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This document is the common MIDI implementation for the devices listed below.

Model: RP701 / F701 / RP107 / F107

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Version: 1.00

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 the drum part, this message is not received by certain instruments.

● Note On

Status	2nd byte	3rd byte
9nH	kkH	vvH

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

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

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

● Control Change

* 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 byte	3rd byte
BnH	00H	mmH
BnH	20H	11H

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

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

* If "GM1 System On" is received, Bank Select is not received.

* Bank Select is transmitted at power-on and when "GM2 System On" is received.

* Bank Select processing will be suspended until a Program Change message is received.

○ Modulation (Controller Number 1)

Status	2nd byte	3rd byte
BnH	01H	vvH

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

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

* 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 byte	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.

o Data Entry (Controller Number 6, 38)

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

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

o Volume (Controller Number 7)

Status	2nd byte	3rd byte
BnH	07H	vvH

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

* Volume messages are used to adjust the volume balance of each Part.

o Pan (Controller Number 10)

Status	2nd byte	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.

* Some Tones might not be capable of being panned all the way to the left or right, or might not be able to respond to this message.

o Expression (Controller Number 11)

Status	2nd byte	3rd byte
BnH	0BH	vvH

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

* This adjusts the volume of a Part. 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.

o Hold 1 (Controller Number 64)

Status	2nd byte	3rd byte
BnH	40H	vvH

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

o Portamento (Controller Number 65)

Status	2nd byte	3rd byte
BnH	41H	vvH

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

o Sostenuto (Controller Number 66)

Status	2nd byte	3rd byte
BnH	42H	vvH

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

o Soft (Controller Number 67)

Status	2nd byte	3rd byte
BnH	43H	vvH

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

* Some Tones will not exhibit any change.

o Resonance (Controller Number 71)

Status	2nd byte	3rd byte
BnH	47H	vvH

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

* Some Tones will not exhibit any change.

o Release Time (Controller Number 72)

Status	2nd byte	3rd byte
BnH	48H	vvH

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

* Some Tones will not exhibit any change.

o Attack Time (Controller Number 73)

Status	2nd byte	3rd byte
BnH	49H	vvH

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

* Some Tones will not exhibit any change.

o Cutoff (Controller Number 74)

Status	2nd byte	3rd byte
BnH	4AH	vvH

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

* Some Tones will not exhibit any change.

o Decay Time (Controller Number 75)

Status	2nd byte	3rd byte
BnH	4BH	vvH

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

* Some Tones will not exhibit any change.

o Vibrato Rate (Controller Number 76)

Status	2nd byte	3rd byte
BnH	4CH	vvH

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

* Some Tones will not exhibit any change.

o Vibrato Depth (Controller Number 77)

Status	2nd byte	3rd byte
BnH	4DH	vvH

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

* Some Tones will not exhibit any change.

o Vibrato Delay (Controller Number 78)

Status	2nd byte	3rd byte
BnH	4EH	vvH

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

* Some Tones will not exhibit any change.

o 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.

o Effect 3 (Chorus Send Level) (Controller Number 93)

Status	2nd byte	3rd byte
BnH	5DH	vvH

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

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

o RPN MSB/LSB (Controller Number 100, 101)

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

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

* 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>

On this instrument, 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),
		Refer to 4. Supplementary Material,
		"About Tuning"
00H 02H	mmH ---	Master Coarse Tuning
		mm: 00H-40H-7FH
		(-64-0-+63 semitones),
		ll: ignored (processed as 00h)
00H 05H	mmH llH	Modulation Depth Range
		mm: 00H-04H (0-4 semitones)
		ll: 00H-7FH (0-100 cents)
		100/128 Cent/Value
7FH 7FH	--- ---	RPN null
		Set a condition in which RPN is not
		specified. 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 byte
CnH	ppH

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

* The sound will change beginning with the next note-on after the Program Change is received.

● Channel Pressure

Status	2nd byte
DnH	vvH

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

* 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 byte
EnH	llH	mmH

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

* 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 byte
BnH	78H	00H

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

● All Notes Off (Controller Number 123)

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

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

* When All Notes Off is received, all notes on the corresponding channel will be turned off.

* However if Hold 1 or Sostenuto is ON, the sound will be continued until these are turned off.

● OMNI OFF (Controller Number 124)

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

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

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

● OMNI ON (Controller Number 125)

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

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

* 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 byte
BnH	7EH	mmH

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

mm = mono number: 01H (1)

* The same processing will be carried out as when All Notes Off is received, and the corresponding channel will be set to Mode 4 (M=1). Only M=1 is supported.

● POLY (Controller Number 127)

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

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

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

■ System Exclusive Message

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

F0H: System Exclusive Message status

ii = ID number: An ID number (manufacturer ID) to indicate the

manufacturer whose Exclusive message this is.
 Roland's manufacturer ID is 41H.
 ID numbers 7EH and 7FH are extensions of the
 MIDI standard; Universal Non-realtime Messages
 (7EH) and Universal Realtime Messages (7FH).

dd,...,ee = data: 00H-7FH (0-127)
 F7H: EOX (End Of Exclusive)

The System Exclusive Messages received by this instrument are; messages related to mode settings, Universal Realtime System Exclusive messages, and Universal Non-realtime System Exclusive messages.

- System Exclusive Messages Related to Mode Settings

These messages are used to initialize a device to GM mode.

When creating performance data, you should insert "GM1 System On" at the beginning of a GM1 score, or "GM2 System On" at the beginning of a GM2 score. However, each song should contain only the single mode message that is appropriate for that song. (Do not insert multiple mode setting messages in the same song.)

"GM System On" uses Universal Non-realtime Message format.

- o GM1 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, this instrument will automatically be set to the proper condition for correctly playing a GM1 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 1 On)
F7H	EOX (End Of Exclusive)

- * Once this message is received, Bank Select is no longer received.
- * There must be an interval of at least 50 ms between this message and the next.

