VA-3 MIDI Implementation

The VA-3 implements additional functionality and parameters over and above the G-1000, which itself was an expansion of the GS sound generator format. These functions and parameters are marked by a [VA-3] symbol. If MIDI messages marked by a VA-3 symbol are transmitted to another GS format sound generator or to the G-1000, those messages may not be recognized.

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.1~16)
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 byte	3rd byte
9nH	kkH	vvH

n = MIDI channel number: 0H~FH (Ch.1~16)
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, these messages are not received when Rx.NOTE ON = OFF for each Instrument.

● Polyphonic Key Pressure

Status	2nd byte	3rd byte
AnH	kkH	vvH

n = MIDI channel number: 0H~FH (Ch.1~16)
kk = note number: 00H~7FH (0~127)
vv = 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 byte	3rd byte
BnH	00H	mmH
BnH	20H	llH

n = MIDI channel number: 0H~FH (Ch.1~16)
mm = Bank number MSB: 00H~7FH (GS Variation number 0~127)
Initial value = 00H
ll = Bank number LSB: 00H~04H (MAP), Initial value = 00H
- Not received when Rx.BANK SELECT = OFF.
- "Rx.BANK SELECT" is set to OFF by "GM1 System On," and Bank Select messages 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.
- The VA-3 recognizes the Bank Select LSB (Controller number 32) as a flag for switching between the VA-3 MAP, the G-1000 MAP, the G-800 MAP, and the SC-55 MAP. With a LSB of 01H, the SC-55 MAP and with a LSB of 02H, the G-800 MAP, and with a LSB of 03H, the G-1000 MAP, and with a LSB of 04H, the VA-3 MAP will be selected respectively.
- Some other GS devices do not recognize the Bank Select LSB (Controller number 32).

❍ Modulation (Controller number 1)

Status	2nd byte	3rd byte
BnH	01H	vvH

n = MIDI channel number: 0H~FH (Ch.1~16)
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 byte	3rd byte
BnH	05H	vvH

n = MIDI channel number: 0H~FH (Ch.1~16)
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 byte	3rd byte
BnH	06H	mmH
BnH	26H	llH

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

❍ Volume (Controller number 7)

Status	2nd byte	3rd byte
BnH	07H	vvH

n = MIDI channel number: 0H~FH (Ch.1~16)
vv = Volume: 00H~7FH (0~127), 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 byte	3rd byte
BnH	0AH	vvH

n = MIDI channel number: 0H~FH (Ch.1~16)
vv = pan: 00H~40H~7FH (Left~Center~Right),
Initial value = 40H (Center)
- The stereo position can be adjusted over 127 steps.
- For Rhythm Parts, this is a relative adjustment of each Instrument's pan setting.
- Not received when Rx.PANPOT = OFF. (Initial value is ON)

❍ Expression (Controller number 11)

Status	2nd byte	3rd byte
BnH	0BH	vvH

n = MIDI channel number: 0H~FH (Ch.1~16)
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.
- Not received when Rx.EXPRESSION = OFF. (Initial value is ON)

❍ Hold 1 (Controller number 64)

Status	2nd byte	3rd byte
BnH	40H	vvH

n = MIDI channel number: 0H~FH (Ch.1~16)
vv = Control value: 00H~7FH (0~127)
- Not received when Rx.HOLD1 = OFF. (Initial value is ON)

❍ Portamento (Controller number 65)

Status	2nd byte	3rd byte
BnH	41H	vvH

n = MIDI channel number: 0H~FH (Ch.1~16)
vv = Control value: 00H~7FH (0~127) 0~63 = OFF, 64~127 = ON
- Not received when Rx.PORTAMENTO = OFF. (Initial value is ON)

❍ Sostenuto (Controller number 66)

Status	2nd byte	3rd byte
BnH	42H	vvH

n = MIDI channel number: 0H~FH (Ch.1~16)
vv = Control value: 00H~7FH (0~127) 0~63 = OFF, 64~127 = ON
- Not received when Rx.SOSTENUTO = OFF. (Initial value is ON)

❍ Soft (Controller number 67)

Status	2nd byte	3rd byte
BnH	43H	vvH

n = MIDI channel number: 0H~FH (Ch.1~16)
vv = Control value: 00H~7FH (0~127) 0~63 = OFF, 64~127 = ON
- Not received when Rx.SOFT = OFF. (Initial value is ON)

❍ Filter Resonance (Timbre/Harmonic Intensity) (Controller number 71) [VA-3]

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)

❍ **Release Time (Controller number 72) [VA-3]**

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)

❍ **Attack time (Controller number 73) [VA-3]**

Status	2nd byte	3rd byte
BnH	49H	vvH

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

❍ **Cutoff (Controller number 74) [VA-3]**

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)

❍ **Decay Time (Controller number 75) [VA-3]**

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)

❍ **Vibrato Rate (Controller number 76) [VA-3]**

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)

❍ **Vibrato Depth (Controller number 77) [VA-3]**

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)

❍ **Vibrato Delay (Controller number 78) [VA-3]**

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)

❍ **Portamento control (Controller number 84)**

Status	2nd byte	3rd byte
BnH	54H	kkH

n = MIDI channel number: 0H~FH (Ch.1~16)
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
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 a glide from C4 to E4
80 40 40	Note off E4	E4 off

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

Status	2nd byte	3rd byte
BnH	5BH	vvH

n = MIDI channel number: 0H~FH (Ch.1~16)
vv = Reverb Send Level: 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 byte	3rd byte
BnH	5DH	vvH

n = MIDI channel number: 0H~FH (Ch.1~16)
vv = Chorus Send Level: 00H~7FH (0~127), Initial value = 00H (0)

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

❍ **NRPN MSB/LSB (Controller number 99, 98)**

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

n = MIDI channel number: 0H~FH (Ch.1~16)
mm = upper byte (MSB) of the parameter number specified by NRPN
ll = lower byte (LSB) 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. On the VA-3, NRPN messages can be used to modify sound parameters, etc.
To use these messages, you must first use NRPN messages (Controller number 98 and 99, their order does not matter) to specify the parameter to be controlled, and then use Data Entry messages (Controller number 6) 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 "5. Supplementary material", Examples of actual MIDI messages, [Example 4] (page 18). On the VA-3, Data entry LSB (Controller number 38) of NRPN is ignored, so it is no problem to send Data entry MSB (Controller number 6) only (without Data entry LSB).

On the VA-3, NRPN can be used to modify the following parameters.

NRPN MSB LSB	Data entry MSB	Function and range
01H 08H	mmH	Vibrato Rate (relative change) mm: 00H~40H~7FH (-64~0~+63)
01H 09H	mmH	Vibrato Depth (relative change) mm: 00H~40H~7FH (-64~0~+63)
01H 0AH	mmH	Vibrato Delay (relative change) mm: 00H~40H~7FH (-64~0~+63)
01H 20H	mmH	TVF Cutoff Frequency (relative change) mm: 00H~40H~7FH (-64~0~+63)
01H 21H	mmH	TVF Resonance (relative change) mm: 00H~40H~7FH (-64~0~+63)
01H 63H	mmH	TVF&TVA Envelope Attack Time (relative change) mm: 00H~40H~7FH (-64~0~+63)
01H 64H	mmH	TVF&TVA Envelope Decay Time (relative change) mm: 00H~40H~7FH (-64~0~+63)
01H 66H	mmH	TVF&TVA Envelope Release Time (relative change) mm: 00H~40H~7FH (-64~0~+63)
18H rrH	mmH	Drum Instrument Pitch Coarse (relative change) rr: Drum Instrument note number mm: 00H~40H~7FH (-64~0~+63 semitone)
1AH rrH	mmH	Drum Instrument TVA Level (absolute change) rr: Drum Instrument note number mm: 00H~7FH (0~max)
1CH rrH	mmH	Drum Instrument Panpot (absolute change) rr: Drum Instrument note number mm: 00H, 01H~40H~7FH (random, left~center~right)
1DH rrH	mmH	Drum Instrument Reverb Send Level (absolute change) rr: Drum Instrument note number mm: 00H~7FH (0~max)
1EH rrH	mmH	Drum Instrument Chorus Send Level (absolute change) rr: Drum Instrument note number mm: 00H~7FH (0~max)
4FH 10H	mmH	Part 4 On / Off (Upper 1) [VA-3] mm: 00H~7FH (00-3FH =Off~40-7FH= On)
4FH 11H	mmH	Part 11 On / Off (Lower1) mm: 00H~ 7FH (00-3FH =Off~40-7FH= On)
4FH 12H	mmH	Part 12 On / Off (Man Bass) mm: 00H~7FH (00-3FH =Off~40-7FH= On)
4FH 13H	mmH	Part 6 On / Off (Upper 2) mm: 00H~7FH (00-3FH =Off~40-7FH= On)
4FH 14H	mmH	Part 16 On / Off (Man Drums) mm: 00H~7FH (00-3FH =Off~40-7FH= On)
4FH 27H	mmH	Part 14 On / Off (Lower 2) mm: 00H~7FH (00-3FH =Off~40-7FH= On)
4FH 26H	mmH	Part 15 On / Off (Melody Int.) mm: 00H~7FH (00-3FH =Off~40-7FH= On)
4FH 18H	mmH	Part 8 On / Off (Acc 5) mm: 00H~7FH (00-3FH =Off~40-7FH= On)
4FH 19H	mmH	Part 9 On / Off (Acc 6) mm: 00H~7FH (00-3FH =Off~40-7FH= On)
4FH 1AH	mmH	Part 10 On / Off (Acc Drums) mm: 00H~7FH (00-3FH =Off~40-7FH= On)
4FH 1BH	mmH	Part 2 On / Off (Acc Bass) mm: 00H~7FH (00-3FH =Off~40-7FH= On)

