Synthesizer Keyboard

Model: V-Synth GT

MIDI Implementation

Date: April 1, 2007

Version: 1.00

1. Receive data (Sound Source Section)

■ Channel Voice Messages

* Not received when the Receive Switch parameter (SYSTEM Common MIDI) is OFF.

● 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)

● 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)

● Polyphonic Key Pressure

Status	2nd byte	3rd byte
AnH	kkH	vvH

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

● Control Change

* If the corresponding Controller number is selected for the Tone Control Source 1, 2, 3, 4, 5, 6, 7 or 8 parameter (Tone Edit Com Matrix Ctrl), the corresponding effect will occur.

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

* Not received when the Receive Bank Select (SYSTEM Common MIDI) is OFF.
* The Patches corresponding to each Bank Select are as follows.

BANK SELECT MSB	LSB	PROGRAM NUMBER	PATCH NUMBER
087	000	001 - 128	001 - 128
	001	001 - 128	129 - 256
	002	001 - 128	257 - 384
	003	001 - 128	385 - 512

❍ 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)

❍ 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)

❍ Panpot (Controller number 10)

Status	2nd byte	3rd byte
BnH	0AH	vvH

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

❍ 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)

❍ Hold 1 (Controller number 64)

Status	2nd byte	3rd byte
BnH	40H	vvH

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

❍ 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

❍ 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

❍ 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)

❍ 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)

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

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

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

<<< RPN >>>
Control Changes include RPN (Registered Parameter Numbers), which are extended.
When using RPNs, first RPN (Controller numbers 100 and 101; they can be sent in any order) should be sent in order to select the parameter, then Data Entry (Controller numbers 6 and 38) should be sent to set the value. Once RPN messages are received, Data Entry messages that is received at the same MIDI channel after that are recognized as changing toward the value of the RPN messages. In order not to make any mistakes, transmitting RPN Null is recommended after setting parameters you need.

This device receives the following RPNs.

RPN MSB, LSB	Data entry MSB, LSB	Notes
00H, 00H	mmH, llH	Pitch Bend Sensitivity mm: 00H - 18H (0 - 24 semitones) ll: ignored (processed as 00H) Up to 2 octave can be specified in semitone steps.
00H, 01H	mmH, llH	Channel Fine Tuning mm, ll: 20 00H - 40 00H - 60 00H (-4096 x 100 / 8192 - 0 - +4096 x 100 / 8192 cent)
00H, 02H	mmH, llH	Channel Coarse Tuning mm: 10H - 40H - 70H (-48 - 0 - +48 semitones) ll: ignored (processed as 00H)
7FH, 7FH	–, –	RPN null RPN and NRPN will be set as "unspecified." Once this setting has been made, subsequent Parameter values that were previously set will not change. mm, 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 the Receive Program Change parameter (SYSTEM Common MIDI) is OFF.

● Channel Pressure

Status	2nd byte
DnH	vvH

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

● 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)

■ Channel Mode Messages

* Not received in when the Receive Switch parameter (SYSTEM Common MIDI) is OFF.

● All Sounds Off (Controller number 120)

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

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

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

● Reset All Controllers (Controller number 121)

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

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

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

Controller	Reset value
Pitch Bend Change	+/-0 (center)
Polyphonic Key Pressure	0 (off)
Channel Pressure	0 (off)
Modulation	0 (off)
Breath Type MSB	0 (min)
Breath Type LSB	0 (min)
Expression	127 (max) However the controller will be at minimum.
Hold 1	0 (off)
Sostenuto	0 (off)
Soft	0 (off)
Hold 2	0 (off)
General Purpose Controller 1 MSB	0 (min)
General Purpose Controller 2 MSB	0 (min)
General Purpose Controller 3 MSB	0 (min)
General Purpose Controller 4 MSB	0 (min)
General Purpose Controller 1 LSB	0 (min)
General Purpose Controller 2 LSB	0 (min)
General Purpose Controller 3 LSB	0 (min)
General Purpose Controller 4 LSB	0 (min)
General Purpose Controller 5	0 (min)
General Purpose Controller 6	0 (min)
General Purpose Controller 7	0 (min)
General Purpose Controller 8	0 (min)
RPN	unset; previously set data will not change

● All Notes Off (Controller number 123)

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

n = MIDI channel number: 0H - FH (ch.1 - 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 Notes Off is received.

● POLY (Controller number 127)

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

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

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

■ System Realtime Message

● Active Sensing

Status
FEH

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

■ System Exclusive Message

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

F0H: System Exclusive Message status
ii = ID number: an ID number (manufacturer ID) to indicate the manufacturer whose Exclusive message this is. Roland's manufacturer ID is 41H.
ID numbers 7EH and 7FH are extensions of the MIDI standard; Universal Non-realtime Messages (7EH) and Universal Realtime Messages (7FH).
dd,...,ee = data: 00H - 7FH (0 - 127)
F7H: EOX (End Of Exclusive)

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

● Universal Non-realtime System Exclusive Messages

❍ Identity Request Message

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

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

* When this message is received, Identity Reply message (p. 6) will be transmitted.

● 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)
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.
* The Master Level parameter (SYSTEM Common Master) will change.

❍ Master Fine Tuning

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

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

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

* The Master Tune parameter (SYSTEM Common Master) will change.

❍ Master Coarse Tuning

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

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

llH: ignored (processed as 00H)
mmH: 28H - 40H - 58H (-24 - 0 - +24 [semitones])

* The Master Key Shift parameter (SYSTEM Common Master) will change.

● Global Parameter Control

❍ 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 byte 1 bits 0 to 1 = channel 15 to 16 bit 2 to 6 = Undefined
ggH	Channel byte 2 bits 0 to 6 = channel 8 to 14
hhH	Channel byte 3 bits 0 to 6 = channel 1 to 7
ssH	12 byte tuning offset of 12 semitones from C to B 00H = -64 [cents] 40H = 0 [cents] (equal temperament) 7FH = +63 [cents]
F7H	EOX (End Of Exclusive)

● Data Transmission

This instrument can use exclusive messages to exchange many varieties of internal settings with other devices.
The model ID of the exclusive messages used by this instrument is 00H 00H 21H.

❍ Data Request 1(RQ1)

This message requests the other device to transmit data. The address and size indicate the type and amount of data that is requested.
When a Data Request message is received, if the device is in a state in which it is able to transmit data, and if the address and size are appropriate, the requested data is transmitted as a Data Set 1 (DT1) message. If the conditions are not met, nothing is transmitted.

Status	data byte	status
F0H	41H, dev, 00H, 00H, 21H, 11H, aaH, bbH, ccH, ddH, ssH, ttH, uuH, vvH, sum	F7H

Byte	Remarks
F0H	Exclusive status
41H	ID number (Roland)
dev	device ID (dev: 10H - 1FH, 7FH)
00H	model ID #1 (V-Synth GT)
00H	model ID #2 (V-Synth GT)
21H	model ID #3 (V-Synth GT)
11H	command ID (RQ1)
aaH	address MSB
bbH	address
ccH	address
ddH	address LSB
ssH	size MSB
ttH	size
uuH	size
vvH	size LSB
sum	checksum
F7H	EOX (End Of Exclusive)

* The size of data that can be transmitted at one time is fixed for each type of data. And data requests must be made with a fixed starting address and size. Refer to the address and size given in “Parameter Address Map” (p. 7).
* Regarding the checksum, please refer to p. 20.
* Not received when the Receive Exclusive parameter (SYSTEM Common MIDI) is OFF.

❍ Data set 1(DT1)

Status	Data byte	Status
F0H	41H, dev, 00H, 00H, 21H, 12H, aaH, bbH, ccH, ddH, eeH, ... ffH, sum	F7H

Byte	Explanation
F0H	Exclusive status
41H	ID number (Roland)
dev	Device ID (dev: 00H - 1FH, 7FH)
00H	Model ID #1 (V-Synth GT)
00H	Model ID #2 (V-Synth GT)
21H	Model ID #3 (V-Synth GT)
12H	Command ID (DT1)
aaH	Address MSB: upper byte of the starting address of the data to be sent
bbH	Address: upper middle byte of the starting address of the data to be sent
ccH	Address: lower middle byte of the starting address of the data to be sent
ddH	Address LSB: lower byte of the starting address of the data to be sent.
eeH	Data: the actual data to be sent. Multiple bytes of data are transmitted in order starting from the address.
:	:
ffH	Data
sum	Checksum
F7H	EOX (End Of Exclusive)

* The amount of data that can be transmitted at one time depends on the type of data, and data will be transmitted from the specified starting address and size. Refer to the address and size given in “Parameter Address Map” (p. 7).
* Data larger than 256 bytes will be divided into packets of 256 bytes or less, and each packet will be sent at an interval of about 20 ms.
* Regarding the checksum, please refer to p. 20.
* Not received when the Receive Exclusive parameter (SYSTEM Common MIDI) is OFF.

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: 10H - 1FH, 7FH)
42H	Model ID (GS)
12H	Command ID (DT1)
aaH	Address MSB: upper byte of the starting address of the transmitted data
bbH	Address: middle byte of the starting address of the transmitted data
ccH	Address LSB: lower byte of the starting address of the transmitted data
ddH	Data: the actual data to be transmitted. Multiple bytes of data are transmitted starting from the address.
:	:
eeH	Data
sum	Checksum
F7H	EOX (End Of Exclusive)

* The amount of data that can be transmitted at one time depends on the type of data, and data will be transmitted from the specified starting address and size. Refer to the address and size given in “Parameter Address Map” (p. 7).
* Data larger than 256 bytes will be divided into packets of 256 bytes or less, and each packet will be sent at an interval of about 20 ms.
* Regarding the checksum, please refer to p. 20.
* Not received when the Receive Exclusive parameter (SYSTEM Common MIDI) is OFF.

2. Data Transmission (Sound Source Section)

■ Channel Voice Messages

● Note off

Status	2nd byte	3rd byte
8nH	kkH	vvH

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

● Note on

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

* By selecting a controller number that corresponds to the setting of parameters of controllers (Time Trip Pad, D-Beam, Knob, and so on), the V-Synth GT can transmit any control change message.

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

* These messages are transmitted when Patch is selected. But not transmitted when Transmit Program Change or Transmit Bank Select parameter (SYSTEM Common MIDI) is OFF.
* Although with the V-Synth GT you can select the Bank Select messages to be transmitted, be sure to refer to the Program Change Map on p. 1 for the Bank Select messages transmitted when the V-Synth GT is select a Patch.

❍ 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)

❍ Breath type MSB (Controller number 2)

Status	2nd byte	3rd byte
BnH	02H	vvH

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

❍ Foot type MSB (Controller number 4)

Status	2nd byte	3rd byte
BnH	04H	vvH

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

❍ 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)

❍ 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)

❍ Effect Controller 1 MSB (Controller number 12)

Status	2nd byte	3rd byte
BnH	0CH	vvH

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

❍ Effect Controller 2 MSB (Controller number 13)

Status	2nd byte	3rd byte
BnH	0DH	vvH

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

❍ General Purpose Controller 1 MSB (Controller number 16)

Status	2nd byte	3rd byte
BnH	10H	vvH

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

❍ General Purpose Controller 2 MSB (Controller number 17)

Status	2nd byte	3rd byte
BnH	11H	vvH

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

❍ General Purpose Controller 3 MSB (Controller number 18)

Status	2nd byte	3rd byte
BnH	12H	vvH

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

❍ General Purpose Controller 4 MSB (Controller number 19)

Status	2nd byte	3rd byte
BnH	13H	vvH

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

❍ Breath type LSB (Controller number 34)

Status	2nd byte	3rd byte
BnH	22H	vvH

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

❍ General Purpose Controller 1 LSB (Controller number 48)

Status	2nd byte	3rd byte
BnH	30H	vvH

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

❍ General Purpose Controller 2 LSB (Controller number 49)

Status	2nd byte	3rd byte
BnH	31H	vvH

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

❍ General Purpose Controller 3 LSB (Controller number 50)

Status	2nd byte	3rd byte
BnH	32H	vvH

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

❍ General Purpose Controller 4 LSB (Controller number 51)

Status	2nd byte	3rd byte
BnH	33H	vvH

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

❍ Hold 1 (Controller number 64)

Status	2nd byte	3rd byte
BnH	40H	vvH

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

❍ General Purpose Controller 5 (Controller number 80)

Status	2nd byte	3rd byte
BnH	50H	vvH

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

❍ **General Purpose Controller 6 (Controller number 81)**

Status	2nd byte	3rd byte
BnH	51H	vvH

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

❍ **General Purpose Controller 7 (Controller number 82)**

Status	2nd byte	3rd byte
BnH	52H	vvH

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

❍ **General Purpose Controller 8 (Controller number 83)**

Status	2nd byte	3rd byte
BnH	53H	vvH

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

● 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)

* These messages are transmitted when Patch is selected. But not transmitted when Transmit Program Change parameter (SYSTEM Common MIDI) is OFF.

● Channel Pressure

Status	2nd byte
DnH	vvH

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

● 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)

■ System Realtime Messages

● Active Sensing

Status
FEH

* This message is transmitted at intervals of approximately 250 msec.
* This message is not sent when Transmit Active Sensing parameter (SYSTEM Common MIDI) is OFF.

■ System Exclusive Messages

Universal Non-realtime System Exclusive Message and Data Set 1 (DT1) are the only System Exclusive messages transmitted by the V-Synth GT.

● Universal Non-realtime System Exclusive Message

❍ **Identity Reply Message**

Receiving Identity Request Message, the V-Synth GT send this message.

Status	Data byte	Status
F0H	7EH, dev, 06H, 02H, 41H, 21H, 02H, 00H, 00H, 00H, 01H, 00H, 00H	F7H

Byte	Explanation
F0H	Exclusive status
7EH	ID number (Universal Non-realtime Message)
dev	Device ID (dev: 10H - 1FH)
06H	Sub ID#1 (General Information)
02H	Sub ID#2 (Identity Reply)
41H	ID number (Roland)
21H 02H	Device family code
00H 00H	Device family number code
00H 01H 00H 00H	Software revision level
F7H	EOX (End of Exclusive)

● Data Transmission

❍ **Data set 1DT1 (12H)**

Status	Data byte	Status
F0H	41H, dev, 00H, 00H, 21H, 12H, aaH, bbH, ccH, ddH, eeH, ... ffH, sum	F7H

Byte	Explanation
F0H	Exclusive status
41H	ID number (Roland)
dev	Device ID (dev: 00H - 1FH, 7FH)
00H	Model ID #1 (V-Synth GT)
00H	Model ID #2 (V-Synth GT)
21H	Model ID #3 (V-Synth GT)
12H	Command ID (DT1)
aaH	Address MSB: upper byte of the starting address of the data to be sent
bbH	Address: upper middle byte of the starting address of the data to be sent
ccH	Address: lower middle byte of the starting address of the data to be sent
ddH	Address LSB: lower byte of the starting address of the data to be sent.
eeH	Data: the actual data to be sent. Multiple bytes of data are transmitted in order starting from the address.
:	:
ffH	Data
sum	Checksum
F7H	EOX (End Of Exclusive)

* The amount of data that can be transmitted at one time depends on the type of data, and data will be transmitted from the specified starting address and size. Refer to the address and size given in "Parameter Address Map" (p. 7).
* Data larger than 256 bytes will be divided into packets of 256 bytes or less, and each packet will be sent at an interval of about 20 ms.

3. Parameter Address Map

* Transmission of "#" marked address is divided to some packets. For example, ABH in hexadecimal notation will be divided to 0AH and 0BH, and is sent/received in this order.

● V-Synth GT (ModelID = 00H 00H 21H)

Start Address	Description
03 00 00 00	Setup
04 00 00 00	System
10 00 00 00	Temporary Tone (1:UPPER)
10 01 00 00	Temporary Tone (2:LOWER)
20 00 00 00	User Tone (001)
20 01 00 00	User Tone (002)
:	
26 7F 00 00	User Tone (896)
30 00 00 00	Temporary Patch
40 00 00 00	User Patch (001)
40 01 00 00	User Patch (002)
:	
43 7F 00 00	User Patch (512)

❍ System

Offset Address	Description
00 00 00	System Common
00 40 00	System Controller

❍ Tone

Offset Address	Description
00 00 00	Tone Common
00 01 00	Tone Common 2
00 02 00	Tone T-FX
00 0A 00	Tone Step Modulator
00 0B 00	Tone AP-Synthesis
00 0D 00	Tone Vocal Designer
00 10 00	Tone Oscillator (Zone 1)
00 11 00	Tone Oscillator (Zone 2)
:	
00 1F 00	Tone Oscillator (Zone 16)
00 20 00	Tone Envelope (Zone 1)
00 22 00	Tone Envelope (Zone 2)
:	
00 3E 00	Tone Envelope (Zone 16)
00 40 00	Tone LFO (Zone 1)
00 41 00	Tone LFO (Zone 2)
:	
00 4F 00	Tone LFO (Zone 16)
00 50 00	Tone COSM1 (Zone 1)
00 51 00	Tone COSM1 (Zone 2)
:	
00 5F 00	Tone COSM1 (Zone 16)
00 60 00	Tone COSM2 (Zone 1)
00 61 00	Tone COSM2 (Zone 2)
:	
00 6F 00	Tone COSM2 (Zone 16)

❍ Patch

Offset Address	Description
00 00 00	Patch Common
00 02 00	Patch Chorus
00 04 00	Patch Reverb
00 06 00	Patch Controller
00 08 00	Patch Tone (1:UPPER)
00 0A 00	Patch Tone (2:LOWER)
00 0C 00	Patch Arpeggio (Note 1)
00 0D 00	Patch Arpeggio (Note 2)
:	
00 1B 00	Patch Arpeggio (Note 16)

❍ Setup

Offset Address		Description	
00 00	0aaa aaaa	Patch Bank Select MSB (CC# 0)	(0 - 127)
00 01	0aaa aaaa	Patch Bank Select LSB (CC# 32)	(0 - 127)
00 02	0aaa aaaa	Patch Program Number (PC)	(0 - 127)
00 03	0000 000a	Transpose Switch	(0 - 1) OFF, ON
00 04	0000 aaaa	Transpose Value	(59 - 70) -5 - +6
00 05	0000 0aaa	Octave Shift	(61 - 67) -3 - +3
00 06	0000 000a	(reserved)	(0 - 1)
00 07	0000 aaaa	Sampling Template	(1 - 8)
00 08	0000 0aaa	Patch Palette Bank	(0 - 7)
00 09	0000 0aaa	Patch Palette Number	(0 - 7)
00 0A	0aaa aaaa	(reserved)	(0 - 127)
00 0B	0aaa aaaa	(reserved)	(0 - 127)
00 0C	0aaa aaaa	(reserved)	(0 - 127)
00 0D	0aaa aaaa	(reserved)	(0 - 127)
00 00 00 0E	Total Size		

❍ System Common

Offset Address		Description	
# 00 00	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Master Tune	(24 - 2024) -100.0 - +100.0 [cent]
00 04	00aa aaaa	Master Key Shift	(40 - 88) -24 - +24
00 05	0aaa aaaa	Master Level	(0 - 127)
00 06	0000 000a	Patch Remain	(0 - 1) OFF, ON
00 07	0000 000a	Mix/Parallel	(0 - 1) MIX, PARALLEL
00 08	0000 00aa	Clock Source	(0 - 2) INT, MIDI, USB
00 09	0000 000a	Clock Out	(0 - 1) OFF, ON
00 0A	0000 000a	Receive Program Change	(0 - 1) OFF, ON
00 0B	0000 000a	Receive Bank Select	(0 - 1) OFF, ON
00 0C	0000 000a	Patch Receive Switch	(0 - 1) OFF, ON
00 0D	0000 aaaa	Patch Receive Channel	(0 - 15) 1 - 16
00 0E	000a aaaa	EQ Low Freq	(0 - 19) 50 - 4000 [Hz]
00 0F	000a aaaa	EQ Low Gain	(0 - 30) -15 - +15 [dB]
00 10	000a aaaa	EQ Mid 1 Freq	(0 - 26) 50 - 20000 [Hz]
00 11	0000 0aaa	EQ Mid 1 Q	(0 - 5) 0.5 - 8.0
00 12	000a aaaa	EQ Mid 1 Gain	(0 - 30) -15 - +15 [dB]
00 13	000a aaaa	EQ Mid 2 Freq	(0 - 26) 50 - 20000 [Hz]
00 14	0000 0aaa	EQ Mid 2 Q	(0 - 5) 0.5 - 8.0
00 15	000a aaaa	EQ Mid 2 Gain	(0 - 30) -15 - +15 [dB]
00 16	0000 aaaa	EQ Hi Freq	(0 - 8) 2000 - 20000 [Hz]
00 17	000a aaaa	EQ Hi Gain	(0 - 30) -15 - +15 [dB]
00 18	000a aaaa	EQ Total Gain	(0 - 30) -15 - +15 [dB]
00 19	0000 000a	EQ Switch	(0 - 1) OFF, ON
00 1A	0aaa aaaa	(reserved)	(0 - 127)
00 1B	0aaa aaaa	(reserved)	(0 - 127)
00 1C	0aaa aaaa	(reserved)	(0 - 127)
00 1D	0aaa aaaa	(reserved)	(0 - 127)
00 00 00 1E	Total Size		

