

## 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 (PAF) = 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 "GM1 System On," and Bank Select message will be ignored.
- \* "Rx.BANK SELECT" is set to ON by "GM2 System On."
- \* "Rx.BANK SELECT" is set to ON by power-on Reset or by receiving "GS RESET."
- \* When Rx.BANK SELECT LSB = OFF, Bank number LSB (llH) will be handled as 00H regardless of the received value. However, when sending Bank Select messages, you have to send both the MSB (mmH) and LSB (llH, the value should be 00H) together.
- \* 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.
- \* Some other GS devices do not recognize the Bank Select LSB (Controller number 32).

#### ○ 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 Instrumentspansetting.'
- \* 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)

### ○Sostenuto (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)

### ○Filter Resonance (Timbre/Harmonic Intensity) (Controller number 71)

Status	2nd byte	3rd byte
BnH	47H	vvH

n = MIDI channel number: 0H-FH(Ch.1-16)  
vv = Resonance value (relative change): 00H-7FH(-64 - 0 +63),  
Initial value = 40H (no change)

\* Some Tones will not exhibit any change.

### ○Release Time (Controller number 72)

Status	2nd byte	3rd byte
BnH	48H	vvH

n = MIDI channel number: 0H-FH(Ch.1-16)  
vv = Release Time value (relative change): 00H-7FH (-64 - 0 +63),  
Initial value = 40H (no change)

\* Some Tones will not exhibit any change.

### ○Attack time (Controller number 73)

Status	2nd byte	3rd byte
BnH	49H	vvH

n = MIDI channel number: 0H-FH (Ch.1-16)  
vv = Attack time value (relative change): 0H-7FH (-64 - 0 +63),  
Initial value = 40H (no change)

\* Some Tones will not exhibit any change.

### ○Cutoff (Controller number 74)

Status	2nd byte	3rd byte
BnH	4AH	vvH

n = MIDI channel number: 0H-FH (Ch.1-16)  
vv = Cutoff value (relative change): 00H-7FH(-64 - 0 +63), Initial value = 40H (no change)

\* Some Tones will not exhibit any change.

### ○Decay Time (Controller number 75)

Status	2nd byte	3rd byte
BnH	4BH	vvH

n = MIDI channel number: 0H-FH (Ch.1-16)  
vv = Decay Time value (relative change): 00H-7FH (-64 - 0 +63),  
Initial value = 40H (no change)

\* Some Tones will not exhibit any change.

### ○Vibrato Rate (Controller number 76)

Status	2nd byte	3rd byte
BnH	4CH	vvH

n = MIDI channel number: 0H-FH (Ch.1-16)  
vv = Vibrato Rate value (relative change): 00H-7FH (-64 - 0 +63),  
Initial value = 40H (no change)

\* Some Tones will not exhibit any change.

### ○Vibrato Depth (Controller number 77)

Status	2nd byte	3rd byte
BnH	4DH	vvH

n = MIDI channel number: 0H-FH (Ch.1-16)  
vv = Vibrato Depth Value (relative change): 00H-7FH (-64 - 0 +63),  
Initial Value = 40H (no change)

\* Some Tones will not exhibit any change.

### ○Vibrato Delay (Controller number 78)

Status	2nd byte	3rd byte
BnH	4EH	vvH

n = MIDI channel number: 0H-FH (Ch.1-16)  
vv = Vibrato Delay value (relative change): 00H-7FH (-64 - 0 +63),  
Initial value = 40H (no change)

\* Some Tones will not exhibit any change.

### ○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

- \* Rx.NRPN is set to OFF by power-on reset or by receiving "GM1 System On" or "GM2 System On", and NRPN message will be ignored. NRPN message will be received when Rx.NRPN = ON, or by receiving "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 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 3. Supplementary material "Examples of actual MIDI messages" <Example 4> (p. 12). 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 MT-90s, 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 3. "Examples of actual MIDI messages" <Example 4> (p. 12).

On the MT-90s, RPN can be used to modify the following parameters.

RPN	Data entry	Explanation
MSB LSB	MSB LSB	
00H 00H	mmH ---	Pitch Bend Sensitivity mm: 00H-18H (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. 13)
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.

### ●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 (CA) = 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, ....., eeH	F7H
F0H	:System Exclusive Message status	

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

The System Exclusive Messages received by the MT-90s 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 "GM1 System On" message should be inserted at the beginning of a General MIDI 1 score, a "GM2 System On" message at the beginning of a General MIDI 2 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.)  
 "GM System On" uses Universal Non-realtime Message format. "GS Reset" uses Roland system Exclusive format "Data Set 1 (DT1)."

#### ○GM1 System On

This is a command message that resets the internal settings of the unit to the General MIDI 1 initial state. After receiving this message, the MT-90s 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	Explanaton
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 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.

#### ○GM2 System On

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

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

- \* When this message is received, the MT-90s will be able to receive the messages specified by General MIDI 2, and use the General MIDI 2 sound map.
- \* There must be an interval of at least 50 ms between this message and the next message.

#### ○GM System Off

"GM System Off" is a command message that resets the internal state of the MT-90s from the GM state to its native condition. The MT-90s will reset to the GS default state.

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

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

- \* When this message is received, the MT-90s will reset to the GS default state.
- \* There must be an interval of at least 50 ms between this message and the next message.