NRPN MSB LSB	Data entry MSB	Function and range
4FH 1CH	mmH	Part 1 On / Off (Acc 1)
		mm: 00H~7FH (00-3FH =Off~40-7FH= On)
4FH 1DH	mmH	Part 3 On / Off (Acc2)
		mm: 00H~7FH (00-3FH =Off~40-7FH= On)
4FH 1EH	mmH	Part 5 On / Off (Acc3)
		mm: 00H~7FH (00-3FH =Off~40-7FH= On)
4FH 1FH	mmH	Part 7 On / Off (Acc 4)
		mm: 00H~7FH (00-3FH =Off~40-7FH= On)
4FH 20H	mmH	Master Accompaniment On / Off
		mm: 00H~7FH (00-3FH =Off~40-7FH= On)
4FH 21H	mmH	Master Volume Upper On / Off
		mm: 00H~7FH (00-3FH =Off~40-7FH= On)
4FH 22H	mmH	Master Volume Lower On / Off
		mm: 00H~7FH (00-3FH =Off~40-7FH= On)
4FH 23H	mmH	Master Volume Bass On / Off
		mm: 00H~7FH (00-3FH =Off~40-7FH= On)
4FH 24H	mmH	Master Volume Drum On / Off
		mm: 00H~7FH (00-3FH =Off~40-7FH= On)

- Parameters marked "relative change" will change relatively to the preset value(40H). Even among different GS devices, "relative change" parameters may sometimes differ in the way the sound changes or in the range of change.
- Parameters marked "absolute change" will be set to the absolute value of the parameter, regardless of the preset value.
- Data entry LSB (llH) is ignored.
- Part On/Off NRPN are received and transmitted through the Basic MIDI Channel.

❍ **RPN MSB/LSB (Controller number 101, 100)**

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

n = MIDI channel number: 0H~FH (Ch.1~16)
mm = upper byte (MSB) of parameter number specified by RPN
ll = lower byte (LSB) of parameter number specified by RPN
- Not received when Rx.RPN = OFF.
- 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 (Controller number 101 and 100, their order does not matter) to specify the parameter to be controlled, and then use Data Entry messages (Controller number 6, 38) 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 "5. Supplementary material", Examples of actual MIDI messages, [Example 4] (page 18).

On the VA-3, RPN can be used to modify the following parameters.

RPN MSB LSB	Data Entry MSB	LSB	Explanation
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)

Refer to "5. Supplementary material", About the Tuning (page 19).

RPN MSB LSB	Data Entry MSB	LSB	Explanation
00H 02H	mmH	—	Master Coarse Tuning
			mm: 28H~40H~58H (-24~0~+24 semitones),
			Initial value = 40H (+/-0 semitone)
			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 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 byte
CnH	ppH

n = MIDI channel number: 0H~FH (Ch.1~16)
pp = Program number: 00H~7FH (prog.1~prog.128)
- Not received when Rx.PROGRAM CHANGE = OFF. (Initial value is ON)
- After a Program Change message is received, the sound will change beginning with the next Note-on. Voices already sounding when the Program Change message was received will not be affected.
- For Drum Parts, Program Change message will not be received on lower byte of the bank numbers (the value of Control Number 0 is other than 0 (00H)).

❍ **Channel Pressure**

Status	2nd byte
DnH	vvH

n = MIDI channel number: 0H~FH (Ch.1~16)
vv = Channel Pressure: 00H~7FH (0~127)
- Not received when Rx.CH PRESSURE (CAf) = 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 byte
EnH	llH	mmH

n = MIDI channel number: 0H~FH (Ch.1~16)
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 byte
BnH	78H	00H

n = MIDI channel number: 0H~FH (Ch.1~16)
- 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 byte
BnH	79H	00H

n = MIDI channel number: 0H~FH (Ch.1~16)
- 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 byte
BnH	7BH	00H

n = MIDI channel number: 0H~FH (Ch.1~16)
- When All Notes Off is received, all notes on the corresponding channel will be turned off. However, if Hold 1 or Sostenuto is ON, the sound will be continued until these are turned off.

● OMNI OFF (Controller number 124)

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

n = MIDI channel number: 0H~FH (Ch.1~16)
- The same processing will be carried out as when All Notes Off is received.

● OMNI ON (Controller number 125)

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

n = MIDI channel number: 0H~FH (Ch.1~16)
- The same processing will be carried out as when All Notes Off is received.OMNI ON will not be turned on.

● MONO (Controller number 126)

Status	2nd byte	3rd byte
BnH	7EH	mmH

n = MIDI channel number: 0H~FH (Ch.1~16)
mm = mono number: 00H~10H (0~16)
- The same processing will be 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 "mm (mono number)."

● POLY (Controller number 127)

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

n = MIDI channel number: 0H~FH (Ch.1~16)
- The same processing will be carried out as when All Sounds Off and All Notes Off is received, and the corresponding channel will be set to Mode 3.

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.

❍ Song/Style Start

Status

FAH
• When "Sequencer Start" is received, the internal Recorder and/or the internal Arranger/Song start according to the following table.

❍ Song/Style Stop

Status

FCH
• When "Sequencer Stop" is received, the internal Recorder and/or the internal arranger/Song stop.

❍ Song Continue
Only in Song Mode

Status

FBH
• When "Sequencer Continue" is received, the internal Recorder continue to play from the current position.

❍ Song Position Pointer
Only in Song Mode

Status	2nd byte	3rd byte
F2H	XXH	YYH

XX = Song Position (Bar) LSB
YY = Song Position (Bar) MSB

❍ Timing Clock

Status

F8H
• When "Timing Clock" is received the internal recorder or the internal Arranger/Song is synchronized to an external clock according to the following table.

Song/Style Sync RX	Response
Internal	A Style/Song will neither start/stop nor follow the tempo of the external Timing Clock (F8) and "Start /Stop" (FA/FC) messages.
Auto	If a Style/Song receives MIDI "Start/Stop" (FA/FC), it will follow automatically Internal or External "Timing" related to the presence or not of the incoming "MIDI Clock" (F8) messages.
MIDI	If a Style/Song receives MIDI "Start/Stop" (FA/FC) it will follow only External "Timing" and maybe wait for the "MIDI Clock" (F8) messages.
Remote	If a Style/Song receives MIDI "Start/Stop" (FA/FC) it will follow only Internal "Timing" ignoring the presence or not of the incoming "MIDI Clock" (F8) messages.

■ 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 VA-3 are: messages related to mode settings, Universal Realtime System Exclusive messages, Data Requests (RQ1), 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 VA-3 will automatically be set to the proper condition for correctly playing a General MIDI score.

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

Byte	Explanation
F0H	Exclusive status
7EH	ID number (Universal Non-realtime Message)
7FH	Device ID (Broadcast)
09H	Sub ID#1 (General MIDI Message)
01H	Sub ID#2 (General MIDI 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 VA-3 will be able to receive the messages specified by General MIDI 2, and use the General MIDI 2 sound map.

❍ GM System Off

"GM System Off" is a command message that resets the internal state of the VA-3 from the GM state to its native condition. The VA-3 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 VA-3 will reset to the GS default state.

❍ GS Reset

GS Reset is a message that resets the internal settings of a device to the GS initial state. This message appears 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 play back GS music data.

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

Byte	Explanation
F0H	Exclusive status
41H	ID number (Roland)
dev	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

"Exit GS Mode" is a command message that resets the internal settings of the unit to the Arranger Mode I initial state.

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

Byte	Explanation
F0H	Exclusive status
41H	ID number (Roland)
dev	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	AddressLSB
7FH	Data (Exit GS Mode)
42H	Checksum
F7H	EOX (End Of Exclusive)

• When this message is received, the unit changes from "General MIDI" mode to VA-3 default mode. (Arranger mode)
• There must be an interval of at least 100 ms between this message and the next message.

● **Universal Realtime System Exclusive Messages**
❍ **Master Volume**

Status	Data byte	Status
F0H	7FH, 7FH, 04H, 01H, llH, 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)
llH	Master Volume lower byte
mmH	Master Volume upper byte
F7H	EOX (End Of Exclusive)

• The lower byte (llH) of Master Volume will be handled as 00H.

● **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,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)

• The VA-3 displays Reverb Type as described in the parentheses.

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)

Status	Data byte	Status
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)

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❍ **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
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=5D	Chorus Send
	vv = 00H~7FH 0~127 (Absolute)

• This parameter affects drum instruments only.

2. Transmit data

■ Channel Voice Messages

● Note off

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

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

● Note on

Status	2nd byte	3rd byte
9nH	kkH	vvH

n = MIDI channel number: 0H~FH (Ch.1~16)
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	llH

n = MIDI channel number: 0H~FH (Ch.1~16)
mm = Bank number MSB: 00H~7FH (GS Variation number 0~127)
ll = Bank number LSB: 00H~04H (MAP)

• Not transmitted when "Program Change" Tx Filter is On.
• Some other GS devices do not recognize the Bank Select LSB (Controller number 32).

❍ **Modulation (Controller number 1)**

Status	2nd byte	3rd byte
BnH	01H	vvH

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

• Not transmitted when "Modulation" Tx Filter is On.

❍ **Portamento Time (Controller number 5)**

Status	2nd byte	3rd byte
BnH	05H	vvH

n = MIDI channel number: 0H~FH (Ch.1~16)
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 byte	3rd byte
BnH	06H	mmH
BnH	26H	llH

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

❍ **Volume (Controller number 7)**

Status	2nd byte	3rd byte
BnH	07H	vvH

n = MIDI channel number: 0H~FH (Ch.1~16)
vv = Volume: 00H~7FH (0~127), Initial value = 64H (100)

• Volume messages are used to adjust the volume balance of each Part.
• Not transmitted when "Volume" Tx Filter is On.

❍ **Pan (Controller number 10)**

Status	2nd byte	3rd byte
BnH	0AH	vvH

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

• The stereo position can be adjusted over 127 steps.
• Not transmitted when "PanPot" Tx Filter is On.