❍ System Controller

Offset Address		Description	
00 00	0000 000a	Transmit Program Change	(0 - 1) OFF, ON
00 01	0000 000a	Transmit Bank Select	(0 - 1) OFF, ON
00 02	0aaa aaaa	Keyboard Velocity	(0 - 127) REAL, 1 - 127
00 03	0000 00aa	Keyboard Sens	(0 - 2) LIGHT, MEDIUM, HEAVY
00 04	000a aaaa	Aftertouch Sens	(0 - 20) 0 - 200
00 05	000a aaaa	Patch Transmit Channel	(0 - 17) 1 - 16, RX-CH, OFF
00 06	000a aaaa	Beam Sens L	(0 - 20) 0 - 200
00 07	000a aaaa	Beam Sens R	(0 - 20) 0 - 200
00 08	0aaa aaaa	Beam 1 Assign L	(0 - 95) OFF, CC01 - CC31, CC33 - CC95
00 09	0aaa aaaa	Beam 1 Assign R	(0 - 95) OFF, CC01 - CC31, CC33 - CC95
00 0A	0aaa aaaa	Beam 2 Assign L	(0 - 95) OFF, CC01 - CC31, CC33 - CC95
00 0B	0aaa aaaa	Beam 2 Assign R	(0 - 95) OFF, CC01 - CC31, CC33 - CC95
00 0C	0aaa aaaa	Beam 3 Assign L	(0 - 95) OFF, CC01 - CC31, CC33 - CC95
00 0D	0aaa aaaa	Beam 3 Assign R	(0 - 95) OFF, CC01 - CC31, CC33 - CC95
00 0E	0aaa aaaa	Beam 4 Assign L	(0 - 95) OFF, CC01 - CC31, CC33 - CC95
00 0F	0aaa aaaa	Beam 4 Assign R	(0 - 95) OFF, CC01 - CC31, CC33 - CC95
00 10	0aaa aaaa	Pad Assign X	(0 - 95) OFF, CC01 - CC31, CC33 - CC95
00 11	0aaa aaaa	Pad Assign Y	(0 - 95) OFF, CC01 - CC31, CC33 - CC95
00 12	0aaa aaaa	Time Trip Assign X	(0 - 95) OFF, CC01 - CC31, CC33 - CC95
00 13	0aaa aaaa	Time Trip Assign Y	(0 - 95) OFF, CC01 - CC31, CC33 - CC95
00 14	0aaa aaaa	Knob 1 Assign	(0 - 95) OFF, CC01 - CC31, CC33 - CC95
00 15	0aaa aaaa	Knob 2 Assign	(0 - 95) OFF, CC01 - CC31, CC33 - CC95
00 16	0000 0aaa	Hold Pedal Polarity	(0 - 1) STANDARD, REVERSE
00 17	0aaa aaaa	Pedal 1 Assign	(0 - 100) OFF, CC01 - CC31, CC33 - CC95, BEND-UP, BEND-DOWN, AFT, VALUE INC, VALUE DEC
00 18	0000 0aaa	Pedal 1 Polarity	(0 - 1) STANDARD, REVERSE
00 19	0aaa aaaa	Pedal 2 Assign	(0 - 100) OFF, CC01 - CC31, CC33 - CC95, BEND-UP, BEND-DOWN, AFT, VALUE INC, VALUE DEC
00 1A	0000 0aaa	Pedal 2 Polarity	(0 - 1) STANDARD, REVERSE
00 1B	0aaa aaaa	S1 Assign	(0 - 95)

			OFF, CC01 - CC31, CC33 - CC95
	00 1C	0aaa aaaa	S2 Assign (0 - 95)
			OFF, CC01 - CC31, CC33 - CC95
00 00 00 1D	Total Size		

❍ Tone Common

	Offset Address		Description	
	00 00	0aaa aaaa	Tone Name 1	(32 - 127) 32 - 127 [ASCII]
	00 01	0aaa aaaa	Tone Name 2	(32 - 127) 32 - 127 [ASCII]
	00 02	0aaa aaaa	Tone Name 3	(32 - 127) 32 - 127 [ASCII]
	00 03	0aaa aaaa	Tone Name 4	(32 - 127) 32 - 127 [ASCII]
	00 04	0aaa aaaa	Tone Name 5	(32 - 127) 32 - 127 [ASCII]
	00 05	0aaa aaaa	Tone Name 6	(32 - 127) 32 - 127 [ASCII]
	00 06	0aaa aaaa	Tone Name 7	(32 - 127) 32 - 127 [ASCII]
	00 07	0aaa aaaa	Tone Name 8	(32 - 127) 32 - 127 [ASCII]
	00 08	0aaa aaaa	Tone Name 9	(32 - 127) 32 - 127 [ASCII]
	00 09	0aaa aaaa	Tone Name 10	(32 - 127) 32 - 127 [ASCII]
	00 0A	0aaa aaaa	Tone Name 11	(32 - 127) 32 - 127 [ASCII]
	00 0B	0aaa aaaa	Tone Name 12	(32 - 127) 32 - 127 [ASCII]
	00 0C	0aaa aaaa	Tone Category	(0 - 15)
	00 0D	0aaa aaaa	Tone Coarse Tune	(16 - 112) -48 - +48
	00 0E	0aaa aaaa	Tone Fine Tune	(14 - 114) -50 - +50
	00 0F	0000 0aaa	Octave Shift	(61 - 67) -3 - +3
	00 10	0000 000a	Mono/Poly	(0 - 1) MONO, POLY
	00 11	0000 000a	Legato Switch	(0 - 1) OFF, ON
	00 12	0000 000a	Portamento Switch	(0 - 1) OFF, ON
	00 13	0000 000a	Portamento Mode	(0 - 1) NORMAL, LEGATO
	00 14	0000 000a	Portamento Type	(0 - 1) RATE, TIME
	00 15	0aaa aaaa	Portamento Time	(0 - 127)
	00 16	0aaa aaaa	Portamento Time Velocity Sens	(1 - 127) -63 - +63
#	00 17	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Tone Tempo (not used)	(200 - 2500) 20.0 - 250.0
	00 1B	00aa aaaa	Pitch Bend Range Up	(0 - 48)
	00 1C	00aa aaaa	Pitch Bend Range Down	(0 - 48)
	00 1D	0000 000a	T-FX Switch	(0 - 1) BYPASS, ON
	00 1E	0000 000a	Chorus Switch (not used)	(0 - 1) OFF, ON
	00 1F	0000 000a	Reverb Switch (not used)	(0 - 1) OFF, ON
	00 20	0000 aaaa	Current Zone	(0 - 15) ZONE1 - ZONE16
	00 21	0aaa aaaa	Zone 1 Range Upper	(0 - 127) C-1 - G9
	00 22	0aaa aaaa	Zone 2 Range Upper	(0 - 127) C-1 - G9
	00 23	0aaa aaaa	Zone 3 Range Upper	(0 - 127) C-1 - G9
	00 24	0aaa aaaa	Zone 4 Range Upper	(0 - 127) C-1 - G9
	00 25	0aaa aaaa	Zone 5 Range Upper	(0 - 127) C-1 - G9
	00 26	0aaa aaaa	Zone 6 Range Upper	(0 - 127) C-1 - G9
	00 27	0aaa aaaa	Zone 7 Range Upper	(0 - 127) C-1 - G9
	00 28	0aaa aaaa	Zone 8 Range Upper	(0 - 127) C-1 - G9
	00 29	0aaa aaaa	Zone 9 Range Upper	(0 - 127) C-1 - G9
	00 2A	0aaa aaaa	Zone 10 Range Upper	(0 - 127) C-1 - G9
	00 2B	0aaa aaaa	Zone 11 Range Upper	(0 - 127) C-1 - G9
	00 2C	0aaa aaaa	Zone 12 Range Upper	(0 - 127) C-1 - G9
	00 2D	0aaa aaaa	Zone 13 Range Upper	(0 - 127) C-1 - G9
	00 2E	0aaa aaaa	Zone 14 Range Upper	(0 - 127) C-1 - G9
	00 2F	0aaa aaaa	Zone 15 Range Upper	(0 - 127) C-1 - G9
	00 30	0aaa aaaa	Zone 16 Range Upper	(0 - 127) C-1 - G9
	00 31	0000 000a	Scale Tune Switch	(0 - 1) OFF, ON
#	00 32	0000 aaaa 0000 bbbb	Tone Scale Tune for C	(28 - 228) -100 - +100
#	00 34	0000 aaaa 0000 bbbb	Tone Scale Tune for C#	(28 - 228) -100 - +100
#	00 36	0000 aaaa 0000 bbbb	Tone Scale Tune for D	(28 - 228) -100 - +100
#	00 38	0000 aaaa 0000 bbbb	Tone Scale Tune for D#	(28 - 228) -100 - +100
#	00 3A	0000 aaaa 0000 bbbb	Tone Scale Tune for E	(28 - 228) -100 - +100
#	00 3C	0000 aaaa 0000 bbbb	Tone Scale Tune for F	(28 - 228) -100 - +100
#	00 3E	0000 aaaa 0000 bbbb	Tone Scale Tune for F#	(28 - 228) -100 - +100
#	00 40	0000 aaaa 0000 bbbb	Tone Scale Tune for G	(28 - 228) -100 - +100
#	00 42	0000 aaaa 0000 bbbb	Tone Scale Tune for G#	(28 - 228) -100 - +100
#	00 44	0000 aaaa 0000 bbbb	Tone Scale Tune for A	(28 - 228) -100 - +100
#	00 46	0000 aaaa 0000 bbbb	Tone Scale Tune for A#	(28 - 228) -100 - +100
#	00 48	0000 aaaa 0000 bbbb	Tone Scale Tune for B	(28 - 228) -100 - +100
	00 4A	0aaa aaaa	Matrix Control 1 Source	(0 - 108) OFF, CC01 - CC31, OFF, CC33 - CC95, BEND, AFT, +PAD-X, +PAD-Y, PAD-X, PAD-Y, TRIP-R, BEAM-L, BEAM-R, KNOB1, KNOB2, VELO, KEYF
	00 4B	0aaa aaaa	Matrix Control 1 Dest 1	(0 - 78) OFF, OSC1-PITCH, OSC1-TIME/PW, OSC1-FORMA/FAT, OSC1-LVL, OSC1-PENV-ATK, OSC1-PENV-DCY, OSC1-PENV-REL, OSC1-TENV-ATK, OSC1-TENV-DCY, OSC1-TENV-REL, OSC1-FENV-ATK, OSC1-FENV-DCY, OSC1-FENV-REL, OSC1-AENV-ATK, OSC1-AENV-DCY, OSC1-AENV-REL, OSC1-LFO-RATE, OSC1-LFO-PCH, OSC1-LFO-TM/PW, OSC1-LFO-FR/FT, OSC1-LFO-LVL, OSC2-PITCH, OSC2-TIME/PW, OSC2-FORMA/FAT, OSC2-LVL, OSC2-PENV-ATK, OSC2-PENV-DCY, OSC2-PENV-REL, OSC2-TENV-ATK, OSC2-TENV-DCY, OSC2-TENV-REL, OSC2-FENV-ATK, OSC2-FENV-DCY, OSC2-FENV-REL, OSC2-AENV-ATK, OSC2-AENV-DCY, OSC2-AENV-REL, OSC2-LFO-RATE, OSC2-LFO-PCH, OSC2-LFO-TM/PW, OSC2-LFO-FR/FT, OSC2-LFO-LVL, CSM1-PRM1, CSM1-PRM2, CSM1-ENV1-ATK, CSM1-ENV1-DCY, CSM1-ENV1-REL, CSM1-ENV2-ATK, CSM1-ENV2-DCY, CSM1-ENV2-REL, CSM1-LFO-RATE, CSM1-LFO-PRM1, CSM1-LFO-PRM2, CSM2-PRM1, CSM2-PRM2, CSM2-ENV1-ATK, CSM2-ENV1-DCY, CSM2-ENV1-REL, CSM2-ENV2-ATK, CSM2-ENV2-DCY, CSM2-ENV2-REL, CSM2-LFO-RATE, CSM2-LFO-PRM1, CSM2-LFO-PRM2, TVA-LVL, TVA-ENV-ATK, TVA-ENV-DCY, TVA-ENV-REL, TVA-LFO-RATE, TVA-LFO-LVL, TVA-LFO-PAN, T-FX-SEND, CHO-SEND, REV-SEND, T-FX-PRM1, T-FX-PRM2, T-FX-PRM3, TVA-PAN
	00 4C	0aaa aaaa	Matrix Control 1 Sens 1	(1 - 127) -63 - +63
	00 4D	0aaa aaaa	Matrix Control 1 Dest 2	(0 - 78) OFF, OSC1-PITCH, OSC1-TIME/PW, OSC1-FORMA/FAT, OSC1-LVL, OSC1-PENV-ATK, OSC1-PENV-DCY, OSC1-PENV-REL, OSC1-TENV-ATK, OSC1-TENV-DCY, OSC1-TENV-REL, OSC1-FENV-ATK, OSC1-FENV-DCY, OSC1-FENV-REL, OSC1-AENV-ATK, OSC1-AENV-DCY, OSC1-AENV-REL, OSC1-LFO-RATE, OSC1-LFO-PCH, OSC1-LFO-TM/PW, OSC1-LFO-FR/FT, OSC1-LFO-LVL, OSC2-PITCH, OSC2-TIME/PW, OSC2-FORMA/FAT, OSC2-LVL, OSC2-PENV-ATK, OSC2-PENV-DCY, OSC2-PENV-REL, OSC2-TENV-ATK, OSC2-TENV-DCY, OSC2-TENV-REL, OSC2-FENV-ATK, OSC2-FENV-DCY, OSC2-FENV-REL, OSC2-AENV-ATK, OSC2-AENV-DCY, OSC2-AENV-REL, OSC2-LFO-RATE, OSC2-LFO-PCH, OSC2-LFO-TM/PW, OSC2-LFO-FR/FT, OSC2-LFO-LVL, CSM1-PRM1, CSM1-PRM2, CSM1-ENV1-ATK, CSM1-ENV1-DCY, CSM1-ENV1-REL, CSM1-ENV2-ATK, CSM1-ENV2-DCY, CSM1-ENV2-REL, CSM1-LFO-RATE, CSM1-LFO-PRM1, CSM1-LFO-PRM2, CSM2-PRM1, CSM2-PRM2, CSM2-ENV1-ATK, CSM2-ENV1-DCY, CSM2-ENV1-REL, CSM2-ENV2-ATK, CSM2-ENV2-DCY, CSM2-ENV2-REL, CSM2-LFO-RATE, CSM2-LFO-PRM1, CSM2-LFO-PRM2, TVA-LVL, TVA-ENV-ATK, TVA-ENV-DCY, TVA-ENV-REL, TVA-LFO-RATE, TVA-LFO-LVL, TVA-LFO-PAN, T-FX-SEND, CHO-SEND, REV-SEND, T-FX-PRM1, T-FX-PRM2, T-FX-PRM3, TVA-PAN
	00 4E	0aaa aaaa	Matrix Control 1 Sens 2	(1 - 127) -63 - +63
	00 4F	0aaa aaaa	Matrix Control 2 Source	(0 - 108) OFF, CC01 - CC31, OFF, CC33 - CC95, BEND, AFT, +PAD-X, +PAD-Y, PAD-X, PAD-Y, TRIP-R, BEAM-L, BEAM-R, KNOB1, KNOB2, VELO, KEYF
	00 50	0aaa aaaa	Matrix Control 2 Dest 1	(0 - 78) OFF, OSC1-PITCH, OSC1-TIME/PW, OSC1-FORMA/FAT, OSC1-LVL, OSC1-PENV-ATK, OSC1-PENV-DCY, OSC1-PENV-REL, OSC1-TENV-ATK, OSC1-TENV-DCY, OSC1-TENV-REL, OSC1-FENV-ATK, OSC1-FENV-DCY, OSC1-FENV-REL, OSC1-AENV-ATK, OSC1-AENV-DCY, OSC1-AENV-REL, OSC1-LFO-RATE, OSC1-LFO-PCH, OSC1-LFO-TM/PW, OSC1-LFO-FR/FT, OSC1-LFO-LVL, OSC2-PITCH, OSC2-TIME/PW, OSC2-FORMA/FAT, OSC2-LVL, OSC2-PENV-ATK, OSC2-PENV-DCY, OSC2-PENV-REL, OSC2-TENV-ATK, OSC2-TENV-DCY, OSC2-TENV-REL, OSC2-FENV-ATK, OSC2-FENV-DCY, OSC2-FENV-REL, OSC2-AENV-ATK, OSC2-AENV-DCY, OSC2-AENV-REL, OSC2-LFO-RATE, OSC2-LFO-PCH, OSC2-LFO-TM/PW, OSC2-LFO-FR/FT, OSC2-LFO-LVL, CSM1-PRM1, CSM1-PRM2, CSM1-ENV1-ATK, CSM1-ENV1-DCY, CSM1-ENV1-REL, CSM1-ENV2-ATK, CSM1-ENV2-DCY, CSM1-ENV2-REL, CSM1-LFO-RATE, CSM1-LFO-PRM1, CSM1-LFO-PRM2, CSM2-PRM1, CSM2-PRM2, CSM2-ENV1-ATK, CSM2-ENV1-DCY, CSM2-ENV1-REL, CSM2-ENV2-ATK, CSM2-ENV2-DCY, CSM2-ENV2-REL, CSM2-LFO-RATE, CSM2-LFO-PRM1, CSM2-LFO-PRM2, TVA-LVL, TVA-ENV-ATK, TVA-ENV-DCY, TVA-ENV-REL, TVA-LFO-RATE, TVA-LFO-LVL, TVA-LFO-PAN, T-FX-SEND, CHO-SEND, REV-SEND, T-FX-PRM1, T-FX-PRM2, T-FX-PRM3, TVA-PAN
	00 51	0aaa aaaa	Matrix Control 2 Sens 1	(1 - 127) -63 - +63
	00 52	0aaa aaaa	Matrix Control 2 Dest 2	(0 - 78) OFF, OSC1-PITCH, OSC1-TIME/PW, OSC1-FORMA/FAT, OSC1-LVL, OSC1-PENV-ATK, OSC1-PENV-DCY, OSC1-PENV-REL, OSC1-TENV-ATK, OSC1-TENV-DCY, OSC1-TENV-REL, OSC1-FENV-ATK, OSC1-FENV-DCY, OSC1-FENV-REL, OSC1-AENV-ATK, OSC1-AENV-DCY, OSC1-AENV-REL, OSC1-LFO-RATE, OSC1-LFO-PCH, OSC1-LFO-TM/PW, OSC1-LFO-FR/FT, OSC1-LFO-LVL, OSC2-PITCH, OSC2-TIME/PW, OSC2-FORMA/FAT, OSC2-LVL, OSC2-PENV-ATK, OSC2-PENV-DCY, OSC2-PENV-REL, OSC2-TENV-ATK, OSC2-TENV-DCY, OSC2-TENV-REL, OSC2-FENV-ATK, OSC2-FENV-DCY, OSC2-FENV-REL, OSC2-AENV-ATK, OSC2-AENV-DCY, OSC2-AENV-REL,

