46H	550	66H	870
07H	235	27H	395	47H	555	67H	880
08H	240	28H	400	48H	560	68H	890
09H	245	29H	405	49H	565	69H	900
0AH	250	2AH	410	4AH	570	6AH	910
0BH	255	2BH	415	4BH	575	6BH	920
0CH	260	2CH	420	4CH	580	6CH	930
0DH	265	2DH	425	4DH	585	6DH	940
0EH	270	2EH	430	4EH	590	6EH	950
0FH	275	2FH	435	4FH	595	6FH	960
10H	280	30H	440	50H	600	70H	970
11H	285	31H	445	51H	605	71H	980
12H	290	32H	450	52H	610	72H	990
13H	295	33H	455	53H	615	73H	1000
14H	300	34H	460	54H	620	74H	-
15H	305	35H	465	55H	625	75H	-
16H	310	36H	470	56H	630	76H	-
17H	315	37H	475	57H	635	77H	-
18H	320	38H	480	58H	640	78H	-
19H	325	39H	485	59H	645	79H	-
1AH	330	3AH	490	5AH	650	7AH	-
1BH	335	3BH	495	5BH	655	7BH	-
1CH	340	3CH	500	5CH	660	7CH	-
1DH	345	3DH	505	5DH	665	7DH	-
1EH	350	3EH	510	5EH	670	7EH	-
1FH	355	3FH	515	5FH	675	7FH	-

Stereo Delay Table(Stereo Delay, Modulation Delay)

Value	(msec)	Value	(msec)	Value	(msec)	Value	(msec)
00H	0.0	20H	3.2	40H	14	60H	116
01H	0.1	21H	3.3	41H	15	61H	120
02H	0.2	22H	3.4	42H	16	62H	130
03H	0.3	23H	3.5	43H	17	63H	140
04H	0.4	24H	3.6	44H	18	64H	150
05H	0.5	25H	3.7	45H	19	65H	160
06H	0.6	26H	3.8	46H	20	66H	170
07H	0.7	27H	3.9	47H	21	67H	180
08H	0.8	28H	4.0	48H	22	68H	190
09H	0.9	29H	4.1	49H	23	69H	200
0AH	1.0	2AH	4.2	4AH	24	6AH	210
0BH	1.1	2BH	4.3	4BH	25	6BH	220
0CH	1.2	2CH	4.4	4CH	26	6CH	230
0DH	1.3	2DH	4.5	4DH	27	6DH	240
0EH	1.4	2EH	4.6	4EH	28	6EH	250
0FH	1.5	2FH	4.7	4FH	29	6FH	260
10H	1.6	30H	4.8	50H	30	70H	270
11H	1.7	31H	4.9	51H	31	71H	280
12H	1.8	32H	5.0	52H	32	72H	290
13H	1.9	33H	5.1	53H	33	73H	300
14H	2.0	34H	5.2	54H	34	74H	320
15H	2.1	35H	5.3	55H	35	75H	340
16H	2.2	36H	5.4	56H	36	76H	360
17H	2.3	37H	5.5	57H	37	77H	380
18H	2.4	38H	5.6	58H	38	78H	400
19H	2.5	39H	5.7	59H	39	79H	420
1AH	2.6	3AH	5.8	5AH	40	7AH	440
1BH	2.7	3BH	5.9	5BH	41	7BH	460
1CH	2.8	3CH	6.0	5CH	42	7CH	480
1DH	2.9	3DH	6.1	5DH	43	7DH	500
1EH	3.0	3EH	6.2	5EH	44	7EH	500
1FH	3.1	3FH	6.3	5FH	45	7FH	500

Rate Table (Chorus, Flanger, etc)