#### ○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.

#### ○Master Fine Tuning

Status	Data byte	Status
F0H	7FH, 7FH, 04H, 03H, 11H, mmH	F7H

Byte	Explanation
F0H	Exclusive status
7FH	ID number (universal realtime message)
7FH	Device ID (Broadcast)
04H	Sub ID#1 (Device Control)
03H	Sub ID#2 (Master Fine Tuning)
11H	Master Fine Tuning LSB
mmH	Master Fine Tuning MSB
F7H	EOX (End Of Exclusive)

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

#### ○Master Coarse Tuning

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

Byte	Explanation
F0H	Exclusive status
7FH	ID number (universal realtime message)
7FH	Device ID (Broadcast)
04H	Sub ID#1 (Device Control)
04H	Sub ID#2 (Master Coarse Tuning)
11H	Master Coarse Tuning LSB
mmH	Master Coarse Tuning MSB
F7H	EOX (End Of Exclusive)
11H :	ignored (processed as 00H)
mmH :	28H - 40H - 58H (-24 - 0 - +24 [semitones])

## ●Global Parameter Control

Parameters of the Global Parameter Control are newly provided for the General MIDI 2.

### ○Reverb Parameters

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

### ○Chorus Parameters

Status	Data byte	Status
F0H	7FH, 7FH, 04H, 05H, 01H, 01H, 01H, 01H, 02H, ppH, vvH	F7H
Byte	Explanation	
F0H	Exclusive status	
7FH	ID number (universal realtime message)	
7FH	Device ID (Broadcast)	
04H	Sub ID#1 (Device Control)	
05H	Sub ID#2 (Global Parameter Control)	
01H	Slot path length	
01H	Parameter width	
01H	Value width	
01H	Slot path MSB	
02H	Slot path LSB (Effect 0102: Chorus)	
ppH	Parameter to be controlled.	
vvH	Value for the parameter.	
F7H	EOX (End Of Exclusive)	
pp=0	Chorus Type	
	vv=0                              Chorus1	
	vv=1                              Chorus2	
	vv=2                              Chorus3	
	vv=3                              Chorus4	
	vv=4                              FB Chorus	
	vv=5                              Flanger	
pp=1	Mod Rate	
	vv= 00H-7FH 0-127	
pp=2	Mod Depth	
	vv = 00H-7FH 0-127	
pp=3	Feedback	
	vv = 00H-7FH 0-127	
pp=4	Send To Reverb	
	vv = 00H-7FH 0-127	

## ○Channel Pressure

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

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

### ○Controller

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

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

### ○Scale/Octave Tuning Adjust

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

Byte	Explanation
F0H	Exclusive status
7EH	ID number (Universal Non-realtime Message)
7FH	Device ID (Broadcast)
08H	Sub ID#1 (MIDI Tuning Standard)
08H	Sub ID#2 (scale/octave tuning 1-byte form)
ffH	Channel/Option byte1
	bits 0 to 1 = channel 15 to 16
	bit 2 to 6 = Undefined
ggH	Channel byte2
	bits 0 to 6 = channel 8 to 14
hhH	Channel byte3
	bits 0 to 6 = channel 1 to 7
ssH	12 byte tuning offset of 12 semitones from C to B
	00H = -64 [cents]
	40H = 0 [cents] (equal temperament)
	7FH = +63 [cents]
F7H	EOX (End Of Exclusive)

## ○Key-Based Instrument Controllers

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

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

\* This parameter affects drum instruments only.

## ●Data transmission

MT-90s 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 2 (p. 8).
- \* 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 3 (p. 13).

## Section 2. 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	+-----+	
40 1x 00	+-----+   PART PARAMETERS	Individual
	(x = 0-F)	
40 2x 5A	+-----+	
41 m0 00	+-----+   SRUM SETUP PARAMETERS	Individual
	(m = 0-1)	
41 m8 7F	+-----+	
48 00 00	+-----+   SYSTEM PARAMETERS	Bulk
48 01 10	+-----+   PART PARAMETERS	Bulk
48 1D 0F	+-----+	
49 m0 00	+-----+   DRUM SETUP PARAMETER	Bulk
	(m = 0-1)	
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 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 (H)	Size (H)	Data (H)	Parameter	Description	Default Value (H)	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 3. Supplementary material, "About tuning" (p. 13).						
40 00 04	00 00 01	00-7F	MASTER VOLUME	0-127 (= F0 7F 7F 04 01 00 vv F7)	7F	127
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 (Rx. only)	00 = GS Reset 127 = Exit GS	***	
* Refer to "System exclusive messages related to Mode settings" (p. 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 MT-90s 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 FEEDBACK0	-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.

## ●Part Parameters

MT-90s 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	TONE 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 (CA)	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 (PA)	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*)

\* When "GM1 System On" and "GM2 System On" are received, Rx. NRPN will be set OFF. When "GS Reset" is received, it will be set ON.

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 (= CC# 126 01 / CC# 127 00)	01	Poly

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 = MAP1 2 = MAP2	00 at x ≠ 0 01 at x = 0	OFF at x ≠ 0 MAP1 at x = 0
----------	----------	-------	---------------------	---------------------------------	----------------------------	-------------------------------

\* This parameter sets the Drum Map of the Part used as the Drum Part. MT-90s 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	0-127 (= CC# 7)	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	-64 (RANDOM), -63 (LEFT) - +63 (RIGHT) (= CC# 10, except RANDOM)	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	0-127 (= CC# 93)	00	0
40 1x 22	00 00 01	00-7F	REVERB SEND LEVEL	0-127 (= CC# 91)	28	40
40 1x 23	00 00 01	00-01	Rx. BANK SELECT	OFF/ON	01 (00*)	ON (OFF*)

\* When "GM1 System On" is received, Rx.BANK SELECT will be set OFF.