		OSC2-LFO-RATE, OSC2-LFO-PCH, OSC2-LFO-TM/PW, OSC2-LFO-FR/FT, OSC2-LFO-LVL, CSM1-PRM1, CSM1-PRM2, CSM1-ENV1-ATK, CSM1-ENV1-DCY, CSM1-ENV1-REL, CSM1-ENV2-ATK, CSM1-ENV2-DCY, CSM1-ENV2-REL, CSM1-LFO-RATE, CSM1-LFO-PRM1, CSM1-LFO-PRM2, CSM2-PRM1, CSM2-PRM2, CSM2-ENV1-ATK, CSM2-ENV1-DCY, CSM2-ENV1-REL, CSM2-ENV2-ATK, CSM2-ENV2-DCY, CSM2-ENV2-REL, CSM2-LFO-RATE, CSM2-LFO-PRM1, CSM2-LFO-PRM2, TVA-LVL, TVA-ENV-ATK, TVA-ENV-DCY, TVA-ENV-REL, TVA-LFO-RATE, TVA-LFO-LVL, TVA-LFO-PAN, T-FX-SEND, CHO-SEND, REV-SEND, T-FX-PRM1, T-FX-PRM2, T-FX-PRM3, TVA-PAN
00 53	0aaa aaaa	Matrix Control 2 Sens 2 (1 - 127) -63 - +63
00 54	0aaa aaaa	Matrix Control 3 Source (0 - 108) OFF, CC01 - CC31, OFF, CC33 - CC95, BEND, AFT, +PAD-X, +PAD-Y, PAD-X, PAD-Y, TRIP-R, BEAM-L, BEAM-R, KNOB1, KNOB2, VELO, KEYF
00 55	0aaa aaaa	Matrix Control 3 Dest 1 (0 - 78) OFF, OSC1-PITCH, OSC1-TIME/PW, OSC1-FORMA/FAT, OSC1-LVL, OSC1-PENV-ATK, OSC1-PENV-DCY, OSC1-PENV-REL, OSC1-TENV-ATK, OSC1-TENV-DCY, OSC1-TENV-REL, OSC1-FENV-ATK, OSC1-FENV-DCY, OSC1-FENV-REL, OSC1-AENV-ATK, OSC1-AENV-DCY, OSC1-AENV-REL, OSC1-LFO-RATE, OSC1-LFO-PCH, OSC1-LFO-TM/PW, OSC1-LFO-FR/FT, OSC1-LFO-LVL, OSC2-PITCH, OSC2-TIME/PW, OSC2-FORMA/FAT, OSC2-LVL, OSC2-PENV-ATK, OSC2-PENV-DCY, OSC2-PENV-REL, OSC2-TENV-ATK, OSC2-TENV-DCY, OSC2-TENV-REL, OSC2-FENV-ATK, OSC2-FENV-DCY, OSC2-FENV-REL, OSC2-AENV-ATK, OSC2-AENV-DCY, OSC2-AENV-REL, OSC2-LFO-RATE, OSC2-LFO-PCH, OSC2-LFO-TM/PW, OSC2-LFO-FR/FT, OSC2-LFO-LVL, CSM1-PRM1, CSM1-PRM2, CSM1-ENV1-ATK, CSM1-ENV1-DCY, CSM1-ENV1-REL, CSM1-ENV2-ATK, CSM1-ENV2-DCY, CSM1-ENV2-REL, CSM1-LFO-RATE, CSM1-LFO-PRM1, CSM1-LFO-PRM2, CSM2-PRM1, CSM2-PRM2, CSM2-ENV1-ATK, CSM2-ENV1-DCY, CSM2-ENV1-REL, CSM2-ENV2-ATK, CSM2-ENV2-DCY, CSM2-ENV2-REL, CSM2-LFO-RATE, CSM2-LFO-PRM1, CSM2-LFO-PRM2, TVA-LVL, TVA-ENV-ATK, TVA-ENV-DCY, TVA-ENV-REL, TVA-LFO-RATE, TVA-LFO-LVL, TVA-LFO-PAN, T-FX-SEND, CHO-SEND, REV-SEND, T-FX-PRM1, T-FX-PRM2, T-FX-PRM3, TVA-PAN
00 56	0aaa aaaa	Matrix Control 3 Sens 1 (1 - 127) -63 - +63
00 57	0aaa aaaa	Matrix Control 3 Dest 2 (0 - 78) OFF, OSC1-PITCH, OSC1-TIME/PW, OSC1-FORMA/FAT, OSC1-LVL, OSC1-PENV-ATK, OSC1-PENV-DCY, OSC1-PENV-REL, OSC1-TENV-ATK, OSC1-TENV-DCY, OSC1-TENV-REL, OSC1-FENV-ATK, OSC1-FENV-DCY, OSC1-FENV-REL, OSC1-AENV-ATK, OSC1-AENV-DCY, OSC1-AENV-REL, OSC1-LFO-RATE, OSC1-LFO-PCH, OSC1-LFO-TM/PW, OSC1-LFO-FR/FT, OSC1-LFO-LVL, OSC2-PITCH, OSC2-TIME/PW, OSC2-FORMA/FAT, OSC2-LVL, OSC2-PENV-ATK, OSC2-PENV-DCY, OSC2-PENV-REL, OSC2-TENV-ATK, OSC2-TENV-DCY, OSC2-TENV-REL, OSC2-FENV-ATK, OSC2-FENV-DCY, OSC2-FENV-REL, OSC2-AENV-ATK, OSC2-AENV-DCY, OSC2-AENV-REL, OSC2-LFO-RATE, OSC2-LFO-PCH, OSC2-LFO-TM/PW, OSC2-LFO-FR/FT, OSC2-LFO-LVL, CSM1-PRM1, CSM1-PRM2, CSM1-ENV1-ATK, CSM1-ENV1-DCY, CSM1-ENV1-REL, CSM1-ENV2-ATK, CSM1-ENV2-DCY, CSM1-ENV2-REL, CSM1-LFO-RATE, CSM1-LFO-PRM1, CSM1-LFO-PRM2, CSM2-PRM1, CSM2-PRM2, CSM2-ENV1-ATK, CSM2-ENV1-DCY, CSM2-ENV1-REL, CSM2-ENV2-ATK, CSM2-ENV2-DCY, CSM2-ENV2-REL, CSM2-LFO-RATE, CSM2-LFO-PRM1, CSM2-LFO-PRM2, TVA-LVL, TVA-ENV-ATK, TVA-ENV-DCY, TVA-ENV-REL, TVA-LFO-RATE, TVA-LFO-LVL, TVA-LFO-PAN, T-FX-SEND, CHO-SEND, REV-SEND, T-FX-PRM1, T-FX-PRM2, T-FX-PRM3, TVA-PAN
00 58	0aaa aaaa	Matrix Control 3 Sens 2 (1 - 127) -63 - +63
00 59	0aaa aaaa	Matrix Control 4 Source (0 - 108) OFF, CC01 - CC31, OFF, CC33 - CC95, BEND, AFT, +PAD-X, +PAD-Y, PAD-X, PAD-Y, TRIP-R, BEAM-L, BEAM-R, KNOB1, KNOB2, VELO, KEYF
00 5A	0aaa aaaa	Matrix Control 4 Dest 1 (0 - 78) OFF, OSC1-PITCH, OSC1-TIME/PW, OSC1-FORMA/FAT, OSC1-LVL, OSC1-PENV-ATK, OSC1-PENV-DCY, OSC1-PENV-REL, OSC1-TENV-ATK, OSC1-TENV-DCY, OSC1-TENV-REL, OSC1-FENV-ATK, OSC1-FENV-DCY, OSC1-FENV-REL, OSC1-AENV-ATK, OSC1-AENV-DCY, OSC1-AENV-REL, OSC1-LFO-RATE, OSC1-LFO-PCH, OSC1-LFO-TM/PW, OSC1-LFO-FR/FT, OSC1-LFO-LVL, OSC2-PITCH, OSC2-TIME/PW, OSC2-FORMA/FAT, OSC2-LVL, OSC2-PENV-ATK, OSC2-PENV-DCY, OSC2-PENV-REL, OSC2-TENV-ATK, OSC2-TENV-DCY, OSC2-TENV-REL, OSC2-FENV-ATK, OSC2-FENV-DCY, OSC2-FENV-REL, OSC2-AENV-ATK, OSC2-AENV-DCY, OSC2-AENV-REL, OSC2-LFO-RATE, OSC2-LFO-PCH, OSC2-LFO-TM/PW, OSC2-LFO-FR/FT, OSC2-LFO-LVL, CSM1-PRM1, CSM1-PRM2, CSM1-ENV1-ATK, CSM1-ENV1-DCY, CSM1-ENV1-REL, CSM1-ENV2-ATK, CSM1-ENV2-DCY, CSM1-ENV2-REL, CSM1-LFO-RATE, CSM1-LFO-PRM1, CSM1-LFO-PRM2, CSM2-PRM1, CSM2-PRM2, CSM2-ENV1-ATK, CSM2-ENV1-DCY, CSM2-ENV1-REL, CSM2-ENV2-ATK, CSM2-ENV2-DCY, CSM2-ENV2-REL, CSM2-LFO-RATE, CSM2-LFO-PRM1, CSM2-LFO-PRM2, TVA-LVL, TVA-ENV-ATK, TVA-ENV-DCY, TVA-ENV-REL, TVA-LFO-RATE, TVA-LFO-LVL, TVA-LFO-PAN, T-FX-SEND, CHO-SEND, REV-SEND, T-FX-PRM1, T-FX-PRM2, T-FX-PRM3, TVA-PAN
00 5B	0aaa aaaa	Matrix Control 4 Sens 1 (1 - 127) -63 - +63
00 5C	0aaa aaaa	Matrix Control 4 Dest 2 (0 - 78) OFF, OSC1-PITCH, OSC1-TIME/PW, OSC1-FORMA/FAT, OSC1-LVL, OSC1-PENV-ATK, OSC1-PENV-DCY, OSC1-PENV-REL, OSC1-TENV-ATK, OSC1-TENV-DCY, OSC1-TENV-REL, OSC1-FENV-ATK, OSC1-FENV-DCY, OSC1-FENV-REL, OSC1-AENV-ATK, OSC1-AENV-DCY, OSC1-AENV-REL,

		OSC1-LFO-RATE, OSC1-LFO-PCH, OSC1-LFO-TM/PW, OSC1-LFO-FR/FT, OSC1-LFO-LVL, OSC2-PITCH, OSC2-TIME/PW, OSC2-FORMA/FAT, OSC2-LVL, OSC2-PENV-ATK, OSC2-PENV-DCY, OSC2-PENV-REL, OSC2-TENV-ATK, OSC2-TENV-DCY, OSC2-TENV-REL, OSC2-FENV-ATK, OSC2-FENV-DCY, OSC2-FENV-REL, OSC2-AENV-ATK, OSC2-AENV-DCY, OSC2-AENV-REL, OSC2-LFO-RATE, OSC2-LFO-PCH, OSC2-LFO-TM/PW, OSC2-LFO-FR/FT, OSC2-LFO-LVL, CSM1-PRM1, CSM1-PRM2, CSM1-ENV1-ATK, CSM1-ENV1-DCY, CSM1-ENV1-REL, CSM1-ENV2-ATK, CSM1-ENV2-DCY, CSM1-ENV2-REL, CSM1-LFO-RATE, CSM1-LFO-PRM1, CSM1-LFO-PRM2, CSM2-PRM1, CSM2-PRM2, CSM2-ENV1-ATK, CSM2-ENV1-DCY, CSM2-ENV1-REL, CSM2-ENV2-ATK, CSM2-ENV2-DCY, CSM2-ENV2-REL, CSM2-LFO-RATE, CSM2-LFO-PRM1, CSM2-LFO-PRM2, TVA-LVL, TVA-ENV-ATK, TVA-ENV-DCY, TVA-ENV-REL, TVA-LFO-RATE, TVA-LFO-LVL, TVA-LFO-PAN, T-FX-SEND, CHO-SEND, REV-SEND, T-FX-PRM1, T-FX-PRM2, T-FX-PRM3, TVA-PAN
00 5D	0aaa aaaa	Matrix Control 4 Sens 2 (1 - 127) -63 - +63
00 5E	0aaa aaaa	Matrix Control 5 Source (0 - 108) OFF, CC01 - CC31, OFF, CC33 - CC95, BEND, AFT, +PAD-X, +PAD-Y, PAD-X, PAD-Y, TRIP-R, BEAM-L, BEAM-R, KNOB1, KNOB2, VELO, KEYF
00 5F	0aaa aaaa	Matrix Control 5 Dest 1 (0 - 78) OFF, OSC1-PITCH, OSC1-TIME/PW, OSC1-FORMA/FAT, OSC1-LVL, OSC1-PENV-ATK, OSC1-PENV-DCY, OSC1-PENV-REL, OSC1-TENV-ATK, OSC1-TENV-DCY, OSC1-TENV-REL, OSC1-FENV-ATK, OSC1-FENV-DCY, OSC1-FENV-REL, OSC1-AENV-ATK, OSC1-AENV-DCY, OSC1-AENV-REL, OSC1-LFO-RATE, OSC1-LFO-PCH, OSC1-LFO-TM/PW, OSC1-LFO-FR/FT, OSC1-LFO-LVL, OSC2-PITCH, OSC2-TIME/PW, OSC2-FORMA/FAT, OSC2-LVL, OSC2-PENV-ATK, OSC2-PENV-DCY, OSC2-PENV-REL, OSC2-TENV-ATK, OSC2-TENV-DCY, OSC2-TENV-REL, OSC2-FENV-ATK, OSC2-FENV-DCY, OSC2-FENV-REL, OSC2-AENV-ATK, OSC2-AENV-DCY, OSC2-AENV-REL, OSC2-LFO-RATE, OSC2-LFO-PCH, OSC2-LFO-TM/PW, OSC2-LFO-FR/FT, OSC2-LFO-LVL, CSM1-PRM1, CSM1-PRM2, CSM1-ENV1-ATK, CSM1-ENV1-DCY, CSM1-ENV1-REL, CSM1-ENV2-ATK, CSM1-ENV2-DCY, CSM1-ENV2-REL, CSM1-LFO-RATE, CSM1-LFO-PRM1, CSM1-LFO-PRM2, CSM2-PRM1, CSM2-PRM2, CSM2-ENV1-ATK, CSM2-ENV1-DCY, CSM2-ENV1-REL, CSM2-ENV2-ATK, CSM2-ENV2-DCY, CSM2-ENV2-REL, CSM2-LFO-RATE, CSM2-LFO-PRM1, CSM2-LFO-PRM2, TVA-LVL, TVA-ENV-ATK, TVA-ENV-DCY, TVA-ENV-REL, TVA-LFO-RATE, TVA-LFO-LVL, TVA-LFO-PAN, T-FX-SEND, CHO-SEND, REV-SEND, T-FX-PRM1, T-FX-PRM2, T-FX-PRM3, TVA-PAN
00 60	0aaa aaaa	Matrix Control 5 Sens 1 (1 - 127) -63 - +63
00 61	0aaa aaaa	Matrix Control 5 Dest 2 (0 - 78) OFF, OSC1-PITCH, OSC1-TIME/PW, OSC1-FORMA/FAT, OSC1-LVL, OSC1-PENV-ATK, OSC1-PENV-DCY, OSC1-PENV-REL, OSC1-TENV-ATK, OSC1-TENV-DCY, OSC1-TENV-REL, OSC1-FENV-ATK, OSC1-FENV-DCY, OSC1-FENV-REL, OSC1-AENV-ATK, OSC1-AENV-DCY, OSC1-AENV-REL, OSC1-LFO-RATE, OSC1-LFO-PCH, OSC1-LFO-TM/PW, OSC1-LFO-FR/FT, OSC1-LFO-LVL, OSC2-PITCH, OSC2-TIME/PW, OSC2-FORMA/FAT, OSC2-LVL, OSC2-PENV-ATK, OSC2-PENV-DCY, OSC2-PENV-REL, OSC2-TENV-ATK, OSC2-TENV-DCY, OSC2-TENV-REL, OSC2-FENV-ATK, OSC2-FENV-DCY, OSC2-FENV-REL, OSC2-AENV-ATK, OSC2-AENV-DCY, OSC2-AENV-REL, OSC2-LFO-RATE, OSC2-LFO-PCH, OSC2-LFO-TM/PW, OSC2-LFO-FR/FT, OSC2-LFO-LVL, CSM1-PRM1, CSM1-PRM2, CSM1-ENV1-ATK, CSM1-ENV1-DCY, CSM1-ENV1-REL, CSM1-ENV2-ATK, CSM1-ENV2-DCY, CSM1-ENV2-REL, CSM1-LFO-RATE, CSM1-LFO-PRM1, CSM1-LFO-PRM2, CSM2-PRM1, CSM2-PRM2, CSM2-ENV1-ATK, CSM2-ENV1-DCY, CSM2-ENV1-REL, CSM2-ENV2-ATK, CSM2-ENV2-DCY, CSM2-ENV2-REL, CSM2-LFO-RATE, CSM2-LFO-PRM1, CSM2-LFO-PRM2, TVA-LVL, TVA-ENV-ATK, TVA-ENV-DCY, TVA-ENV-REL, TVA-LFO-RATE, TVA-LFO-LVL, TVA-LFO-PAN, T-FX-SEND, CHO-SEND, REV-SEND, T-FX-PRM1, T-FX-PRM2, T-FX-PRM3, TVA-PAN
00 62	0aaa aaaa	Matrix Control 5 Sens 2 (1 - 127) -63 - +63
00 63	0aaa aaaa	Matrix Control 6 Source (0 - 108) OFF, CC01 - CC31, OFF, CC33 - CC95, BEND, AFT, +PAD-X, +PAD-Y, PAD-X, PAD-Y, TRIP-R, BEAM-L, BEAM-R, KNOB1, KNOB2, VELO, KEYF
00 64	0aaa aaaa	Matrix Control 6 Dest 1 (0 - 78) OFF, OSC1-PITCH, OSC1-TIME/PW, OSC1-FORMA/FAT, OSC1-LVL, OSC1-PENV-ATK, OSC1-PENV-DCY, OSC1-PENV-REL, OSC1-TENV-ATK, OSC1-TENV-DCY, OSC1-TENV-REL, OSC1-FENV-ATK, OSC1-FENV-DCY, OSC1-FENV-REL, OSC1-AENV-ATK, OSC1-AENV-DCY, OSC1-AENV-REL, OSC1-LFO-RATE, OSC1-LFO-PCH, OSC1-LFO-TM/PW, OSC1-LFO-FR/FT, OSC1-LFO-LVL, OSC2-PITCH, OSC2-TIME/PW, OSC2-FORMA/FAT, OSC2-LVL, OSC2-PENV-ATK, OSC2-PENV-DCY, OSC2-PENV-REL, OSC2-TENV-ATK, OSC2-TENV-DCY, OSC2-TENV-REL, OSC2-FENV-ATK, OSC2-FENV-DCY, OSC2-FENV-REL, OSC2-AENV-ATK, OSC2-AENV-DCY, OSC2-AENV-REL, OSC2-LFO-RATE, OSC2-LFO-PCH, OSC2-LFO-TM/PW, OSC2-LFO-FR/FT, OSC2-LFO-LVL, CSM1-PRM1, CSM1-PRM2, CSM1-ENV1-ATK, CSM1-ENV1-DCY, CSM1-ENV1-REL, CSM1-ENV2-ATK, CSM1-ENV2-DCY, CSM1-ENV2-REL, CSM1-LFO-RATE, CSM1-LFO-PRM1, CSM1-LFO-PRM2, CSM2-PRM1, CSM2-PRM2, CSM2-ENV1-ATK, CSM2-ENV1-DCY, CSM2-ENV1-REL, CSM2-ENV2-ATK, CSM2-ENV2-DCY, CSM2-ENV2-REL, CSM2-LFO-RATE, CSM2-LFO-PRM1, CSM2-LFO-PRM2, TVA-LVL, TVA-ENV-ATK, TVA-ENV-DCY, TVA-ENV-REL, TVA-LFO-RATE, TVA-LFO-LVL, TVA-LFO-PAN, T-FX-SEND, CHO-SEND, REV-SEND, T-FX-PRM1, T-FX-PRM2, T-FX-PRM3, TVA-PAN
00 65	0aaa aaaa	Matrix Control 6 Sens 1 (1 - 127) -63 - +63