- o GM2 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 2). After receiving this message, this instrument will automatically be set to the proper condition for correctly playing a GM2 score.

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, this instrument will be able to receive the messages specified by General MIDI 2, and use the General MIDI 2 soundmap.
- * There must be an interval of at least 50 ms between this message and the next.

- Universal Realtime System Exclusive Messages

- o 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)

11H: ignored (processed as 00H)
 mmH: 00H-7FH 0-127

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

o 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)

11H, mmH: 00 00H-40 00H-7F 7FH (-100-0-+99.9 [cents])

o Master Coarse Tuning

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

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.

o Reverb Parameters

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

Byte	Explanation
F0H	Exclusive status
7FH	ID number (Universal Realtime Message)
7FH	Device ID (Broadcast)
04H	Sub ID#1 (Device Control)
05H	Sub ID#2 (Global Parameter Control)
01H	Slot path length
01H	Parameter ID width
01H	Value width
01H	Slot path MSB
01H	Slot path LSB (Effect 0101: Reverb)
ppH	Parameter to be controlled.
vvH	Value for the parameter.
F7H	EOX (End Of Exclusive)

pp=0 Reverb Type
 vv = 00H Small Room (Room1)
 vv = 01H Medium Room (Room2)
 vv = 02H Large Room (Room3)
 vv = 03H Medium Hall (Hall1)
 vv = 04H Large Hall (Hall2)
 vv = 08H Plate (Plate)

pp=1 Reverb Time
 vv = 00H-7FH 0-127

o Chorus Parameters

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

Byte	Explanation
F0H	Exclusive status
7FH	ID number (Universal Realtime Message)
7FH	Device ID (Broadcast)
04H	Sub ID#1 (Device Control)
05H	Sub ID#2 (Global Parameter Control)
01H	Slot path length
01H	Parameter ID width
01H	Value width
01H	Slot path MSB
02H	Slot path LSB (Effect 0102: Chorus)
ppH	Parameter to be controlled.
vvH	Value for the parameter.
F7H	EOX (End Of Exclusive)

pp=0 Chorus Type
 vv = 00H Chorus1
 vv = 01H Chorus2
 vv = 02H Chorus3
 vv = 03H Chorus4
 vv = 04H FB Chorus
 vv = 05H 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

o 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 (00H-0FH)
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 [%]

o 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 (00H-0FH)
ccH	Controller number (00-1FH, 40-5FH)
ppH	Controlled parameter
rrH	Controlled range
F7H	E0X (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 [%]

o Scale/Octave Tuning Adjust

Status	Data byte	Status
F0H	7EH, 7FH, 08H, 08H, ffH, ggH, hhH, ssH...	F7H

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 bits 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	E0X (End Of Exclusive)

o Key-Based Instrument Controllers

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

Byte	Explanation
F0H	Exclusive status
7FH	ID number (Universal Realtime Message)
7FH	Device ID (Broadcast)
0AH	Sub ID#1 (Key-Based Instrument Control)
01H	Sub ID#2 (Controller)
0nH	MIDI Channel (00-0FH)
kkH	Key Number
nnH	Controller Number
vvH	Value
F7H	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=5DH	Chorus Send	
	vv = 00H-7FH	0-127 (Absolute)

* This parameter effects drum instruments only.

• Universal Non-realtime System Exclusive Messages

o Identity Request Message

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

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

* Device ID = 10H or 7FH

2. Transmit Data

■ Channel Voice Messages

● Note Off

Status	2nd byte	3rd byte
8nH	kkH	vvH

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

● Note On

Status	2nd byte	3rd byte
9nH	kkH	vvH

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

● Control Change

○ Bank Select (Controller Number 0, 32)

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

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

○ Volume (Controller Number 7)

Status	2nd byte	3rd byte
BnH	07H	vvH

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

○ Expression (Controller Number 11)

Status	2nd byte	3rd byte
BnH	0BH	vvH

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

○ Hold 1 (Controller Number 64)

Status	2nd byte	3rd byte
BnH	40H	vvH

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

○ Sostenuto (Controller Number 66)

Status	2nd byte	3rd byte
BnH	42H	vvH

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

○ Soft (Controller Number 67)

Status	2nd byte	3rd byte
BnH	43H	vvH

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

o Effect 1 (Reverb Send Level) (Controller Number 91)

Status	2nd byte	3rd byte
BnH	5BH	vvH

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

• Program Change

Status	2nd byte
CnH	ppH

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

■ System Exclusive Messages

o Identity Reply

RP701

Status	Data byte	Status
F0H	7EH, 10H, 06H, 02H, 41H, 19H, 03H, 00H, 00H, 1EH, 01H, 00H, 00H	F7H

Byte	Explanation
F0H	Exclusive status
7EH	ID number (Universal Non-realtime Message)
10H	Device ID
06H	Sub ID#1 (General Information)
02H	Sub ID#2 (Identity Reply)
41H	ID number (Roland)
19H	Device family code (LSB)
03H	Device family code (MSB)
00H	Device family number code (LSB)
00H	Device family number code (MSB)
1EH	Software revision level
01H	Software revision level
00H	Software revision level
00H	Software revision level
F7H	EOX (End of Exclusive)

F701

Status	Data byte	Status
F0H	7EH, 10H, 06H, 02H, 41H, 19H, 03H, 00H, 00H, 1FH, 01H, 00H, 00H	F7H

Byte	Explanation
F0H	Exclusive status
7EH	ID number (Universal Non-realtime Message)
10H	Device ID
06H	Sub ID#1 (General Information)
02H	Sub ID#2 (Identity Reply)
41H	ID number (Roland)
19H	Device family code (LSB)
03H	Device family code (MSB)
00H	Device family number code (LSB)
00H	Device family number code (MSB)
1FH	Software revision level
01H	Software revision level
00H	Software revision level
00H	Software revision level
F7H	EOX (End of Exclusive)