\* When "GS RESET" is received, Rx.BANK SELECT will be set ON.

40 1x 24	00 00 01	00-01	Rx.BANK SELECT LSB	OFF/ON	00	OFF
40 1x 25	00 00 01	00-01	TONE REMAIN	OFF/ON	01	ON
40 1x 30	00 00 01	0E-72	TONE MODIFY 1	-50 - +50 Vibrato rate (= NRPN# 8)	40	0
40 1x 31	00 00 01	0E-72	TONE MODIFY 2	-50 - +50 Vibrato depth (= NRPN# 9)	40	0
40 1x 32	00 00 01	0E-72	TONE MODIFY 3	-50 - +50 TVF cutoff frequency (= NRPN# 32)	40	0
40 1x 33	00 00 01	0E-72	TONE MODIFY 4	-50 - +50 TVF resonance (= NRPN# 33)	40	0
40 1x 34	00 00 01	0E-72	TONE MODIFY 5	-50 - +50 TVF&TVA Env.attack (= NRPN# 99)	40	0
40 1x 35	00 00 01	0E-72	TONE MODIFY 6	-50 - +50 TVF&TVA Env.decay (= NRPN# 100)	40	0
40 1x 36	00 00 01	0E-72	TONE MODIFY 7	-50 - +50 TVF&TVA Env.release (= NRPN# 102)	40	0
40 1x 37	00 00 01	0E-72	TONE MODIFY 8	-50 - +50 Vibrato delay (= NRPN# 10)	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 ±0 cent (40H) is equal temperament. Refer to section 3. Supplementary material, "The Scale Tune Feature" (p. 13).

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]		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 [%]

## ● 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	TVA level (= NRPN# 26)
41 m3 rr	00 00 01	00-7F	ASSIGN GROUP NUMBER	Non, 1-127
41 m4 rr	00 00 01	00-7F	PANPOT	-64 (RANDOM), -63 (LEFT) - +63 (RIGHT) (= NRPN# 28, except RANDOM)
41 m5 rr	00 00 01	00-7F	REVERB SEND LEVEL	0.0-1.0 (= NRPN# 29) Multiplicand of the part reverb depth
41 m6 rr	00 00 01	00-7F	CHORUS SEND LEVEL	0.0-1.0 (= NRPN# 30) 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.

## Section 3. 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 bbH expressing two 7-bit bytes would indicate a value of aa x 128 + bb.
- \* In the case of values which have a ± sign, 00H = -64, 40H = ±0, and 7FH = +63, so that the decimal expression would be 64 less than the value given in the above chart. In the case of two types, 00 00H = -8192, 40 00H = ±0, and 7F 7FH = +8191. For example if aa bbH were expressed as decimal, this would be aa bbH - 40 00H = aa x 128 + bb - 64 x 128.
- \* Data marked "nibbled" 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  
 $18 \times 128 + 52 = 2356$

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

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

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

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

Since from the preceding table, 0 = 00H, 4 = 04H, 14 = 0EH, 10 = 0AH, the answer 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 (Flute in GS).

#### <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  $40 \times 128 + 0 = 8192$  is 0, so this Pitch Bend Value is

$$28 \times 128 - 40 \times 128 = 40 \times 128 + 0 - (64 \times 128 + 0) = 5120 - 8192 = -3072$$

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.

#### <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.

B364 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.)

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 rewind 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 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

\* Checksum is 0 if the remainder is 0.

### <Example> 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.

## ●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 0D (+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 09 (- 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 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.

### ○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 MT-90s, 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 List