	00 66	0aaa aaaa	Matrix Control 6 Dest 2 (0 - 78) OFF, OSC1-PITCH, OSC1-TIME/PW, OSC1-FORMA/FAT, OSC1-LVL, OSC1-PENV-ATK, OSC1-PENV-DCY, OSC1-PENV-REL, OSC1-TENV-ATK, OSC1-TENV-DCY, OSC1-TENV-REL, OSC1-FENV-ATK, OSC1-FENV-DCY, OSC1-FENV-REL, OSC1-AENV-ATK, OSC1-AENV-DCY, OSC1-AENV-REL, OSC1-LFO-RATE, OSC1-LFO-PCH, OSC1-LFO-TM/PW, OSC1-LFO-FR/FT, OSC1-LFO-LVL, OSC2-PITCH, OSC2-TIME/PW, OSC2-FORMA/FAT, OSC2-LVL, OSC2-PENV-ATK, OSC2-PENV-DCY, OSC2-PENV-REL, OSC2-TENV-ATK, OSC2-TENV-DCY, OSC2-TENV-REL, OSC2-FENV-ATK, OSC2-FENV-DCY, OSC2-FENV-REL, OSC2-AENV-ATK, OSC2-AENV-DCY, OSC2-AENV-REL, OSC2-LFO-RATE, OSC2-LFO-PCH, OSC2-LFO-TM/PW, OSC2-LFO-FR/FT, OSC2-LFO-LVL, CSM1-PRM1, CSM1-PRM2, CSM1-ENV1-ATK, CSM1-ENV1-DCY, CSM1-ENV1-REL, CSM1-ENV2-ATK, CSM1-ENV2-DCY, CSM1-ENV2-REL, CSM1-LFO-RATE, CSM1-LFO-PRM1, CSM1-LFO-PRM2, CSM2-PRM1, CSM2-PRM2, CSM2-ENV1-ATK, CSM2-ENV1-DCY, CSM2-ENV1-REL, CSM2-ENV2-ATK, CSM2-ENV2-DCY, CSM2-ENV2-REL, CSM2-LFO-RATE, CSM2-LFO-PRM1, CSM2-LFO-PRM2, TVA-LVL, TVA-ENV-ATK, TVA-ENV-DCY, TVA-ENV-REL, TVA-LFO-RATE, TVA-LFO-LVL, TVA-LFO-PAN, T-FX-SEND, CHO-SEND, REV-SEND, T-FX-PRM1, T-FX-PRM2, T-FX-PRM3, TVA-PAN
	00 67	0aaa aaaa	Matrix Control 6 Sens 2 (1 - 127) -63 - +63
	00 68	0aaa aaaa	Matrix Control 7 Source (0 - 108) OFF, CC01 - CC31, OFF, CC33 - CC95, BEND, AFT, +PAD-X, +PAD-Y, PAD-X, PAD-Y, TRIP-R, BEAM-L, BEAM-R, KNOB1, KNOB2, VELO, KEYF
	00 69	0aaa aaaa	Matrix Control 7 Dest 1 (0 - 78) OFF, OSC1-PITCH, OSC1-TIME/PW, OSC1-FORMA/FAT, OSC1-LVL, OSC1-PENV-ATK, OSC1-PENV-DCY, OSC1-PENV-REL, OSC1-TENV-ATK, OSC1-TENV-DCY, OSC1-TENV-REL, OSC1-FENV-ATK, OSC1-FENV-DCY, OSC1-FENV-REL, OSC1-AENV-ATK, OSC1-AENV-DCY, OSC1-AENV-REL, OSC1-LFO-RATE, OSC1-LFO-PCH, OSC1-LFO-TM/PW, OSC1-LFO-FR/FT, OSC1-LFO-LVL, OSC2-PITCH, OSC2-TIME/PW, OSC2-FORMA/FAT, OSC2-LVL, OSC2-PENV-ATK, OSC2-PENV-DCY, OSC2-PENV-REL, OSC2-TENV-ATK, OSC2-TENV-DCY, OSC2-TENV-REL, OSC2-FENV-ATK, OSC2-FENV-DCY, OSC2-FENV-REL, OSC2-AENV-ATK, OSC2-AENV-DCY, OSC2-AENV-REL, OSC2-LFO-RATE, OSC2-LFO-PCH, OSC2-LFO-TM/PW, OSC2-LFO-FR/FT, OSC2-LFO-LVL, CSM1-PRM1, CSM1-PRM2, CSM1-ENV1-ATK, CSM1-ENV1-DCY, CSM1-ENV1-REL, CSM1-ENV2-ATK, CSM1-ENV2-DCY, CSM1-ENV2-REL, CSM1-LFO-RATE, CSM1-LFO-PRM1, CSM1-LFO-PRM2, CSM2-PRM1, CSM2-PRM2, CSM2-ENV1-ATK, CSM2-ENV1-DCY, CSM2-ENV1-REL, CSM2-ENV2-ATK, CSM2-ENV2-DCY, CSM2-ENV2-REL, CSM2-LFO-RATE, CSM2-LFO-PRM1, CSM2-LFO-PRM2, TVA-LVL, TVA-ENV-ATK, TVA-ENV-DCY, TVA-ENV-REL, TVA-LFO-RATE, TVA-LFO-LVL, TVA-LFO-PAN, T-FX-SEND, CHO-SEND, REV-SEND, T-FX-PRM1, T-FX-PRM2, T-FX-PRM3, TVA-PAN
	00 6A	0aaa aaaa	Matrix Control 7 Sens 1 (1 - 127) -63 - +63
	00 6B	0aaa aaaa	Matrix Control 7 Dest 2 (0 - 78) OFF, OSC1-PITCH, OSC1-TIME/PW, OSC1-FORMA/FAT, OSC1-LVL, OSC1-PENV-ATK, OSC1-PENV-DCY, OSC1-PENV-REL, OSC1-TENV-ATK, OSC1-TENV-DCY, OSC1-TENV-REL, OSC1-FENV-ATK, OSC1-FENV-DCY, OSC1-FENV-REL, OSC1-AENV-ATK, OSC1-AENV-DCY, OSC1-AENV-REL, OSC1-LFO-RATE, OSC1-LFO-PCH, OSC1-LFO-TM/PW, OSC1-LFO-FR/FT, OSC1-LFO-LVL, OSC2-PITCH, OSC2-TIME/PW, OSC2-FORMA/FAT, OSC2-LVL, OSC2-PENV-ATK, OSC2-PENV-DCY, OSC2-PENV-REL, OSC2-TENV-ATK, OSC2-TENV-DCY, OSC2-TENV-REL, OSC2-FENV-ATK, OSC2-FENV-DCY, OSC2-FENV-REL, OSC2-AENV-ATK, OSC2-AENV-DCY, OSC2-AENV-REL, OSC2-LFO-RATE, OSC2-LFO-PCH, OSC2-LFO-TM/PW, OSC2-LFO-FR/FT, OSC2-LFO-LVL, CSM1-PRM1, CSM1-PRM2, CSM1-ENV1-ATK, CSM1-ENV1-DCY, CSM1-ENV1-REL, CSM1-ENV2-ATK, CSM1-ENV2-DCY, CSM1-ENV2-REL, CSM1-LFO-RATE, CSM1-LFO-PRM1, CSM1-LFO-PRM2, CSM2-PRM1, CSM2-PRM2, CSM2-ENV1-ATK, CSM2-ENV1-DCY, CSM2-ENV1-REL, CSM2-ENV2-ATK, CSM2-ENV2-DCY, CSM2-ENV2-REL, CSM2-LFO-RATE, CSM2-LFO-PRM1, CSM2-LFO-PRM2, TVA-LVL, TVA-ENV-ATK, TVA-ENV-DCY, TVA-ENV-REL, TVA-LFO-RATE, TVA-LFO-LVL, TVA-LFO-PAN, T-FX-SEND, CHO-SEND, REV-SEND, T-FX-PRM1, T-FX-PRM2, T-FX-PRM3, TVA-PAN
	00 6C	0aaa aaaa	Matrix Control 7 Sens 2 (1 - 127) -63 - +63
	00 6D	0aaa aaaa	Matrix Control 8 Source (0 - 108) OFF, CC01 - CC31, OFF, CC33 - CC95, BEND, AFT, +PAD-X, +PAD-Y, PAD-X, PAD-Y, TRIP-R, BEAM-L, BEAM-R, KNOB1, KNOB2, VELO, KEYF
	00 6E	0aaa aaaa	Matrix Control 8 Dest 1 (0 - 78) OFF, OSC1-PITCH, OSC1-TIME/PW, OSC1-FORMA/FAT, OSC1-LVL, OSC1-PENV-ATK, OSC1-PENV-DCY, OSC1-PENV-REL, OSC1-TENV-ATK, OSC1-TENV-DCY, OSC1-TENV-REL, OSC1-FENV-ATK, OSC1-FENV-DCY, OSC1-FENV-REL, OSC1-AENV-ATK, OSC1-AENV-DCY, OSC1-AENV-REL, OSC1-LFO-RATE, OSC1-LFO-PCH, OSC1-LFO-TM/PW, OSC1-LFO-FR/FT, OSC1-LFO-LVL, OSC2-PITCH, OSC2-TIME/PW, OSC2-FORMA/FAT, OSC2-LVL, OSC2-PENV-ATK, OSC2-PENV-DCY, OSC2-PENV-REL, OSC2-TENV-ATK, OSC2-TENV-DCY, OSC2-TENV-REL, OSC2-FENV-ATK, OSC2-FENV-DCY, OSC2-FENV-REL, OSC2-AENV-ATK, OSC2-AENV-DCY, OSC2-AENV-REL, OSC2-LFO-RATE, OSC2-LFO-PCH, OSC2-LFO-TM/PW, OSC2-LFO-FR/FT, OSC2-LFO-LVL, CSM1-PRM1, CSM1-PRM2, CSM1-ENV1-ATK, CSM1-ENV1-DCY, CSM1-ENV1-REL, CSM1-ENV2-ATK, CSM1-ENV2-DCY, CSM1-ENV2-REL, CSM1-LFO-RATE, CSM1-LFO-PRM1, CSM1-LFO-PRM2, CSM2-PRM1, CSM2-PRM2, CSM2-ENV1-ATK, CSM2-ENV1-DCY, CSM2-ENV1-REL, CSM2-ENV2-ATK, CSM2-ENV2-DCY, CSM2-ENV2-REL, CSM2-LFO-RATE, CSM2-LFO-PRM1, CSM2-LFO-PRM2,
			TVA-LVL, TVA-ENV-ATK, TVA-ENV-DCY, TVA-ENV-REL, TVA-LFO-RATE, TVA-LFO-LVL, TVA-LFO-PAN, T-FX-SEND, CHO-SEND, REV-SEND, T-FX-PRM1, T-FX-PRM2, T-FX-PRM3, TVA-PAN
	00 6F	0aaa aaaa	Matrix Control 8 Sens 1 (1 - 127) -63 - +63
	00 70	0aaa aaaa	Matrix Control 8 Dest 2 (0 - 78) OFF, OSC1-PITCH, OSC1-TIME/PW, OSC1-FORMA/FAT, OSC1-LVL, OSC1-PENV-ATK, OSC1-PENV-DCY, OSC1-PENV-REL, OSC1-TENV-ATK, OSC1-TENV-DCY, OSC1-TENV-REL, OSC1-FENV-ATK, OSC1-FENV-DCY, OSC1-FENV-REL, OSC1-AENV-ATK, OSC1-AENV-DCY, OSC1-AENV-REL, OSC1-LFO-RATE, OSC1-LFO-PCH, OSC1-LFO-TM/PW, OSC1-LFO-FR/FT, OSC1-LFO-LVL, OSC2-PITCH, OSC2-TIME/PW, OSC2-FORMA/FAT, OSC2-LVL, OSC2-PENV-ATK, OSC2-PENV-DCY, OSC2-PENV-REL, OSC2-TENV-ATK, OSC2-TENV-DCY, OSC2-TENV-REL, OSC2-FENV-ATK, OSC2-FENV-DCY, OSC2-FENV-REL, OSC2-AENV-ATK, OSC2-AENV-DCY, OSC2-AENV-REL, OSC2-LFO-RATE, OSC2-LFO-PCH, OSC2-LFO-TM/PW, OSC2-LFO-FR/FT, OSC2-LFO-LVL, CSM1-PRM1, CSM1-PRM2, CSM1-ENV1-ATK, CSM1-ENV1-DCY, CSM1-ENV1-REL, CSM1-ENV2-ATK, CSM1-ENV2-DCY, CSM1-ENV2-REL, CSM1-LFO-RATE, CSM1-LFO-PRM1, CSM1-LFO-PRM2, CSM2-PRM1, CSM2-PRM2, CSM2-ENV1-ATK, CSM2-ENV1-DCY, CSM2-ENV1-REL, CSM2-ENV2-ATK, CSM2-ENV2-DCY, CSM2-ENV2-REL, CSM2-LFO-RATE, CSM2-LFO-PRM1, CSM2-LFO-PRM2, TVA-LVL, TVA-ENV-ATK, TVA-ENV-DCY, TVA-ENV-REL, TVA-LFO-RATE, TVA-LFO-LVL, TVA-LFO-PAN, T-FX-SEND, CHO-SEND, REV-SEND, T-FX-PRM1, T-FX-PRM2, T-FX-PRM3, TVA-PAN
	00 71	0aaa aaaa	Matrix Control 8 Sens 2 (1 - 127) -63 - +63
00 00 00 72	Total Size		

❍ Tone Common 2

Offset Address		Description	
00 00	0000 000a	AP-Synthesis Switch	(0 - 1) OFF, ON
00 01	0000 000a	Vocal Designer Structure Switch	(0 - 1) OFF, ON
00 02	0000 000a	Vocal Designer Switch	(0 - 1) OFF, ON
00 03	00aa aaaa	(reserved)	(0 - 63)
00 04	0aaa aaaa	(reserved)	(0 - 127)
00 05	0aaa aaaa	(reserved)	(0 - 127)
00 06	0aaa aaaa	(reserved)	(0 - 127)
00 07	0aaa aaaa	(reserved)	(0 - 127)
00 08	0aaa aaaa	(reserved)	(0 - 127)
00 09	0aaa aaaa	(reserved)	(0 - 127)
00 0A	0aaa aaaa	(reserved)	(0 - 127)
00 0B	0aaa aaaa	(reserved)	(0 - 127)
00 0C	0aaa aaaa	(reserved)	(0 - 127)
00 0D	0aaa aaaa	(reserved)	(0 - 127)
00 0E	0aaa aaaa	(reserved)	(0 - 127)
00 0F	0aaa aaaa	(reserved)	(0 - 127)
00 10	0aaa aaaa	(reserved)	(0 - 127)
00 11	0aaa aaaa	(reserved)	(0 - 127)
00 12	0aaa aaaa	(reserved)	(0 - 127)
00 00 00 13	Total Size		

❍ Tone T-FX

	Offset Address		Description	
	00 00	0aaa aaaa	T-FX Type	(0 - 41)
	00 01	0aaa aaaa	T-FX Master Level	(0 - 127)
	00 02	0aaa aaaa	T-FX Chorus Send Level	(0 - 127)
	00 03	0aaa aaaa	T-FX Reverb Send Level	(0 - 127)
#	00 04	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	T-FX Parameter 1	(12768 - 52768) -20000 - +20000
#	00 08	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	T-FX Parameter 2	(12768 - 52768) -20000 - +20000
#	00 0C	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	T-FX Parameter 3	(12768 - 52768) -20000 - +20000
#	00 10	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	T-FX Parameter 4	(12768 - 52768) -20000 - +20000
#	00 14	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	T-FX Parameter 5	(12768 - 52768) -20000 - +20000
#	00 18	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	T-FX Parameter 6	(12768 - 52768) -20000 - +20000
#	00 1C	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	T-FX Parameter 7	(12768 - 52768) -20000 - +20000
#	00 20	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	T-FX Parameter 8	(12768 - 52768) -20000 - +20000
#	00 24	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	T-FX Parameter 9	(12768 - 52768) -20000 - +20000
#	00 28	0000 aaaa		

	0000 bbbb			
	0000 cccc			
	0000 dddd	T-FX Parameter 10	(12768 - 52768)	
			-20000 - +20000	
# 00 2C	0000 aaaa			
	0000 bbbb			
	0000 cccc			
	0000 dddd	T-FX Parameter 11	(12768 - 52768)	
			-20000 - +20000	
# 00 30	0000 aaaa			
	0000 bbbb			
	0000 cccc			
	0000 dddd	T-FX Parameter 12	(12768 - 52768)	
			-20000 - +20000	
# 00 34	0000 aaaa			
	0000 bbbb			
	0000 cccc			
	0000 dddd	T-FX Parameter 13	(12768 - 52768)	
			-20000 - +20000	
# 00 38	0000 aaaa			
	0000 bbbb			
	0000 cccc			
	0000 dddd	T-FX Parameter 14	(12768 - 52768)	
			-20000 - +20000	
# 00 3C	0000 aaaa			
	0000 bbbb			
	0000 cccc			
	0000 dddd	T-FX Parameter 15	(12768 - 52768)	
			-20000 - +20000	
# 00 40	0000 aaaa			
	0000 bbbb			
	0000 cccc			
	0000 dddd	T-FX Parameter 16	(12768 - 52768)	
			-20000 - +20000	
# 00 44	0000 aaaa			
	0000 bbbb			
	0000 cccc			
	0000 dddd	T-FX Parameter 17	(12768 - 52768)	
			-20000 - +20000	
# 00 48	0000 aaaa			
	0000 bbbb			
	0000 cccc			
	0000 dddd	T-FX Parameter 18	(12768 - 52768)	
			-20000 - +20000	
# 00 4C	0000 aaaa			
	0000 bbbb			
	0000 cccc			
	0000 dddd	T-FX Parameter 19	(12768 - 52768)	
			-20000 - +20000	
# 00 50	0000 aaaa			
	0000 bbbb			
	0000 cccc			
	0000 dddd	T-FX Parameter 20	(12768 - 52768)	
			-20000 - +20000	
# 00 54	0000 aaaa			
	0000 bbbb			
	0000 cccc			
	0000 dddd	T-FX Parameter 21	(12768 - 52768)	
			-20000 - +20000	
# 00 58	0000 aaaa			
	0000 bbbb			
	0000 cccc			
	0000 dddd	T-FX Parameter 22	(12768 - 52768)	
			-20000 - +20000	
# 00 5C	0000 aaaa			
	0000 bbbb			
	0000 cccc			
	0000 dddd	T-FX Parameter 23	(12768 - 52768)	
			-20000 - +20000	
# 00 60	0000 aaaa			
	0000 bbbb			
	0000 cccc			
	0000 dddd	T-FX Parameter 24	(12768 - 52768)	
			-20000 - +20000	
# 00 64	0000 aaaa			
	0000 bbbb			
	0000 cccc			
	0000 dddd	T-FX Parameter 25	(12768 - 52768)	
			-20000 - +20000	
# 00 68	0000 aaaa			
	0000 bbbb			
	0000 cccc			
	0000 dddd	T-FX Parameter 26	(12768 - 52768)	
			-20000 - +20000	
# 00 6C	0000 aaaa			
	0000 bbbb			
	0000 cccc			
	0000 dddd	T-FX Parameter 27	(12768 - 52768)	
			-20000 - +20000	
# 00 70	0000 aaaa			
	0000 bbbb			
	0000 cccc			
	0000 dddd	T-FX Parameter 28	(12768 - 52768)	
			-20000 - +20000	
# 00 74	0000 aaaa			
	0000 bbbb			
	0000 cccc			
	0000 dddd	T-FX Parameter 29	(12768 - 52768)	
			-20000 - +20000	
# 00 78	0000 aaaa			
	0000 bbbb			
	0000 cccc			
	0000 dddd	T-FX Parameter 30	(12768 - 52768)	
			-20000 - +20000	
# 00 7C	0000 aaaa			
	0000 bbbb			
	0000 cccc			
	0000 dddd	T-FX Parameter 31	(12768 - 52768)	
			-20000 - +20000	
# 01 00	0000 aaaa			
	0000 bbbb			
	0000 cccc			
	0000 dddd	T-FX Parameter 32	(12768 - 52768)	
			-20000 - +20000	
00 00 01 04	Total Size			

❍ Tone Step Modulator

Offset Address		Description	
00 00	0000 000a	Master Switch	(0 - 1) OFF, ON
00 01	0000 00aa	Key Sync	(0 - 2) OFF, PART, VOICE
00 02	0000 000a	Track 1 Switch	(0 - 1) OFF, ON
00 03	0000 000a	Track Loop Switch	(0 - 1) OFF, ON
00 04	0000 000a	Track 1 Type	(0 - 1) STEP, SMOOTH
00 05	0000 0aaa	Track 1 Grid	(0 - 5) QUARTER, 8TH, 8TH-T, 16TH, 16TH-T, 32TH
00 06	0000 aaaa	Track 1 End Point	(0 - 15) 1 - 16
00 07	0000 0aaa	Track 1 Direction	(0 - 5) FWD1, FWD2, FWD3, BWD1, BWD2, BWD3
00 08	0000 aaaa	Track 1 Zone	(0 - 15) 1 - 16
00 09	0aaa aaaa	Track 1 Destination	(0 - 71) OSC1+2-PIT-CRS, OSC1+2-PIT-FINE, PORTA-TIME, OSC1-PIT-CRS, OSC1-PIT-FINE, OSC1-PITCH, OSC1-PENV-DPT, OSC1-TIME/PW, OSC1-TENV-DPT, OSC1-FORMA/FAT, OSC1-FENV-DPT, OSC1-LFO-RATE, OSC1-LFO-PCH, OSC1-LFO-TM/PW, OSC1-LFO-FR/FT, OSC1-LFO-LVL, OSC1-LVL, OSC2-PIT-CRS, OSC2-PIT-FINE, OSC2-PITCH, OSC2-PENV-DPT, OSC2-TIME/PW, OSC2-TENV-DPT, OSC2-FORMA/FAT, OSC2-FENV-DPT, OSC2-LFO-RATE, OSC2-LFO-PCH, OSC2-LFO-TM/PW, OSC2-LFO-FR/FT, OSC2-LFO-LVL, OSC2-LVL, CSM1-PRM1, CSM1-PRM2, CSM1-ENV1-ATK, CSM1-ENV1-DCY, CSM1-ENV1-SUS, CSM1-ENV1-REL, CSM1-ENV2-ATK, CSM1-ENV2-DCY, CSM1-ENV2-SUS, CSM1-ENV2-REL, CSM1-LFO-RATE, CSM1-LFO-PRM1, CSM1-LFO-PRM2, CSM2-PRM1, CSM2-PRM2, CSM2-ENV1-ATK, CSM2-ENV1-DCY, CSM2-ENV1-SUS, CSM2-ENV1-REL, CSM2-ENV2-ATK, CSM2-ENV2-DCY, CSM2-ENV2-SUS, CSM2-ENV2-REL, CSM2-LFO-RATE, CSM2-LFO-PRM1, CSM2-LFO-PRM2, TVA-LVL, TVA-PAN, TVA-ENV-ATK, TVA-ENV-DCY, TVA-ENV-SUS, TVA-ENV-REL, TVA-LFO-RATE, TVA-LFO-LVL, TVA-LFO-PAN, T-FX-SEND, CHO-SEND, REV-SEND, T-FX-PRM1, T-FX-PRM2, T-FX-PRM3
00 0A	0aaa aaaa	Track 1 Step 01 Value	(1 - 127) -63 - +63
00 0B	0aaa aaaa	Track 1 Step 02 Value	(1 - 127) -63 - +63
00 0C	0aaa aaaa	Track 1 Step 03 Value	(1 - 127) -63 - +63
00 0D	0aaa aaaa	Track 1 Step 04 Value	(1 - 127) -63 - +63
00 0E	0aaa aaaa	Track 1 Step 05 Value	(1 - 127) -63 - +63
00 0F	0aaa aaaa	Track 1 Step 06 Value	(1 - 127) -63 - +63
00 10	0aaa aaaa	Track 1 Step 07 Value	(1 - 127) -63 - +63
00 11	0aaa aaaa	Track 1 Step 08 Value	(1 - 127) -63 - +63
00 12	0aaa aaaa	Track 1 Step 09 Value	(1 - 127) -63 - +63
00 13	0aaa aaaa	Track 1 Step 10 Value	(1 - 127) -63 - +63
00 14	0aaa aaaa	Track 1 Step 11 Value	(1 - 127) -63 - +63
00 15	0aaa aaaa	Track 1 Step 12 Value	(1 - 127) -63 - +63
00 16	0aaa aaaa	Track 1 Step 13 Value	(1 - 127) -63 - +63
00 17	0aaa aaaa	Track 1 Step 14 Value	(1 - 127) -63 - +63
00 18	0aaa aaaa	Track 1 Step 15 Value	(1 - 127) -63 - +63
00 19	0aaa aaaa	Track 1 Step 16 Value	(1 - 127) -63 - +63
00 1A	0000 000a	Track 2 Switch	(0 - 1) OFF, ON
00 1B	0000 000a	Track Loop Switch	(0 - 1) OFF, ON
00 1C	0000 000a	Track 2 Type	(0 - 1) STEP, SMOOTH
00 1D	0000 0aaa	Track 2 Grid	(0 - 5) QUARTER, 8TH, 8TH-T, 16TH, 16TH-T, 32TH
00 1E	0000 aaaa	Track 2 End Point	(0 - 15) 1 - 16
00 1F	0000 0aaa	Track 2 Direction	(0 - 5) FWD1, FWD2, FWD3, BWD1, BWD2, BWD3
00 20	0000 aaaa	Track 2 Zone	(0 - 15) 1 - 16
00 21	0aaa aaaa	Track 2 Destination	(0 - 71) OSC1+2-PIT-CRS, OSC1+2-PIT-FINE, PORTA-TIME, OSC1-PIT-CRS, OSC1-PIT-FINE, OSC1-PITCH, OSC1-PENV-DPT, OSC1-TIME/PW, OSC1-TENV-DPT, OSC1-FORMA/FAT, OSC1-FENV-DPT, OSC1-LFO-RATE, OSC1-LFO-PCH, OSC1-LFO-TM/PW, OSC1-LFO-FR/FT, OSC1-LFO-LVL, OSC1-LVL, OSC2-PIT-CRS, OSC2-PIT-FINE, OSC2-PITCH, OSC2-PENV-DPT, OSC2-TIME/PW, OSC2-TENV-DPT, OSC2-FORMA/FAT, OSC2-FENV-DPT, OSC2-LFO-RATE, OSC2-LFO-PCH, OSC2-LFO-TM/PW, OSC2-LFO-FR/FT, OSC2-LFO-LVL, OSC2-LVL, CSM1-PRM1, CSM1-PRM2, CSM1-ENV1-ATK, CSM1-ENV1-DCY, CSM1-ENV1-SUS, CSM1-ENV1-REL, CSM1-ENV2-ATK, CSM1-ENV2-DCY, CSM1-ENV2-SUS, CSM1-ENV2-REL, CSM1-LFO-RATE, CSM1-LFO-PRM1, CSM1-LFO-PRM2, CSM2-PRM1, CSM2-PRM2, CSM2-ENV1-ATK, CSM2-ENV1-DCY, CSM2-ENV1-SUS, CSM2-ENV1-REL, CSM2-ENV2-ATK, CSM2-ENV2-DCY, CSM2-ENV2-SUS, CSM2-ENV2-REL, CSM2-LFO-RATE, CSM2-LFO-PRM1, CSM2-LFO-PRM2, TVA-LVL, TVA-PAN, TVA-ENV-ATK, TVA-ENV-DCY, TVA-ENV-SUS, TVA-ENV-REL, TVA-LFO-RATE, TVA-LFO-LVL, TVA-LFO-PAN, T-FX-SEND, CHO-SEND, REV-SEND, T-FX-PRM1, T-FX-PRM2, T-FX-PRM3
00 22	0aaa aaaa	Track 2 Step 01 Value	(1 - 127) -63 - +63
00 23	0aaa aaaa	Track 2 Step 02 Value	(1 - 127) -63 - +63
00 24	0aaa aaaa	Track 2 Step 03 Value	(1 - 127) -63 - +63
00 25	0aaa aaaa	Track 2 Step 04 Value	(1 - 127) -63 - +63
00 26	0aaa aaaa	Track 2 Step 05 Value	(1 - 127) -63 - +63
00 27	0aaa aaaa	Track 2 Step 06 Value	(1 - 127) -63 - +63
00 28	0aaa aaaa	Track 2 Step 07 Value	(1 - 127) -63 - +63
00 29	0aaa aaaa	Track 2 Step 08 Value	(1 - 127) -63 - +63