Value	(sec)	Value	(sec)	Value	(sec)	Value	(sec)
00H	0.05	20H	1.65	40H	3.25	60H	4.85
01H	0.10	21H	1.70	41H	3.30	61H	4.90
02H	0.15	22H	1.75	42H	3.35	62H	4.95
03H	0.20	23H	1.80	43H	3.40	63H	5.00
04H	0.25	24H	1.85	44H	3.45	64H	5.10
05H	0.30	25H	1.90	45H	3.50	65H	5.20
06H	0.35	26H	1.95	46H	3.55	66H	5.30
07H	0.40	27H	2.00	47H	3.60	67H	5.40
08H	0.45	28H	2.05	48H	3.65	68H	5.50
09H	0.50	29H	2.10	49H	3.70	69H	5.60
0AH	0.55	2AH	2.15	4AH	3.75	6AH	5.70
0BH	0.60	2BH	2.20	4BH	3.80	6BH	5.80
0CH	0.65	2CH	2.25	4CH	3.85	6CH	5.90
0DH	0.70	2DH	2.30	4DH	3.90	6DH	6.00
0EH	0.75	2EH	2.35	4EH	3.95	6EH	6.10
0FH	0.80	2FH	2.40	4FH	4.00	6FH	6.20
10H	0.85	30H	2.45	50H	4.05	70H	6.30
11H	0.90	31H	2.50	51H	4.10	71H	6.40
12H	0.95	32H	2.55	52H	4.15	72H	6.50
13H	1.00	33H	2.60	53H	4.20	73H	6.60
14H	1.05	34H	2.65	54H	4.25	74H	6.70
15H	1.10	35H	2.70	55H	4.30	75H	6.80
16H	1.15	36H	2.75	56H	4.35	76H	6.90
17H	1.20	37H	2.80	57H	4.40	77H	7.00
18H	1.25	38H	2.85	58H	4.45	78H	7.10
19H	1.30	39H	2.90	59H	4.50	79H	7.20
1AH	1.35	3AH	2.95	5AH	4.55	7AH	7.30
1BH	1.40	3BH	3.00	5BH	4.60	7BH	7.40
1CH	1.45	3CH	3.05	5CH	4.65	7CH	7.50
1DH	1.50	3DH	3.10	5DH	4.70	7DH	7.60
1EH	1.55	3EH	3.15	5EH	4.75	7EH	7.70
1FH	1.60	3FH	3.20	5FH	4.80	7FH	7.80

HF Damp

Value	(Hz)
00H-07H	315
08H-0FH	400
10H-17H	500
18H-1FH	630
20H-27H	800
28H-2FH	1000
30H-37H	1250
38H-3FH	1600
40H-47H	2000
48H-4FH	2500
50H-57H	3150
58H-5FH	4000
60H-67H	5000
68H-6FH	6300
70H-77H	8000
78H-7FH	Bypass

bbH expressing two 7-bit bytes would indicate a value of $aa \times 128 + bb$.

In the case of values which have a \pm sign, 00H = -64, 40H = ± 0 , and 7FH = +63, so that the decimal expression would be 64 less than the value given in the above chart. In the case of two types, 00 00H = -8192, 40 00H = ± 0 , and 7F 7FH = +8191. For example if aa bbH were expressed as decimal, this would be $aa \text{ bbH} - 40 \text{ 00H} = aa \times 128 + bb - 64 \times 128$.

Data marked "nibbled" is expressed in hexadecimal in 4-bit units. A value expressed as a 2-byte nibble 0a 0bH has the value of $a \times 16 + b$.

<Example 1> What is the decimal expression of 5AH ?

From the preceding table, 5AH = 90

<Example 2> 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
 $((10 \times 16 + 3) \times 16 + 9) \times 16 + 13 = 41885$

<Example 4> What is the nibbled expression of the decimal value 1258?

```

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

```

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

Examples of actual MIDI messages

<Example 1> 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.

<Example 2> 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 (Flute in GS).

<Example 3> EA 00 28

EnH is the Pitch Bend Change status, and n is the MIDI channel number. The 2nd byte (00H = 0) is the LSB and the 3rd byte (28H = 40) is the MSB, but Pitch Bend Value is a signed number in which $40 \text{ 00H} (-64 \times 128 + 0 = -8192)$ is 0, so this Pitch Bend Value is $28 \text{ 00H} - 40 \text{ 00H} = 40 \times 128 + 0 - (64 \times 128 + 0) = 5120 - 8192 = -3072$

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.

<Example 4> B3 64 00 65 00 06 0C 26 00 64 7F 65 7F

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

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

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

RPN parameter number 00 00H is Pitch Bend Sensitivity, and the MSB of the value indicates semitone units, so a value of 0CH = 12 sets the maximum pitch bend range to ± 12 semitones (1 octave). (On GS sound sources 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.)

Section 4. Supplementary material

Decimal and Hexadecimal table

In MIDI documentation, data values and addresses/sizes of exclusive messages etc. are expressed as hexadecimal values for each 7 bits.

The following table shows how these correspond to decimal numbers.

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

* Decimal values such as MIDI channel, bank select, and program change are listed as one (1) greater than the values given in the above table.

* A 7-bit byte can express data in the range of 128 steps. For data where greater precision is required, we must use two or more bytes. For example, two hexadecimal numbers aa

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 source will then misinterpret the data. Take care to give each event its own status.

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

* TPQN: Ticks Per Quarter Note

● Example of an Exclusive message and calculating a Checksum

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

◆ How to calculate the checksum (hexadecimal numbers are indicated by 'H')

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

Here's an example of how the checksum is calculated. We will assume that in the exclusive message we are transmitting, the address is aa bb ccH and the data or size is dd ee ffH.