MT-90s TONE LIST

CC0 / CC32 / PC#	Tone Name	Voices	Tone No.
00h / 00h / 00h	Piano 1	1	1
08h / 00h / 00h	Piano 1w	2	2
10h / 00h / 00h	Piano 1d	1	3
00h / 00h / 01h	Piano 2	1	4
08h / 00h / 01h	Piano 2w	2	5
00h / 00h / 02h	Piano 3	1	6
08h / 00h / 02h	Piano 3w	2	7
00h / 00h / 03h	Honky-tonk	2	8
08h / 00h / 03h	Honky-tonk 2	2	9
00h / 00h / 04h	E.Piano 1	1	10
08h / 00h / 04h	Detuned EP 1	2	11
10h / 00h / 04h	E.Piano 1v	2	12
18h / 00h / 04h	60sE.Piano	1	13
00h / 00h / 05h	E.Piano 2	1	14
08h / 00h / 05h	Detuned EP 2	2	15
10h / 00h / 05h	E.Piano 2v	2	16
00h / 00h / 06h	Harpsichord	1	17
08h / 00h / 06h	Coupled Hps.	2	18
10h / 00h / 06h	Harpsi.w	2	19
18h / 00h / 06h	Harpsi.o	2	20
00h / 00h / 07h	Clav.	1	21
00h / 00h / 08h	Celesta	1	22
00h / 00h / 09h	Glockenspiel	1	23
00h / 00h / 0Ah	Music Box	1	24
00h / 00h / 0Bh	Vibraphone	1	25
08h / 00h / 0Bh	Vibes w	2	26
00h / 00h / 0Ch	Marimba	1	27
08h / 00h / 0Ch	Marimba w	1	28
00h / 00h / 0Dh	Xylophone	1	29
00h / 00h / 0Eh	Tubular-bell	1	30
08h / 00h / 0Eh	Church Bell	1	31
09h / 00h / 0Eh	Carillon	1	32
00h / 00h / 0Fh	Santur	1	33
00h / 00h / 10h	Organ 1	1	34
01h / 00h / 10h	Full Organ 1	1	35
08h / 00h / 10h	Detuned Or.1	2	35
09h / 00h / 10h	Full Organ 4	1	36
10h / 00h / 10h	Pop Organ 1	1	36
12h / 00h / 10h	Pop Organ	1	37
20h / 00h / 10h	Full Organ 4	1	37
21h / 00h / 10h	Organ 1	1	38
00h / 00h / 11h	Organ 2	1	38
01h / 00h / 11h	Jazz Organ 3	2	39
08h / 00h / 11h	Detuned Or.2	2	39
20h / 00h / 11h	Jazz Organ 1	2	40
00h / 00h / 12h	Rock Organ 2	2	41
00h / 00h / 13h	Church Org.1	1	42
08h / 00h / 13h	Church Org.2	2	43
10h / 00h / 13h	Church Org.3	2	44
00h / 00h / 14h	Reed Organ	1	45
00h / 00h / 15h	Accordion Fr	2	46
08h / 00h / 15h	Accordion It	2	47
00h / 00h / 16h	Harmonica	1	48
01h / 00h / 16h	Harmonica	1	49
00h / 00h / 17h	Bandoneon	2	49
00h / 00h / 18h	Nylon-str.Gt	1	50
08h / 00h / 18h	Ukulele	1	51
10h / 00h / 18h	Nylon Gt.o	2	52
20h / 00h / 18h	Nylon Guitar	1	53
00h / 00h / 19h	Steel-str.Gt	1	54
08h / 00h / 19h	12-str.Gt	2	55
09h / 00h / 19h	Nylon+Steel	2	56
10h / 00h / 19h	Mandolin	1	56
20h / 00h / 19h	Steel Gt.2	1	57
00h / 00h / 1Ah	Jazz Guitar	1	57
08h / 00h / 1Ah	Hawaiian Gt.	1	58
00h / 00h / 1Bh	Clean Gt.	1	59
08h / 00h / 1Bh	Chorus Gt.	2	60
00h / 00h / 1Ch	Muted Gt.	1	61
08h / 00h / 1Ch	Funk Gt.	1	62
10h / 00h / 1Ch	Funk Gt.2	2	63
00h / 00h / 1Dh	Overdrive Gt	1	64
00h / 00h / 1Eh	DistortionGt	1	65

CC0 / CC32 / PC#	Tone Name	Voices	Tone No.
08h / 00h / 1Eh	Feedback Gt.	2	66
00h / 00h / 1Fh	Gt.Harmonics	1	67
08h / 00h / 1Fh	Gt. Feedback	1	68
10h / 00h / 1Fh	Gt.Harmonics	1	69
00h / 00h / 20h	Acoustic Bs.	1	69
00h / 00h / 21h	Fingered Bs.	1	70
00h / 00h / 22h	Picked Bs.	1	71
00h / 00h / 23h	Fretless Bs.	1	72
00h / 00h / 24h	Slap Bass 1	1	73
00h / 00h / 25h	Slap Bass 2	1	74
00h / 00h / 26h	Synth Bass 1	1	75
01h / 00h / 26h	SynthBass101	1	76
08h / 00h / 26h	Synth Bass 3	1	77
00h / 00h / 27h	Synth Bass 2	2	78
08h / 00h / 27h	Synth Bass 4	2	79
10h / 00h / 27h	Rubber Bass	2	80
00h / 00h / 28h	Violin	1	81
08h / 00h / 28h	Slow Violin	1	82
00h / 00h / 29h	Viola	1	83
00h / 00h / 2Ah	Cello	1	84
00h / 00h / 2Bh	Contrabass	1	85
00h / 00h / 2Ch	Tremolo Str	1	86
00h / 00h / 2Dh	PizzicatoStr	1	87
00h / 00h / 2Eh	Harp	1	88
00h / 00h / 2Fh	Timpani	1	89
00h / 00h / 30h	Strings	1	90
08h / 00h / 30h	Orchestra	2	91
00h / 00h / 31h	Slow Strings	1	92
00h / 00h / 32h	Syn.Strings1	1	93
08h / 00h / 32h	Syn.Strings3	2	94
00h / 00h / 33h	Syn.Strings2	2	95
00h / 00h / 34h	Choir Aahs	1	96
20h / 00h / 34h	Choir	1	97
00h / 00h / 35h	Pop Voice	1	98
00h / 00h / 36h	SynVox	1	99
00h / 00h / 37h	OrchestraHit	2	100
00h / 00h / 38h	Trumpet	1	101
00h / 00h / 39h	Trombone	1	102
01h / 00h / 39h	Trombone 2	2	103
00h / 00h / 3Ah	Tuba	1	104
00h / 00h / 3Bh	MutedTrumpet	1	105
00h / 00h / 3Ch	French Horns	2	106
01h / 00h / 3Ch	Fr.Horn 2	2	107
00h / 00h / 3Dh	Brass 1	1	108
08h / 00h / 3Dh	Brass 2	2	109
00h / 00h / 3Eh	Synth Brass1	2	110
08h / 00h / 3Eh	Synth Brass3	2	111
10h / 00h / 3Eh	AnalogBrass1	2	112
00h / 00h / 3Fh	Synth Brass2	2	113
08h / 00h / 3Fh	Synth Brass4	1	114
10h / 00h / 3Fh	AnalogBrass2	2	115
00h / 00h / 40h	Soprano Sax	1	116
00h / 00h / 41h	Alto Sax	1	117
00h / 00h / 42h	Tenor Sax	1	118
00h / 00h / 43h	Baritone Sax	1	119
00h / 00h / 44h	Oboe	1	120
00h / 00h / 45h	English Horn	1	121
00h / 00h / 46h	Bassoon	1	122
00h / 00h / 47h	Clarinet	1	123
00h / 48h / 00h	Piccolo	1	124
00h / 00h / 49h	Flute	1	125
00h / 00h / 4Ah	Recorder	1	126
00h / 00h / 4Bh	Pan Flute	1	127
00h / 00h / 4Ch	Bottle Blow	2	128
00h / 00h / 4Dh	Shakuhachi	2	129
00h / 00h / 4Eh	Whistle	1	130
00h / 00h / 4Fh	Ocarina	1	131
00h / 00h / 50h	Square Wave	2	132
01h / 00h / 50h	Square	1	133
08h / 00h / 50h	Sine Wave	1	134
00h / 00h / 51h	Saw Wave	2	135
01h / 00h / 51h	Saw	1	136
08h / 00h / 51h	Doctor Solo	2	137
00h / 00h / 52h	Syn.Calliope	2	138
00h / 00h / 53h	Chiffer Lead	2	139