	00 2A	0aaa aaaa	Track 2 Step 09 Value (1 - 127) -63 - +63
	00 2B	0aaa aaaa	Track 2 Step 10 Value (1 - 127) -63 - +63
	00 2C	0aaa aaaa	Track 2 Step 11 Value (1 - 127) -63 - +63
	00 2D	0aaa aaaa	Track 2 Step 12 Value (1 - 127) -63 - +63
	00 2E	0aaa aaaa	Track 2 Step 13 Value (1 - 127) -63 - +63
	00 2F	0aaa aaaa	Track 2 Step 14 Value (1 - 127) -63 - +63
	00 30	0aaa aaaa	Track 2 Step 15 Value (1 - 127) -63 - +63
	00 31	0aaa aaaa	Track 2 Step 16 Value (1 - 127) -63 - +63
	00 32	0000 000a	Track 3 Switch (0 - 1) OFF, ON
	00 33	0000 000a	Track Loop Switch (0 - 1) OFF, ON
	00 34	0000 000a	Track 3 Type (0 - 1) STEP, SMOOTH
	00 35	0000 0aaa	Track 3 Grid (0 - 5) QUARTER, 8TH, 8TH-T, 16TH, 16TH-T, 32TH
	00 36	0000 aaaa	Track 3 End Point (0 - 15) 1 - 16
	00 37	0000 0aaa	Track 3 Direction (0 - 5) FWD1, FWD2, FWD3, BWD1, BWD2, BWD3
	00 38	0000 aaaa	Track 3 Zone (0 - 15) 1 - 16
	00 39	0aaa aaaa	Track 3 Destination (0 - 71) OSC1+2-PIT-CRS, OSC1+2-PIT-FINE, PORTA-TIME, OSC1-PIT-CRS, OSC1-PIT-FINE, OSC1-PITCH, OSC1-PENV-DPT, OSC1-TIME/PW, OSC1-TENV-DPT, OSC1-FORMA/FAT, OSC1-FENV-DPT, OSC1-LFO-RATE, OSC1-LFO-PCH, OSC1-LFO-TM/PW, OSC1-LFO-FR/FT, OSC1-LFO-LVL, OSC1-LVL, OSC2-PIT-CRS, OSC2-PIT-FINE, OSC2-PITCH, OSC2-PENV-DPT, OSC2-TIME/PW, OSC2-TENV-DPT, OSC2-FORMA/FAT, OSC2-FENV-DPT, OSC2-LFO-RATE, OSC2-LFO-PCH, OSC2-LFO-TM/PW, OSC2-LFO-FR/FT, OSC2-LFO-LVL, OSC2-LVL, CSM1-PRM1, CSM1-PRM2, CSM1-ENV1-ATK, CSM1-ENV1-DCY, CSM1-ENV1-SUS, CSM1-ENV1-REL, CSM1-ENV2-ATK, CSM1-ENV2-DCY, CSM1-ENV2-SUS, CSM1-ENV2-REL, CSM1-LFO-RATE, CSM1-LFO-PRM1, CSM1-LFO-PRM2, CSM2-PRM1, CSM2-PRM2, CSM2-ENV1-ATK, CSM2-ENV1-DCY, CSM2-ENV1-SUS, CSM2-ENV1-REL, CSM2-ENV2-ATK, CSM2-ENV2-DCY, CSM2-ENV2-SUS, CSM2-ENV2-REL, CSM2-LFO-RATE, CSM2-LFO-PRM1, CSM2-LFO-PRM2, TVA-LVL, TVA-PAN, TVA-ENV-ATK, TVA-ENV-DCY, TVA-ENV-SUS, TVA-ENV-REL, TVA-LFO-RATE, TVA-LFO-LVL, TVA-LFO-PAN, T-FX-SEND, CHO-SEND, REV-SEND, T-FX-PRM1, T-FX-PRM2, T-FX-PRM3
	00 3A	0aaa aaaa	Track 3 Step 01 Value (1 - 127) -63 - +63
	00 3B	0aaa aaaa	Track 3 Step 02 Value (1 - 127) -63 - +63
	00 3C	0aaa aaaa	Track 3 Step 03 Value (1 - 127) -63 - +63
	00 3D	0aaa aaaa	Track 3 Step 04 Value (1 - 127) -63 - +63
	00 3E	0aaa aaaa	Track 3 Step 05 Value (1 - 127) -63 - +63
	00 3F	0aaa aaaa	Track 3 Step 06 Value (1 - 127) -63 - +63
	00 40	0aaa aaaa	Track 3 Step 07 Value (1 - 127) -63 - +63
	00 41	0aaa aaaa	Track 3 Step 08 Value (1 - 127) -63 - +63
	00 42	0aaa aaaa	Track 3 Step 09 Value (1 - 127) -63 - +63
	00 43	0aaa aaaa	Track 3 Step 10 Value (1 - 127) -63 - +63
	00 44	0aaa aaaa	Track 3 Step 11 Value (1 - 127) -63 - +63
	00 45	0aaa aaaa	Track 3 Step 12 Value (1 - 127) -63 - +63
	00 46	0aaa aaaa	Track 3 Step 13 Value (1 - 127) -63 - +63
	00 47	0aaa aaaa	Track 3 Step 14 Value (1 - 127) -63 - +63
	00 48	0aaa aaaa	Track 3 Step 15 Value (1 - 127) -63 - +63
	00 49	0aaa aaaa	Track 3 Step 16 Value (1 - 127) -63 - +63
	00 4A	0000 000a	Track 4 Switch (0 - 1) OFF, ON
	00 4B	0000 000a	Track Loop Switch (0 - 1) OFF, ON
	00 4C	0000 000a	Track 4 Type (0 - 1) STEP, SMOOTH
	00 4D	0000 0aaa	Track 4 Grid (0 - 5) QUARTER, 8TH, 8TH-T, 16TH, 16TH-T, 32TH
	00 4E	0000 aaaa	Track 4 End Point (0 - 15) 1 - 16
	00 4F	0000 0aaa	Track 4 Direction (0 - 5) FWD1, FWD2, FWD3, BWD1, BWD2, BWD3
	00 50	0000 aaaa	Track 4 Zone (0 - 15) 1 - 16
	00 51	0aaa aaaa	Track 4 Destination (0 - 71) OSC1+2-PIT-CRS, OSC1+2-PIT-FINE, PORTA-TIME, OSC1-PIT-CRS, OSC1-PIT-FINE, OSC1-PITCH, OSC1-PENV-DPT, OSC1-TIME/PW, OSC1-TENV-DPT, OSC1-FORMA/FAT, OSC1-FENV-DPT, OSC1-LFO-RATE, OSC1-LFO-PCH, OSC1-LFO-TM/PW, OSC1-LFO-FR/FT, OSC1-LFO-LVL, OSC1-LVL, OSC2-PIT-CRS, OSC2-PIT-FINE, OSC2-PITCH, OSC2-PENV-DPT, OSC2-TIME/PW, OSC2-TENV-DPT, OSC2-FORMA/FAT, OSC2-FENV-DPT, OSC2-LFO-RATE, OSC2-LFO-PCH, OSC2-LFO-TM/PW, OSC2-LFO-FR/FT, OSC2-LFO-LVL, OSC2-LVL, CSM1-PRM1, CSM1-PRM2, CSM1-ENV1-ATK, CSM1-ENV1-DCY, CSM1-ENV1-SUS, CSM1-ENV1-REL, CSM1-ENV2-ATK, CSM1-ENV2-DCY, CSM1-ENV2-SUS, CSM1-ENV2-REL, CSM1-LFO-RATE, CSM1-LFO-PRM1, CSM1-LFO-PRM2, CSM2-PRM1, CSM2-PRM2, CSM2-ENV1-ATK, CSM2-ENV1-DCY, CSM2-ENV1-SUS, CSM2-ENV1-REL, CSM2-ENV2-ATK, CSM2-ENV2-DCY, CSM2-ENV2-SUS, CSM2-ENV2-REL, CSM2-LFO-RATE, CSM2-LFO-PRM1, CSM2-LFO-PRM2, TVA-LVL, TVA-PAN, TVA-ENV-ATK, TVA-ENV-DCY, TVA-ENV-SUS, TVA-ENV-REL, TVA-LFO-RATE, TVA-LFO-LVL, TVA-LFO-PAN, T-FX-SEND, CHO-SEND, REV-SEND, T-FX-PRM1, T-FX-PRM2, T-FX-PRM3
	00 52	0aaa aaaa	Track 4 Step 01 Value (1 - 127) -63 - +63
	00 53	0aaa aaaa	Track 4 Step 02 Value (1 - 127) -63 - +63
	00 54	0aaa aaaa	Track 4 Step 03 Value (1 - 127) -63 - +63
	00 55	0aaa aaaa	Track 4 Step 04 Value (1 - 127) -63 - +63
	00 56	0aaa aaaa	Track 4 Step 05 Value (1 - 127) -63 - +63
	00 57	0aaa aaaa	Track 4 Step 06 Value (1 - 127) -63 - +63
	00 58	0aaa aaaa	Track 4 Step 07 Value (1 - 127) -63 - +63
	00 59	0aaa aaaa	Track 4 Step 08 Value (1 - 127) -63 - +63
	00 5A	0aaa aaaa	Track 4 Step 09 Value (1 - 127) -63 - +63
	00 5B	0aaa aaaa	Track 4 Step 10 Value (1 - 127) -63 - +63
	00 5C	0aaa aaaa	Track 4 Step 11 Value (1 - 127) -63 - +63
	00 5D	0aaa aaaa	Track 4 Step 12 Value (1 - 127) -63 - +63
	00 5E	0aaa aaaa	Track 4 Step 13 Value (1 - 127) -63 - +63
	00 5F	0aaa aaaa	Track 4 Step 14 Value (1 - 127) -63 - +63
	00 60	0aaa aaaa	Track 4 Step 15 Value (1 - 127) -63 - +63
	00 61	0aaa aaaa	Track 4 Step 16 Value (1 - 127) -63 - +63
00 00 00 62	Total Size		

❍ Tone AP-Synthesis

Offset Address		Description
00 00	0000 0aaa	Octave Shift (61 - 67) -3 - +3
00 01	0aaa aaaa	Coarse Tune (16 - 112) -48 - +48
00 02	0aaa aaaa	T-FX Send Level (0 - 127)
00 03	0aaa aaaa	Chorus Send Level (0 - 127)
00 04	0aaa aaaa	Reverb Send Level (0 - 127)
00 05	0000 00aa	Output Assign (0 - 2) T-FX, MAIN, DIR
00 06	0aaa aaaa	Control Assign Dest 1 Source (0 - 108) OFF, CC01 - CC31, OFF, CC33 - CC95, BEND, AFT, PAD-X, PAD-Y, BEAM-L, BEAM-R, KNOB1, KNOB2, MOD, SW1, SW2, PEDAL1, PEDAL2
00 07	0000 000a	Control Assign Dest 1 Polarity (0 - 1) NORMAL, REVERSE
00 08	0aaa aaaa	Control Assign Dest 2 Source (0 - 108) OFF, CC01 - CC31, OFF, CC33 - CC95, BEND, AFT, PAD-X, PAD-Y, BEAM-L, BEAM-R, KNOB1, KNOB2, MOD, SW1, SW2, PEDAL1, PEDAL2
00 09	0000 000a	Control Assign Dest 2 Polarity (0 - 1) NORMAL, REVERSE
00 0A	0aaa aaaa	Control Assign Dest 3 Source (0 - 108) OFF, CC01 - CC31, OFF, CC33 - CC95, BEND, AFT, PAD-X, PAD-Y, BEAM-L, BEAM-R, KNOB1, KNOB2, MOD, SW1, SW2, PEDAL1, PEDAL2
00 0B	0000 000a	Control Assign Dest 3 Polarity (0 - 1) NORMAL, REVERSE
00 0C	0aaa aaaa	Control Assign Dest 4 Source (0 - 108) OFF, CC01 - CC31, OFF, CC33 - CC95, BEND, AFT, PAD-X, PAD-Y, BEAM-L, BEAM-R, KNOB1, KNOB2, MOD, SW1, SW2, PEDAL1, PEDAL2
00 0D	0000 000a	Control Assign Dest 4 Polarity (0 - 1) NORMAL, REVERSE
00 0E	0aaa aaaa	Control Assign Dest 5 Source (0 - 108) OFF, CC01 - CC31, OFF, CC33 - CC95, BEND, AFT, PAD-X, PAD-Y, BEAM-L, BEAM-R, KNOB1, KNOB2, MOD, SW1, SW2, PEDAL1, PEDAL2
00 0F	0000 000a	Control Assign Dest 5 Polarity (0 - 1) NORMAL, REVERSE
00 10	0aaa aaaa	Control Assign Dest 6 Source (0 - 108) OFF, CC01 - CC31, OFF, CC33 - CC95, BEND, AFT, PAD-X, PAD-Y, BEAM-L, BEAM-R, KNOB1, KNOB2, MOD, SW1, SW2, PEDAL1, PEDAL2
00 11	0000 000a	Control Assign Dest 6 Polarity (0 - 1) NORMAL, REVERSE
00 12	0aaa aaaa	Control Assign Dest 7 Source (0 - 108) OFF, CC01 - CC31, OFF, CC33 - CC95, BEND, AFT, PAD-X, PAD-Y, BEAM-L, BEAM-R, KNOB1, KNOB2, MOD, SW1, SW2, PEDAL1, PEDAL2
00 13	0000 000a	Control Assign Dest 7 Polarity (0 - 1) NORMAL, REVERSE
00 14	0aaa aaaa	Control Assign Dest 8 Source (0 - 108) OFF, CC01 - CC31, OFF, CC33 - CC95, BEND, AFT, PAD-X, PAD-Y, BEAM-L, BEAM-R, KNOB1, KNOB2, MOD, SW1, SW2, PEDAL1, PEDAL2
00 15	0000 000a	Control Assign Dest 8 Polarity (0 - 1) NORMAL, REVERSE
00 16	0aaa aaaa	Control Assign Dest 9 Source (0 - 108) OFF, CC01 - CC31, OFF, CC33 - CC95, BEND, AFT, PAD-X, PAD-Y, BEAM-L, BEAM-R, KNOB1, KNOB2, MOD, SW1, SW2, PEDAL1, PEDAL2
00 17	0000 000a	Control Assign Dest 9 Polarity (0 - 1) NORMAL, REVERSE
00 18	0aaa aaaa	Control Assign Dest 10 Source (0 - 108) OFF, CC01 - CC31, OFF, CC33 - CC95, BEND, AFT, PAD-X, PAD-Y,

			BEAM-L, BEAM-R, KNOB1, KNOB2, MOD, SW1, SW2, PEDAL1, PEDAL2
00 19	0000 000a	Control Assign Dest 10 Polarity	(0 - 1) NORMAL, REVERSE
00 1A	0aaa aaaa	Control Assign Dest 11 Source	(0 - 108) OFF, CC01 - CC31, OFF, CC33 - CC95, BEND, AFT, PAD-X, PAD-Y, BEAM-L, BEAM-R, KNOB1, KNOB2, MOD, SW1, SW2, PEDAL1, PEDAL2
00 1B	0000 000a	Control Assign Dest 11 Polarity	(0 - 1) NORMAL, REVERSE
00 1C	0aaa aaaa	Control Assign Dest 12 Source	(0 - 108) OFF, CC01 - CC31, OFF, CC33 - CC95, BEND, AFT, PAD-X, PAD-Y, BEAM-L, BEAM-R, KNOB1, KNOB2, MOD, SW1, SW2, PEDAL1, PEDAL2
00 1D	0000 000a	Control Assign Dest 12 Polarity	(0 - 1) NORMAL, REVERSE
00 1E	0aaa aaaa	Control Assign Dest 13 Source	(0 - 108) OFF, CC01 - CC31, OFF, CC33 - CC95, BEND, AFT, PAD-X, PAD-Y, BEAM-L, BEAM-R, KNOB1, KNOB2, MOD, SW1, SW2, PEDAL1, PEDAL2
00 1F	0000 000a	Control Assign Dest 13 Polarity	(0 - 1) NORMAL, REVERSE
00 20	0aaa aaaa	Control Assign Dest 14 Source	(0 - 108) OFF, CC01 - CC31, OFF, CC33 - CC95, BEND, AFT, PAD-X, PAD-Y, BEAM-L, BEAM-R, KNOB1, KNOB2, MOD, SW1, SW2, PEDAL1, PEDAL2
00 21	0000 000a	Control Assign Dest 14 Polarity	(0 - 1) NORMAL, REVERSE
00 22	0aaa aaaa	Control Assign Dest 15 Source	(0 - 108) OFF, CC01 - CC31, OFF, CC33 - CC95, BEND, AFT, PAD-X, PAD-Y, BEAM-L, BEAM-R, KNOB1, KNOB2, MOD, SW1, SW2, PEDAL1, PEDAL2
00 23	0000 000a	Control Assign Dest 15 Polarity	(0 - 1) NORMAL, REVERSE
00 24	0aaa aaaa	Control Assign Dest 16 Source	(0 - 108) OFF, CC01 - CC31, OFF, CC33 - CC95, BEND, AFT, PAD-X, PAD-Y, BEAM-L, BEAM-R, KNOB1, KNOB2, MOD, SW1, SW2, PEDAL1, PEDAL2
00 25	0000 000a	Control Assign Dest 16 Polarity	(0 - 1) NORMAL, REVERSE
00 26	0aaa aaaa	(reserved)	(0 - 127)
00 27	0aaa aaaa	(reserved)	(0 - 127)
00 28	0aaa aaaa	(reserved)	(0 - 127)
00 29	0aaa aaaa	(reserved)	(0 - 127)
00 2A	0aaa aaaa	(reserved)	(0 - 127)
00 2B	0aaa aaaa	AP-S Phrase Model	(0 - 127)
00 2C	0aaa aaaa	AP-S Level	(0 - 127)
00 2D	0aaa aaaa	AP-S Pan	(0 - 127) L64 - 63R
00 2E	0aaa aaaa	AP-S Pitch Fine Tune	(14 - 114) -50 - +50

#	00 2F	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	AP-S Parameter 1	(12768 - 52768) -20000 - +20000
#	00 33	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	AP-S Parameter 2	(12768 - 52768) -20000 - +20000
#	00 37	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	AP-S Parameter 3	(12768 - 52768) -20000 - +20000
#	00 3B	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	AP-S Parameter 4	(12768 - 52768) -20000 - +20000
#	00 3F	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	AP-S Parameter 5	(12768 - 52768) -20000 - +20000
#	00 43	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	AP-S Parameter 6	(12768 - 52768) -20000 - +20000
#	00 47	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	AP-S Parameter 7	(12768 - 52768) -20000 - +20000
#	00 4B	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	AP-S Parameter 8	(12768 - 52768) -20000 - +20000
#	00 4F	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	AP-S Parameter 9	(12768 - 52768) -20000 - +20000
#	00 53	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	AP-S Parameter 10	(12768 - 52768) -20000 - +20000
#	00 57	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	AP-S Parameter 11	(12768 - 52768) -20000 - +20000
#	00 5B	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	AP-S Parameter 12	(12768 - 52768) -20000 - +20000
#	00 5F	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	AP-S Parameter 13	(12768 - 52768) -20000 - +20000
#	00 63	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	AP-S Parameter 14	(12768 - 52768) -20000 - +20000
#	00 67	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	AP-S Parameter 15	(12768 - 52768) -20000 - +20000
#	00 6B	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	AP-S Parameter 16	(12768 - 52768) -20000 - +20000
#	00 6F	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	AP-S Parameter 17	(12768 - 52768) -20000 - +20000
#	00 73	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	AP-S Parameter 18	(12768 - 52768) -20000 - +20000
#	00 77	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	AP-S Parameter 19	(12768 - 52768) -20000 - +20000
#	00 7B	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	AP-S Parameter 20	(12768 - 52768) -20000 - +20000
#	00 7F	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	AP-S Parameter 21	(12768 - 52768) -20000 - +20000
#	01 03	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	AP-S Parameter 22	(12768 - 52768) -20000 - +20000
#	01 07	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	AP-S Parameter 23	(12768 - 52768) -20000 - +20000
#	01 0B	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	AP-S Parameter 24	(12768 - 52768) -20000 - +20000
#	01 0F	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	AP-S Parameter 25	(12768 - 52768) -20000 - +20000
#	01 13	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	AP-S Parameter 26	(12768 - 52768) -20000 - +20000
#	01 17	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	AP-S Parameter 27	(12768 - 52768) -20000 - +20000
#	01 1B	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	AP-S Parameter 28	(12768 - 52768) -20000 - +20000
#	01 1F	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	AP-S Parameter 29	(12768 - 52768) -20000 - +20000
#	01 23	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	AP-S Parameter 30	(12768 - 52768) -20000 - +20000
#	01 27	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	AP-S Parameter 31	(12768 - 52768) -20000 - +20000
#	01 2B	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	AP-S Parameter 32	(12768 - 52768) -20000 - +20000
	00 00 01 2F	Total Size		