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

<Example 1> Setting REVERB MACRO to ROOM 3

According to the "Parameter Address Map," the REVERB MACRO Address is 40 01 30H, and ROOM 3 is a value of 02H. Thus,

F0	41	10	42	12	40 01 30	02	??	F7
(1)	(2)	(3)	(4)	(5)	Address	data	checksum	(6)

(1) Exclusive Status, (2) ID (Roland), (3) Device ID (17),
(4) Model ID (GS), (5) Command ID (DT1), (6) End of Exclusive

Next we calculate the checksum.

40H + 01H + 30H + 02H = 64 + 1 + 48 + 2 = 115 (sum)
115 (sum) / 128 = 0 (quotient) ... 115 (remainder)
checksum = 128 - 115 (remainder) = 13 = 0DH

This means that F0 41 10 42 12 40 01 30 02 0D F7 is the message we transmit.

<Example 2> Requesting transmission of the LEVEL for DRUM MAP 1 NOTE NUMBER 75 (D#5; Claves)

NOTE NUMBER 75 (D#5) is 4BH in hexadecimal.

According to the "Parameter Address Map," LEVEL of NOTE NUMBER 75 (D#5; Claves) in DRUM MAP 1 has an Address of 41 02 4BH and a Size of 00 00 01H. Thus,

F0	41	10	42	11	41 02 4B	00 00 01	??	F7
(1)	(2)	(3)	(4)	(5)	Address	size	checksum	(6)

(1) Exclusive Status, (2) ID (Roland), (3) Device ID (17),
(4) Model ID (GS), (5) Command ID (RQ1), (6) End of Exclusive

Next we calculate the checksum.

41H + 02H + 4BH + 00H + 00H + 01H = 65 + 2 + 75 + 0 + 0 + 1 = 143 (sum)
143 (sum) / 128 = 1 (quotient) ... 15 (remainder)
checksum = 128 - 15 (remainder) = 113 = 71H

This means that F0 41 10 42 11 41 02 4B 00 00 01 71 F7 is the message we transmit.

● About tuning

In MIDI, individual Parts are tuned by sending RPN #1 (Master Fine Tuning) to the appropriate MIDI channel.

In MIDI, an entire device is tuned by either sending RPN #1 to all MIDI channels being used, or by sending a System Exclusive MASTER TUNE (address 40 00 00H).

RPN #1 allows tuning to be specified in steps of approximately 0.012 cents (to be precise, 100/8192 cent), and System Exclusive MASTER TUNE allows tuning in steps of 0.1 cent. One cent is 1/100th of a semitone.

The values of RPN #1 (Master Fine Tuning) and System Exclusive MASTER TUNE are added together to determine the actual pitch sounded by each Part.

Frequently used tuning values are given in the following table for your reference. Values are in hexadecimal (decimal in parentheses).

Hz in A4	cent	RPN #1	Sys.Ex. 40 00 00
445.0	+19.56	4C 43 (+1603)	00 04 0C 04 (+196)
444.0	+15.67	4A 03 (+1283)	00 04 09 0E (+157)
443.0	+11.76	47 44 (+ 964)	00 04 07 06 (+118)
442.0	+ 7.85	45 03 (+ 643)	00 04 04 0F (+ 79)
441.0	+ 3.93	42 42 (+ 322)	00 04 02 07 (+ 39)
440.0	0.00	40 00 (0)	00 04 00 00 (0)
439.0	- 3.94	3D 3D (- 323)	00 03 0D 03 (- 39)
438.0	- 7.89	3A 7A (- 646)	00 03 0B 01 (- 79)

<Example> Set the tuning of MIDI channel 3 to A4 = 442.0 Hz

Send RPN#1 to MIDI channel 3. From the above table, the value is 45 03H.

B2	64 00	MIDI ch.3, lower byte of RPN parameter number: 00H
(B2)	65 01	(MIDI ch.3) upper byte of RPN parameter number: 01H
(B2)	06 45	(MIDI ch.3) upper byte of parameter value: 45H
(B2)	26 03	(MIDI ch.3) lower byte of parameter value: 03H
(B2)	64 7F	(MIDI ch.3) lower byte of RPN parameter number: 7FH
(B2)	65 7F	(MIDI ch.3) upper byte of RPN parameter number: 7FH

● The Scale Tune Feature (address: 40 1x 0)

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.

● 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 E-500 /E-500 OR / E-300 / KR-75, the default settings for the Scale Tune feature produce equal temperament.

● Just Temperament (Keytone C)

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

● 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 (Keytone C)	Arabian Scale
C	0	0	-6
C#	0	-8	+45
D	0	+4	-2
D#	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
A#	0	+14	-10
B	0	-12	-49

The values in the table are given in cents. Refer to the explanation of Scale Tuning on page 8 to convert these values to hexadecimal, and transmit them as exclusive data.