RP107

Status	Data byte	Status
F0H	7EH, 10H, 06H, 02H, 41H, 19H, 03H,	F7H

00H, 00H, 27H, 01H, 00H, 00H

Byte	Explanation
F0H	Exclusive status
7EH	ID number (Universal Non-realtime Message)
10H	Device ID
06H	Sub ID#1 (General Information)
02H	Sub ID#2 (Identity Reply)
41H	ID number (Roland)
19H	Device family code (LSB)
03H	Device family code (MSB)
00H	Device family number code (LSB)
00H	Device family number code (MSB)
27H	Software revision level
01H	Software revision level
00H	Software revision level
00H	Software revision level
F7H	EOX (End of Exclusive)

F107	Data byte	Status
Status		
F0H	7EH, 10H, 06H, 02H, 41H, 19H, 03H, 00H, 00H, 28H, 01H, 00H, 00H	F7H

Byte	Explanation
F0H	Exclusive status
7EH	ID number (Universal Non-realtime Message)
10H	Device ID
06H	Sub ID#1 (General Information)
02H	Sub ID#2 (Identity Reply)
41H	ID number (Roland)
19H	Device family code (LSB)
03H	Device family code (MSB)
00H	Device family number code (LSB)
00H	Device family number code (MSB)
28H	Software revision level
01H	Software revision level
00H	Software revision level
00H	Software revision level
F7H	EOX (End of Exclusive)

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.

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

D: decimal

H: hexadecimal

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

* A 7-bits 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-bits 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-bits units. A value expressed as a 2-byte nibble 0a 0bH has the value of a x 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 x 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
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

<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 00H (= 64 x 128 + 0 = 8192) is 0, so this Pitch Bend Value is 28 00H - 40 00H = 40 x 128 + 0 - (64 x 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 x (-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 controller 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.)

Once the parameter number has been specified for RPN, 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 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

• About Tuning

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

In MIDI, all parts can be tuned by sending RPN#1 to each of the MIDI channels that you are using.

RPN#1 allows you to specify the tuning with an accuracy of approximately 0.012 cents (to be precise, 100/8192 cents).

One cent is 1/100th of a semitone.

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
445.0	+19.56	4C 43 (+1603)
444.0	+15.67	4A 03 (+1283)
443.0	+11.76	47 44 (+ 964)
442.0	+7.85	45 03 (+ 643)
441.0	+3.93	42 42 (+ 322)
440.0	0.00	40 00 (0)
439.0	-3.94	3D 3D (- 323)
438.0	-7.89	3A 7A (- 646)

<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 01 MIDI ch.3, lower byte of RPN parameter number: 01H
(B2) 65 00 (MIDI ch.3) upper byte of RPN parameter number: 00H
(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
    