❍ **Expression (Controller number 11)**

Status	2nd byte	3rd byte
BnH	0BH	vvH

n = MIDI channel number: 0H~FH (Ch.1~16)
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.
• Not transmitted when "Expression" Tx Filter is On.

❍ **Hold 1 (Controller number 64)**

Status	2nd byte	3rd byte
BnH	40H	vvH

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

• Not transmitted when "Hold" Tx Filter is On.

❍ **Portamento (Controller number 65)**

Status	2nd byte	3rd byte
BnH	41H	vvH

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

❍ **Portamento control (Controller number 84)**

Status	2nd byte	3rd byte
BnH	54H	kkH

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

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

Status	2nd byte	3rd byte
BnH	5BH	vvH

n = MIDI channel number: 0H~FH (Ch.1~16)
vv = Reverb Send Level: 00H~7FH (0~127), Initial value = 28H (40)
• This message adjusts the Reverb Send Level of each Part.
• Not transmitted when "Reverb" Tx Filter is On.

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

Status	2nd byte	3rd byte
BnH	5DH	vvH

n = MIDI channel number: 0H~FH (Ch.1~16)
vv = Chorus Send Level: 00H~7FH (0~127), Initial value = 00H (0)
• This message adjusts the Chorus Send Level of each Part.
• Not transmitted when "Chorus" Tx Filter is On.

❍ **NRPN MSB/LSB (Controller number 99, 98)**

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

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

• Not transmitted when "NRPN" Tx Filter is On.

NRPN
The NRPN (Non Registered Parameter Number) message allows an extended range of control changes to be used, letting you use control functions which are not defined in the MIDI Specification.
NRPNs provide a great deal of freedom, and can be used with any manufacturer's devices. As a result, any particular parameter number can easily mean one thing when used for a certain device, and mean something completely different on another device. Note that RPNs and NRPNs require that a multiple number of messages be processed in the correct order. However, a majority of the sequencers currently on the market cannot always be relied on to consistently send messages in the proper order if the messages are located at almost exactly the same point in time.
On the GS instruments, NRPN can be used to modify the following parameters. The range of values for relative change parameters will be different with certain models. Please see the explanation that follows the chart.

NRPN MSB LSB	Data Entry MSB	Function and range
01H 08H	mmH	Vibrato Rate (relative change) mm: 00H~40H~7FH (-64~0~+63)
01H 09H	mmH	Vibrato Depth (relative change) mm: 00H~40H~7FH (-64~0~+63)
01H 0AH	mmH	Vibrato Delay (relative change) mm: 00H~40H~7FH (-64~0~+63)
01H 20H	mmH	TVF Cutoff Frequency (relative change) mm: 00H~40H~7FH (-64~0~+63)
01H 21H	mmH	TVF Resonance (relative change) mm: 00H~40H~7FH (-64~0~+63)
01H 63H	mmH	TVF&TVA Envelope Attack Time (relative change) mm: 00H~40H~7FH (-64~0~+63)
01H 64H	mmH	TVF&TVA Envelope Decay Time (relative change) mm: 00H~40H~7FH (-64~0~+63)
01H 66H	mmH	TVF&TVA Envelope Release Time (relative change) mm: 00H~40H~7FH (-64~0~+63)
18H rrH	mmH	Drum Instrument Pitch Coarse (relative change) rr: Drum Instrument note number mm: 00H~40H~7FH (-64~0~+63 semitone)
1AH rrH	mmH	Drum Instrument TVA Level (absolute change) rr: Drum Instrument note number mm: 00H~7FH (0~max)
1CH rrH	mmH	Drum Instrument Panpot (absolute change) rr: Drum Instrument note number mm: 00H, 01H~40H~7FH (random, left~center~right)
1DH rrH	mmH	Drum Instrument Reverb Send Level (absolute change) rr: Drum Instrument note number mm: 00H~7FH (0~max)
1EH rrH	mmH	Drum Instrument Chorus Send Level (absolute change) rr: Drum Instrument note number mm: 00H~7FH (0~max)
4FH 10H	mmH	Part 4 On / Off (Upper 1) mm: 00H~7FH (00-3FH =Off~40-7FH= On)
4FH 11H	mmH	Part 11 On / Off (Lower)

NRPN MSB LSB	Data Entry MSB	Function and range mm: 00H~7FH (00-3FH =Off~40-7FH= On)
4FH 12H	mmH	Part 12 On / Off (Man Bass) mm: 00H~7FH (00-3FH =Off~40-7FH= On)
4FH 13H	mmH	Part 6 On / Off (Upper 2) mm: 00H~7FH (00-3FH =Off~40-7FH= On)
4FH 14H	mmH	Part 16 On / Off (Man Drums) mm: 00H~7FH (00-3FH =Off~40-7FH= On)
4FH 27H	mmH	Part 14 On / Off (Lower 2) mm: 00H~7FH (00-3FH =Off~40-7FH= On)
4FH 26H	mmH	Part 15 On / Off (Melody Int.) mm: 00H~7FH (00-3FH =Off~40-7FH= On)
4FH 18H	mmH	Part 8 On / Off (Acc 5) mm: 00H~7FH (00-3FH =Off~40-7FH= On)
4FH 19H	mmH	Part 9 On / Off (Acc 6) mm: 00H~7FH (00-3FH =Off~40-7FH= On)
4FH 1AH	mmH	Part 10 On / Off (Acc Drums) mm: 00H~7FH (00-3FH =Off~40-7FH= On)
4FH 1BH	mmH	Part 2 On / Off (Acc Bass) mm: 00H~7FH (00-3FH =Off~40-7FH= On)
4FH 1CH	mmH	Part 1 On / Off (Acc 1) mm: 00H~7FH (00-3FH =Off~40-7FH= On)
4FH 1DH	mmH	Part 3 On / Off (Acc2) mm: 00H~7FH (00-3FH =Off~40-7FH= On)
4FH 1EH	mmH	Part 5 On / Off (Acc3) mm: 00H~7FH (00-3FH =Off~40-7FH= On)
4FH 1EH	mmH	Part 7 On / Off (Acc 4) mm: 00H~7FH (00-3FH =Off~40-7FH= On)
4FH 20H	mmH	Master Accompaniment On / Off mm: 00H~7FH (00-3FH =Off~40-7FH= On)
4FH 21H	mmH	Master Volume Upper On / Off mm: 00H~7FH (00-3FH =Off~40-7FH= On)
4FH 22H	mmH	Master Volume Lower On / Off mm: 00H~7FH (00-3FH =Off~40-7FH= On)
4FH 23H	mmH	Master Volume Bass On / Off mm: 00H~7FH (00-3FH =Off~40-7FH= On)
4FH 24H	mmH	Master Volume Drum On / Off mm: 00H~7FH (00-3FH =Off~40-7FH= On)

• Parameters marked "relative change" will change relatively to the preset value(40H). Even among different GS devices, "relative change" parameters may sometimes differ in the way the sound changes or in the range of change.
• Parameters marked "absolute change" will be set to the absolute value of the parameter, regardless of the preset value.
• Data entry LSB (llH) is ignored.

❍ **RPN MSB/LSB (Controller number 101, 100)**

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

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

• Not transmitted when "RPN" Tx Filter is On.

RPN
The RPN (Registered Parameter Number) message allows an extended range of control changes to be used, letting you use additional control functions which are part of the MIDI Specification.
On the VA-3, RPN can be used to modify the following parameters.

RPN MSB LSB	Data Entry MSB	LSB	Explanation
00H 00H	mmH	—	Pitch Bend Sensitivity mm: 00H~18H (0~24 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)

Refer to "5. Supplementary material", About the Tuning (page 19).

RPN MSB LSB	Data Entry MSB	LSB	Explanation
00H 02H	mmH	—	Master Coarse Tuning mm: 28H~40H~58H (-24~0~+24 semitones), Initial value = 40H (+/-0 semitone) 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 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 byte
CnH	ppH

n = MIDI channel number: 0H~FH (Ch.1~16)
pp = Program number: 00H~7FH (prog.1~prog.128)
• Not transmitted when "Program Change" Tx Filter is On.

● **Pitch Bend Change**

Status	2nd byte	3rd byte
EnH	llH	mmH

n = MIDI channel number: 0H~FH (Ch.1~16)
mm, ll = Pitch Bend value: 00 00H~40 00H~7F 7FH (-8192~0~+8191)
• Not transmitted when "Pitch Bender" Tx Filter is On.

■ Channel Mode Messages

● **All Sounds Off (Controller number 120)**

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

n = MIDI channel number: 0H~FH (Ch.1~16)
• When this message is transmitted, all currently sounding notes on the corresponding channel will be turned off immediately.

● **Reset All Controllers (Controller number 121)**

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

n = MIDI channel number: 0H~FH (Ch.1~16)
• When this message is transmitted, 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)
Hold 1	0 (off)
Sostenuto	0 (off)
Soft	0 (off)

● **MONO (Controller number 126)**

Status	2nd byte	3rd byte
BnH	7EH	mmH

n = MIDI channel number: 0H~FH (Ch.1~16)
mm = mono number: 00H~10H (0~16)
• The corresponding channel will be set to Mode 4 (M=1).

● **POLY (Controller number 127)**

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

n = MIDI channel number: 0H~FH (Ch.1~16)
• The corresponding channel will be set to Mode 3.

■ System Realtime Messages

❍ **Active Sensing**

Status
FEH
Transmitted about every 250ms.

❍ **Song/Style Start**

Status
FAH
• This message is transmitted when the internal sequencer is started.

❍ **Song/Style Stop**

Status
FCH
• This message is transmitted when the internal sequencer is stopped.

❍ **Song Continue**

Status
FBH
• This message is transmitted when the sequencer is started not from the beginning.

❍ **Song Position Pointer**

Status	2nd byte	3rd byte
F2H	XXH	YYH

XX = Song Position (Bar) LSB
YY = Song Position (Bar) MSB

❍ **Timing Clock**

Status
F8H

● **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 the 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 VA-3 will automatically be set to the proper condition for correctly playing a General MIDI score.