For example, to set the tune (C-B) of the Part1 Arabian Scale, send the data as follows:

F0 41 10 42 12 40 11 40 3A 6D 3E 34 0D 38 6B 3C 6F 40 36 0F 50 F7

● Tone Map

LSB 0 (00h)

PC#	CC0	Tone Name					
Dec	Hex						
1	00h	00h (0)	Piano 1	33	20h	00h (0)	GS Ac.Bass
		08h (8)	Piano 1w	34	21h	00h (0)	GS Fing.Bass
		10h (16)	Piano 1d	35	22h	00h (0)	GS Picked Bs
2	01h	00h (0)	Piano 2	36	23h	00h (0)	Fretless Bs.
		08h (8)	Piano 2w	37	24h	00h (0)	Slap Bass 1
3	02h	00h (0)	Piano 3	38	25h	00h (0)	Slap Bass 2
		08h (8)	Piano 3w	39	26h	00h (0)	Synth Bass 1
4	03h	00h (0)	Honky-tonk			01h (1)	SynthBass101
		08h (8)	Honky-tonk 2	40	27h	08h (8)	Synth Bass 3
5	04h	00h (0)	E.Piano 1			00h (0)	Synth Bass 2
		08h (8)	Detuned EP 1			08h (8)	Synth Bass 4
		10h (16)	E.Piano 1v	41	28h	10h (16)	Rubber Bass
		18h (24)	60's E.Piano			00h (0)	GS Violin
6	05h	00h (0)	GS E.Piano2	42	29h	08h (8)	Slow Violin
		08h (8)	Detuned EP 2	43	2Ah	00h (0)	Viola
		10h (16)	E.Piano 2v	44	2Bh	00h (0)	GS Cello
7	06h	00h (0)	Harpsichord	45	2Ch	00h (0)	Contrabass
		08h (8)	Coupled Hps.	46	2Dh	00h (0)	Tremolo Str
		10h (16)	Harpsi.w	47	2Eh	00h (0)	PizzicatoStr
		18h (24)	Harpsi.o	48	2Fh	00h (0)	GS Harp
8	07h	00h (0)	Clav	49	30h	00h (0)	Timpani
9	08h	00h (0)	Celesta			00h (0)	GS Strings
10	09h	00h (0)	Glockenspiel	50	31h	08h (8)	Orchestra
11	0Ah	00h (0)	Music Box	51	32h	00h (0)	GS Sl.Str
12	0Bh	00h (0)	GS Vibe	52	33h	00h (0)	Syn.Strings1
		08h (8)	Vibe.w	53	34h	08h (8)	Syn.Strings3
13	0Ch	00h (0)	GS Marimba			00h (0)	Syn.Strings2
		08h (8)	Marimba	54	35h	00h (0)	Choir Aahs
14	0Dh	00h (0)	Xylophone	55	36h	20h (32)	Choir
15	0Eh	00h (0)	Tubular-bell	56	37h	00h (0)	Pop Voice
		08h (8)	Church Bell	57	38h	00h (0)	SynVox
		09h (9)	Carillon			00h (0)	OrchestraHit
16	0Fh	00h (0)	GS Santur	58	39h	00h (0)	GS Trumpet
17	10h	00h (0)	Organ 1			01h (1)	Trumpet
		01h (1)	Full Organ 1	59	3Ah	00h (0)	GS Trombone
		08h (8)	Detuned Or.1	60	3Bh	01h (1)	Trombone 2
		09h (9)	Full Organ 2	61	3Ch	00h (0)	Tuba
		10h (16)	Pop Organ 1	62	3Dh	00h (0)	MutedTrumpet
		11h (17)	Pop Organ 2	63	3Eh	00h (0)	French Horn
		12h (18)	Pop Organ	64	3Fh	01h (1)	Fr.Horn 2
		20h (32)	Full Organ 4	65	40h	00h (0)	Brass 1
		21h (33)	Full Organ 3	66	41h	08h (8)	Brass 2
18	11h	00h (0)	Organ 2			00h (0)	Synth Brass1
		01h (1)	Jazz Organ 3	67	42h	08h (8)	Synth Brass3
		08h (8)	Detuned Or.2	68	43h	10h (16)	AnalogBrass1
		20h (32)	Jazz Organ 1	69	44h	00h (0)	Synth Brass2
19	12h	00h (0)	Rock Organ 2	70	45h	08h (8)	Synth Brass4
20	13h	00h (0)	Church Org.1	71	46h	10h (16)	AnalogBrass2
		08h (8)	Church Org.2	72	47h	00h (0)	GS Sop.Sax
		10h (16)	Church Org.3	73	48h	00h (0)	Alto Sax
21	14h	00h (0)	Reed Organ	74	49h	08h (8)	Blow Sax
22	15h	00h (0)	Accordion Fr	75	4Ah	00h (0)	Tenor Sax
		08h (8)	Accordion It	76	4Bh	08h (8)	Blow Sax
23	16h	00h (0)	GS Harmonica	77	4Ch	00h (0)	Baritone Sax
		01h (1)	Harmonica	78	4Dh	00h (0)	GS Oboe
24	17h	00h (0)	Bandoneon	79	4Eh	00h (0)	English Horn
25	18h	00h (0)	GS Nylon Gt.	80	4Fh	00h (0)	Bassoon
		08h (8)	Ukulele	81	50h	00h (0)	Clarinet
		10h (16)	Nylon Gt.o			00h (0)	Piccolo
		20h (32)	Nylon Guitar	75	4Ah	00h (0)	GS Flute
26	19h	00h (0)	Steel-str.Gt	76	4Bh	00h (0)	Recorder
		08h (8)	12-str.Gt	77	4Ch	00h (0)	Pan Flute
		09h (9)	Nylon+Steel	78	4Dh	00h (0)	Bottle Blow
		10h (16)	GS Mandolin	79	4Eh	00h (0)	Shakuhachi
		20h (32)	Steel Gt.2	80	4Fh	00h (0)	Whistle
27	1Ah	00h (0)	Jazz Guitar	81	50h	00h (0)	Ocarina
		08h (8)	GS Hawaiian			00h (0)	Square Wave
28	1Bh	00h (0)	Clean Gt.			01h (1)	Square
		08h (8)	Chorus Gt.	82	51h	08h (8)	Sine Wave
29	1Ch	00h (0)	Muted Gt.			00h (0)	Saw Wave
		08h (8)	Funk Gt.			01h (1)	Saw
		10h (16)	Funk Gt.2	83	52h	08h (8)	Doctor Solo
30	1Dh	00h (0)	Overdrive Gt	84	53h	00h (0)	Syn.Calliope
31	1Eh	00h (0)	GS Dist.Gt.	85	54h	00h (0)	Chiffer Lead
						00h (0)	Charang