```

4. Tone List

RP701 / F701

Grand

No.	Name	MSB	LSB	PC
1	Concert Piano	0	68	1
2	Ballad Piano	16	67	1
3	Mellow Piano	4	64	1
4	Bright Piano	8	66	2

Upright

No.	Name	MSB	LSB	PC
5	Upright Piano	16	64	1
6	Mellow Upright	1	65	1
7	Bright Upright	1	66	1
8	Rock Piano	8	64	3
9	Ragtime Piano	0	64	4

Classical

No.	Name	MSB	LSB	PC
10	Fortepiano	2	64	1
11	Mellow Forte	2	65	1
12	Bright Forte	2	66	1
13	Harpsichord	0	67	7
14	Harpsi 8'+4'	8	67	7

E.Piano

No.	Name	MSB	LSB	PC
15	1976SuitCase	8	71	5
16	Tremolo EP	0	69	5
17	Pop EP	16	67	5
18	Vintage EP	0	67	5
19	FM E.Piano	0	70	6
20	EP Belle	8	68	6
21	60's EP	24	65	5
22	Clav.	0	67	8
23	Stage Phaser	0	68	5
24	70's EP	16	66	5
25	E.Grand	0	69	3
26	Magical Piano	47	65	3

Strings

No.	Name	MSB	LSB	PC
1	SymphonicStr1	1	67	50
2	Epic Strings	1	67	49
3	Rich Strings	0	71	50
4	Orchestra Str	0	64	49
5	Orchestra	8	66	49
6	Chamber Winds	0	67	69
7	Harp	0	68	47
8	Violin	0	0	41
9	Velo Strings	1	65	49
10	Cello	0	0	43
11	OrchestraBrs	1	66	61
12	Pizzicato Str	0	0	46
13	SymphonicStr2	1	65	50
14	Soft Pad	0	64	90
15	Flute	0	64	74
16	A.Bass+Cymb1	0	66	33

Organ

No.	Name	MSB	LSB	PC
17	Pipe Organ	8	70	20
18	Nason Flt 8'	16	66	20
19	Combo Jz.Org	0	70	19
20	Ballad Organ	0	69	19
21	ChurchOrgan1	0	66	20
22	ChurchOrgan2	8	69	20
23	Gospel Spin	0	71	17
24	Full Stops	0	69	17
25	Mellow Bars	32	68	17
26	Light Organ	32	69	17
27	Lower Organ	0	66	17
28	60's Organ	16	64	17

Voice

No.	Name	MSB	LSB	PC
29	Jazz Scat	0	65	55

Do Re Mi

No.	Name	MSB	LSB	PC
30	Do Re Mi 1#	121	10	54
31	Do Re Mi 1b	121	11	54
32	Do Re Mi 2#	121	12	54
33	Do Re Mi 2b	121	13	54

Drums

No.	Name	MSB	LSB	PC
34	STANDARD Set	120	0	1
35	ROOM Set	120	0	9
36	POWER Set	120	0	17
37	ELEC.Set	120	0	25
38	ANALOG Set	120	0	26
39	JAZZ Set	120	0	33
40	BRUSH Set	120	0	41
41	ORCH.Set	120	0	49
42	SFX Set	120	0	57

GM2

No.	Name	MSB	LSB	PC
43	Piano 1	121	0	1
44	Piano 1w	121	1	1
45	Piano 1d	121	2	1
46	Piano 2	121	0	2
47	Piano 2w	121	1	2
48	Piano 3	121	0	3
49	Piano 3w	121	1	3
50	Honky-tonk	121	0	4
51	Honky-tonk w	121	1	4
52	E.Piano 1	121	0	5
53	Detuned EP 1	121	1	5
54	Vintage EP	121	2	5
55	60's E.Piano	121	3	5
56	E.Piano 2	121	0	6
57	Detuned EP 2	121	1	6
58	St.FM EP	121	2	6
59	EP Legend	121	3	6
60	EP Phaser	121	4	6
61	Harpsi.	121	0	7
62	Coupled Hps.	121	1	7

63	Harpsi.w	121	2	7	128 WarmSyn.Bass	121	1	39
64	Harpsi.o	121	3	7	129 Synth Bass 3	121	2	39
65	Clav.	121	0	8	130 Clav.Bass	121	3	39
66	Pulse Clav.	121	1	8	131 Hammer Bass	121	4	39
67	Celesta	121	0	9	132 Synth Bass 2	121	0	40
68	Glockenspiel	121	0	10	133 Synth Bass 4	121	1	40
69	Music Box	121	0	11	134 RubberSyn.Bs	121	2	40
70	Vibraphone	121	0	12	135 Attack Pulse	121	3	40
71	Vibraphone w	121	1	12	136 Violin	121	0	41
72	Marimba	121	0	13	137 Slow Violin	121	1	41
73	Marimba w	121	1	13	138 Viola	121	0	42
74	Xylophone	121	0	14	139 Cello	121	0	43
75	TubularBells	121	0	15	140 Contrabass	121	0	44
76	Church Bell	121	1	15	141 Tremolo Str.	121	0	45
77	Carillon	121	2	15	142 PizzicatoStr	121	0	46
78	Santur	121	0	16	143 Harp	121	0	47
79	Organ 1	121	0	17	144 Yang Qin	121	1	47
80	TremoloOrgan	121	1	17	145 Timpani	121	0	48
81	60's Organ	121	2	17	146 Strings	121	0	49
82	Organ 2	121	3	17	147 Orchestra	121	1	49
83	Perc.Organ 1	121	0	18	148 60's Strings	121	2	49
84	Chorus Organ	121	1	18	149 Slow Strings	121	0	50
85	Perc.Organ 2	121	2	18	150 Syn.Strings1	121	0	51
86	Rock Organ	121	0	19	151 Syn.Strings3	121	1	51
87	Church Org.1	121	0	20	152 Syn.Strings2	121	0	52
88	Church Org.2	121	1	20	153 Choir 1	121	0	53
89	Church Org.3	121	2	20	154 Choir 2	121	1	53
90	Reed Organ	121	0	21	155 Voice	121	0	54
91	Puff Organ	121	1	21	156 Humming	121	1	54
92	Accordion 1	121	0	22	157 Synth Voice	121	0	55
93	Accordion 2	121	1	22	158 Analog Voice	121	1	55
94	Harmonica	121	0	23	159 OrchestraHit	121	0	56
95	Bandoneon	121	0	24	160 Bass Hit	121	1	56
96	Nylon-str.Gt	121	0	25	161 6th Hit	121	2	56
97	Ukulele	121	1	25	162 Euro Hit	121	3	56
98	Nylon Gt o	121	2	25	163 Trumpet	121	0	57
99	Nylon Gt 2	121	3	25	164 Dark Trumpet	121	1	57
100	Steel-str.Gt	121	0	26	165 Trombone 1	121	0	58
101	12-str.Gt	121	1	26	166 Trombone 2	121	1	58