CC0 / CC32 / PC#	Tone Name	Voices	Tone No.
00h / 00h / 54h	Charang	2	140
00h / 00h / 55h	Solo Vox	2	141
00h / 00h / 56h	5th Saw Wave	2	142
00h / 00h / 57h	Bass & Lead	2	143
00h / 00h / 58h	Fantasia	2	144
00h / 00h / 59h	Warm Pad	1	145
00h / 00h / 5Ah	Polysynth	2	146
00h / 00h / 5Bh	Space Voice	1	147
00h / 00h / 5Ch	Bowed Glass	2	148
00h / 00h / 5Dh	Metal Pad	2	149
00h / 00h / 5Eh	Halo Pad	2	150
00h / 00h / 5Fh	Sweep Pad	1	151
00h / 00h / 60h	Ice Rain	2	152
00h / 00h / 61h	Soundtrack	2	153
00h / 00h / 62h	Crystal	2	154
01h / 00h / 62h	Syn Mallet	1	155
00h / 00h / 63h	Atmosphere	2	156
00h / 00h / 64h	Brightness	2	157
00h / 00h / 65h	Goblin	2	158
00h / 00h / 66h	Echo Drops	1	159
01h / 00h / 66h	Echo Bell	2	160
02h / 00h / 66h	Echo Pan	2	161
00h / 00h / 67h	Star Theme	2	162
00h / 00h / 68h	Sitar	1	163
01h / 00h / 68h	Sitar 2	2	164
00h / 00h / 69h	Banjo	1	165
00h / 00h / 6Ah	Shamisen	1	166
00h / 00h / 6Bh	Koto	1	167
08h / 00h / 6Bh	Taisho Koto	2	168
00h / 00h / 6Ch	Kalimba	1	169
00h / 00h / 6Dh	Bagpipe	1	170
00h / 00h / 6Eh	Fiddle	1	171
00h / 00h / 6Fh	Shanai	1	172
00h / 00h / 70h	Tinkle Bell	1	173
00h / 00h / 71h	Agogo	1	174
00h / 00h / 72h	Steel Drums	1	175
00h / 00h / 73h	Woodblock	1	176
08h / 00h / 73h	Castanets	1	177
00h / 00h / 74h	Taiko	1	178
08h / 00h / 74h	Concert BD	1	179
00h / 00h / 75h	Melo. Tom 1	1	180
08h / 00h / 75h	Melo. Tom 2	1	181
00h / 00h / 76h	Synth Drum	1	182
08h / 00h / 76h	808 Tom	1	183
09h / 00h / 76h	Elec Perc.	1	184
00h / 00h / 77h	Reverse Cym.	1	185
00h / 00h / 78h	Gt.FretNoise	1	186
01h / 00h / 78h	Gt.Cut Noise	1	187
02h / 00h / 78h	String Slap	1	188
00h / 00h / 79h	Breath Noise	1	189
01h / 00h / 79h	Fl.Key Click	1	190
00h / 00h / 7Ah	Seashore	1	191
01h / 00h / 7Ah	Rain	1	192
02h / 00h / 7Ah	Thunder	1	193
03h / 00h / 7Ah	Wind	1	194
04h / 00h / 7Ah	Stream	2	195
05h / 00h / 7Ah	Bubble	2	196
00h / 00h / 7Bh	Bird	2	197
01h / 00h / 7Bh	Dog	1	198
02h / 00h / 7Bh	Horse-Gallop	1	199
03h / 00h / 7Bh	Bird 2	1	200
00h / 00h / 7Ch	Telephone 1	1	201
01h / 00h / 7Ch	Telephone 2	1	202
02h / 00h / 7Ch	DoorCreaking	1	203
03h / 00h / 7Ch	Door	1	204
04h / 00h / 7Ch	Scratch	1	205
05h / 00h / 7Ch	Windchime	2	206
00h / 00h / 7Dh	Helicopter	1	207
01h / 00h / 7Dh	Car-Engine	1	208
02h / 00h / 7Dh	Car-Stop	1	209
03h / 00h / 7Dh	Car-Pass	1	210
04h / 00h / 7Dh	Car-Crash	2	211
05h / 00h / 7Dh	Siren	1	212
06h / 00h / 7Dh	Train	1	213
07h / 00h / 7Dh	Jetplane	2	214