86	55h	00h (0)	Solo Vox			03h (3)	Punch
87	56h	00h (0)	5th Saw Wave			04h (4)	Heart Beat
88	57h	00h (0)	Bass & Lead			05h (5)	Footsteps
89	58h	00h (0)	Fantasia	128	7Fh	00h (0)	Gun Shot
90	59h	00h (0)	Warm Pad			01h (1)	Machine Gun
91	5Ah	00h (0)	Polysynth			02h (2)	Lasergun
92	5Bh	00h (0)	Space Voice			03h (3)	Explosion
93	5Ch	00h (0)	Bowed Glass				
94	5Dh	00h (0)	Metal Pad				
95	5Eh	00h (0)	Halo Pad				
96	5Fh	00h (0)	Sweep Pad				
97	60h	00h (0)	Ice Rain				
98	61h	00h (0)	Soundtrack				
99	62h	00h (0)	Crystal				
		01h (1)	Syn Mallet				
100	63h	00h (0)	Atmosphere				
101	64h	00h (0)	Brightness	3	02h	08h (8)	Rock Piano
102	65h	00h (0)	Goblin	4	03h	00h (0)	Honky-tonk
103	66h	00h (0)	Echo Drops			08h (8)	Honky-tonk 1
		01h (1)	Echo Bell	5	04h	00h (0)	E.Piano 1
		02h (2)	Echo Pan			08h (8)	Soft E.Piano
104	67h	00h (0)	Star Theme			10h (16)	E.Piano 1
105	68h	00h (0)	Sitar			18h (24)	Sine Rhodes
		01h (1)	Sitar 2	6	05h	00h (0)	Hard E.Piano
106	69h	00h (0)	Banjo			08h (8)	St.FM EP
107	6Ah	00h (0)	CS Shamisen			10h (16)	E.Piano 2
108	6Bh	00h (0)	Koto	7	06h	00h (0)	Harpsichord 1
		08h (8)	Taisho Koto			08h (8)	Harpsichord 2
109	6Ch	00h (0)	Kalimba			10h (16)	Harpsi.w
110	6Dh	00h (0)	Bagpipe			18h (24)	Harpsi.o
111	6Fh	00h (0)	Fiddle	8	07h	00h (0)	Analog Clav.
112	6Fh	00h (0)	Shanai	12	08h	00h (0)	Vibraphone
113	70h	00h (0)	Tinkle Bell	13	0Ch	00h (0)	CS Marimba
114	71h	00h (0)	Agogo			08h (8)	Barafon
115	72h	00h (0)	Steel Drums	16	0Fh	00h (0)	Santur
116	73h	00h (0)	Woodblock	17	10h	00h (0)	Pop Organ 1
		08h (8)	Castanets			08h (8)	Pop Organ 2
117	74h	00h (0)	Taiko			10h (16)	Pop Organ
		08h (8)	Concert BD			20h (32)	VS Organ
118	75h	00h (0)	Melo. Tom 1	18	11h	00h (0)	Jazz Organ 1
		08h (8)	Melo. Tom 2			08h (8)	Jazz Organ 3
119	76h	00h (0)	Synth Drum			20h (32)	Jazz Organ 2
		08h (8)	808 Tom	19	12h	00h (0)	Rock Organ 1
		09h (9)	Elec Perc.	20	13h	00h (0)	Organ Flute
120	77h	00h (0)	Reverse Cym.			08h (8)	Trem.Flute
121	78h	00h (0)	Gt.FretNoise			10h (16)	Theater Org.
		01h (1)	Gt.Cut Noise	21	14h	00h (0)	Digi Church
		02h (2)	String Slap	22	15h	00h (0)	Accordion
122	79h	00h (0)	Breath Noise			08h (8)	Accordion It
		01h (1)	Fl.Key Click	23	16h	00h (0)	Harmonica
123	7Ah	00h (0)	Seashore	25	18h	00h (0)	Nylon Guitar
		01h (1)	Rain			08h (8)	Gut Guitar
		02h (2)	Thunder			10h (16)	Nylon Gt.o
		03h (3)	Wind			20h (32)	Nylon Gt.2
		04h (4)	Stream	26	19h	00h (0)	Steel Guitar
		05h (5)	Bubble			08h (8)	12str Guitar
124	7Bh	00h (0)	Bird			10h (16)	Mandolin
		01h (1)	Dog	27	1Ah	00h (0)	Jazz Guitar
		02h (2)	Horse-Gallop			08h (8)	Hawaiian Gt.
		03h (3)	Bird 2	28	1Bh	00h (0)	JC E.Guitar
125	7Ch	00h (0)	Telephone 1			08h (8)	Chorus Gt.
		01h (1)	Telephone 2	29	1Ch	00h (0)	Muted Dis.Gt
		02h (2)	DoorCreaking			08h (8)	Funk Gt.
		03h (3)	Door			10h (16)	Funk Gt.2
		04h (4)	Scratch	31	1Eh	00h (0)	DistortionGt
		05h (5)	Windchime			08h (8)	Power Gt.2
126	7Dh	00h (0)	Helicopter	33	20h	00h (0)	Acoustic Bs.
		01h (1)	Car-Engine	34	21h	00h (0)	Fingered Bs.
		02h (2)	Car-Stop	35	22h	00h (0)	Picked Bass
		03h (3)	Car-Pass	39	26h	00h (0)	Synth Bass 1
		04h (4)	Car-Crash			01h (1)	SynthBass101
		05h (5)	Siren			08h (8)	Synth Bass 3
		06h (6)	Train	41	28h	00h (0)	Violin
		07h (7)	Jetplane			08h (8)	Slow Violin
		08h (8)	Starship	43	2Ah	00h (0)	Cello
		09h (9)	Burst Noise	47	2Eh	00h (0)	Harp
127	7Eh	00h (0)	Applause	49	30h	00h (0)	Strings
		01h (1)	Laughing			08h (8)	Orchestra
		02h (2)	Screaming	50	31h	00h (0)	Slow Strings