102	Mandolin	121	2	26	167 Bright Tb	121	2	58
103	Steel+Body	121	3	26	168 Tuba	121	0	59
104	Jazz Guitar	121	0	27	169 MuteTrumpet1	121	0	60
105	Hawaiian Gt	121	1	27	170 MuteTrumpet2	121	1	60
106	Clean Guitar	121	0	28	171 French Horn1	121	0	61
107	Chorus Gt 1	121	1	28	172 French Horn2	121	1	61
108	Mid Tone Gt	121	2	28	173 Brass 1	121	0	62
109	Muted Guitar	121	0	29	174 Brass 2	121	1	62
110	Funk Guitar1	121	1	29	175 Synth Brass1	121	0	63
111	Funk Guitar2	121	2	29	176 Synth Brass3	121	1	63
112	Chorus Gt 2	121	3	29	177 AnalogBrass1	121	2	63
113	Overdrive Gt	121	0	30	178 Jump Brass	121	3	63
114	Guitar Pinch	121	1	30	179 Synth Brass2	121	0	64
115	DistortionGt	121	0	31	180 Synth Brass4	121	1	64
116	Gt Feedback1	121	1	31	181 AnalogBrass2	121	2	64
117	Dist.Rhy Gt	121	2	31	182 Soprano Sax	121	0	65
118	Gt Harmonics	121	0	32	183 Alto Sax	121	0	66
119	Gt Feedback2	121	1	32	184 Tenor Sax	121	0	67
120	AcousticBass	121	0	33	185 Baritone Sax	121	0	68
121	FingeredBass	121	0	34	186 Oboe	121	0	69
122	Finger Slap	121	1	34	187 English Horn	121	0	70
123	Picked Bass	121	0	35	188 Bassoon	121	0	71
124	FretlessBass	121	0	36	189 Clarinet	121	0	72
125	Slap Bass 1	121	0	37	190 Piccolo	121	0	73
126	Slap Bass 2	121	0	38	191 Flute	121	0	74
127	Synth Bass 1	121	0	39	192 Recorder	121	0	75

193 Pan Flute	121 0 76	258 Gt FretNoise	121 0 121
194 Bottle Blow	121 0 77	259 Gt Cut Noise	121 1 121
195 Shakuhachi	121 0 78	260 BsStringSlap	121 2 121
196 Whistle	121 0 79	261 Breath Noise	121 0 122
197 Ocarina	121 0 80	262 Fl.Key Click	121 1 122
198 Square Lead1	121 0 81	263 Seashore	121 0 123
199 Square Lead2	121 1 81	264 Rain	121 1 123
200 Sine Lead	121 2 81	265 Thunder	121 2 123
201 Saw Lead 1	121 0 82	266 Wind	121 3 123
202 Saw Lead 2	121 1 82	267 Stream	121 4 123
203 Doctor Solo	121 2 82	268 Bubble	121 5 123
204 Natural Lead	121 3 82	269 Bird 1	121 0 124
205 SequencedSaw	121 4 82	270 Dog	121 1 124
206 Syn.Calliope	121 0 83	271 Horse Gallop	121 2 124
207 Chiffer Lead	121 0 84	272 Bird 2	121 3 124
208 Charang	121 0 85	273 Telephone 1	121 0 125
209 Wire Lead	121 1 85	274 Telephone 2	121 1 125
210 Solo Vox	121 0 86	275 DoorCreaking	121 2 125
211 5th Saw Lead	121 0 87	276 Door	121 3 125
212 Bass+Lead	121 0 88	277 Scratch	121 4 125
213 Delayed Lead	121 1 88	278 Wind Chimes	121 5 125
214 Fantasia	121 0 89	279 Helicopter	121 0 126
215 Warm Pad	121 0 90	280 Car Engine	121 1 126
216 Sine Pad	121 1 90	281 Car Stop	121 2 126
217 Polysynth	121 0 91	282 Car Pass	121 3 126
218 Space Voice	121 0 92	283 Car Crash	121 4 126
219 Itopia	121 1 92	284 Siren	121 5 126
220 Bowed Glass	121 0 93	285 Train	121 6 126
221 Metallic Pad	121 0 94	286 Jetplane	121 7 126
222 Halo Pad	121 0 95	287 Starship	121 8 126
223 Sweep Pad	121 0 96	288 Burst Noise	121 9 126
224 Ice Rain	121 0 97	289 Applause	121 0 127
225 Soundtrack	121 0 98	290 Laughing	121 1 127
226 Crystal	121 0 99	291 Screaming	121 2 127
227 Synth Mallet	121 1 99	292 Punch	121 3 127
228 Atmosphere	121 0 100	293 Heart Beat	121 4 127
229 Brightness	121 0 101	294 Footsteps	121 5 127
230 Goblins	121 0 102	295 Gun Shot	121 0 128
231 Echo Drops	121 0 103	296 Machine Gun	121 1 128
232 Echo Bell	121 1 103	297 Laser Gun	121 2 128
233 Echo Pan	121 2 103	298 Explosion	121 3 128
234 Star Theme	121 0 104		
235 Sitar 1	121 0 105	RP107 / F107	
236 Sitar 2	121 1 105	No. Name	MSB LSB PC
237 Banjo	121 0 106	-----	
238 Shamisen	121 0 107	1 Concert Piano	0 68 1
239 Koto	121 0 108	2 Ballad Piano	16 67 1
240 Taisho Koto	121 1 108	3 Mellow Piano	4 64 1
241 Kalimba	121 0 109	4 Bright Piano	8 66 2
242 Bagpipe	121 0 110	5 Stage EP	8 71 5
243 Fiddle	121 0 111	6 Pop EP	16 67 5
244 Shanai	121 0 112	7 Magical Piano	47 65 3
245 Tinkle Bell	121 0 113	8 Harpsichord	0 67 7
246 Agogo	121 0 114	9 Celesta	121 0 9
247 Steel Drums	121 0 115	10 Vibraphone	121 0 12
248 Woodblock	121 0 116	11 Pipe Organ	8 70 20
249 Castanets	121 1 116	12 Combo Jz. Organ	0 70 19
250 Taiko	121 0 117	13 SymphonicStr1	1 67 50
251 Concert BD	121 1 117	14 Soft Pad	0 64 90
252 Melodic Tom1	121 0 118	15 Jazz Scat	0 65 55
253 Melodic Tom2	121 1 118		
254 Synth Drum	121 0 119		