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

Byte	Explanation
F0H	Exclusive status
7EH	ID number (Universal Non-realtime Message)
7FH	Device ID (Broadcast)
09H	Sub ID#1 (General MIDI Message)
01H	Sub ID#2 (General MIDI 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 VA-3 will be able to receive the messages specified by General MIDI 2, and use the General MIDI 2 sound map.

❍ **GM System Off**
"GM System Off" is a command message that resets the internal state of the VA-3 from the GM state to its native condition. The VA-3 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 VA-3 will reset to the GS default state.

❍ **GS Reset**
GS Reset is a command message that resets the internal settings of a device to the GS initial state. This message appears 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 play back GS music data.

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

Byte	Explanation
F0H	Exclusive status
41H	ID number (Roland)
dev	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.

■ System Exclusive Messages

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 Transmitted and received by the VA-3 are: messages related to Mode Setting, Universal Realtime System Exclusive messages, Data Requests (RQ1), and Data Set (DT1).

3. Individual Parameter Transmission (Model ID=42)

Individual Parameter Transmission transmits data (or requests data) for one parameter as one exclusive message (one packet of "F0 ..... F7").
In Individual Parameter Transmission, you must use the Address and Size listed in the following "Parameter Address Map". Addresses marked at "#" cannot be used as starting addresses.

■ System Realtime Message

● Active sensing

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

■ System Exclusive messages

"Identity Reply" and "Data Set 1 (DT1)" are the only System Exclusive messages transmitted by the VA-3.
When an appropriate "Identity Request Message" and "Data Request 1 (RQ1)" message are received, the requested internal data will be transmitted.

❍ Identity Reply

Status	Data byte	Status
F0H	7EH, dev, 06H, 02H, 41H, 42H, 00H, 00H, 06H, ssH, ssH, ssH, ssH	F7H

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

*   Reply the message by the unique device ID (dev) when the device has received the "Identity Request Message" in the Broadcast.

❍ Data set 1   DT1 (12H)

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

Byte	Explanation
F0H	Exclusive status
41H	ID number (Roland)
dev	Device ID (dev: 00H~1FH, Initial value is 10H)
42H	Model ID (GS)
12H	Command ID (DT1)
aaH	Address MSB: upper byte of the starting address of the data to be sent
bbH	Address: middle byte of the starting address of the data to be sent
ccH	Address LSB: lower byte of the starting address of the data to be sent.
ddH	Data: the actual data to be sent. Multiple bytes of data are transmitted in order 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 will be transmitted from the specified starting address and size.
*   Data larger than 128 bytes will be divided into packets of 128 bytes or less, and each packet will be sent at an interval of about 40 ms.
*   Regarding the checksum, refer to "5. Supplementary material", Example of an Exclusive message and calculating a checksum, (page 18).

● **Patch parameters**
❍ **Patch common parameters**
The parameters common to all Parts in each module are called Patch Common 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 [cents]	00 04 00 00	0 [cents]
40 00 01#				Use nibblized data.		
40 00 02#						
40 00 03#						

• Refer to section "5. Supplementary material", About the Tuning (page 19).

Address(H)	Size(H)	Data(H)	Parameter	Description	Default Value (H)	Description
40 00 04	00 00 01	00~7F	MASTER VOLUME	0~127	7F	127
				(= F0 7F 7F 04 01 00 vv F7)		
40 00 05	00 00 01	28~58	MASTER KEY-SHIFT	-24~+24 [semitones]	40	0 [semitones]
40 00 06	00 00 01	01~7F	MASTER PAN	-63 (LEFT)~+63 (RIGHT)	40	0 (CENTER)
40 00 7F	00 00 01	00	MODE SET	00 = GS Reset		
				(Rx. only)		
40 01 00	00 00 10	20~7F	PATCH NAME	16 ASCII Characters		
40 01 :	#					
40 01 0F#						
40 01 30	00 00 01	00~07	REVERB MACRO	00: Room 1	04	Hall 2
				01: Room 2		
				02: Room 3		
				03: Hall 1		
				04: Hall 2		
				05: Plate		
				06: Delay		
				07: Panning Delay		
40 01 31	00 00 01	00~07	REVERB CHARACTER	0~7	04	4
40 01 32	00 00 01	00~07	REVERB PRE-LPF	0~7	00	0
40 01 33	00 00 01	00~7F	REVERB LEVEL	0~127	40	64
40 01 34	00 00 01	00~7F	REVERB TIME	0~127	40	64
40 01 35	00 00 01	00~7F	REVERB DELAY FEEDBACK	0~127	00	0
40 01 37	00 00 01	00~7F	REVERB PREDELAY TIME	0~127 [ms]	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 their 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.

Address(H)	Size(H)	Data(H)	Parameter	Description	Default Value (H)	Description
40 01 38	00 00 01	00~07	CHORUS MACRO	00: Chorus 1	02	Chorus 3
				01: Chorus 2		
				02: Chorus 3		
				03: Chorus 4		
				04: Feedback Chorus		
				05: Flanger		
				06: Short Delay		
				07: Short Delay(FB)		
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 select the chorus type with CHORUS MACRO, each Chorus parameter will be set to their most suitable value.

Address(H)	Size(H)	Data(H)	Parameter	Default Value (H)	Description
40 03 00	00 00 02	00~7F	EFX TYPE	00 00	00: Thru

Address(H)	Size(H)	Data(H)	Parameter	Description	Default Value (H)	Description
40 03 17	00 00 01	00~7F	EFX SEND LEVEL TO REVERB	0~127	28	40

• EFX TYPE is a macro parameter which sets various Insertion Effect parameters as a group. When you use EFX TYPE to select an Insertion Effect type, each effect parameter will be set to the most suitable value.

M-FX EFFECT LIST

00 Thru

Effect Type	F0 41 10 42 12 40 03 00 00 00 00 3D F7	Thru

01 Enhancer

Effect Type	F0 41 10 42 12 40 03 00 01 02 3A F7	Enhancer
Sens = 127	F0 41 10 42 12 40 03 03 7F 3B F7	Value Hex. 00~7F
Mix = 64	F0 41 10 42 12 40 03 04 40 79 F7	Value Hex. 00~7F

02 Overdrv1

Effect Type	F0 41 10 42 12 40 03 00 01 10 2C F7	Overdrive
Amp Type Small	F0 41 10 42 12 40 03 04 00 39 F7	Small
Drive = 48	F0 41 10 42 12 40 03 03 30 0A F7	Value Hex. 00~7F
Pan = 64	F0 41 10 42 12 40 03 15 40 68 F7	Value Hex. 00~7F

03 Overdrv2

Effect Type	F0 41 10 42 12 40 03 00 01 10 2C F7	Overdrive
Amp Type Bltln	F0 41 10 42 12 40 03 04 01 38 F7	Bltln (Default)
Drive = 48	F0 41 10 42 12 40 03 03 30 0A F7	Value Hex. 00~7F
Pan = 64	F0 41 10 42 12 40 03 15 40 68 F7	Value Hex. 00~7F

04 Overdrv3
    Effect Type   F0 41 10 42 12 40 03 00 01 10 2C F7   Overdrive
    Amp Type 2-Stk   F0 41 10 42 12 40 03 04 02 37 F7   2-Stk
    Drive = 48   F0 41 10 42 12 40 03 03 30 0A F7   Value Hex. 00~7F
    Pan = 64   F0 41 10 42 12 40 03 15 40 68 F7   Value Hex. 00~7F

05 Overdrv4
    Effect Type   F0 41 10 42 12 40 03 00 01 10 2C F7   Overdrive
    Amp Type 3-Stk   F0 41 10 42 12 40 03 04 03 36 F7   3-Stk
    Drive = 48   F0 41 10 42 12 40 03 03 30 0A F7   Value Hex. 00~7F
    Pan = 64   F0 41 10 42 12 40 03 15 40 68 F7   Value Hex. 00~7F

06 Distort1
    Effect Type   F0 41 10 42 12 40 03 00 01 11 2B F7   Distortion
    Amp Type Small   F0 41 10 42 12 40 03 04 00 39 F7   Small
    Drive = 76   F0 41 10 42 12 40 03 03 4C 6E F7   Value Hex. 00~7F
    Pan = 64   F0 41 10 42 12 40 03 15 40 68 F7   Value Hex. 00~7F

07 Distort2
    Effect Type   F0 41 10 42 12 40 03 00 01 11 2B F7   Distortion
    Amp Type Bltln   F0 41 10 42 12 40 03 04 01 38 F7   Bltln
    Drive = 76   F0 41 10 42 12 40 03 03 4C 6E F7   Value Hex. 00~7F
    Pan = 64   F0 41 10 42 12 40 03 15 40 68 F7   Value Hex. 00~7F

08 Distort3
    Effect Type   F0 41 10 42 12 40 03 00 01 11 2B F7   Distortion
    Amp Type 2-Stk   F0 41 10 42 12 40 03 04 02 37 F7   2-Stk
    Drive = 76   F0 41 10 42 12 40 03 03 4C 6E F7   Value Hex. 00~7F
    Pan = 64   F0 41 10 42 12 40 03 15 40 68 F7   Value Hex. 00~7F

09 Distort4
    Effect Type   F0 41 10 42 12 40 03 00 01 11 2B F7   Distortion
    Amp Type 3-Stk   F0 41 10 42 12 40 03 04 03 36 F7   3-Stk (Default)
    Drive = 76   F0 41 10 42 12 40 03 03 4C 6E F7   Value Hex. 00~7F
    Pan = 64   F0 41 10 42 12 40 03 15 40 68 F7   Value Hex. 00~7F

10 Phaser
    Effect Type   F0 41 10 42 12 40 03 00 01 20 1C F7   Phaser
    Manual = 36   F0 41 10 42 12 40 03 03 24 16 F7   ValueHex.00-24-7F
    Rate = 16   F0 41 10 42 12 40 03 04 10 29 F7   Value Hex. 00~7F