CC0 / CC32 / PC#	Tone Name	Voices	Tone No.
08h / 00h / 7Dh	Starship	2	215
09h / 00h / 7Dh	Burst Noise	2	216
00h / 00h / 7Eh	Applause	2	217
01h / 00h / 7Eh	Laughing	1	218
02h / 00h / 7Eh	Screaming	1	219
03h / 00h / 7Eh	Punch	1	220
04h / 00h / 7Eh	Heart Beat	1	221
05h / 00h / 7Eh	Footsteps	1	222
00h / 00h / 7Fh	Gun Shot	1	223
01h / 00h / 7Fh	Machine Gun	1	224
02h / 00h / 7Fh	Lasergun	1	225
03h / 00h / 7Fh	Explosion	2	226
08h / 40h / 04h	Soft E.Piano	2	
18h / 40h / 04h	Sine Rhodes	1	
00h / 40h / 05h	Hard E.Piano	2	
08h / 40h / 05h	St.FM EP	2	
00h / 40h / 07h	Analog Clav.	2	
20h / 40h / 10h	VS Organ	2	
00h / 40h / 11h	Jazz Organ 1	2	
08h / 40h / 11h	Jazz Organ 3	2	
20h / 40h / 11h	Jazz Organ 6	2	
00h / 40h / 12h	Rotary Org.F	1	
00h / 40h / 13h	Organ Flute	2	
08h / 40h / 13h	Trem.Flute	2	
10h / 40h / 13h	Theater Org.	2	
00h / 40h / 14h	Digi Church	2	
00h / 40h / 18h	Nylon Guitar	1	
00h / 40h / 19h	Steel Guitar	1	
08h / 40h / 19h	12str Guitar	2	
00h / 40h / 1Bh	JC E.Guitar	2	
00h / 40h / 1Ch	Muted Dis.Gt	2	
00h / 40h / 1Dh	Overdrive Gt	1	
08h / 40h / 1Eh	Power Gt.2	2	
00h / 40h / 20h	Acoustic Bs.	2	
00h / 40h / 21h	Fingered Bs.	1	
10h / 40h / 27h	SH101 Bass	1	
00h / 40h / 36h	Choir Oohs	2	
00h / 40h / 50h	Syn.Square	2	
01h / 40h / 50h	FM Lead 1	2	
08h / 40h / 50h	JP8 Square	1	
00h / 40h / 51h	Mg Lead	1	
01h / 40h / 51h	P5 Saw Lead	1	
08h / 40h / 51h	Rhythmic Saw	2	
00h / 40h / 52h	JP8 Pulse	2	
00h / 40h / 53h	Cheese Saw	1	
00h / 40h / 54h	Reso Saw	1	
00h / 40h / 55h	RAVE Vox	2	
00h / 40h / 56h	5th Lead	2	
00h / 40h / 57h	FM Lead 2	1	
00h / 40h / 58h	Fantasia 2	2	
00h / 40h / 59h	Soft Pad	2	
00h / 40h / 5Ah	P5 Poly	2	
00h / 40h / 5Bh	Heaven II	2	
00h / 40h / 5Ch	Bowed Glass	2	
00h / 40h / 5Dh	Tine Pad	2	
00h / 40h / 5Eh	JP8 Sqr Pad	2	
00h / 40h / 5Fh	Sweep Pad 2	2	
00h / 40h / 60h	LFO RAVE	2	
00h / 40h / 61h	Ancestral	2	
00h / 40h / 62h	Vibra Bells	2	
00h / 40h / 63h	Harpvox	2	
00h / 40h / 65h	Calculating	2	
00h / 40h / 66h	Big Panner	2	
01h / 40h / 66h	Ai-yai-a	2	
02h / 40h / 66h	Echo Pan 2	2	
00h / 41h / 00h	MIDI Piano1	2	
00h / 41h / 01h	MIDI Piano2	2	
00h / 41h / 02h	EG+Rhodes 1	2	
00h / 41h / 04h	Hard Rhodes	2	
08h / 41h / 05h	FM+SA EP	2	
00h / 41h / 07h	5th Ana.Clav	2	
00h / 41h / 10h	Full Organ 1	1	
08h / 41h / 10h	Full Organ 4	1	