255 TR-808 Tom	121 1 119		
256 Elec.Perc.	121 2 119		
257 Reverse Cym.	121 0 120		

5. Rhythm Set List

* -----: No sound.

* [EXC]: will not sound simultaneously with other percussion instruments of the same number.

	STANDARD Set	ROOM Set	POWER Set	ELEC.Set
A0	21 -----	-----	-----	-----
A#0	22 -----	-----	-----	-----
B0	23 -----	-----	-----	-----
C1	24 -----	-----	-----	-----
C#1	25 -----	-----	-----	-----
D1	26 -----	-----	-----	-----
D#1	27 High-Q	High-Q	High-Q	High-Q
E1	28 Slap	Slap	Slap	Slap
F1	29 Scratch Push [EXC7]	Scratch Push [EXC7]	Scratch Push [EXC7]	Scratch Push [EXC7]
F#1	30 Scratch Pull [EXC7]	Scratch Pull [EXC7]	Scratch Pull [EXC7]	Scratch Pull [EXC7]
G1	31 Sticks	Sticks	Sticks	Sticks
G#1	32 Square Click	Square Click	Square Click	Square Click
A1	33 Metronome Click	Metronome Click	Metronome Click	Metronome Click
A#1	34 Metronome Bell	Metronome Bell	Metronome Bell	Metronome Bell
B1	35 Kick Drum 2	Room Kick 2	Room Kick 1	Power Kick
C2	36 Kick Drum 1	Room Kick 1	Power Kick	Electric Kick
C#2	37 Side Stick	Side Stick	Side Stick	Side Stick
D2	38 Snare Drum	Room Snare	Power Snare	Electric Snare 1
D#2	39 Hand Clap	Hand Clap	Hand Clap	Hand Clap
E2	40 Electric Snare 3	Electric Snare 4	Electric Snare 5	Electric Snare 2
F2	41 Low Tom 2	Room Low Tom 2	Power Low Tom 2	Electric Low Tom 2
F#2	42 Closed Hi-Hat 1 [EXC1]	Closed Hi-Hat 2 [EXC1]	Closed Hi-Hat 2 [EXC1]	Closed Hi-Hat 2 [EXC1]
G2	43 Low Tom 1	Room Low Tom 1	Power Low Tom 1	Electric Low Tom 1
G#2	44 Pedal Hi-Hat 1 [EXC1]	Pedal Hi-Hat 2 [EXC1]	Pedal Hi-Hat 2 [EXC1]	Pedal Hi-Hat 2 [EXC1]
A2	45 Mid Tom 2	Room Mid Tom 2	Power Mid Tom 2	Electric Mid Tom 2
A#2	46 Open Hi-Hat 1 [EXC1]	Open Hi-Hat 2 [EXC1]	Open Hi-Hat 2 [EXC1]	Open Hi-Hat 2 [EXC1]
B2	47 Mid Tom 1	Room Mid Tom 1	Power Mid Tom 1	Electric Mid Tom 1
C3	48 High Tom 2	Room High Tom 2	Power High Tom 2	Electric High Tom 2 [EXC1]
C#3	49 Crash Cymbal 1	Crash Cymbal 3	Crash Cymbal 3	Crash Cymbal 3
D3	50 High Tom 1	Room High Tom 1	Power High Tom 1	Electric High Tom 1
D#3	51 Ride Cymbal 1	Ride Cymbal 3	Ride Cymbal 3	Ride Cymbal 3
E3	52 Chinese Cymbal 1	Chinese Cymbal 2	Chinese Cymbal 2	Reverse Cymbal
F3	53 Ride Bell 1	Ride Bell 2	Ride Bell 2	Ride Bell 2
F#3	54 Tambourine	Tambourine	Tambourine	Tambourine
G3	55 Splash Cymbal	Splash Cymbal	Splash Cymbal	Splash Cymbal
G#3	56 Cowbell	Cowbell	Cowbell	Cowbell
A3	57 Crash Cymbal 2	Crash Cymbal 4	Crash Cymbal 4	Crash Cymbal 4
A#3	58 Vibraslap	Vibraslap	Vibraslap	Vibraslap
B3	59 Ride Cymbal 2	Ride Cymbal4	Ride Cymbal4	Ride Cymbal4
C4	60 High Bongo 1	High Bongo 2	High Bongo 2	High Bongo 2
C#4	61 Low Bongo 1	Low Bongo 2	Low Bongo 2	Low Bongo 2
D4	62 Mute High Conga 1	Mute High Conga 2	Mute High Conga 2	Mute High Conga 2
D#4	63 Open High Conga	Open High Conga	Open High Conga	Open High Conga
E4	64 Low Conga	Low Conga	Low Conga	Low Conga
F4	65 High Timbale	High Timbale	High Timbale	High Timbale
F#4	66 Low Timbale	Low Timbale	Low Timbale	Low Timbale
G4	67 High Agogo	High Agogo	High Agogo	High Agogo
G#4	68 Low Agogo	Low Agogo	Low Agogo	Low Agogo
A4	69 Cabasa	Cabasa	Cabasa	Cabasa
A#4	70 Maracas	Maracas	Maracas	Maracas
B4	71 Short High Whistle [EXC2]	Short High Whistle [EXC2]	Short High Whistle [EXC2]	Short High Whistle [EXC2]
C5	72 Long Low Whistle [EXC2]	Long Low Whistle [EXC2]	Long Low Whistle [EXC2]	Long Low Whistle [EXC2]
C#5	73 Short Guiro [EXC3]	Short Guiro [EXC3]	Short Guiro [EXC3]	Short Guiro [EXC3]

D5	74	Long Guiro	[EXC3]	Long Guiro	[EXC3]	Long Guiro	[EXC3]	Long Guiro	[EXC3]
D#5	75	Claves		Claves		Claves		Claves	
E5	76	High Woodblock		High Woodblock		High Woodblock		High Woodblock	
F5	77	Low Woodblock		Low Woodblock		Low Woodblock		Low Woodblock	
F#5	78	Mute Cuica	[EXC4]	Mute Cuica	[EXC4]	Mute Cuica	[EXC4]	Mute Cuica	[EXC4]
G5	79	Open Cuica	[EXC4]	Open Cuica	[EXC4]	Open Cuica	[EXC4]	Open Cuica	[EXC4]
G#5	80	Mute Triangle	[EXC5]	Mute Triangle	[EXC5]	Mute Triangle	[EXC5]	Mute Triangle	[EXC5]
A5	81	Open Triangle	[EXC5]	Open Triangle	[EXC5]	Open Triangle	[EXC5]	Open Triangle	[EXC5]
A#5	82	Shaker		Shaker		Shaker		Shaker	
B5	83	Jingle Bell		Jingle Bell		Jingle Bell		Jingle Bell	