11 Auto Wah
    Effect Type   F0 41 10 42 12 40 03 00 01 21 1B F7   Auto Wah
    Manual = 68   F0 41 10 42 12 40 03 05 44 74 F7   Value Hex. 00~7F
    Rate = 40   F0 41 10 42 12 40 03 07 28 0E F7   Value Hex. 00~7F

12 Rotary
    Effect Type   F0 41 10 42 12 40 03 00 01 22 1A F7   Rotary (Slow)
    Speed = 0   F0 41 10 42 12 40 03 0D 00 30 F7   Value Hex. 00~7F
    Level = 127   F0 41 10 42 12 40 03 16 7F 28 F7   Value Hex. 00~7F

12 Rotary
    Effect Type   F0 41 10 42 12 40 03 00 01 22 1A F7   Rotary (Fast)
    Speed = 127   F0 41 10 42 12 40 03 0D 7F 31 F7   Value Hex. 00~7F
    Level = 127   F0 41 10 42 12 40 03 16 7F 28 F7   Value Hex. 00~7F

13 StFlangr
    Effect Type   F0 41 10 42 12 40 03 00 01 23 19 F7   Stereo Flanger
    Rate = 11   F0 41 10 42 12 40 03 06 0B 2C F7   Value Hex. 00~7F
    Feedback = 104   F0 41 10 42 12 40 03 08 68 4D F7   Value Hex. 0F~71

14 SpFlangr
    Effect Type   F0 41 10 42 12 40 03 00 01 24 18 F7   Step Flanger
    Feedback = 39   F0 41 10 42 12 40 03 06 27 10 F7   Value Hex. 0F~71
    Step Rate= 54   F0 41 10 42 12 40 03 08 36 7F F7   Value Hex. 00~7F

15 Compress
    Effect Type   F0 41 10 42 12 40 03 00 01 30 0C F7   Compressor
    Pan = 64   F0 41 10 42 12 40 03 15 40 68 F7   Value Hex. 00~7F
    Level = 104   F0 41 10 42 12 40 03 16 68 3F F7   Value Hex. 00~7F

16 Limiter
    Effect Type   F0 41 10 42 12 40 03 00 01 31 0B F7   Limiter
    Pan = 64   F0 41 10 42 12 40 03 15 40 68 F7   Value Hex. 00~7F
    Level = 127   F0 41 10 42 12 40 03 16 7F 28 F7   Value Hex. 00~7F

17 Hexa Cho
    Effect Type   F0 41 10 42 12 40 03 00 01 40 7C F7   Hexa Chorus
    Rate = 32   F0 41 10 42 12 40 03 04 20 19 F7   Value Hex. 00~7F
    Balance = 64   F0 41 10 42 12 40 03 12 40 6B F7   Value Hex. 00~7F

18 Trem Cho
    Effect Type   F0 41 10 42 12 40 03 00 01 41 7B F7   Tremolo Chorus
    Trem Rate = 60   F0 41 10 42 12 40 03 07 3C 7A F7   Value Hex. 00~7F
    Balance = 55   F0 41 10 42 12 40 03 12 37 74 F7   Value Hex. 00~7F

19 StChorus
    Effect Type   F0 41 10 42 12 40 03 00 01 42 7A F7   Stereo Chorus
    Rate = 16   F0 41 10 42 12 40 03 06 10 27 F7   Value Hex. 00~7F
    Balance = 40   F0 41 10 42 12 40 03 12 28 03 F7   Value Hex. 00~7F

20 Space D
    Effect Type   F0 41 10 42 12 40 03 00 01 43 79 F7   Space D
    Rate = 16   F0 41 10 42 12 40 03 04 10 29 F7   Value Hex. 00~7F
    Balance = 64   F0 41 10 42 12 40 03 12 40 6B F7   Value Hex. 00~7F

21 St Delay
    Effect Type   F0 41 10 42 12 40 03 00 01 50 6C F7   Stereo Delay
    Feedback = 80   F0 41 10 42 12 40 03 05 50 68 F7   Value Hex. 0F~71
    Balance = 40   F0 41 10 42 12 40 03 12 28 03 F7   Value Hex. 00~7F

22 Mod Delay
    Effect Type   F0 41 10 42 12 40 03 00 01 51 6B F7   Mod Delay
    Mod Rate = 12   F0 41 10 42 12 40 03 07 0C 2A F7   Value Hex. 00~7F
    Balance = 40   F0 41 10 42 12 40 03 12 28 03 F7   Value Hex. 00~7F

23 3Tap Delay
    Effect Type   F0 41 10 42 12 40 03 00 01 52 6A F7   3 Tap Delay
    Feedback = 80   F0 41 10 42 12 40 03 06 50 67 F7   Value Hex. 0F~71
    Balance = 48   F0 41 10 42 12 40 03 12 30 7B F7   Value Hex. 00~7F

24 4Tap Delay
    Effect Type   F0 41 10 42 12 40 03 00 01 53 69 F7   4 Tap Delay
    Feedback = 41   F0 41 10 42 12 40 03 0B 29 09 F7   Value Hex. 0F~71
    Balance = 48   F0 41 10 42 12 40 03 12 30 7B F7   Value Hex. 00~7F

25 TmCtrDly
    Effect Type   F0 41 10 42 12 40 03 00 01 54 68 F7   Tm Ctrl Delay
    Dly Time = 60   F0 41 10 42 12 40 03 03 3C 7E F7   Value Hex. 00~7F
    Feedback = 41   F0 41 10 42 12 40 03 05 29 0F F7   Value Hex. 00~7F

26 Reverb
    Effect Type   F0 41 10 42 12 40 03 00 01 55 67 F7   Reverb
    Time = 100   F0 41 10 42 12 40 03 05 64 54 F7   Value Hex. 00~7F
    Balance = 50   F0 41 10 42 12 40 03 12 32 79 F7   Value Hex. 00~7F

27 GteRevNr
    Effect Type   F0 41 10 42 12 40 03 00 01 56 66 F7   Gate Reverb
    Type Norm   F0 41 10 42 12 40 03 03 00 3A F7   Norm (Default)
    Balance = 33   F0 41 10 42 12 40 03 12 21 0A F7   Value Hex. 00~7F
    Level = 120   F0 41 10 42 12 40 03 16 78 2F F7   Value Hex. 00~7F

28 GteRevRv
    Effect Type   F0 41 10 42 12 40 03 00 01 56 66 F7   Gate Reverb
    Type Reverse   F0 41 10 42 12 40 03 03 01 39 F7   Reverse
    Balance = 42   F0 41 10 42 12 40 03 12 2A 01 F7   Value Hex. 00~7F
    Level = 112   F0 41 10 42 12 40 03 16 70 37 F7   Value Hex. 00~7F

29 GteRevS1
    Effect Type   F0 41 10 42 12 40 03 00 01 56 66 F7   Gate Reverb
    Type Sweep1   F0 41 10 42 12 40 03 03 02 38 F7   Sweep1
    Balance = 35   F0 41 10 42 12 40 03 12 23 08 F7   Value Hex. 00~7F
    Level = 120   F0 41 10 42 12 40 03 16 78 2F F7   Value Hex. 00~7F

30 GteRevS2
    Effect Type   F0 41 10 42 12 40 03 00 01 56 66 F7   Gate Reverb
    Type Sweep2   F0 41 10 42 12 40 03 03 03 37 F7   Sweep2
    Balance = 42   F0 41 10 42 12 40 03 12 2A 01 F7   Value Hex. 00~7F
    Level = 112   F0 41 10 42 12 40 03 16 70 37 F7   Value Hex. 00~7F

31 PitchShf
    Effect Type   F0 41 10 42 12 40 03 00 01 60 5C F7   2 Pitch Shifter
    Coarse1 = 71   F0 41 10 42 12 40 03 03 47 73 F7   Value Hex. 28~4C
    Coarse2 = 59   F0 41 10 42 12 40 03 07 3B 7B F7   Value Hex. 28~4C

32 Fb P.Shift
    Effect Type   F0 41 10 42 12 40 03 00 01 61 5B F7   Fb P.Shifter
    P.Coarse = 71   F0 41 10 42 12 40 03 03 47 73 F7   Value Hex. 28~4C
    Feedback = 76   F0 41 10 42 12 40 03 05 4C 6C F7   Value Hex. 0F~71

33 OD→Chors
    Effect Type   F0 41 10 42 12 40 03 00 02 00 3B F7   OD→Chorus
    OD Pan = 64   F0 41 10 42 12 40 03 04 40 79 F7   Value Hex. 00~7F
    Cho Bal = 64   F0 41 10 42 12 40 03 0C 40 71 F7   Value Hex. 00~7F

34 OD→Flger
    Effect Type   F0 41 10 42 12 40 03 00 02 01 3A F7   OD→Flanger
    OD Pan = 64   F0 41 10 42 12 40 03 04 40 79 F7   Value Hex. 00~7F
    FL Bal = 32   F0 41 10 42 12 40 03 0C 20 11 F7   Value Hex. 00~7F

35 OD→Delay
    Effect Type   F0 41 10 42 12 40 03 00 02 02 39 F7   OD→Delay
    OD Pan = 64   F0 41 10 42 12 40 03 04 40 79 F7   Value Hex. 00~7F
    Dly Bal = 48   F0 41 10 42 12 40 03 0C 30 01 F7   Value Hex. 00~7F

36 DS→Chors
    Effect Type   F0 41 10 42 12 40 03 00 02 03 38 F7   DS→Chorus
    DS Pan = 64   F0 41 10 42 12 40 03 04 40 79 F7   Value Hex. 00~7F
    Cho Bal = 64   F0 41 10 42 12 40 03 0C 40 71 F7   Value Hex. 00~7F

37 DS→Flger
    Effect Type   F0 41 10 42 12 40 03 00 02 04 37 F7   DS→Flanger
    DS Pan = 64   F0 41 10 42 12 40 03 04 40 79 F7   Value Hex. 00~7F
    FL Bal = 32   F0 41 10 42 12 40 03 0C 20 11 F7   Value Hex. 00~7F