❍ Tone Vocal Designer

Offset Address		Description	
00 00	0000 aaaa	Vocoder Type	(1 - 4) STEREO, MONO, VINTAGE, EXT-IN
00 01	0aaa aaaa	T-FX Send Level	(0 - 127)
00 02	0aaa aaaa	Chorus Send Level	(0 - 127)
00 03	0aaa aaaa	Reverb Send Level	(0 - 127)
00 04	0000 00aa	Output Assign	(0 - 2) T-FX, MAIN, DIR
00 05	0000 aaaa	Mic Setting Number	(1 - 8)
00 06	0aaa aaaa	Natural Voice Level	(0 - 127)
00 07	0aaa aaaa	(reserved)	(0 - 127)
00 08	0aaa aaaa	(reserved)	(0 - 127)
00 09	0aaa aaaa	(reserved)	(0 - 127)
00 0A	0aaa aaaa	(reserved)	(0 - 127)

#	00 0B	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Vocoder Parameter 1	(12768 - 52768) -20000 - +20000
#	00 0F	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Vocoder Parameter 2	(12768 - 52768) -20000 - +20000
#	00 13	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Vocoder Parameter 3	(12768 - 52768) -20000 - +20000
#	00 17	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	Vocoder Parameter 4	(12768 - 52768) -20000 - +20000
#	00 1B	0000 aaaa 0000 bbbb		

	0000 cccc		
	0000 dddd	Vocoder Parameter 5	(12768 - 52768) -20000 - +20000
# 00 1F	0000 aaaa		
	0000 bbbb		
	0000 cccc		
	0000 dddd	Vocoder Parameter 6	(12768 - 52768) -20000 - +20000
# 00 23	0000 aaaa		
	0000 bbbb		
	0000 cccc		
	0000 dddd	Vocoder Parameter 7	(12768 - 52768) -20000 - +20000
# 00 27	0000 aaaa		
	0000 bbbb		
	0000 cccc		
	0000 dddd	Vocoder Parameter 8	(12768 - 52768) -20000 - +20000
# 00 2B	0000 aaaa		
	0000 bbbb		
	0000 cccc		
	0000 dddd	Vocoder Parameter 9	(12768 - 52768) -20000 - +20000
# 00 2F	0000 aaaa		
	0000 bbbb		
	0000 cccc		
	0000 dddd	Vocoder Parameter 10	(12768 - 52768) -20000 - +20000
# 00 33	0000 aaaa		
	0000 bbbb		
	0000 cccc		
	0000 dddd	Vocoder Parameter 11	(12768 - 52768) -20000 - +20000
# 00 37	0000 aaaa		
	0000 bbbb		
	0000 cccc		
	0000 dddd	Vocoder Parameter 12	(12768 - 52768) -20000 - +20000
# 00 3B	0000 aaaa		
	0000 bbbb		
	0000 cccc		
	0000 dddd	Vocoder Parameter 13	(12768 - 52768) -20000 - +20000
# 00 3F	0000 aaaa		
	0000 bbbb		
	0000 cccc		
	0000 dddd	Vocoder Parameter 14	(12768 - 52768) -20000 - +20000
# 00 43	0000 aaaa		
	0000 bbbb		
	0000 cccc		
	0000 dddd	Vocoder Parameter 15	(12768 - 52768) -20000 - +20000
# 00 47	0000 aaaa		
	0000 bbbb		
	0000 cccc		
	0000 dddd	Vocoder Parameter 16	(12768 - 52768) -20000 - +20000
# 00 4B	0000 aaaa		
	0000 bbbb		
	0000 cccc		
	0000 dddd	Vocoder Parameter 17	(12768 - 52768) -20000 - +20000
# 00 4F	0000 aaaa		
	0000 bbbb		
	0000 cccc		
	0000 dddd	Vocoder Parameter 18	(12768 - 52768) -20000 - +20000
# 00 53	0000 aaaa		
	0000 bbbb		
	0000 cccc		
	0000 dddd	Vocoder Parameter 19	(12768 - 52768) -20000 - +20000
# 00 57	0000 aaaa		
	0000 bbbb		
	0000 cccc		
	0000 dddd	Vocoder Parameter 20	(12768 - 52768) -20000 - +20000
00 00 00 5B	Total Size		

❍ Tone Oscillator

Offset Address	Description		
00 00	0000 00aa	Structure Type	(0 - 3) 1 - 4
00 01	0000 000a	MOD Switch	(0 - 1) OFF, ON
00 02	0000 0aaa	MOD Type	(0 - 4) MIX, RING(AM), FM, ENV RING, OSC SYNC
00 03	0aaa aaaa	MOD Original Level	(0 - 127)
00 04	0aaa aaaa	MOD Attack Time	(0 - 127)
00 05	0aaa aaaa	MOD Release Time	(0 - 127)
00 06	0000 000a	TVA Switch	(0 - 1) OFF, ON
00 07	0aaa aaaa	TVA Level	(0 - 127)
00 08	00aa aaaa	TVA Level Keyfollow	(44 - 84) -200 - +200
00 09	0aaa aaaa	TVA Level LFO Depth	(1 - 127) -63 - +63
00 0A	0aaa aaaa	TVA Pan	(0 - 127) L64 - 63R
00 0B	00aa aaaa	TVA Pan Keyfollow	(44 - 84) -200 - +200
00 0C	0aaa aaaa	TVA Pan LFO Depth	(1 - 127) -63 - +63
00 0D	0aaa aaaa	T-FX Send Level	(0 - 127)
00 0E	0aaa aaaa	Chorus Send Level	(0 - 127)
00 0F	0aaa aaaa	Reverb Send Level	(0 - 127)
00 10	0000 00aa	Output Assign	(0 - 2) T-FX, MAIN, DIR
00 11	0000 000a	OSC 1 Switch	(0 - 1) OFF, ON
00 12	0000 00aa	OSC 1 Type	(0 - 2) ANALOG, PCM, EXTIN
00 13	000a aaaa	OSC 1 Wave Gain	(52 - 76) -12 - +12 [dB]
00 14	0aaa aaaa	OSC 1 Pitch	(1 - 127) -63 - +63
00 15	00aa aaaa	OSC 1 Pitch Keyfollow	(44 - 84) -200 - +200
00 16	0aaa aaaa	OSC 1 Pitch LFO Depth	(1 - 127) -63 - +63
00 17	0aaa aaaa	OSC 1 Pitch Envelope Depth	(1 - 127) -63 - +63
00 18	0aaa aaaa	OSC 1 Coarse Tune	(16 - 112) -48 - +48
00 19	0aaa aaaa	OSC 1 Fine Tune	(14 - 114) -50 - +50 [cent]
00 1A	000a aaaa	OSC 1 Random Pitch Depth	(0 - 30) 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 20, 30, 40, 50, 60, 70, 80, 90, 100, 200, 300, 400, 500, 600, 700, 800, 900, 1000, 1100, 1200
00 1B	0aaa aaaa	OSC 1 Level	(0 - 127)
00 1C	00aa aaaa	OSC 1 Level Keyfollow	(44 - 84) -200 - +200
00 1D	0aaa aaaa	OSC 1 Level LFO Depth	(1 - 127) -63 - +63
00 1E	0000 aaaa	OSC 1 Analog Wavefrom	(0 - 13) SAW, SQUARE, TRIANGLE, SINE, RAMP, JUNO, HQ-SAW, HQ-SQUARE, NOISE, LA-SAW, LA-SQUARE, SUPER-SAW, FBACK-OSC, X-MOD-OSC
00 1F	00aa aaaa	OSC 1 Impact	(0 - 40) 0.0 - 4.0
00 20	0aaa aaaa	OSC 1 Pulse Width	(1 - 127) -63 - +63
00 21	00aa aaaa	OSC 1 Pulse Width Keyfollow	(44 - 84) -200 - +200
00 22	0aaa aaaa	OSC 1 Pulse Width LFO Depth	(1 - 127) -63 - +63
00 23	0aaa aaaa	OSC 1 Pulse Width Envelope Depth	(1 - 127) -63 - +63
00 24	0aaa aaaa	OSC 1 Fat	(0 - 127)
00 25	00aa aaaa	OSC 1 Fat Keyfollow	(44 - 84) -200 - +200
00 26	0aaa aaaa	OSC 1 Fat LFO Depth	(1 - 127) -63 - +63
00 27	0aaa aaaa	OSC 1 Fat Envelope Depth	(1 - 127) -63 - +63
# 00 28	0000 aaaa		
	0000 bbbb		
	0000 cccc		
	0000 dddd	OSC 1 Wave Number	(0 - 999) OFF, 1 - 999
# 00 2C	0000 aaaa		
	0000 bbbb		
	0000 cccc		
	0000 dddd		
	0000 eeee		
	0000 ffff		
	0000 gggg		
	0000 hhhh	OSC 1 Start Offset	0000000h - FFFFFFFh
00 34	0aaa aaaa	OSC 1 Time	(1 - 127) -63 - +63
00 35	00aa aaaa	OSC 1 Time Keyfollow	(44 - 84) -200 - +200
00 36	0aaa aaaa	OSC 1 Time LFO Depth	(1 - 127) -63 - +63
00 37	0aaa aaaa	OSC 1 Time Envelope Depth	(1 - 127) -63 - +63
00 38	0000 00aa	OSC 1 Time Offset	(0 - 2) BWD, ZERO, FWD
00 39	0aaa aaaa	OSC 1 Formant	(1 - 127) -63 - +63
00 3A	00aa aaaa	OSC 1 Formant Keyfollow	(44 - 84) -200 - +200
00 3B	0aaa aaaa	OSC 1 Formant LFO Depth	(1 - 127) -63 - +63
00 3C	0aaa aaaa	OSC 1 Formant Envelope Depth	(1 - 127) -63 - +63
00 3D	0000 000a	OSC 1 Tempo Sync Sw	(0 - 1) OFF, ON
00 3E	0000 000a	OSC 1 Robot Voice Sw	(0 - 1) OFF, ON
00 3F	0000 00aa	OSC 1 Playback Mode	(0 - 3) RETRIGGER, LEGATO, STEP, EVENT
00 40	0000 000a	OSC 1 Loop Sw	(0 - 1) OFF, ON
00 41	0000 000a	OSC 1 Vari Sw	(0 - 1) OFF, ON
00 42	0aaa aaaa	OSC 1 Energy	(0 - 127) OFF, 1 - 127
00 43	0000 000a	OSC 1 Time Trip Sw	(0 - 1) OFF, ON
00 44	0000 000a	OSC 1 Time Trip Beat Keep	(0 - 1) OFF, ON
00 45	0000 000a	OSC 2 Switch	(0 - 1) OFF, ON
00 46	0000 00aa	OSC 2 Type	(0 - 2) ANALOG, PCM, EXTIN
00 47	000a aaaa	OSC 2 Wave Gain	(52 - 76) -12 - +12 [dB]
00 48	0aaa aaaa	OSC 2 Pitch	(1 - 127) -63 - +63
00 49	00aa aaaa	OSC 2 Pitch Keyfollow	(44 - 84) -200 - +200
00 4A	0aaa aaaa	OSC 2 Pitch LFO Depth	(1 - 127) -63 - +63
00 4B	0aaa aaaa	OSC 2 Pitch Envelope Depth	(1 - 127) -63 - +63
00 4C	0aaa aaaa	OSC 2 Coarse Tune	(16 - 112) -48 - +48
00 4D	0aaa aaaa	OSC 2 Fine Tune	(14 - 114) -50 - +50 [cent]
00 4E	000a aaaa	OSC 2 Random Pitch Depth	(0 - 30) 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 20, 30, 40, 50, 60, 70, 80, 90, 100, 200, 300, 400, 500, 600, 700, 800, 900, 1000, 1100, 1200
00 4F	0aaa aaaa	OSC 2 Level	(0 - 127)
00 50	00aa aaaa	OSC 2 Level Keyfollow	(44 - 84) -200 - +200
00 51	0aaa aaaa	OSC 2 Level LFO Depth	(1 - 127) -63 - +63
00 52	0000 aaaa	OSC 2 Analog Wavefrom	(0 - 13) SAW, SQUARE, TRIANGLE, SINE, RAMP, JUNO, HQ-SAW, HQ-SQUARE, NOISE, LA-SAW, LA-SQUARE, SUPER-SAW, FBACK-OSC, X-MOD-OSC
00 53	00aa aaaa	OSC 2 Impact	(0 - 40) 0.0 - 4.0
00 54	0aaa aaaa	OSC 2 Pulse Width	(1 - 127) -63 - +63
00 55	00aa aaaa	OSC 2 Pulse Width Keyfollow	(44 - 84) -200 - +200
00 56	0aaa aaaa	OSC 2 Pulse Width LFO Depth	(1 - 127) -63 - +63
00 57	0aaa aaaa	OSC 2 Pulse Width Envelope Depth	(1 - 127) -63 - +63
00 58	0aaa aaaa	OSC 2 Fat	(0 - 127)
00 59	00aa aaaa	OSC 2 Fat Keyfollow	(44 - 84) -200 - +200
00 5A	0aaa aaaa	OSC 2 Fat LFO Depth	(1 - 127) -63 - +63
00 5B	0aaa aaaa	OSC 2 Fat Envelope Depth	(1 - 127) -63 - +63
# 00 5C	0000 aaaa		

	0000 bbbb		
	0000 cccc		
	0000 dddd	OSC 2 Wave Number	(0 - 999)
			OFF, 1 - 999
# 00 60	0000 aaaa		
	0000 bbbb		
	0000 cccc		
	0000 dddd		
	0000 eeee		
	0000 ffff		
	0000 gggg		
	0000 hhhh	OSC 2 Start Offset	
			0000000h - FFFFFFFh
00 68	0aaa aaaa	OSC 2 Time	(1 - 127)
			-63 - +63
00 69	00aa aaaa	OSC 2 Time Keyfollow	(44 - 84)
			-200 - +200
00 6A	0aaa aaaa	OSC 2 Time LFO Depth	(1 - 127)
			-63 - +63
00 6B	0aaa aaaa	OSC 2 Time Envelope Depth	(1 - 127)
			-63 - +63
00 6C	0000 00aa	OSC 2 Time Offset	(0 - 2)
			BWD, ZERO, FWD
00 6D	0aaa aaaa	OSC 2 Formant	(1 - 127)
			-63 - +63
00 6E	00aa aaaa	OSC 2 Formant Keyfollow	(44 - 84)
			-200 - +200
00 6F	0aaa aaaa	OSC 2 Formant LFO Depth	(1 - 127)
			-63 - +63
00 70	0aaa aaaa	OSC 2 Formant Envelope Depth	(1 - 127)
			-63 - +63
00 71	0000 000a	OSC 2 Tempo Sync Sw	(0 - 1)
			OFF, ON
00 72	0000 000a	OSC 2 Robot Voice Sw	(0 - 1)
			OFF, ON
00 73	0000 00aa	OSC 2 Playback Mode	(0 - 3)
			RETRIGGER, LEGATO, STEP, EVENT
00 74	0000 000a	OSC 2 Loop Sw	(0 - 1)
			OFF, ON
00 75	0000 000a	OSC 2 Vari Sw	(0 - 1)
			OFF, ON
00 76	0aaa aaaa	OSC 2 Energy	(0 - 127)
			OFF, 1 - 127
00 77	0000 000a	OSC 2 Time Trip Sw	(0 - 1)
			OFF, ON
00 78	0000 000a	OSC 2 Time Trip Beat Keep	(0 - 1)
			OFF, ON
00 79	0aaa aaaa	OSC 1 Detune	(1 - 127)
			-63 - +63
00 7A	0000 00aa	OSC 1 Sub Oscillator Octave	(0 - 3)
			OFF, -2, -1, 0
00 7B	0aaa aaaa	OSC 1 Sub Oscillator Level	(0 - 127)
00 7C	0aaa aaaa	OSC 2 Detune	(1 - 127)
			-63 - +63
00 7D	0000 00aa	OSC 2 Sub Oscillator Octave	(0 - 3)
			OFF, -2, -1, 0
00 7E	0aaa aaaa	OSC 2 Sub Oscillator Level	(0 - 127)
00 00 00 7F	Total Size		