C6	84	Bell Tree		Bell Tree		Bell Tree		Bell Tree	
C#6	85	Castanets		Castanets		Castanets		Castanets	
D6	86	Mute Surdo	[EXC6]	Mute Surdo	[EXC6]	Mute Surdo	[EXC6]	Mute Surdo	[EXC6]
D#6	87	Open Surdo	[EXC6]	Open Surdo	[EXC6]	Open Surdo	[EXC6]	Open Surdo	[EXC6]
E6	88	-----		-----		-----		-----	

* -----: No sound.

* [EXC]: will not sound simultaneously with other percussion instruments of the same number.

		ANALOG Set		JAZZ Set		BRUSH Set		ORCH.Set	

A0	21	-----		-----		-----		-----	
A#0	22	-----		-----		-----		-----	
B0	23	-----		-----		-----		-----	

C1	24	-----		-----		-----		-----	
C#1	25	-----		-----		-----		-----	
D1	26	-----		-----		-----		-----	
D#1	27	High-Q		High-Q		High-Q		Closed Hi-Hat 2	[EXC1]
E1	28	Slap		Slap		Slap		Pedal Hi-Hat 2	[EXC1]
F1	29	Scratch Push	[EXC7]	Scratch Push	[EXC7]	Scratch Push	[EXC7]	Open Hi-Hat 2	[EXC1]
F#1	30	Scratch Pull	[EXC7]	Scratch Pull	[EXC7]	Scratch Pull	[EXC7]	Ride Cymbal 3	
G1	31	Sticks		Sticks		Sticks		Sticks	
G#1	32	Square Click		Square Click		Square Click		Square Click	
A1	33	Metronome Click		Metronome Click		Metronome Click		Metronome Click	
A#1	34	Metronome Bell		Metronome Bell		Metronome Bell		Metronome Bell	
B1	35	TR-808 Kick 2		Room Kick 2		Room Kick 2		Concert Bass Drum 2	

C2	36	TR-808 Kick 1		Jazz Kick		Jazz Kick		Concert Bass Drum 1	
C#2	37	TR-808 Rim shot		Side Stick		Side Stick		Side Stick	
D2	38	TR-808 Snare		Jazz Snare		Brush Tap		Concert Snare Drum	
D#2	39	Hand Clap		Hand Clap		Brush Slap1		Castanets	
E2	40	Electric Snare 6		Electric Snare 7		Brush Swirl		Concert Snare Drum	
F2	41	TR-808 Low Tom 2		Jazz Low Tom		Brush Low Tom 2		Timpani F	
F#2	42	TR-808 Closed Hi-Hat 1	[EXC1]	Closed Hi-Hat 2	[EXC1]	Brush Closed Hi-Hat	[EXC1]	Timpani F#	
G2	43	TR-808 Low Tom 1		Low Tom 1		Brush Low Tom 1		Timpani G	
G#2	44	TR-808 Closed Hi-Hat 2	[EXC1]	Pedal Hi-Hat 2	[EXC1]	Brush Pedal Hi-Hat	[EXC1]	Timpani G#	
A2	45	TR-808 Mid Tom 2		Mid Tom 2		Brush Mid Tom 2		Timpani A	
A#2	46	TR-808 Open Hi-Hat	[EXC1]	Open Hi-Hat 2	[EXC1]	Brush Open Hi-Hat	[EXC1]	Timpani A#	
B2	47	TR-808 Mid Tom 1		Jazz Mid Tom		Brush Mid Tom 1		Timpani B	

C3	48	TR-808 High Tom 2		Jazz High Tom 2		Brush High Tom 2		Timpani C	
C#3	49	TR-808 Crash Cymbal		Crash Cymbal 3		Jazz Crash Cymbal		Timpani C#	
D3	50	TR-808 High Tom 1		Jazz High Tom 1		Brush High Tom 1		Timpani D	
D#3	51	Ride Cymbal 3		Ride Cymbal 3		Jazz Ride Cymbal 1		Timpani D#	
E3	52	Chinese Cymbal 2		Chinese Cymbal 2		Chinese Cymbal 2		Timpani E	
F3	53	Ride Bell 2		Ride Bell 2		Jazz Ride Cymbal 2		Timpani F	
F#3	54	Tambourine		Tambourine		Tambourine		Tambourine	
G3	55	Splash Cymbal		Splash Cymbal		Splash Cymbal		Splash Cymbal	
G#3	56	TR-808 Cowbell		Cowbell		Cowbell		Cowbell	
A3	57	Crash Cymbal 4		Crash Cymbal 4		Crash Cymbal 4		Concert Cymbal 2	
A#3	58	Vibraslap		Vibraslap		Vibraslap		Vibraslap	
B3	59	Ride Cymbal4		Ride Cymbal4		Ride Cymbal4		Concert Cymbal 1	

C4	60	High Bongo 2		High Bongo 2		High Bongo 2		High Bongo 2	
C#4	61	Low Bongo 2		Low Bongo 2		Low Bongo 2		Low Bongo 2	
D4	62	TR-808 High Conga		Mute High Conga 2		Mute High Conga 2		Mute High Conga 2	
D#4	63	TR-808 Mid Conga		Open High Conga		Open High Conga		Open High Conga	
E4	64	TR-808 Low Conga		Low Conga		Low Conga		Low Conga	
F4	65	High Timbale		High Timbale		High Timbale		High Timbale	
F#4	66	Low Timbale		Low Timbale		Low Timbale		Low Timbale	
G4	67	High Agogo		High Agogo		High Agogo		High Agogo	
G#4	68	Low Agogo		Low Agogo		Low Agogo		Low Agogo	
A4	69	Cabasa		Cabasa		Cabasa		Cabasa	
A#4	70	TR-808 Maracas		Maracas		Maracas		Maracas	
B4	71	Short High Whistle	[EXC2]	Short High Whistle	[EXC2]	Short High Whistle	[EXC2]	Short High Whistle	[EXC2]
C5	72	Long Low Whistle	[EXC2]	Long Low Whistle	[EXC2]	Long Low Whistle	[EXC2]	Long Low Whistle	[EXC2]
C#5	73	Short Guiro	[EXC3]	Short Guiro	[EXC3]	Short Guiro	[EXC3]	Short Guiro	[EXC3]
D5	74	Long Guiro	[EXC3]	Long Guiro	[EXC3]	Long Guiro	[EXC3]	Long Guiro	[EXC3]
D#5	75	Claves		Claves		Claves		Claves	
E5	76	High Woodblock		High Woodblock		High Woodblock		High Woodblock	