				LSB 65 (41h)			
				PC#	CC0	Tone Name	
				Dec	Hex		
55	36h	00h (0)	Choir Oohs				
57	38h	00h (0)	Trumpet				
58	39h	00h (0)	Trombone	3	02h	00h (0)	EG+Rhodes 1
		01h (1)	Trombone 2			08h (8)	Piano 3w
61	3Ch	00h (0)	Fr.Horn Solo	5	04h	00h (0)	Hard Rhodes
		01h (1)	French Horn			08h (8)	Detuned EP 1
62	3Dh	00h (0)	Brass 1			10h (16)	E.Piano 1
		08h (8)	Brass 2			18h (24)	Sine Rhodes
65	40h	00h (0)	Soprano Sax	6	05h	00h (0)	E.Piano 3
67	42h	00h (0)	Blow Sax			08h (8)	FM+SA EP
69	44h	00h (0)	Oboe			10h (16)	Hard E.Piano
74	49h	00h (0)	Flute	8	07h	00h (0)	5th Ana.Clav
76	4Bh	00h (0)	Blow Pipe	17	10h	00h (0)	Full Organ 1
81	50h	00h (0)	Syn.Square			08h (8)	Full Organ 2
		01h (1)	FM Lead 1			10h (16)	Full Organ 3
		08h (8)	JP8 Square			20h (32)	Full Organ 4
82	51h	00h (0)	Mg Lead	18	11h	00h (0)	Jazz Organ 4
		01h (1)	P5 Saw Lead			08h (8)	Organ Bass
		08h (8)	Rhythmic Saw			20h (32)	Pipe Org. Bs
83	52h	00h (0)	JP8 Pulse	19	12h	00h (0)	Rotary Org.S
84	53h	00h (0)	Cheese Saw	20	13h	00h (0)	Church Organ
85	54h	00h (0)	Reso Saw			08h (8)	Church Organ
86	55h	00h (0)	RAVE Vox			10h (16)	Theater Org.
87	56h	00h (0)	5th Lead			00h (0)	Steel Guitar
88	57h	00h (0)	FM Lead 2	26	19h	08h (8)	Nylon+Steel
89	58h	00h (0)	Fantasia 2			10h (16)	Steel Gt.2
90	59h	00h (0)	Soft Pad			00h (0)	Muted Dis.Gt
91	5Ah	00h (0)	P5 Poly	29	1Ch	08h (8)	Funk Gt.
92	5Bh	00h (0)	Heaven II			10h (16)	Funk Gt.2
94	5Dh	00h (0)	Tine Pad			00h (0)	Dazed Guitar
95	5Eh	00h (0)	JP8 Sqr Pad	31	1Eh	08h (8)	Power Guitar
96	5Fh	00h (0)	Sweep Pad 2	33	20h	00h (0)	A.Bass+Cymb1
97	60h	00h (0)	LFO RAVE	35	22h	00h (0)	Mute PickBs.
98	61h	00h (0)	Ancestral	81	50h	00h (0)	CC Solo
99	62h	00h (0)	Vibra Bells			01h (1)	FM Lead 1
		01h (1)	Syn Mallet			08h (8)	JP8 Square
100	63h	00h (0)	Harpvox	94	5Dh	00h (0)	Panner Pad
102	65h	00h (0)	Calculating	98	61h	00h (0)	Prologue
103	66h	00h (0)	Big Panner	99	62h	00h (0)	Clear Bells
		01h (1)	Ai-yai-a			01h (1)	Syn Mallet
		02h (2)	Echo Pan 2	100	63h	00h (0)	Nylon Harp
107	6Ah	00h (0)	Shamisen	102	65h	00h (0)	Goblinson
121	78h	00h (0)	Gt.FretNoise				
		01h (1)	Gt.Cut Noise				
		02h (2)	String Slap				
		06h (6)	Pick Scrape				
123	7Ah	00h (0)	Seashore	3	02h	00h (0)	EG+Rhodes 2
		01h (1)	Rain			08h (8)	Piano 3w
		02h (2)	Thunder Bell	5	04h	00h (0)	E.Piano 1
		03h (3)	Wind			08h (8)	Chord EP1
		04h (4)	Stream			10h (16)	E.Piano 1
		05h (5)	Bubble			18h (24)	Sine Rhodes