❍ Tone Envelope

Offset Address		Description	
# 00 00	0000 aaaa		
	0000 bbbb	Env 1 Attack Time	(0 - 144)
			0 - 127, MUSICAL-NOTES
# 00 02	0000 aaaa		
	0000 bbbb	Env 1 Decay Time	(0 - 144)
			0 - 127, MUSICAL-NOTES
00 04	0aaa aaaa	Env 1 Sustine	(0 - 127)
# 00 05	0000 aaaa		
	0000 bbbb	Env 1 Release Time	(0 - 144)
			0 - 127, MUSICAL-NOTES
00 07	0000 0aaa	Env 1 Velocity Curve	(0 - 7)
			FIXED, 1 - 7
00 08	0aaa aaaa	Env 1 Velocity Sens	(1 - 127)
			-63 - +63
00 09	0aaa aaaa	Env 1 Attack Velocity Sens	(1 - 127)
			-63 - +63
00 0A	0aaa aaaa	Env 1 Decay Velocity Sens	(1 - 127)
			-63 - +63
00 0B	0aaa aaaa	Env 1 Release Velocity Sens	(1 - 127)
			-63 - +63
00 0C	00aa aaaa	Env 1 Time Keyfollow	(44 - 84)
			-200 - +200
# 00 0D	0000 aaaa		
	0000 bbbb	Env 2 Attack Time	(0 - 144)
			0 - 127, MUSICAL-NOTES
# 00 0F	0000 aaaa		
	0000 bbbb	Env 2 Decay Time	(0 - 144)
			0 - 127, MUSICAL-NOTES
00 11	0aaa aaaa	Env 2 Sustine	(0 - 127)
# 00 12	0000 aaaa		
	0000 bbbb	Env 2 Release Time	(0 - 144)
			0 - 127, MUSICAL-NOTES
00 14	0000 0aaa	Env 2 Velocity Curve	(0 - 7)
			FIXED, 1 - 7
00 15	0aaa aaaa	Env 2 Velocity Sens	(1 - 127)
			-63 - +63
00 16	0aaa aaaa	Env 2 Attack Velocity Sens	(1 - 127)
			-63 - +63
00 17	0aaa aaaa	Env 2 Decay Velocity Sens	(1 - 127)
			-63 - +63
00 18	0aaa aaaa	Env 2 Release Velocity Sens	(1 - 127)
			-63 - +63
00 19	00aa aaaa	Env 2 Time Keyfollow	(44 - 84)
			-200 - +200
# 00 1A	0000 aaaa		
	0000 bbbb	Env 3 Attack Time	(0 - 144)
			0 - 127, MUSICAL-NOTES
# 00 1C	0000 aaaa		
	0000 bbbb	Env 3 Decay Time	(0 - 144)
			0 - 127, MUSICAL-NOTES
00 1E	0aaa aaaa	Env 3 Sustine	(0 - 127)
# 00 1F	0000 aaaa		
	0000 bbbb	Env 3 Release Time	(0 - 144)
			0 - 127, MUSICAL-NOTES
00 21	0000 0aaa	Env 3 Velocity Curve	(0 - 7)
			FIXED, 1 - 7
00 22	0aaa aaaa	Env 3 Velocity Sens	(1 - 127)
			-63 - +63
00 23	0aaa aaaa	Env 3 Attack Velocity Sens	(1 - 127)
			-63 - +63
00 24	0aaa aaaa	Env 3 Decay Velocity Sens	(1 - 127)
			-63 - +63
00 25	0aaa aaaa	Env 3 Release Velocity Sens	(1 - 127)
			-63 - +63
00 26	00aa aaaa	Env 3 Time Keyfollow	(44 - 84)
			-200 - +200
# 00 27	0000 aaaa		
	0000 bbbb	Env 4 Attack Time	(0 - 144)
			0 - 127, MUSICAL-NOTES
# 00 29	0000 aaaa		
	0000 bbbb	Env 4 Decay Time	(0 - 144)
			0 - 127, MUSICAL-NOTES
00 2B	0aaa aaaa	Env 4 Sustine	(0 - 127)
# 00 2C	0000 aaaa		
	0000 bbbb	Env 4 Release Time	(0 - 144)
			0 - 127, MUSICAL-NOTES
00 2E	0000 0aaa	Env 4 Velocity Curve	(0 - 7)
			FIXED, 1 - 7
00 2F	0aaa aaaa	Env 4 Velocity Sens	(1 - 127)
			-63 - +63
00 30	0aaa aaaa	Env 4 Attack Velocity Sens	(1 - 127)
			-63 - +63
00 31	0aaa aaaa	Env 4 Decay Velocity Sens	(1 - 127)
			-63 - +63
00 32	0aaa aaaa	Env 4 Release Velocity Sens	(1 - 127)
			-63 - +63
00 33	00aa aaaa	Env 4 Time Keyfollow	(44 - 84)
			-200 - +200
# 00 34	0000 aaaa		
	0000 bbbb	Env 5 Attack Time	(0 - 144)
			0 - 127, MUSICAL-NOTES
# 00 36	0000 aaaa		
	0000 bbbb	Env 5 Decay Time	(0 - 144)
			0 - 127, MUSICAL-NOTES
00 38	0aaa aaaa	Env 5 Sustine	(0 - 127)
# 00 39	0000 aaaa		
	0000 bbbb	Env 5 Release Time	(0 - 144)
			0 - 127, MUSICAL-NOTES
00 3B	0000 0aaa	Env 5 Velocity Curve	(0 - 7)
			FIXED, 1 - 7
00 3C	0aaa aaaa	Env 5 Velocity Sens	(1 - 127)
			-63 - +63
00 3D	0aaa aaaa	Env 5 Attack Velocity Sens	(1 - 127)
			-63 - +63
00 3E	0aaa aaaa	Env 5 Decay Velocity Sens	(1 - 127)
			-63 - +63
00 3F	0aaa aaaa	Env 5 Release Velocity Sens	(1 - 127)
			-63 - +63
00 40	00aa aaaa	Env 5 Time Keyfollow	(44 - 84)
			-200 - +200
# 00 41	0000 aaaa		
	0000 bbbb	Env 6 Attack Time	(0 - 144)
			0 - 127, MUSICAL-NOTES
# 00 43	0000 aaaa		
	0000 bbbb	Env 6 Decay Time	(0 - 144)
			0 - 127, MUSICAL-NOTES
00 45	0aaa aaaa	Env 6 Sustine	(0 - 127)
# 00 46	0000 aaaa		
	0000 bbbb	Env 6 Release Time	(0 - 144)
			0 - 127, MUSICAL-NOTES
00 48	0000 0aaa	Env 6 Velocity Curve	(0 - 7)
			FIXED, 1 - 7
00 49	0aaa aaaa	Env 6 Velocity Sens	(1 - 127)
			-63 - +63
00 4A	0aaa aaaa	Env 6 Attack Velocity Sens	(1 - 127)
			-63 - +63
00 4B	0aaa aaaa	Env 6 Decay Velocity Sens	(1 - 127)
			-63 - +63
00 4C	0aaa aaaa	Env 6 Release Velocity Sens	(1 - 127)
			-63 - +63
00 4D	00aa aaaa	Env 6 Time Keyfollow	(44 - 84)
			-200 - +200
# 00 4E	0000 aaaa		
	0000 bbbb	Env 7 Attack Time	(0 - 144)
			0 - 127, MUSICAL-NOTES
# 00 50	0000 aaaa		
	0000 bbbb	Env 7 Decay Time	(0 - 144)
			0 - 127, MUSICAL-NOTES
00 52	0aaa aaaa	Env 7 Sustine	(0 - 127)
# 00 53	0000 aaaa		
	0000 bbbb	Env 7 Release Time	(0 - 144)
			0 - 127, MUSICAL-NOTES
00 55	0000 0aaa	Env 7 Velocity Curve	(0 - 7)
			FIXED, 1 - 7
00 56	0aaa aaaa	Env 7 Velocity Sens	(1 - 127)
			-63 - +63
00 57	0aaa aaaa	Env 7 Attack Velocity Sens	(1 - 127)
			-63 - +63
00 58	0aaa aaaa	Env 7 Decay Velocity Sens	(1 - 127)
			-63 - +63
00 59	0aaa aaaa	Env 7 Release Velocity Sens	(1 - 127)
			-63 - +63
00 5A	00aa aaaa	Env 7 Time Keyfollow	(44 - 84)
			-200 - +200
# 00 5B	0000 aaaa		
	0000 bbbb	Env 8 Attack Time	(0 - 144)
			0 - 127, MUSICAL-NOTES
# 00 5D	0000 aaaa		
	0000 bbbb	Env 8 Decay Time	(0 - 144)
			0 - 127, MUSICAL-NOTES
00 5F	0aaa aaaa	Env 8 Sustine	(0 - 127)
# 00 60	0000 aaaa		
	0000 bbbb	Env 8 Release Time	(0 - 144)
			0 - 127, MUSICAL-NOTES
00 62	0000 0aaa	Env 8 Velocity Curve	(0 - 7)
			FIXED, 1 - 7
00 63	0aaa aaaa	Env 8 Velocity Sens	(1 - 127)
			-63 - +63
00 64	0aaa aaaa	Env 8 Attack Velocity Sens	(1 - 127)
			-63 - +63
00 65	0aaa aaaa	Env 8 Decay Velocity Sens	(1 - 127)
			-63 - +63
00 66	0aaa aaaa	Env 8 Release Velocity Sens	(1 - 127)
			-63 - +63
00 67	00aa aaaa	Env 8 Time Keyfollow	(44 - 84)
			-200 - +200
# 00 68	0000 aaaa		
	0000 bbbb	Env 9 Attack Time	(0 - 144)
			0 - 127, MUSICAL-NOTES
# 00 6A	0000 aaaa		
	0000 bbbb	Env 9 Decay Time	(0 - 144)
			0 - 127, MUSICAL-NOTES
00 6C	0aaa aaaa	Env 9 Sustine	(0 - 127)
# 00 6D	0000 aaaa		
	0000 bbbb	Env 9 Release Time	(0 - 144)
			0 - 127, MUSICAL-NOTES
00 6F	0000 0aaa	Env 9 Velocity Curve	(0 - 7)
			FIXED, 1 - 7
00 70	0aaa aaaa	Env 9 Velocity Sens	(1 - 127)
			-63 - +63
00 71	0aaa aaaa	Env 9 Attack Velocity Sens	(1 - 127)
			-63 - +63
00 72	0aaa aaaa	Env 9 Decay Velocity Sens	(1 - 127)
			-63 - +63
00 73	0aaa aaaa	Env 9 Release Velocity Sens	(1 - 127)
			-63 - +63
00 74	00aa aaaa	Env 9 Time Keyfollow	(44 - 84)
			-200 - +200

#	00 75	0000 aaaa 0000 bbbb	Env 10 Attack Time (0 - 144) 0 - 127, MUSICAL-NOTES
#	00 77	0000 aaaa 0000 bbbb	Env 10 Decay Time (0 - 144) 0 - 127, MUSICAL-NOTES
	00 79	0aaa aaaa	Env 10 Sustine (0 - 127)
#	00 7A	0000 aaaa 0000 bbbb	Env 10 Release Time (0 - 144) 0 - 127, MUSICAL-NOTES
	00 7C	0000 0aaa	Env 10 Velocity Curve (0 - 7) FIXED, 1 - 7
	00 7D	0aaa aaaa	Env 10 Velocity Sens (1 - 127) -63 - +63
	00 7E	0aaa aaaa	Env 10 Attack Velocity Sens (1 - 127) -63 - +63
	00 7F	0aaa aaaa	Env 10 Decay Velocity Sens (1 - 127) -63 - +63
	01 00	0aaa aaaa	Env 10 Release Velocity Sens (1 - 127) -63 - +63
	01 01	00aa aaaa	Env 10 Time Keyfollow (44 - 84) -200 - +200
#	01 02	0000 aaaa 0000 bbbb	Env 11 Attack Time (0 - 144) 0 - 127, MUSICAL-NOTES
#	01 04	0000 aaaa 0000 bbbb	Env 11 Decay Time (0 - 144) 0 - 127, MUSICAL-NOTES
	01 06	0aaa aaaa	Env 11 Sustine (0 - 127)
#	01 07	0000 aaaa 0000 bbbb	Env 11 Release Time (0 - 144) 0 - 127, MUSICAL-NOTES
	01 09	0000 0aaa	Env 11 Velocity Curve (0 - 7) FIXED, 1 - 7
	01 0A	0aaa aaaa	Env 11 Velocity Sens (1 - 127) -63 - +63
	01 0B	0aaa aaaa	Env 11 Attack Velocity Sens (1 - 127) -63 - +63
	01 0C	0aaa aaaa	Env 11 Decay Velocity Sens (1 - 127) -63 - +63
	01 0D	0aaa aaaa	Env 11 Release Velocity Sens (1 - 127) -63 - +63
	01 0E	00aa aaaa	Env 11 Time Keyfollow (44 - 84) -200 - +200
#	01 0F	0000 aaaa 0000 bbbb	Env 12 Attack Time (0 - 144) 0 - 127, MUSICAL-NOTES
#	01 11	0000 aaaa 0000 bbbb	Env 12 Decay Time (0 - 144) 0 - 127, MUSICAL-NOTES
	01 13	0aaa aaaa	Env 12 Sustine (0 - 127)
#	01 14	0000 aaaa 0000 bbbb	Env 12 Release Time (0 - 144) 0 - 127, MUSICAL-NOTES
	01 16	0000 0aaa	Env 12 Velocity Curve (0 - 7) FIXED, 1 - 7
	01 17	0aaa aaaa	Env 12 Velocity Sens (1 - 127) -63 - +63
	01 18	0aaa aaaa	Env 12 Attack Velocity Sens (1 - 127) -63 - +63
	01 19	0aaa aaaa	Env 12 Decay Velocity Sens (1 - 127) -63 - +63
	01 1A	0aaa aaaa	Env 12 Release Velocity Sens (1 - 127) -63 - +63
	01 1B	00aa aaaa	Env 12 Time Keyfollow (44 - 84) -200 - +200
#	01 1C	0000 aaaa 0000 bbbb	Env 13 Attack Time (0 - 144) 0 - 127, MUSICAL-NOTES
#	01 1E	0000 aaaa 0000 bbbb	Env 13 Decay Time (0 - 144) 0 - 127, MUSICAL-NOTES
	01 20	0aaa aaaa	Env 13 Sustine (0 - 127)
#	01 21	0000 aaaa 0000 bbbb	Env 13 Release Time (0 - 144) 0 - 127, MUSICAL-NOTES
	01 23	0000 0aaa	Env 13 Velocity Curve (0 - 7) FIXED, 1 - 7
	01 24	0aaa aaaa	Env 13 Velocity Sens (1 - 127) -63 - +63
	01 25	0aaa aaaa	Env 13 Attack Velocity Sens (1 - 127) -63 - +63
	01 26	0aaa aaaa	Env 13 Decay Velocity Sens (1 - 127) -63 - +63
	01 27	0aaa aaaa	Env 13 Release Velocity Sens (1 - 127) -63 - +63
	01 28	00aa aaaa	Env 13 Time Keyfollow (44 - 84) -200 - +200
	00 00 01 29	Total Size	

Env1	OSC1 Pitch
Env2	OSC1 Time/Pulse Width
Env3	OSC1 Formant/Fat
Env4	OSC1 Level
Env5	OSC2 Pitch
Env6	OSC2 Time/Pulse Width
Env7	OSC2 Formant/Fat
Env8	OSC2 Level
Env9	COSM1 Parameter 1
Env10	COSM1 Parameter 2
Env11	COSM2 Parameter 1
Env12	COSM2 Parameter 2
Env13	TVA Level

❍ Tone LFO

Offset Address		Description	
	00 00	0000 0aaa	LFO 1 Waveform (0 - 7) SIN, TRI, SAW, SQR, RND, TRP, S&H, CHS
#	00 01	0000 aaaa 0000 bbbb	LFO 1 Rate (0 - 144) 0 - 127, MUSICAL-NOTES
	00 03	0000 0aaa	LFO 1 Offset (0 - 4) -100, -50, 0, +50, +100
	00 04	0aaa aaaa	LFO 1 Delay Time (0 - 127)
	00 05	0000 00aa	LFO 1 Fade Mode (0 - 3) ON-IN, ON-OUT, OFF-IN, OFF-OUT
	00 06	0aaa aaaa	LFO 1 Fade Time (0 - 127)
	00 07	0000 000a	LFO 1 Key Sync (0 - 1) OFF, ON
	00 08	0000 0aaa	LFO 2 Waveform (0 - 7) SIN, TRI, SAW, SQR, RND, TRP, S&H, CHS
#	00 09	0000 aaaa 0000 bbbb	LFO 2 Rate (0 - 144) 0 - 127, MUSICAL-NOTES
	00 0B	0000 0aaa	LFO 2 Offset (0 - 4) -100, -50, 0, +50, +100
	00 0C	0aaa aaaa	LFO 2 Delay Time (0 - 127)
	00 0D	0000 00aa	LFO 2 Fade Mode (0 - 3) ON-IN, ON-OUT, OFF-IN, OFF-OUT
	00 0E	0aaa aaaa	LFO 2 Fade Time (0 - 127)
	00 0F	0000 000a	LFO 2 Key Sync (0 - 1) OFF, ON
	00 10	0000 0aaa	LFO 3 Waveform (0 - 7) SIN, TRI, SAW, SQR, RND, TRP, S&H, CHS
#	00 11	0000 aaaa 0000 bbbb	LFO 3 Rate (0 - 144) 0 - 127, MUSICAL-NOTES
	00 13	0000 0aaa	LFO 3 Offset (0 - 4) -100, -50, 0, +50, +100
	00 14	0aaa aaaa	LFO 3 Delay Time (0 - 127)
	00 15	0000 00aa	LFO 3 Fade Mode (0 - 3) ON-IN, ON-OUT, OFF-IN, OFF-OUT
	00 16	0aaa aaaa	LFO 3 Fade Time (0 - 127)
	00 17	0000 000a	LFO 3 Key Sync (0 - 1) OFF, ON
	00 18	0000 0aaa	LFO 4 Waveform (0 - 7) SIN, TRI, SAW, SQR, RND, TRP, S&H, CHS
#	00 19	0000 aaaa 0000 bbbb	LFO 4 Rate (0 - 144) 0 - 127, MUSICAL-NOTES
	00 1B	0000 0aaa	LFO 4 Offset (0 - 4) -100, -50, 0, +50, +100
	00 1C	0aaa aaaa	LFO 4 Delay Time (0 - 127)
	00 1D	0000 00aa	LFO 4 Fade Mode (0 - 3) ON-IN, ON-OUT, OFF-IN, OFF-OUT
	00 1E	0aaa aaaa	LFO 4 Fade Time (0 - 127)
	00 1F	0000 000a	LFO 4 Key Sync (0 - 1) OFF, ON
	00 20	0000 0aaa	LFO 5 Waveform (0 - 7) SIN, TRI, SAW, SQR, RND, TRP, S&H, CHS
#	00 21	0000 aaaa 0000 bbbb	LFO 5 Rate (0 - 144) 0 - 127, MUSICAL-NOTES
	00 23	0000 0aaa	LFO 5 Offset (0 - 4) -100, -50, 0, +50, +100
	00 24	0aaa aaaa	LFO 5 Delay Time (0 - 127)
	00 25	0000 00aa	LFO 5 Fade Mode (0 - 3) ON-IN, ON-OUT, OFF-IN, OFF-OUT
	00 26	0aaa aaaa	LFO 5 Fade Time (0 - 127)
	00 27	0000 000a	LFO 5 Key Sync (0 - 1) OFF, ON
	00 00 00 28	Total Size	

LFO1	OSC1
LFO2	OSC2
LFO3	COSM1
LFO4	COSM2
LFO5	TVA

❍ Tone COSM

Offset Address		Description	
	00 00	0000 000a	COSM Switch (0 - 1) BYPASS, ON
	00 01	0aaa aaaa	COSM Type (0 - 16)
#	00 02	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	COSM Parameter 1 (12768 - 52768) -20000 - +20000
#	00 06	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	COSM Parameter 2 (12768 - 52768) -20000 - +20000
#	00 0A	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	COSM Parameter 3 (12768 - 52768) -20000 - +20000
#	00 0E	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	COSM Parameter 4 (12768 - 52768) -20000 - +20000
#	00 12	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	COSM Parameter 5 (12768 - 52768) -20000 - +20000
#	00 16	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	COSM Parameter 6 (12768 - 52768) -20000 - +20000
#	00 1A	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	COSM Parameter 7 (12768 - 52768) -20000 - +20000
#	00 1E	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	COSM Parameter 8 (12768 - 52768) -20000 - +20000
#	00 22	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	COSM Parameter 9 (12768 - 52768) -20000 - +20000
#	00 26	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	COSM Parameter 10 (12768 - 52768) -20000 - +20000
#	00 2A	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	COSM Parameter 11 (12768 - 52768) -20000 - +20000
#	00 2E	0000 aaaa 0000 bbbb 0000 cccc 0000 dddd	COSM Parameter 12 (12768 - 52768) -20000 - +20000
#	00 32	0000 aaaa 0000 bbbb	

	0000 cccc		
	0000 dddd	COSM Parameter 13	(12768 - 52768) -20000 - +20000
# 00 36	0000 aaaa		
	0000 bbbb		
	0000 cccc		
	0000 dddd	COSM Parameter 14	(12768 - 52768) -20000 - +20000
# 00 3A	0000 aaaa		
	0000 bbbb		
	0000 cccc		
	0000 dddd	COSM Parameter 15	(12768 - 52768) -20000 - +20000
# 00 3E	0000 aaaa		
	0000 bbbb		
	0000 cccc		
	0000 dddd	COSM Parameter 16	(12768 - 52768) -20000 - +20000
00 00 00 42	Total Size		

❍ Patch Common

Offset Address	Description		
00 00	0aaa aaaa	Patch Name 1	(32 - 127) 32 - 127 [ASCII]
00 01	0aaa aaaa	Patch Name 2	(32 - 127) 32 - 127 [ASCII]
00 02	0aaa aaaa	Patch Name 3	(32 - 127) 32 - 127 [ASCII]
00 03	0aaa aaaa	Patch Name 4	(32 - 127) 32 - 127 [ASCII]
00 04	0aaa aaaa	Patch Name 5	(32 - 127) 32 - 127 [ASCII]
00 05	0aaa aaaa	Patch Name 6	(32 - 127) 32 - 127 [ASCII]
00 06	0aaa aaaa	Patch Name 7	(32 - 127) 32 - 127 [ASCII]
00 07	0aaa aaaa	Patch Name 8	(32 - 127) 32 - 127 [ASCII]
00 08	0aaa aaaa	Patch Name 9	(32 - 127) 32 - 127 [ASCII]
00 09	0aaa aaaa	Patch Name 10	(32 - 127) 32 - 127 [ASCII]
00 0A	0aaa aaaa	Patch Name 11	(32 - 127) 32 - 127 [ASCII]
00 0B	0aaa aaaa	Patch Name 12	(32 - 127) 32 - 127 [ASCII]
00 0C	0aaa aaaa	Patch Category	(0 - 15)
00 0D	0aaa aaaa	Patch Level	(0 - 127)
00 0E	0aaa aaaa	Patch Coarse Tune	(16 - 112) -48 - +48
# 00 0F	0000 aaaa		
	0000 bbbb		
	0000 cccc		
	0000 dddd	Patch Tempo	(200 - 2500) 20.0 - 250.0
00 13	0000 00aa	(reserved)	(0 - 2)
00 14	0000 000a	S1 Assign Mode	(0 - 1) LATCH, MOMENTARY
00 15	0000 000a	S2 Assign Mode	(0 - 1) LATCH, MOMENTARY
00 16	0000 000a	Chorus Switch	(0 - 1) OFF, ON
00 17	0000 000a	Reverb Switch	(0 - 1) OFF, ON
00 18	0000 000a	(reserved)	(0 - 1)
00 19	0000 00aa	Arpeggio Tone Select	(0 - 2) UPPER, LOWER, UPPER&LOWER
00 1A	0000 000a	APM Tone Select	(0 - 1) UPPER, LOWER
00 1B	0000 000a	Vocal Designer Tone Select	(0 - 1) UPPER, LOWER
00 1C	0000 0aaa	Vocal Designer Car/Mod Select	(0 - 3) NORMAL, CAR-BY-OTHERTONE, MOD-BY-OTHERTONE, PROCESSOR
00 1D	0aaa aaaa	(reserved)	(0 - 127)
00 1E	0aaa aaaa	(reserved)	(0 - 127)
00 1F	0aaa aaaa	(reserved)	(0 - 127)
00 20	0aaa aaaa	(reserved)	(0 - 127)
00 00 00 21	Total Size		

❍ Patch Chorus

Offset Address	Description		
00 00	0000 aaaa	Chorus Type	(0 - 8)
00 01	0aaa aaaa	Chorus Master Level	(0 - 127)
00 02	0aaa aaaa	Chorus Reverb Send Level	(0 - 127)
# 00 03	0000 aaaa		
	0000 bbbb		
	0000 cccc		
	0000 dddd	Chorus Parameter 1	(12768 - 52768) -20000 - +20000
# 00 07	0000 aaaa		
	0000 bbbb		
	0000 cccc		
	0000 dddd	Chorus Parameter 2	(12768 - 52768) -20000 - +20000
# 00 0B	0000 aaaa		
	0000 bbbb		
	0000 cccc		
	0000 dddd	Chorus Parameter 3	(12768 - 52768) -20000 - +20000
# 00 0F	0000 aaaa		
	0000 bbbb		
	0000 cccc		
	0000 dddd	Chorus Parameter 4	(12768 - 52768) -20000 - +20000
# 00 13	0000 aaaa		
	0000 bbbb		
	0000 cccc		
	0000 dddd	Chorus Parameter 5	(12768 - 52768) -20000 - +20000
# 00 17	0000 aaaa		
	0000 bbbb		
	0000 cccc		
	0000 dddd	Chorus Parameter 6	(12768 - 52768) -20000 - +20000
# 00 1B	0000 aaaa		
	0000 bbbb		
	0000 cccc		
	0000 dddd	Chorus Parameter 7	(12768 - 52768) -20000 - +20000
# 00 1F	0000 aaaa		
	0000 bbbb		
	0000 cccc		
	0000 dddd	Chorus Parameter 8	(12768 - 52768) -20000 - +20000
# 00 23	0000 aaaa		
	0000 bbbb		
	0000 cccc		
	0000 dddd	Chorus Parameter 9	(12768 - 52768) -20000 - +20000
# 00 27	0000 aaaa		
	0000 bbbb		
	0000 cccc		
	0000 dddd	Chorus Parameter 10	(12768 - 52768) -20000 - +20000
# 00 2B	0000 aaaa		
	0000 bbbb		
	0000 cccc		
	0000 dddd	Chorus Parameter 11	(12768 - 52768) -20000 - +20000
# 00 2F	0000 aaaa		
	0000 bbbb		
	0000 cccc		
	0000 dddd	Chorus Parameter 12	(12768 - 52768) -20000 - +20000
00 00 00 33	Total Size		