38 DS→Delay
    Effect Type   F0 41 10 42 12 40 03 00 02 05 36 F7   DS→Delay
    DS Pan = 64   F0 41 10 42 12 40 03 04 40 79 F7   Value Hex. 00~7F
    Dly Bal = 48   F0 41 10 42 12 40 03 0C 30 01 F7   Value Hex. 00~7F

39 EH→Chors
    Effect Type   F0 41 10 42 12 40 03 00 02 06 35 F7   EH→Chorus
    EH Sens = 64   F0 41 10 42 12 40 03 03 40 7A F7   Value Hex. 00~7F
    Cho Bal = 64   F0 41 10 42 12 40 03 0C 40 71 F7   Value Hex. 00~7F

40 EH→Flger
Effect Type	F0 41 10 42 12 40 03 00 02 07 34 F7	EH→Flanger
EH Sens = 64	F0 41 10 42 12 40 03 03 40 7A F7	Value Hex. 00~7F
FL Bal = 48	F0 41 10 42 12 40 03 0C 30 01 F7	Value Hex. 00~7F

41 EH→Delay
Effect Type	F0 41 10 42 12 40 03 00 02 08 33 F7	EH→Delay
EH Sens = 64	F0 41 10 42 12 40 03 03 40 7A F7	Value Hex. 00~7F
Dly Bal = 48	F0 41 10 42 12 40 03 0C 30 01 F7	Value Hex. 00~7F

42 Cho→Dly
Effect Type	F0 41 10 42 12 40 03 00 02 09 32 F7	Cho→Delay
Cho Bal = 64	F0 41 10 42 12 40 03 07 40 76 F7	Value Hex. 00~7F
Dly Bal = 48	F0 41 10 42 12 40 03 0C 30 01 F7	Value Hex. 00~7F

43 FL→Delay
Effect Type	F0 41 10 42 12 40 03 00 02 0A 31 F7	FL→Delay
FL Fb = 104	F0 41 10 42 12 40 03 06 68 4F F7	Value Hex. 0F~71
Dly Bal = 48	F0 41 10 42 12 40 03 0C 30 01 F7	Value Hex. 00~7F

44 Cho→Flger
Effect Type	F0 41 10 42 12 40 03 00 02 0B 30 F7	Cho→Flanger
Cho Bal = 64	F0 41 10 42 12 40 03 07 40 76 F7	Value Hex. 00~7F
FL Bal = 64	F0 41 10 42 12 40 03 0C 40 71 F7	Value Hex. 00~7F

45 Cho/Delay
Effect Type	F0 41 10 42 12 40 03 00 11 00 2C F7	Cho / Delay
Cho Bal = 64	F0 41 10 42 12 40 03 07 40 76 F7	Value Hex. 00~7F
Dly Bal = 40	F0 41 10 42 12 40 03 0C 28 09 F7	Value Hex. 00~7F

46 FL/Delay
Effect Type	F0 41 10 42 12 40 03 00 11 01 2B F7	FL / Delay
FL Bal = 64	F0 41 10 42 12 40 03 07 40 76 F7	Value Hex. 00~7F
Dly Bal = 48	F0 41 10 42 12 40 03 0C 30 01 F7	Value Hex. 00~7F

47 Cho/Flger
Effect Type	F0 41 10 42 12 40 03 00 11 02 2A F7	Cho / Flanger
Cho Bal = 64	F0 41 10 42 12 40 03 07 40 76 F7	Value Hex. 00~7F
FL Bal = 64	F0 41 10 42 12 40 03 0C 40 71 F7	Value Hex. 00~7F

Effect Type only from MIDI or SMF
— Equalizer
Effect Type	F0 41 10 42 12 40 03 00 01 00 3C F7	Stereo-EQ

— Spectrum
Effect Type	F0 41 10 42 12 40 03 00 01 01 3B F7	Spectrum

❍ **Patch Part parameters**
The VA-3 has 32 Parts:
16 Parts to use Arranger and Keyboard and 16 Parts for Songs.
If you like to send messages to the 16 Parts relative to Arranger and Keyboard, you have to use the address 40 xx xx.
If you like to send messages to the 16 Parts relative to Songs, you have to use the address 50 xx xx.

The 32 Parts are:

Arranger Mode GM/GS Off			**Song Mode GM/GS On**			
TRACK	NAME	MIDI CHANNEL	TRACK	NAME	MIDI CHANNEL	SYS EX X=
1	Accomp 1	Ch 1	1	Part 1	Ch 1	X=1
2	Accomp Bass	Ch 2	2	Part 2	Ch 2	X=2
3	Accomp 2	Ch 3	3	Part 3	Ch 3	X=3
4	Upper 1	Ch 4	4	Part 4 UP1	Ch 4	X=4
5	Accomp 3	Ch 5	5	Part 5	Ch 5	X=5
6	Upper 2	Ch 6	6	Part 6	Ch 6	X=6
7	Accomp 4	Ch 7	7	Part 7	Ch 7	X=7
8	Accomp 5	Ch 8	8	Part 8	Ch 8	X=8
9	Accomp 6	Ch 9	9	Part 9	Ch 9	X=9
10	Accomp Drums	Ch 10	10	Part 10	Ch 10	X=0
11	Lower 1	Ch 11	11	Part 11	Ch 11	X=A
12	M Bass	Ch 12	12	Part 12	Ch 12	X=B
13	RX1	Ch 13	13	Part 13	Ch 13	X=C
14	Lower 2	Ch 14	14	Part 14	Ch 14	X=D
15	Melody Int	Ch 15	15	Part 15	Ch 15	X=E
16	Manual Drums	Ch 16	16	Part 16	Ch 16	X=F

In the following map, the control numbers of the control changes are indicated as CC#.

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(CAf)	OFF/ON	01	ON
40 1x 05	00 00 01	00, 01	Rx. PROGRAM CHANGE	OFF/ON	01	ON
40 1x 06	00 00 01	00, 01	Rx. CONTROL CHANGE	OFF/ON	01	ON
40 1x 07	00 00 01	00, 01	Rx. POLY PRESSURE(PAf)	OFF/ON	01	ON
40 1x 08	00 00 01	00, 01	Rx. NOTE MESSAGE	OFF/ON	01	ON
40 1x 09	00 00 01	00, 01	Rx. RPN	OFF/ON	01	ON
40 1x 0A	00 00 01	00, 01	Rx. NRPN	OFF/ON	00 (01*)	OFF (ON*)

• 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.

Address(H)	Size(H)	Data(H)	Parameter	Description	Default Value (H)	Description
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

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Address(H)	Size(H)	Data(H)	Parameter	Description	Default Value (H)	Description
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	VA-3/SC-88Pro/SC-88 MAP 01 SC-55 MAP 00 at x=0 01 at x≠0	 LIMITED-MULTI SINGLE (Drum Part) LIMITED-MULTI (Normal Part)

Single: If the same note is played multiple times in succession, the previously-sounding note will be completely silenced, and then the new note will be sounded.
LimitedMulti: If the same note is played multiple times in succession, the previously-sounding note will be continued to a certain extent even after the new note is sounded (default setting).
FullMulti: If the same note is played multiple times in succession, the previously-sounding note(s) will continue sounding for their natural length even after the new note is sounded.

• 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≠0
01 at x=0 | OFF (Normal Part)
MAP1 (Drum Part) |

• This parameter sets the Drum Map of the Part used as the Drum Part. The VA-3 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)).

Address(H)	Size(H)	Data(H)	Parameter	Description	Default Value (H)	Description
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	KEYBOARD RANGE LOW	(C-1)~(G9)	00	C-1
40 1x 1E	00 00 01	00~7F	KEYBOARD 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 to OFF.
• When "GS RESET" or "GM2 System On" is received, Rx.BANK SELECT will be set to ON.

| 40 1x 24 | 00 00 01 | 00, 01 | RX BANK SELECT LSB | OFF/ON | 01 | ON |

• When RX BANK SELECT LSB = OFF, Bank Select LSB (Bn 20 11) will be treated as 00H regardless of its value.

40 1x 2A	00 00 02	00 00~40 00~7F 7F	PITCH FINE TUNE	-100~0~+100 [cents] (= RPN#1)	40 00	0
40 1x 2B#						
40 1x 30	00 00 01	00~7F	TONE MODIFY1 Vibrato Rate	-64~+63 (=NRPN# 8/CC#76)	40	0
40 1x 31	00 00 01	00~7F	TONE MODIFY2 Vibrato Depth	-64~+63 (=NRPN# 9/CC#77)	40	0
40 1x 32	00 00 01	00~7F	TONE MODIFY3 TVF Cutoff Freq	-64~+63 (=NRPN# 32/CC#74)	40	0
40 1x 33	00 00 01	00~7F	TONE MODIFY4 TVF Resonance	-64~+63 (=NRPN# 33/CC#71)	40	0
40 1x 34	00 00 01	00~7F	TONE MODIFY5 TVF&TVA Env.attack	-64~+63 (=NRPN# 99/CC#73)	40	0
40 1x 35	00 00 01	00~7F	TONE MODIFY6 TVF&TVA Env.decay	-64~+63 (=NRPN# 100/CC#75)	40	0
40 1x 36	00 00 01	00~7F	TONE MODIFY7 TVF&TVA Env.release	-64~+63 (=NRPN# 102/CC#72)	40	0
40 1x 37	00 00 01	00~7F	TONE MODIFY8 Vibrato Delay	-64~+63 (=NRPN# 10/CC#78)	40	0
40 1x 40	00 00 0C	00~7F	SCALE TUNING C	-64~+63 [cents]	40	0 [cents]
40 1x 41#		00~7F	SCALE TUNING C#	-64~+63 [cents]	40	0 [cents]
40 1x 42#		00~7F	SCALE TUNING D	-64~+63 [cents]	40	0 [cents]
40 1x 43#		00~7F	SCALE TUNING D#	-64~+63 [cents]	40	0 [cents]
40 1x 44#		00~7F	SCALE TUNING E	-64~+63 [cents]	40	0 [cents]
40 1x 45#		00~7F	SCALE TUNING F	-64~+63 [cents]	40	0 [cents]
40 1x 46#		00~7F	SCALE TUNING F#	-64~+63 [cents]	40	0 [cents]
40 1x 47#		00~7F	SCALE TUNING G	-64~+63 [cents]	40	0 [cents]
40 1x 48#		00~7F	SCALE TUNING G#	-64~+63 [cents]	40	0 [cents]
40 1x 49#		00~7F	SCALE TUNING A	-64~+63 [cents]	40	0 [cents]

Address(H)	Size(H)	Data(H)	Parameter	Description	Default Value (H)	Description
40 1x 4A#		00~7F	SCALE TUNING A#	-64~+63 [cents]	40	0 [cents]
40 1x 4B#		00~7F	SCALE TUNING B	-64~+63 [cents]	40	0 [cents]

• 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 cents (40H) is equal temperament (page 19).