124	7Bh	00h (0)	Bird	17	10h	00h (0)	Lower Organ1
		01h (1)	Dog			08h (8)	Lower Organ2
		02h (2)	Horse-Gallop			10h (16)	Lower Organ3
		03h (3)	Bird 2			20h (32)	Metalic Org.
		04h (4)	Cat	18	11h	00h (0)	Jazz Organ 5
125	7Ch	00h (0)	Telephone 1			08h (8)	Jazz Organ 6
		01h (1)	Telephone 2			20h (32)	Jazz Organ 7
		02h (2)	DoorCreaking	19	12h	00h (0)	Rotary Org.F
		03h (3)	Door	25	18h	00h (0)	Chord Gt1
		04h (4)	Scratch			08h (8)	Cut Guitar
		05h (5)	Bar Chimes			10h (16)	Nylon Gt.o
126	7Dh	00h (0)	Helicopter			20h (32)	Nylon Gt.2
		01h (1)	Car-Engine	31	1Eh	00h (0)	Rock Rhythm2
		02h (2)	Car-Stop			08h (8)	Rock Rhythm
		03h (3)	Car-Pass	89	58h	00h (0)	Chord Syn1
		04h (4)	Car-Crash	96	5Fh	00h (0)	Converge
		05h (5)	Siren	99	62h	00h (0)	ChristmasBel
		06h (6)	Train			01h (1)	Syn Mallet
		07h (7)	Falling Down	100	63h	00h (0)	Nylon+Rhodes
		08h (8)	Starship	102	65h	00h (0)	50's Sci-Fi
		09h (9)	Burst Noise				
127	7Eh	00h (0)	Applause				
		01h (1)	Laughing				
		02h (2)	Screaming				
		03h (3)	Punch				
		04h (4)	Heart Beat				
		07h (7)	Finger Snap				
				LSB 66 (42h)			
				PC#	CC0	Tone Name	
				Dec	Hex		
				3	02h	00h (0)	EG+Rhodes 2
						08h (8)	Piano 3w
				5	04h	00h (0)	E.Piano 1
						08h (8)	Chord EP1
						10h (16)	E.Piano 1
						18h (24)	Sine Rhodes
124	7Bh	00h (0)	Bird	17	10h	00h (0)	Lower Organ1
		01h (1)	Dog			08h (8)	Lower Organ2
		02h (2)	Horse-Gallop			10h (16)	Lower Organ3
		03h (3)	Bird 2			20h (32)	Metalic Org.
		04h (4)	Cat	18	11h	00h (0)	Jazz Organ 5
125	7Ch	00h (0)	Telephone 1			08h (8)	Jazz Organ 6
		01h (1)	Telephone 2			20h (32)	Jazz Organ 7
		02h (2)	DoorCreaking	19	12h	00h (0)	Rotary Org.F
		03h (3)	Door	25	18h	00h (0)	Chord Gt1
		04h (4)	Scratch			08h (8)	Cut Guitar
		05h (5)	Bar Chimes			10h (16)	Nylon Gt.o
126	7Dh	00h (0)	Helicopter			20h (32)	Nylon Gt.2
		01h (1)	Car-Engine	31	1Eh	00h (0)	Rock Rhythm2
		02h (2)	Car-Stop			08h (8)	Rock Rhythm
		03h (3)	Car-Pass	89	58h	00h (0)	Chord Syn1
		04h (4)	Car-Crash	96	5Fh	00h (0)	Converge
		05h (5)	Siren	99	62h	00h (0)	ChristmasBel
		06h (6)	Train			01h (1)	Syn Mallet
		07h (7)	Falling Down	100	63h	00h (0)	Nylon+Rhodes
		08h (8)	Starship	102	65h	00h (0)	50's Sci-Fi
		09h (9)	Burst Noise				
				LSB 67 (43h)			
				PC#	CC0	Tone Name	
				Dec	Hex		
				17	10h	00h (0)	Full Organ 5 *
						08h (8)	Full Organ 6 *
						10h (16)	Full Organ 7 *
						20h (32)	Full Organ 8 *