❍ Patch Reverb

Offset Address	Description		
00 00	0000 aaaa	Reverb Type	(0 - 13)
00 01	0aaa aaaa	Reverb Master Level	(0 - 127)
# 00 02	0000 aaaa		
	0000 bbbb		
	0000 cccc		
	0000 dddd	Reverb Parameter 1	(12768 - 52768) -20000 - +20000
# 00 06	0000 aaaa		
	0000 bbbb		
	0000 cccc		
	0000 dddd	Reverb Parameter 2	(12768 - 52768) -20000 - +20000
# 00 0A	0000 aaaa		
	0000 bbbb		
	0000 cccc		
	0000 dddd	Reverb Parameter 3	(12768 - 52768) -20000 - +20000
# 00 0E	0000 aaaa		
	0000 bbbb		
	0000 cccc		
	0000 dddd	Reverb Parameter 4	(12768 - 52768) -20000 - +20000
# 00 12	0000 aaaa		
	0000 bbbb		
	0000 cccc		
	0000 dddd	Reverb Parameter 5	(12768 - 52768) -20000 - +20000
# 00 16	0000 aaaa		
	0000 bbbb		
	0000 cccc		
	0000 dddd	Reverb Parameter 6	(12768 - 52768) -20000 - +20000
# 00 1A	0000 aaaa		
	0000 bbbb		
	0000 cccc		
	0000 dddd	Reverb Parameter 7	(12768 - 52768) -20000 - +20000
# 00 1E	0000 aaaa		
	0000 bbbb		
	0000 cccc		
	0000 dddd	Reverb Parameter 8	(12768 - 52768) -20000 - +20000
# 00 22	0000 aaaa		
	0000 bbbb		
	0000 cccc		
	0000 dddd	Reverb Parameter 9	(12768 - 52768) -20000 - +20000
# 00 26	0000 aaaa		
	0000 bbbb		
	0000 cccc		
	0000 dddd	Reverb Parameter 10	(12768 - 52768) -20000 - +20000
# 00 2A	0000 aaaa		
	0000 bbbb		
	0000 cccc		
	0000 dddd	Reverb Parameter 11	(12768 - 52768) -20000 - +20000
# 00 2E	0000 aaaa		
	0000 bbbb		
	0000 cccc		
	0000 dddd	Reverb Parameter 12	(12768 - 52768) -20000 - +20000
# 00 32	0000 aaaa		
	0000 bbbb		
	0000 cccc		
	0000 dddd	Reverb Parameter 13	(12768 - 52768) -20000 - +20000
# 00 36	0000 aaaa		
	0000 bbbb		
	0000 cccc		
	0000 dddd	Reverb Parameter 14	(12768 - 52768) -20000 - +20000
# 00 3A	0000 aaaa		
	0000 bbbb		
	0000 cccc		
	0000 dddd	Reverb Parameter 15	(12768 - 52768) -20000 - +20000
# 00 3E	0000 aaaa		
	0000 bbbb		
	0000 cccc		
	0000 dddd	Reverb Parameter 16	(12768 - 52768) -20000 - +20000
# 00 42	0000 aaaa		
	0000 bbbb		
	0000 cccc		
	0000 dddd	Reverb Parameter 17	(12768 - 52768) -20000 - +20000
# 00 46	0000 aaaa		
	0000 bbbb		
	0000 cccc		
	0000 dddd	Reverb Parameter 18	(12768 - 52768) -20000 - +20000
# 00 4A	0000 aaaa		
	0000 bbbb		
	0000 cccc		
	0000 dddd	Reverb Parameter 19	(12768 - 52768) -20000 - +20000
# 00 4E	0000 aaaa		

	0000 bbbb		
	0000 cccc		
	0000 dddd	Reverb Parameter 20	(12768 - 52768) -20000 - +20000
#	00 52	0000 aaaa	
		0000 bbbb	
		0000 cccc	
		0000 dddd	Reverb Parameter 21 (12768 - 52768) -20000 - +20000
#	00 56	0000 aaaa	
		0000 bbbb	
		0000 cccc	
		0000 dddd	Reverb Parameter 22 (12768 - 52768) -20000 - +20000
#	00 5A	0000 aaaa	
		0000 bbbb	
		0000 cccc	
		0000 dddd	Reverb Parameter 23 (12768 - 52768) -20000 - +20000
#	00 5E	0000 aaaa	
		0000 bbbb	
		0000 cccc	
		0000 dddd	Reverb Parameter 24 (12768 - 52768) -20000 - +20000
00 00 00 62		Total Size	

❍ Patch Controller

Offset Address		Description	
00 00	0000 0aaa	Beam Type	(0 - 4) OFF, 1 - 4
00 01	0000 000a	Pad Mode	(0 - 1) X-Y, TIME-TRIP
00 02	0000 000a	Pad Hold	(0 - 1) OFF, ON
00 03	0000 000a	Arpeggio Switch	(0 - 1) OFF, ON
00 04	0000 000a	Arpeggio Hold	(0 - 1) OFF, ON
00 05	0aaa aaaa	Arpeggio Motif	(0 - 7) UP, DOWN, UP&DOWN, RANDOM, NOTE-ORDER, RHYTHM, PHRASE, AUTO
00 06	0aaa aaaa	Arpeggio Duration	(0 - 100)
00 07	0aaa aaaa	Arpeggio Shuffle Rate	(0 - 100)
00 08	0000 000a	Arpeggio Shuffle Resolution	(0 - 1) 16TH, 8TH
00 09	0aaa aaaa	Arpeggio Keyboard Velocity	(0 - 127) REAL, 1 - 127
00 0A	0000 0aaa	Arpeggio Octave Range	(61 - 67) -3 - +3
00 0B	0000 0aaa	Arpeggio Grid	(0 - 5) QUARTER, 8TH, 8TH-T, 16TH, 16TH-T, 32TH
00 0C	000a aaaa	Arpeggio End Point	(0 - 31) 1 - 32
00 00 00 0D		Total Size	

❍ Patch Tone

Offset Address		Description	
00 00	0000 000a	Receive Switch	(0 - 1) OFF, ON
00 01	0aaa aaaa	Tone Bank Select MSB (CC# 0)	(0 - 127)
00 02	0aaa aaaa	Tone Bank Select LSB (CC# 32)	(0 - 127)
00 03	0aaa aaaa	Tone Program Number (PC)	(0 - 127)
00 04	0aaa aaaa	Tone Level	(0 - 127)
00 05	0aaa aaaa	Tone Pan	(0 - 127) L64 - 63R
00 06	0aaa aaaa	Key Range Min	(0 - 127) C-1 - MAX
00 07	0aaa aaaa	Key Range Max	(0 - 127) MIN - G9
00 08	0aaa aaaa	(reserved)	(0 - 127)
00 09	0aaa aaaa	(reserved)	(0 - 127)
00 0A	0aaa aaaa	(reserved)	(0 - 127)
00 0B	0aaa aaaa	(reserved)	(0 - 127)
00 0C	0000 000a	(reserved)	(0 - 1)
00 0D	0000 000a	(reserved)	(0 - 1)
00 0E	0000 000a	(reserved)	(0 - 1)
00 0F	0000 000a	(reserved)	(0 - 1)
00 10	0000 000a	(reserved)	(0 - 1)
00 11	0000 000a	(reserved)	(0 - 1)
00 12	0000 000a	(reserved)	(0 - 1)
00 13	0000 000a	(reserved)	(0 - 1)
00 14	0000 000a	(reserved)	(0 - 1)
00 15	0000 000a	Reserved 1	(0 - 1)
00 16	0000 000a	Reserved 1	(0 - 1)
00 17	0000 000a	Reserved 2	(0 - 1)
00 18	0000 000a	Reserved 2	(0 - 1)
00 19	0000 000a	Reserved 3	(0 - 1)
00 1A	0000 000a	Reserved 3	(0 - 1)
00 1B	0000 000a	Reserved 4	(0 - 1)
00 1C	0000 000a	Reserved 4	(0 - 1)
00 1D	0000 000a	Reserved 5	(0 - 1)
00 1E	0000 000a	Reserved 5	(0 - 1)
00 1F	0000 000a	Reserved 6	(0 - 1)
00 20	0000 000a	Reserved 6	(0 - 1)
00 21	0000 000a	Reserved 7	(0 - 1)
00 22	0000 000a	Reserved 7	(0 - 1)
00 23	0000 000a	Reserved 8	(0 - 1)
00 24	0000 000a	Reserved 8	(0 - 1)
00 25	0000 000a	Reserved 1	(0 - 1)
00 26	0000 000a	Reserved 2	(0 - 1)
00 27	0000 000a	Reserved 3	(0 - 1)
00 28	0000 000a	Reserved 4	(0 - 1)
00 29	0000 000a	Reserved 5	(0 - 1)
00 2A	0000 000a	Reserved 6	(0 - 1)
00 2B	0000 000a	Reserved 7	(0 - 1)
00 2C	0000 000a	Reserved 8	(0 - 1)
00 2D	0000 000a	Reserved 9	(0 - 1)
00 2E	0000 000a	Reserved 10	(0 - 1)
00 2F	0000 000a	Reserved 11	(0 - 1)
00 30	0000 000a	Reserved 12	(0 - 1)
00 31	0000 000a	Reserved 13	(0 - 1)
00 32	0000 000a	Reserved 14	(0 - 1)
00 33	0000 000a	Reserved 15	(0 - 1)
00 34	0000 000a	Reserved 16	(0 - 1)
00 35	0000 000a	Reserved 1	(0 - 1)
00 36	0000 000a	Reserved 2	(0 - 1)
00 37	0000 000a	Reserved 3	(0 - 1)
00 00 00 38		Total Size	

❍ Patch Arpeggio

Offset Address		Description	
00 00	0000 000a	Control Switch	(0 - 1) NOTE, CTRL
00 01	0aaa aaaa	Control Number	(0 - 127)
# 00 02	0000 aaaa		
	0000 bbbb	Step 1 Velocity	(0 - 128) REST, 1 - 127, TIE
# 00 04	0000 aaaa		
	0000 bbbb	Step 2 Velocity	(0 - 128) REST, 1 - 127, TIE
# 00 06	0000 aaaa		
	0000 bbbb	Step 3 Velocity	(0 - 128) REST, 1 - 127, TIE
# 00 08	0000 aaaa		
	0000 bbbb	Step 4 Velocity	(0 - 128) REST, 1 - 127, TIE
# 00 0A	0000 aaaa		
	0000 bbbb	Step 5 Velocity	(0 - 128) REST, 1 - 127, TIE
# 00 0C	0000 aaaa		
	0000 bbbb	Step 6 Velocity	(0 - 128) REST, 1 - 127, TIE
# 00 0E	0000 aaaa		
	0000 bbbb	Step 7 Velocity	(0 - 128) REST, 1 - 127, TIE
# 00 10	0000 aaaa		
	0000 bbbb	Step 8 Velocity	(0 - 128) REST, 1 - 127, TIE
# 00 12	0000 aaaa		
	0000 bbbb	Step 9 Velocity	(0 - 128) REST, 1 - 127, TIE
# 00 14	0000 aaaa		
	0000 bbbb	Step 10 Velocity	(0 - 128) REST, 1 - 127, TIE
# 00 16	0000 aaaa		
	0000 bbbb	Step 11 Velocity	(0 - 128) REST, 1 - 127, TIE
# 00 18	0000 aaaa		
	0000 bbbb	Step 12 Velocity	(0 - 128) REST, 1 - 127, TIE
# 00 1A	0000 aaaa		
	0000 bbbb	Step 13 Velocity	(0 - 128) REST, 1 - 127, TIE
# 00 1C	0000 aaaa		
	0000 bbbb	Step 14 Velocity	(0 - 128) REST, 1 - 127, TIE
# 00 1E	0000 aaaa		
	0000 bbbb	Step 15 Velocity	(0 - 128) REST, 1 - 127, TIE
# 00 20	0000 aaaa		
	0000 bbbb	Step 16 Velocity	(0 - 128) REST, 1 - 127, TIE
# 00 22	0000 aaaa		
	0000 bbbb	Step 17 Velocity	(0 - 128) REST, 1 - 127, TIE
# 00 24	0000 aaaa		
	0000 bbbb	Step 18 Velocity	(0 - 128) REST, 1 - 127, TIE
# 00 26	0000 aaaa		
	0000 bbbb	Step 19 Velocity	(0 - 128) REST, 1 - 127, TIE
# 00 28	0000 aaaa		
	0000 bbbb	Step 20 Velocity	(0 - 128) REST, 1 - 127, TIE
# 00 2A	0000 aaaa		
	0000 bbbb	Step 21 Velocity	(0 - 128) REST, 1 - 127, TIE
# 00 2C	0000 aaaa		
	0000 bbbb	Step 22 Velocity	(0 - 128) REST, 1 - 127, TIE
# 00 2E	0000 aaaa		
	0000 bbbb	Step 23 Velocity	(0 - 128) REST, 1 - 127, TIE
# 00 30	0000 aaaa		
	0000 bbbb	Step 24 Velocity	(0 - 128) REST, 1 - 127, TIE
# 00 32	0000 aaaa		
	0000 bbbb	Step 25 Velocity	(0 - 128) REST, 1 - 127, TIE
# 00 34	0000 aaaa		
	0000 bbbb	Step 26 Velocity	(0 - 128) REST, 1 - 127, TIE
# 00 36	0000 aaaa		
	0000 bbbb	Step 27 Velocity	(0 - 128) REST, 1 - 127, TIE
# 00 38	0000 aaaa		
	0000 bbbb	Step 28 Velocity	(0 - 128) REST, 1 - 127, TIE
# 00 3A	0000 aaaa		
	0000 bbbb	Step 29 Velocity	(0 - 128) REST, 1 - 127, TIE
# 00 3C	0000 aaaa		
	0000 bbbb	Step 30 Velocity	(0 - 128) REST, 1 - 127, TIE
# 00 3E	0000 aaaa		
	0000 bbbb	Step 31 Velocity	(0 - 128) REST, 1 - 127, TIE
# 00 40	0000 aaaa		
	0000 bbbb	Step 32 Velocity	(0 - 128) REST, 1 - 127, TIE
00 00 00 42		Total Size	

4. 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.

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

D: decimal
H: hexadecimal

* Decimal values such as MIDI channel, bank select, and program change are listed as one 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.

<Example1> What is the decimal expression of 5AH?

From the preceding table, 5AH = 90

<Example2> What is the decimal expression of the value 12 34H given as hexadecimal for each 7 bits?

From the preceding table, since 12H = 18 and 34H = 52
18 x 128+52 = 2356

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

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

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

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

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

■ Examples of Actual MIDI Messages

<Example1> 92 3E 5F

9n is the Note-on status, and n is the MIDI channel number. Since 2H = 2, 3EH = 62, and 5FH = 95, this is a Note-on message with MIDI CH = 3, note number 62 (note name is D4), and velocity 95.

<Example2> CE 49

CnH is the Program Change status, and n is the MIDI channel number. Since EH = 14 and 49H = 73, this is a Program Change message with MIDI CH = 15, program number 74.

<Example3> EA 00 28

EnH is the Pitch Bend Change status, and n is the MIDI channel number. The 2nd byte (00H = 0) is the LSB and the 3rd byte (28H = 40) is the MSB, but Pitch Bend Value is a signed number in which 40 00H (= 64 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 -200 cents, so in this case -200 x (-3072) ÷ (-8192) = -75 cents of Pitch Bend is being applied to MIDI channel 11.

<Example4> B3 64 00 65 00 06 0C 26 00 64 7F 65 7F

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

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

In other words, the above messages specify a value of 0C 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 cc ddH and the data or size is ee ffH.

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

<Example1> Setting CHORUS TYPE of PATCH to CHORUS 1 (DT1)

According to the "Parameter Address Map" (p. 7), the start address of Temporary Patch is 30 00 00 00H, the offset address of PATCH CHORUS at PATCH is 02 00H, and the address of CHORUS TYPE is 00 00H. Therefore the address of CHORUS TYPE of PATCH CHORUS is;

```
   30 00 00 00H
      02 00H
+)    00 00H
   30 00 02 00H
```

CHORUS 1 has the value of 01H.
So the system exclusive message should be sent is;

F0	41	10	00 00 21	12	30 00 02 00	01	??	F7
(1)	(2)	(3)	(4)	(5)	address	data	checksum	(6)

(1) Exclusive Status
(2) ID (Roland)
(3) Device ID (17)
(4) Model ID (V-Synth GT)
(5) Command ID (DT1)
(6) End of Exclusive

Then calculate the checksum.

30H + 00H + 02H + 00H + 01H = 48 + 0 + 2 + 0 + 1 = 51 (sum)
51 (sum) ÷ 128 = 0 (quotient) ... 51 (remainder)
checksum = 128 - 51 (remainder) = 77 = 4DH

This means that F0 41 10 00 00 21 12 30 00 02 00 01 4D F7 is the message should be sent.

<Example2> Getting the data (RQ1) of TONE T-FX in TONE:003

According to the "Parameter Address Map" (p. 7), the start address of TONE:003 is 20 02 00 00H, and the offset address of PATCH MFX is 00 02 00H.
Therefore the start address of PATCH MFX in PATCH:003 is;

```
   20 02 00 00H
+)    00 02 00H
   20 02 02 00H
```

As the size of TONE T-FX is 00 00 01 04H, the system exclusive message should be sent is;

F0	41	10	00 00 21	11	20 02 02 00	00 00 01 04	??	F7
(1)	(2)	(3)	(4)	(5)	address	data	checksum	(6)

(1) Exclusive Status
(2) ID (Roland)
(3) Device ID (17)
(4) Model ID (V-Synth GT)
(5) Command ID (RQ1)
(6) End of Exclusive

Then calculate the checksum.

20H + 02H + 02H + 00H + 00H + 00H + 01H + 04H = 32 + 2 + 2 + 0 + 0 + 0 + 1 + 4 = 41 (sum)
117 (sum) ÷ 128 = 0 (quotient) ... 41 (remainder)
checksum = 128 - 41 (remainder) = 87 = 57H

This means that F0 41 10 00 00 21 11 20 02 02 00 00 00 01 04 57 F7 is the message should be sent.

<Example3> Getting Temporary Patch data (RQ1)

According to the "Parameter Address Map" (p. 7), the start address of Temporary Patch is assigned as following:

30 00 00 00	Temporary Patch

The offset address of Patch is also assigned as follows:

00 00 00	Patch Common
:	
00 02 00	Patch Chorus
:	
00 04 00	Patch Reverb
:	
00 06 00	Patch Controller
:	
00 08 00	Patch Tone (1:UPPER)
:	
00 0A 00	Patch Tone (2:LOWER)
:	
00 0C 00	Patch Arpeggio (Note 1)
:	
00 1B 00	Patch Arpeggio (Note 16)

As the data size of Patch Arpeggio is 00 00 00 42H, summation of the size and the start address of Temporary Patch Arpeggio (Note 16) will be;

```
   30 00 00 00H
   00 00 1B 00H
+) 00 00 00 42H
   30 00 1B 42H
```

And the size that have to be got should be;

```
   30 00 1B 42H
-) 30 00 00 00H
   00 00 1B 42H
```

Therefore the system exclusive message should be sent is;

F0	41	10	00 00 21	11	30 00 00 00	00 00 1B 42	??	F7
(1)	(2)	(3)	(4)	(5)	address	data	checksum	(6)

(1) Exclusive Status
(2) ID (Roland)
(3) Device ID (17)
(4) Model ID (V-Synth GT)
(5) Command ID (RQ1)
(6) End of Exclusive

Calculating the checksum as shown in <Example 2>, we get a message of F0 41 10 00 00 21 11 30 00 00 00 00 00 1B 42 73 F7 to be transmitted.

<Example4> Getting Temporary UPPER/LOWER Tone data (RQ1) at once;

According to the "Parameter Address Map" (p. 7), the start address of Temporary UPPER/LOWER Tone is assigned as following:

10 00 00 00	Temporary Tone (1:UPPER)
10 01 00 00	Temporary Tone (2:LOWER)

The offset address of Tone is also assigned as follows:

00 00 00	Tone Common
:	
00 01 00	Tone Common 2
:	
00 02 00	Tone T-FX
:	
00 0A 00	Tone Step Modulator
:	
00 0B 00	Tone AP-Synthesis
:	
00 0D 00	Tone Vocal Designer
:	
00 10 00	Tone Oscillator (Zone 1)
:	
00 20 00	Tone Envelope (Zone 1)
:	
00 40 00	Tone LFO (Zone 1)
:	
00 50 00	Tone COSM1 (Zone 1)
:	
00 60 00	Tone COSM2 (Zone 1)
:	
00 6F 00	Tone COSM2 (Zone 16)

As the data size of Tone COSM is 00 00 00 42H, summation of the size and the start address of Temporary Tone (LOWER) COSM (Zone 16) will be;

```
   10 01 00 00H
   00 00 6F 00H
+) 00 00 00 42H
   10 01 6F 42H
```

And the size that have to be got should be;

```
   10 01 6F 42H
-) 10 00 00 00H
   00 01 6F 42H
```

Therefore the system exclusive message should be sent is;

F0	41	10	00 00 21	11	10 00 00 00	00 01 6F 42	??	F7
(1)	(2)	(3)	(4)	(5)	address	data	checksum	(6)

(1) Exclusive Status
(2) ID (Roland)
(3) Device ID (17)
(4) Model ID (V-Synth GT)
(5) Command ID (RQ1)
(6) End of Exclusive

Calculating the checksum as shown in <Example 2>, we get a message of F0 41 10 00 00 21 11 10 00 00 00 00 01 6F 42 3E F7 to be transmitted.

■ 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 V-Synth GT, 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.

❍ Arabian Scale

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

Example Settings

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

The values in the table are given in cents. Convert these values to hexadecimal, and transmit them as Exclusive data.
For example, to set the tune (C-B) of the Upper Tone (Tone 1) Arabian Scale, send the following data:

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

■ ASCII Code Table

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

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

D: decimal
H: hexadecimal

* "SP" is space.