CC0 / CC32 / PC#	Tone Name	Voices	Tone No.
00h / 41h / 11h	Jazz Organ 4	2	
08h / 41h / 11h	Organ Bass	2	
20h / 41h / 11h	Pipe Org. Bs	2	
00h / 41h / 12h	Rotary Org.S	1	
08h / 41h / 19h	Nylon+Steel	2	
08h / 41h / 1Eh	Power Guitar	2	
00h / 41h / 20h	A.Bass+Cymb1	2	
00h / 41h / 22h	Mute PickBs.	1	
00h / 41h / 50h	CC Solo	2	
00h / 41h / 5Dh	Panner Pad	2	
00h / 41h / 5Fh	Polar Pad	1	
00h / 41h / 62h	Clear Bells	2	
00h / 41h / 63h	Nylon Harp	2	
00h / 41h / 65h	Goblinson	2	
02h / 41h / 66h	Water Piano	2	
<hr/>			
00h / 42h / 02h	EG+Rhodes 2	2	
08h / 42h / 05h	Hard FM EP	2	
00h / 42h / 10h	Lower Organ1	1	
08h / 42h / 10h	Lower Organ2	2	
10h / 42h / 10h	Lower Organ3	1	
20h / 42h / 10h	Metalic Org.	2	
00h / 42h / 11h	Jazz Organ 5	2	
08h / 42h / 11h	Jazz Organ 6	2	
20h / 42h / 11h	Jazz Organ 7	2	
00h / 42h / 12h	Rotary Org.F	1	
00h / 42h / 5Fh	Converge	1	
00h / 42h / 62h	ChristmasBel	2	
00h / 42h / 63h	Nylon+Rhodes	2	
00h / 42h / 65h	50sSci-Fi	2	
<hr/>			
00h / 43h / 10h	Full Organ 5	2	
08h / 43h / 10h	Full Organ 6	2	
10h / 43h / 10h	Full Organ 7	2	
20h / 43h / 10h	Full Organ 8	2	
<hr/>			
00h / 48h / 00h	Piano 1*	1	227
00h / 48h / 01h	Piano 2*	1	228
00h / 48h / 02h	Piano 3*	1	229
00h / 48h / 03h	Honky-tonk*	2	230
00h / 48h / 04h	E.Piano 1*	1	231
00h / 48h / 05h	E.Piano 2*	1	232
00h / 48h / 06h	Harpsichord*	1	233
00h / 48h / 07h	Clav.*	1	234
<hr/>			
00h / 48h / 08h	Celesta*	1	235
00h / 48h / 09h	Glocken*	1	236
00h / 48h / 0Ah	Music Box*	1	237
00h / 48h / 0Bh	Vibraphone*	1	238
00h / 48h / 0Ch	Marimba*	1	239
00h / 48h / 0Dh	Xylophone*	1	240
00h / 48h / 0Eh	Tubularbell*	1	241
00h / 48h / 0Fh	Santur*	1	242
<hr/>			
00h / 48h / 10h	Organ 1*	1	243
10h / 48h / 10h	Pop Organ 1*	1	244
00h / 48h / 11h	Organ 2*	1	245
00h / 48h / 12h	Rock Organ2*	2	246
00h / 48h / 13h	ChurchOrg.1*	1	247
00h / 48h / 14h	Reed Organ*	1	248
00h / 48h / 15h	AccordionFr*	2	249
00h / 48h / 16h	Harmonica*	1	250
00h / 48h / 17h	Bandoneon*	2	251
<hr/>			
00h / 48h / 18h	Nylon-strGt*	1	252
00h / 48h / 19h	Steel-strGt*	1	253
00h / 48h / 1Ah	Jazz Guitar*	1	254
00h / 48h / 1Bh	Clean Gt.*	1	255
00h / 48h / 1Ch	Muted Gt.*	1	256
08h / 48h / 1Ch	Funk Gt.*	1	257
00h / 48h / 1Dh	OverdriveGt*	1	258
00h / 48h / 1Eh	Dist.Guitar*	1	259
00h / 48h / 1Fh	Gt.Harmo*	1	260
<hr/>			
00h / 48h / 20h	Acoustic Bs*	1	261
00h / 48h / 21h	Fingered Bs*	1	262
00h / 48h / 22h	Picked Bs.*	1	263
00h / 48h / 23h	Fretless Bs*	1	264