Address(H)	Size(H)	Data(H)	Parameter	Description	Default Value (H)	Description
40 2x 00	00 00 01	28~58	MOD PITCH CONTROL	-24~+24 [semitones]	40	0 [semitones]
40 2x 01	00 00 01	00~7F	MOD TVF CUTOFF CONTROL	-9600~+9600 [cents]	40	0 [cents]
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 [cents]	0A	10 [cents]
40 2x 05	00 00 01	00~7F	MOD LFO1 TVF DEPTH	0~2400 [cents]	00	0 [cents]
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 [cents]	00	0 [cents]
40 2x 09	00 00 01	00~7F	MOD LFO2 TVF DEPTH	0~2400 [cents]	00	0 [cents]
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 [semitones]	42	2 [semitones]
40 2x 11	00 00 01	00~7F	BEND TVF CUTOFF CONTROL	-9600~+9600 [cents]	40	0 [cents]
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 [cents]	00	0 [cents]
40 2x 15	00 00 01	00~7F	BEND LFO1 TVF DEPTH	0~2400 [cents]	00	0 [cents]
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 [cents]	00	0 [cents]
40 2x 19	00 00 01	00~7F	BEND LFO2 TVF DEPTH	0~2400 [cents]	00	0 [cents]
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 [semitones]	40	0 [semitones]
40 2x 21	00 00 01	00~7F	CAf TVF CUTOFF CONTROL	-9600~+9600 [cents]	40	0 [cents]
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 [cents]	00	0 [cents]
40 2x 25	00 00 01	00~7F	CAf LFO1 TVF DEPTH	0~2400 [cents]	00	0 [cents]
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 [cents]	00	0 [cents]
40 2x 29	00 00 01	00~7F	CAf LFO2 TVF DEPTH	0~2400 [cents]	00	0 [cents]
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 [semitones]	40	0 [semitones]
40 2x 31	00 00 01	00~7F	PAf TVF CUTOFF CONTROL	-9600~+9600 [cents]	40	0 [cents]
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 [cents]	00	0 [cents]
40 2x 35	00 00 01	00~7F	PAf LFO1 TVF DEPTH	0~2400 [cents]	00	0 [cents]
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 [cents]	00	0 [cents]
40 2x 39	00 00 01	00~7F	PAf LFO2 TVF DEPTH	0~2400 [cents]	00	0 [cents]
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 [semitones]	40	0 [semitones]
40 2x 41	00 00 01	00~7F	CC1 TVF CUTOFF CONTROL	-9600~+9600 [cents]	40	0 [cents]
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 [cents]	00	0 [cents]
40 2x 45	00 00 01	00~7F	CC1 LFO1 TVF DEPTH	0~2400 [cents]	00	0 [cents]
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 [cents]	00	0 [cents]
40 2x 49	00 00 01	00~7F	CC1 LFO2 TVF DEPTH	0~2400 [cents]	00	0 [cents]
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 [semitones]	40	0 [semitones]
40 2x 51	00 00 01	00~7F	CC2 TVF CUTOFF CONTROL	-9600~+9600 [cents]	40	0 [cents]
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 [cents]	00	0 [cents]
40 2x 55	00 00 01	00~7F	CC2 LFO1 TVF DEPTH	0~2400 [cents]	00	0 [cents]
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 [cents]	00	0 [cents]
40 2x 59	00 00 01	00~7F	CC2 LFO2 TVF DEPTH	0~2400 [cents]	00	0 [cents]
40 2x 5A	00 00 01	00~7F	CC2 LFO2 TVA DEPTH	0~100.0 [%]	00	0 [%]

• You may not always be able to obtain the desired effect by modifying the LFO 1 and LFO 2 parameters.

Address(H)	Size(H)	Data(H)	Parameter	Description	Default Value (H)	Description
40 4x 00	00 00 01	00~04	TONE MAP NUMBER (= CC#32: Bank number LSB)	MAP 0~4 00: SELECTED 01: E-86/SC-55 MAP 02: G-800/RA-800/SC88 MAP 03: G-1000/EM-2000/Sc-88 Pro MAP 04: VA-3/SC-8850 MAP	00	

• When "GS Reset" is received, this will be 00: SELECTED.

Address(H)	Size(H)	Data(H)	Parameter	Description	Default Value (H)	Description
40 4x 01	00 00 01	01~04	TONE MAP-0 NUMBER	01: E-86/SC-55 MAP 02: G-800/RA-800/SC-88 MAP 03: G-1000/EM-2000/SC-88Pro MAP	(04)	

Address(H)	Size(H)	Data(H)	Parameter	Description	Default Value (H)	Description
				04: VA-3/SC-8850 MAP		

• This specifies a MAP when TONE MAP NUMBER is 00.

Address(H)	Size(H)	Data(H)	Parameter	Description	Default Value (H)	Description
40 4x 22	00 00 01	00, 01	PART EFX ASSIGN	00:BYPASS 01:EFX	00	BYPASS
41 m6 rr	00 00 01	00~7F	CHORUS SEND LEVEL	0.0~1.0 Multiplicand of the part chorus level (=NRPN# 30)		
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		

Address(H)	Size(H)	Data(H)	Parameter	Description	Default Value (H)	Description
00 10 10 21	00 00 0C	00~7F	SCALE TUNING C	-64~+63 [cents]	40	0 [cents]
00 10 10 22#		00~7F	SCALE TUNING C#	-64~+63 [cents]	40	0 [cents]
00 10 10 23#		00~7F	SCALE TUNING D	-64~+63 [cents]	40	0 [cents]
00 10 10 24#		00~7F	SCALE TUNING D#	-64~+63 [cents]	40	0 [cents]
00 10 10 25#		00~7F	SCALE TUNING E	-64~+63 [cents]	40	0 [cents]
00 10 10 26#		00~7F	SCALE TUNING F	-64~+63 [cents]	40	0 [cents]
00 10 10 27#		00~7F	SCALE TUNING F#	-64~+63 [cents]	40	0 [cents]
00 10 10 28#		00~7F	SCALE TUNING G	-64~+63 [cents]	40	0 [cents]
00 10 10 29#		00~7F	SCALE TUNING G#	-64~+63 [cents]	40	0 [cents]
00 10 10 2A#		00~7F	SCALE TUNING A	-64~+63 [cents]	40	0 [cents]
00 10 10 2B#		00~7F	SCALE TUNING A#	-64~+63 [cents]	40	0 [cents]
00 10 10 2C#		00~7F	SCALE TUNING B	-64~+63 [cents]	40	0 [cents]

• This specifies a MAP when TONE MAP NUMBER is 00.

				04: VA-3/SC-8850 MAP		
40 4x 22			PART EFX ASSIGN	00:BYPASS 01:EFX	00	BYPASS

4. Bulk Dump

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

To make the VA-3 perform a Bulk Dump transmission, send it a "Bulk Dump Request" message. Bulk Dump Request uses the Data Request 1 (RQ1) format, but unlike when transmitting individual parameters, the "Size" specified by the request message refers not to size of the data but rather specifies the contents of the data. For the data contents corresponding to each Size, refer to "Parameter dump."

When the VA-3 receives a Bulk Dump Request, it will transmit a Bulk Dump in the format given below.

The VA-3 is also able to transmit a list of its internal sounds. This function can be used to display a list of sounds on a computer.

■ Dumping a list of internal sounds

● Instrument list dump

❍ Instrument list dump request (receive only)

This command requests a bulk dump of a list of the preset sounds (Instruments) in internal memory, and uses "Data Request 1 (RQ1)" format. The Size specifies the contents of the requested data.

Address:	0C 00 01
Size:	00 00 00: ALL
	00 00 01: E-86/SC-55 MAP
	00 00 02: G-800/RA-800/SC-88 MAP
	00 00 03: G-1000/EM-2000/SC-88Pro MAP
	00 00 04: VA-3/SC-8850 MAP

❍ Instrument list dump (transmit only)

When Instrument List Dump Request is received, the sound names of the specified map will be transmitted continuously in the format given below, where 16 bytes are used for each sound name. The Address of the transmitted data is 0C 00 01 for all packets. User bank sound names are not transmitted.

DUMP FORMAT

0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
CC0	MAP	PC	00	TONE NAME(ASCII 12 Characters)											

.

CC0:	Variation number
MAP:	MAP number	01 = E-86/SC-55 MAP, 02 = G-800/RA-800/SC-88 MAP,
		03 = G-1000/EM-2000/SC-88Pro MAP,
		04 = VA-3/SC-8850 MAP
PC:	Program number

● Drum set list dump

❍ Drum set list dump request (receive only)

This command requests a bulk dump transmission of a list of Preset Drum Sets in internal memory, and uses "Data Request 1 (RQ1)" format. The Size specifies the desired data contents.