F5	77	Low Woodblock		Low Woodblock		Low Woodblock		Low Woodblock	
F#5	78	Mute Cuica	[EXC4]	Mute Cuica	[EXC4]	Mute Cuica	[EXC4]	Mute Cuica	[EXC4]
G5	79	Open Cuica	[EXC4]	Open Cuica	[EXC4]	Open Cuica	[EXC4]	Open Cuica	[EXC4]
G#5	80	Mute Triangle	[EXC5]	Mute Triangle	[EXC5]	Mute Triangle	[EXC5]	Mute Triangle	[EXC5]
A5	81	Open Triangle	[EXC5]	Open Triangle	[EXC5]	Open Triangle	[EXC5]	Open Triangle	[EXC5]
A#5	82	Shaker		Shaker		Shaker		Shaker	
B5	83	Jingle Bell		Jingle Bell		Jingle Bell		Jingle Bell	
C6	84	Bell Tree		Bell Tree		Bell Tree		Bell Tree	
C#6	85	Castanets		Castanets		Castanets		Castanets	
D6	86	Mute Surdo	[EXC6]	Mute Surdo	[EXC6]	Mute Surdo	[EXC6]	Mute Surdo	[EXC6]
D#6	87	Open Surdo	[EXC6]	Open Surdo	[EXC6]	Open Surdo	[EXC6]	Open Surdo	[EXC6]
E6	88	-----		-----		-----		Applause	

* -----: No sound.

* [EXC]: will not sound simultaneously with other percussion instruments of the same number.

		SFX Set
A0	21	-----
A#0	22	-----
B0	23	-----
C1	24	-----
C#1	25	-----
D1	26	-----
D#1	27	-----
E1	28	-----
F1	29	-----
F#1	30	-----
G1	31	-----
G#1	32	-----
A1	33	-----
A#1	34	-----
B1	35	-----
C2	36	-----
C#2	37	-----
D2	38	-----
D#2	39	High Q
E2	40	Slap
F2	41	Scratch Push [EXC7]
F#2	42	Scratch Pull [EXC7]
G2	43	Sticks
G#2	44	Square Click
A2	45	Metronome Click

A#2		46		Metronome Bell
B2		47		Guitar Fret Noise
-----+-----				
C3		48		Guitar Cutting Noise Up
C#3		49		Guitar Cutting Noise Down
D3		50		String Slap of Double Bass
D#3		51		F1.Key Click
E3		52		Laughing
F3		53		Screaming
F#3		54		Punch
G3		55		Heart Beat
G#3		56		Footsteps 1
A3		57		Footsteps 2
A#3		58		Applause
B3		59		Door Creaking
-----+-----				
C4		60		Door
C#4		61		Scratch
D4		62		Wind Chimes
D#4		63		Car-Engine
E4		64		Car-Stop
F4		65		Car-Pass
F#4		66		Car-Crash
G4		67		Siren
G#4		68		Train
A4		69		Jet Plane
A#4		70		Helicopter
B4		71		Starship
-----+-----				
C5		72		Gun Shot
C#5		73		Machine Gun
D5		74		Laser Gun
D#5		75		Explosion
E5		76		Dog
F5		77		Horse-Gallop
F#5		78		Birds
G5		79		Rain
G#5		80		Thunder
A5		81		Wind
A#5		82		Seashore
B5		83		Stream
-----+-----				
C6		84		Bubble
C#6		85		-----
D6		86		-----
D#6		87		-----
E6		88		-----

Function...	Transmitted	Recognized	Remarks
Basic Channel Default	1	1-16	
Basic Channel Changed	1-16	1-16	
Mode Default	Mode 3	Mode 3	*1
Mode Messages	X	Mode 3, 4 (M = 1)	
Mode Altered	*****		
Note Number :	15-113	0-127	
Note Number : True Voice	*****	0-127	
Velocity Note On	0	0	
Velocity Note Off	0	0	
After Touch Key's	X	X	
After Touch Channel's	X	0	
Pitch Bend	X	0	
Control Change 0, 32	0	0	Bank select
Control Change 1	X	0	Modulation
Control Change 5	X	0	Portamento time
Control Change 6, 38	X	0	Data entry
Control Change 7	X	0	Volume
Control Change 10	X	0	Panpot
Control Change 11	X	0	Expression
Control Change 64	0	0	Hold 1
Control Change 65	X	0	Portamento
Control Change 66	0	0	Sostenuto
Control Change 67	0	0	Soft
Control Change 71	X	0	Resonance
Control Change 72	X	0	Release time
Control Change 73	X	0	Attack time
Control Change 74	X	0	Cutoff
Control Change 75	X	0	Decay time
Control Change 76	X	0	Vibrato rate
Control Change 77	X	0	Vibrato depth
Control Change 78	X	0	Vibrato delay
Control Change 84	X	0	Portamento control
Control Change 91	0	0 (Reverb)	General purpose effects 1 depth
Control Change 93	X	0 (Chorus)	General purpose effects 3 depth
Control Change 100, 101	X	0	RPN LSB, MSB
Program Change	0	0	
Program Change : True Number	*****	0-127	Program No. 1-128
System Exclusive	0	0	
System Common : Song Position	X	X	
System Common : Song Select	X	X	
System Common : Tune Request	X	X	
System Real Time : Clock	X	X	
System Real Time : Commands	X	X	
Aux Messages : All Sound Off	X	0	
Aux Messages : Reset All Controllers	X	0	
Aux Messages : Local On/Off	0	X	
Aux Messages : All Notes Off	X	0 (123-127)	
Aux Messages : Active Sensing	X	X	
Aux Messages : System Reset	X	X	

```
+-----+-----+-----+
| Notes                                     | *1 Only M=1 is supported |
+-----+-----+-----+
Mode 1 : OMNI ON, POLY   Mode 2 : OMNI ON, MONO           0 : Yes
Mode 3 : OMNI OFF, POLY  Mode 4 : OMNI OFF, MONO          X : No
```