CC0 / CC32 / PC#	Tone Name	Voices	Tone No.
00h / 48h / 24h	Slap Bass 1*	1	265
00h / 48h / 25h	Slap Bass 2*	1	266
00h / 48h / 26h	Synth Bass1*	1	267
00h / 48h / 27h	Synth Bass2*	2	268
10h / 48h / 27h	Rubber Bass*	2	269
<hr/>			
00h / 48h / 28h	Violin*	1	270
00h / 48h / 29h	Viola*	1	271
00h / 48h / 2Ah	Cello*	1	272
00h / 48h / 2Bh	Contrabass*	1	273
00h / 48h / 2Ch	Tremolo Str*	1	274
00h / 48h / 2Dh	Pizzicato*	1	275
00h / 48h / 2Eh	Harp*	1	276
00h / 48h / 2Fh	Timpani*	1	277
<hr/>			
00h / 48h / 30h	Strings*	1	278
00h / 48h / 31h	SlowStrings*	1	279
00h / 48h / 32h	Syn.Str 1*	1	280
00h / 48h / 33h	Syn.Str 2*	2	281
00h / 48h / 34h	Choir Aahs*	1	282
00h / 48h / 35h	Pop Voice*	1	283
00h / 48h / 36h	SynVox*	1	284
00h / 48h / 37h	Orche.Hit*	2	285
<hr/>			
00h / 48h / 38h	Trumpet*	1	286
00h / 48h / 39h	Trombone*	1	287
00h / 48h / 3Ah	Tuba*	1	288
00h / 48h / 3Bh	M.Trumpet*	1	289
00h / 48h / 3Ch	FrenchHorns*	2	290
00h / 48h / 3Dh	Brass 1*	1	291
00h / 48h / 3Eh	SynthBrass1*	2	292
10h / 48h / 3Eh	A.Brass 1*	2	293
00h / 48h / 3Fh	SynthBrass2*	2	294
<hr/>			
00h / 48h / 40h	Soprano Sax*	1	295
00h / 48h / 41h	Alto Sax*	1	296
00h / 48h / 42h	Tenor Sax*	1	297
00h / 48h / 43h	BaritoneSax*	1	298
00h / 48h / 44h	Oboe*	1	299
00h / 48h / 45h	EnglishHorn*	1	300
00h / 48h / 46h	Bassoon*	1	301
00h / 48h / 47h	Clarinet*	1	302
<hr/>			
00h / 48h / 48h	Piccolo*	1	303
00h / 48h / 49h	Flute*	1	304
00h / 48h / 4Ah	Recorder*	1	305
00h / 48h / 4Bh	Pan Flute*	1	306
00h / 48h / 4Ch	Bottle Blow*	2	307
00h / 48h / 4Dh	Shakuhachi*	2	308
00h / 48h / 4Eh	Whistle*	1	309
00h / 48h / 4Fh	Ocarina*	1	310
<hr/>			
00h / 48h / 50h	Square Wave*	2	311
00h / 48h / 51h	Saw Wave*	2	312
08h / 48h / 51h	Doctor Solo*	2	313
00h / 48h / 52h	SynCalliope*	2	314
00h / 48h / 53h	ChifferLead*	2	315
00h / 48h / 54h	Charang*	2	316
00h / 48h / 55h	Solo Vox*	2	317
00h / 48h / 56h	5th SawWave*	2	318
00h / 48h / 57h	Bass & Lead*	2	319
<hr/>			
00h / 48h / 58h	Fantasia*	2	320
00h / 48h / 59h	Warm Pad*	1	321
00h / 48h / 5Ah	Polysynth*	2	322
00h / 48h / 5Bh	Space Voice*	1	323
00h / 48h / 5Ch	Bowed Glass*	2	324
00h / 48h / 5Dh	Metal Pad*	2	325
00h / 48h / 5Eh	Halo Pad*	2	326
00h / 48h / 5Fh	Sweep Pad*	1	327
<hr/>			
00h / 48h / 60h	Ice Rain*	2	328
00h / 48h / 61h	Soundtrack*	2	329
00h / 48h / 62h	Crystal*	2	330
01h / 48h / 62h	Syn Mallet*	2	331
00h / 48h / 63h	Atmosphere*	2	332
00h / 48h / 64h	Brightness*	2	333
00h / 48h / 65h	Goblin*	2	334
00h / 48h / 66h	Echo Drops*	1	335
00h / 48h / 67h	Star Theme*	2	336
<hr/>			
00h / 48h / 68h	Sitar*	1	337
00h / 48h / 69h	Banjo*	1	338



CC0 / CC32 / PC#	Tone Name	Voices	Tone No.
00h / 48h / 6Ah	Shamisen*	1	339
00h / 48h / 6Bh	Koto*	1	340
00h / 48h / 6Ch	Kalimba*	1	341
00h / 48h / 6Dh	Bagpipe*	1	342
00h / 48h / 6Eh	Fiddle*	1	343
00h / 48h / 6Fh	Shanai*	1	344
00h / 48h / 70h	Tinkle Bell*	1	345
00h / 48h / 71h	Agogo*	1	346
00h / 48h / 72h	Steel Drums*	1	347
00h / 48h / 73h	Woodblock*	1	348
00h / 48h / 74h	Taiko*	1	349
00h / 48h / 75h	Melo.Tom 1*	1	350
00h / 48h / 76h	Synth Drum*	1	351
00h / 48h / 77h	ReverseCym.*	1	352
00h / 48h / 78h	Fret Noise*	1	353
00h / 48h / 79h	BreathNoise*	1	354
00h / 48h / 7Ah	Seashore*	1	355
00h / 48h / 7Bh	Bird*	2	356
00h / 48h / 7Ch	Telephone 1*	1	357
00h / 48h / 7Dh	Helicopter*	1	358
00h / 48h / 7Eh	Applause*	2	359
00h / 48h / 7Fh	Gun Shot*	1	360

#### MT-90s Drum MAPPING

PC# / CC0 / CC32	Rhythm Name	Rhythm Set No.
00h / 00h / 00h	STANDARD	1
00h / 00h / 08h	ROOM	2
00h / 00h / 10h	POWER	3
00h / 00h / 18h	ELECTRONIC	4
00h / 00h / 19h	TR-808	5
00h / 00h / 20h	JAZZ	6
00h / 00h / 28h	BRUSH	7
00h / 00h / 30h	ORCHESTRA	8
00h / 00h / 38h	SOUND EFFECT	9
00h / 40h / 00h	STANDARD*	
00h / 40h / 08h	ROOM*	
00h / 40h / 19h	DANCE	
00h / 40h / 28h	BRUSH*	

\* Tone with a "\*" symbol appended to their name may not playback satisfactorily on other GS sound generating devices.