Address:	0C 00 02
Size:	00 00 00: ALL
	00 00 01: E-86/SC-55 MAP
	00 00 02: G-800/RA-800/SC-88 MAP
	00 00 03: G-1000/EM-2000/SC-88Pro MAP
	00 00 04: VA-3/SC-8850 MAP

❍ Drum set list dump (transmit only)

When a Drum Set List Dump Request is received, the Drum Set names of the specified MAP will be transmitted successively in the format given below, where 16 bytes are used for each sound. The Address of the transmitted data will be 0C 00 02 for each packet.

DUMP FORMAT

0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
00	MAP	PC	00	DRUM TONE NAME(ASCII 12 Characters)											

.

MAP:	MAP number	01 = E-86/SC-55 MAP, 02 = G-800/RA-800/SC-88 MAP
		03 = G-1000/EM-2000/SC-88Pro MAP,
		04 = VA-3/SC-8850 MAP
PC:	Program number

● Drum instrument list dump

❍ Drum instrument list dump request (receive only)

This command requests a bulk dump transmission of the Instrument list of an internal Preset Drum Sets, and uses "Data Request 1 (RQ1)" format. The Size specifies the desired data contents.

Address:	0C 00 03
Size:	00 00 00: ALL
	00 00 01: E-86/SC-55 MAP
	00 00 02: G-800/RA-800/SC-88 MAP
	00 00 03: G-1000/EM-2000/SC-88Pro MAP
	00 00 04: VA-3/SC-8850 MAP

❍ Drum instrument list dump (transmit only)

When a Drum Instrument List Dump Request is received, the Drum Instrument names of the specified Drum Set will be transmitted in the following format where 16 bytes are used for each Drum Instrument name. The address of the transmitted data will be 0C 00 03 for each packet.

DUMP FORMAT

0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
00	MAP	PC	KEY	DRUM TONE NAME(ASCII 12 Characters)											

.

MAP:	MAP number	01 = E-86/SC-55 MAP, 02 = G-800/RA-800/SC-88 MAP,
		03 = G-1000/EM-2000/SC-88Pro MAP,
		04 = VA-3/SC-8850 MAP
PC:	Program number
KEY:	Note number

● Insertion effect list dump

❍ Insertion effect list dump request (receive only)

This command requests a bulk dump transmission of the Insertion effect list of an internal memory, and uses "Data Request 1 (RQ1)" format. The Size specifies the desired data contents.

Address:	0C 00 04
Size:	00 00 00: ALL

❍ Insertion effect list dump (transmit only)

When a Insertion Effect List Dump Request is received, the specified Insertion Effect names will be transmitted in the following format where 20 bytes are used for each Effect name. The address of the transmitted data will be 0C 00 04 for each packet.

DUMP FORMAT

0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	10	11	12
MSB	LSB	00	00	EFFECT NAME(ASCII 16 Characters)														

MSB:	Category
LSB:	Type

5. Supplementary material

■ Decimal and Hexadecimal table

(An "H" is appended to the end of numbers in hexadecimal notation.)

In MIDI documentation, data values and addresses/sizes of Exclusive messages, etc. are expressed as hexadecimal values for each 7 bits.
The following table shows how these correspond to decimal numbers.

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 greater than the values given in the above table.
- A 7-bit byte can express data in the range of 128 steps. For data where greater precision is required, we must use two or more bytes. For example, two hexadecimal numbers aa bbH expressing two 7-bit bytes would indicate a value of aa x 128+bb.
- In the case of values which have a +/- sign, 00H = -64, 40H = +/-0, and 7FH = +63, so that the decimal expression would be 64 less than the value given in the above chart. In the case of two types, 00 00H = -8192, 40 00H = +/-0, and 7F 7FH = +8191. For example, if aa bbH were expressed as decimal, this would be aa bbH - 40 00H = aa x 128+bb - 64 x 128.
- Data marked "Use nibbled data" is expressed in hexadecimal in 4-bit units. A value expressed as a 2-byte nibble 0a 0bH has the value of a x 16+b.

[**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 x 16+3) x 16+9) x 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 result 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 12+80 = 8192) is 0, so this Pitch Bend Value is 28 00H - 40 00H = 40 x 12+80 - (64 x 12+80) = 5120 - 8192 = -3072

If the Pitch Bend Sensitivity is set to 2 semitones, -8192 (00 00H) will cause the pitch to change by -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 control number, and the 3rd byte is the value. In a case in which two or more consecutive messages have the same status, MIDI has a provision called "running status" which allows the status byte of the second and following messages to be omitted. Thus, the above messages have the following meaning.

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

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

RPN parameter number 00 00H is Pitch Bend Sensitivity, and the MSB of the value indicates semitone units, so a value of 0CH = 12 sets the maximum pitch bend range to +/-12 semitones (1 octave). (On GS sound generators the LSB of Pitch Bend Sensitivity is ignored, but the LSB should be transmitted anyway (with a value of 0) so that operation will be correct on any device.)

Once the parameter number has been specified for RPN or NRPN, all Data Entry messages transmitted on that same channel will be valid, so after the desired value has been transmitted, it is a good idea to set the parameter number to 7F 7FH to prevent accidents. This is the reason for the (B3) 64 7F (B3) 65 7F at the end.

It is not desirable for performance data (such as Standard MIDI File data) to contain many events with running status as given in [Example 4]. This is because if playback is halted during the song and then rewound or fast-forwarded, the sequencer may not be able to transmit the correct status, and the sound generator will then misinterpret the data. Take care to give each event its own status.

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

*TPQN: Ticks Per Quarter Note

■ Example of an Exclusive message and calculating a checksum

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

❍ **How to calculate the checksum (hexadecimal numbers are indicated by "H")**
The checksum is a value derived by adding the address, size, and checksum itself and inverting the lower 7 bits.
Here's an example of how the checksum is calculated. We will assume that in the Exclusive message we are transmitting, the address is aa bb ccH and the data or size is dd ee ffH.

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

[**Example 1**] Setting REVERB MACRO to ROOM 3
According to the "Parameter Address Map (p.247)," the REVERB MACRO Address is 40 01 30H, and ROOM 3 is a value of 02H. Thus:

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

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

Next, we calculate the checksum.
40H+01H+30H+02H = 64+1+48+2 = 115 (sum)
115 (sum) ÷ 128 = 0 (quotient) ... 115 (remainder)
checksum = 128 - 115 (remainder) = 13 = 0DH

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

[**Example 2**] Setting REVERB LEVEL to 12

According to the "Parameter Address Map (p.248)," the REVERB LEVEL Address is 40 01 33H, and the parameter value is 0CH. Thus,

F0	41	10	42	12	40 01 33	0C	??	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 + 33H + 0CH=64 + 1 + 51 + 12=128 (sum)
128 (sum) ÷ 128 = 0 (quotient) ... 0 (remainder)
checksum = 128 - 0 (remainder) = 128 = 80H

In this case, however, the checksum value should be 00H, not 80H. You should use 00H if the remainder is 0.
This means that F0 41 10 42 12 40 01 33 0C 00 F7 is the message we transmit.

■ About the 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 at A4	Cents	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	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**] Setting 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 the VA-3, the default settings for the Scale Tune feature produce equal temperament.

❍ Just Temperament (Tonic of C)
The principal triads resound much more beautifully than with equal temperament, but this benefit can only be obtained in one key. If transposed, the chords tend to become ambiguous. The example given involves settings for a key in which C is the keynote.

❍ Arabic 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 Arabic Scale.

Example Settings

Note name	Equal Temperament	Just Temperament (Keytone C)	Arabic 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 18 to convert these values to hexadecimal, and transmit them as Exclusive data. For example, to set the tune (C-B) of the Part1 Arabic Scale, send the following data:

F0 41 10 42 12 40 11 40 3A 6D 3E 34 0D 38 6B 3C 6F 40 36 0F 76 F70

MIDI Implementation Chart

[V-Arranger Keyboard]   Date: March 2001

Model: VA-3   Version: 1.00

	Function...	Transmitted	Recognized	Remarks
Basic Channel	Default Changed	1~16 1~16, Off	1~16 1~16, Off	32 Parts 4 Logical Parts
Mode	Default Message Altered	Mode 3 Mode 3, 4 (M=1) *****	Mode 3 Mode 3, 4 (M=1)	*2
Note Number	 True Voice	0~127 *1 *****	0~127 *1 0~127	
Velocity	Note ON Note OFF	O *1 X	O *1 X	
After Touch	Key's Ch's	X X	O *1 O *1	
Pitch Bend		O *1	O *1	
Control Change	0,32 1 5 6, 38 7 10 11 64 65 66 67 84 91 93 98, 99 100, 101	O *1 O *1 O O O *1 O *1 O *1 O *1 O X *1 X *1 O O *1 O *1 O *1 O *1	O *1 O *1 O *1 O *1 O *1 O *1 O *1 O *1 O *1 O *1 O *1 O *1 O (Reverb) *1 O (Chorus) *1 O *1 O *1	Bank Select Modulation Portamento Time Data Entry Volume Panpot Expression Hold 1 Portamento Sostenuto Soft Portamento Control Effect 1 Depth Effect 3 Depth NRPN LSB, MSB RPN LSB, MSB
Program Change	 True #	O *1 *****	O *1 0~127	Program Number 1~128
System Exclusive		O *1	O *1	
System Common	Song Position Pointer Song Sel Tune	X *1 X X	X *1 X X	
System Real Time	Clock Commands	O *1 O *1	O *1 O *1	
Aux Messages	All Sounds Off Reset All Controllers Local On/Off All Notes Off Active Sense Reset	X X O *1 X O X	O (120, 126, 127) O (121) O O (123-125) O X	
Notes		*1 O X is selectable *2 Recognized as M=1 even if M≠1		

Mode 1: OMNI ON, POLY   Mode 2: OMNI ON, MONO   O: Yes
Mode 3: OMNI OFF, POLY   Mode 4: OMNI OFF, MONO   X: No