● Oriental Tone Map (only for E-500 OR)

Tones

LSB 115 (74h)			
PC#	CC0	Tone Name	
Dec	Hex		
11	00h	0Ah	Strings Octave
17	00h	10h	Oriental Org1
21	00h	14h	Oriental Org2
40	00h	27h	Folk Violin Vib
41	00h	28h	Folk Violin
42	00h	29h	Brass Octave
66	00h	41h	Oriental Sax
83	00h	52h	Accordion 1
85	00h	54h	Accordion 2
86	00h	55h	IV Accordion
87	00h	56h	Kanoun Stereo
95	00h	5Eh	Kanoun 1
96	00h	5Fh	Kanoun 2
97	00h	60h	Kanoun Trm
99	00h	62h	Kanoun Oct
100	00h	63h	Kawala 2
101	00h	64h	Kawala 1
102	00h	65h	Kawala Oct
103	00h	66h	Kawala OctV
104	00h	69h	Bozouki
107	00h	6Ah	Bozouki Trm
108	00h	6Bh	Bozouki V-Mix
110	00h	6Dh	Oud Trm
111	00h	6Eh	Rababa
112	00h	6Fh	Oud 1
113	00h	70h	Oud 2
114	00h	71h	Oud 1 Trm
115	00h	72h	Oud 1 Trm Vmix
116	00h	73h	Oud 2 Trm Vmix
117	00h	74h	Oud Oct
118	00h	75h	Nay
119	00h	76h	Nay Oct
120	00h	77h	Nay OctV
121	00h	78h	Mizmar Trm
122	00h	79h	Mizmar
123	00h	7Ah	Mizmar Oct
126	00h	7Dh	Mizmar Dual
127	00h	7Eh	Arghoul

Drum Sets

LSB 1 (01h)			
PC#	CC0	Set Name	
118	00h	75	Oriental Set 1

LSB 2 (02h)			
PC#	CC0	Set Name	
118	00h	75	Oriental Set 2

LSB 0 (00h)			
PC#	CC0	Set Name	
118	00h	75	E-40 Modified

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E-500 / E-500 OR
E-300 / KR-75

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