MIDI Implementation

1. RECOGNIZED RECEIVE DATA

■ CHANNEL VOICE MESSAGE

● Control Change

❍ Bank Select

Status	Second	Third
BnH	00H	mmH
BnH	20H	llH

n = MIDI Channel No. :	0H - FH (ch.1 - ch.16)
mm = Bank No. (MSB) :	00H - 7FH (0 - 127)
ll = Bank No. (LSB) :	00H - 7FH (0 - 127)

* If the bank number MSB is 02H or less, the reception program change map will be switched. (If it is 03H or higher it will be ignored.)
* The bank number LSB will be ignored.
* After start-up, the VG-88 will operate with bank number 00H until it receives a bank select.

❍ Control Change Number #1–#31, #64–#95

Status	Second	Third
BnH	ccH	vvH

n = MIDI Channel No.:	0H - FH (ch.1 - ch.16)
cc = Controller No. :	01H - 1FH (1 - 31)
	40H - 5FH (64 - 95)
vv = Value :	00H - 7FH (0 -127)

* By specifying this as a source for “realtime parameter control” you can use these messages to control a target.

● Program Change

Status	Second
CnH	ppH

n = MIDI Channel No.:	0H - FH (ch.1 - ch.16)
pp = Program No. :	00H - 7FH (No.1 - No.128)

* Patches will be selected according to the program number that is received.
* Three program change maps are referenced when switching, and these are selected by bank select.

■ SYSTEM REALTIME MESSAGE

● Timing clock

Status
F8H

* This message is transmitted at intervals of 1/24th of a quarter note.
* Recognized if the 'BPM' patch parameter is set to 'MIDI'.

■ SYSTEM EXCLUSIVE MESSAGE

Status	Data Byte	Status
F0H	iiH,ddH ...eeH	F7H

F0H = System Exclusive	
ii = Manufacturer ID :	41H (Roland)
dd ,..ee = Data :	00H - 7FH (0 - 127)
F7H = EOX (End of Exclusive / System common)	

* For more details, please refer to “Roland Exclusive Message”.

2. TRANSMITTED DATA

■ CHANNEL VOICE MESSAGE

● Control Change

❍ Bank Select

Status	Second	Third
BnH	00H	mmH
BnH	20H	00H

n = MIDI Channel No. :	0H - FH (ch.1 - ch.16)
mm = Bank No.	00H - 02H (0 - 2)

* If you set up a system parameter "PROGRAM CHANGE OUT" for "ON", Bank Select (00H, 20H) is transmitted when switching patch.

❍ Control Change Number #1–#31, #64–#95

Status	Second	Third
BnH	ccH	vvH

n = MIDI Channel No. :	0H - FH (ch.1 - ch.16)
cc = Controller No. :	01H - 1FH (1 - 31)
	40H - 5FH (64 - 95)
vv = Value :	00H - 7FH (0 - 127)

* If you set up a control change number at a system parameter "EXP PEDAL NUMBER", control change information is transmitted when operating EXP pedal.
* If you set up a control change number at a system parameter "CTL PEDAL NUMBER", control change information is transmitted when operating CTL pedal.
* If you set up a control change number at a system parameter "SUB CTL 1 NUMBER", control change information is transmitted when operating SUB CTL 1 (SUB EXP) pedal of an outside connection.
* If you set up a control change number at a system parameter "SUB CTL 2 NUMBER", control change information is transmitted when operating SUB CTL 2 pedal of an outside connection.

● Program Change

Status	Second
CnH	ppH

n = MIDI Channel No. :	0H - FH (ch.1 - ch.16)
pp = Program No. :	00H - 63H (No.1 - No.100)

* If you set up a system parameter "PROGRAM CHANGE OUT" for "ON", program change information is transmitted when switching patch.
* The following program numbers are transmitted.

VG-88	BANK MSB	BANK LSB	PROG CHG	VG-88	BANK MSB	BANK LSB	PROG CHG	VG-88	BANK MSB	BANK LSB	PROG CHG
# 1-1	0	0	1	#26-1	1	0	1	#51-1	2	0	1
# 1-2	0	0	2	#26-2	1	0	2	#51-2	2	0	2
# 1-3	0	0	3	#26-3	1	0	3	#51-3	2	0	3
# 1-4	0	0	4	#26-4	1	0	4	#51-4	2	0	4
# 2-1	0	0	5	#27-1	1	0	5	#52-1	2	0	5
# 2-2	0	0	6	#27-2	1	0	6	#52-2	2	0	6
# 2-3	0	0	7	#27-3	1	0	7	#52-3	2	0	7
# 2-4	0	0	8	#27-4	1	0	8	#52-4	2	0	8
# 3-1	0	0	9	#28-1	1	0	9	#53-1	2	0	9
# 3-2	0	0	10	#28-2	1	0	10	#53-2	2	0	10
# 3-3	0	0	11	#28-3	1	0	11	#53-3	2	0	11
# 3-4	0	0	12	#28-4	1	0	12	#53-4	2	0	12
# 4-1	0	0	13	#29-1	1	0	13	#54-1	2	0	13
# 4-2	0	0	14	#29-2	1	0	14	#54-2	2	0	14
# 4-3	0	0	15	#29-3	1	0	15	#54-3	2	0	15
# 4-4	0	0	16	#29-4	1	0	16	#54-4	2	0	16
# 5-1	0	0	17	#30-1	1	0	17	#55-1	2	0	17
# 5-2	0	0	18	#30-2	1	0	18	#55-2	2	0	18
# 5-3	0	0	19	#30-3	1	0	19	#55-3	2	0	19
# 5-4	0	0	20	#30-4	1	0	20	#55-4	2	0	20
# 6-1	0	0	21	#31-1	1	0	21	#56-1	2	0	21
# 6-2	0	0	22	#31-2	1	0	22	#56-2	2	0	22
# 6-3	0	0	23	#31-3	1	0	23	#56-3	2	0	23
# 6-4	0	0	24	#31-4	1	0	24	#56-4	2	0	24
# 7-1	0	0	25	#32-1	1	0	25	#57-1	2	0	25
# 7-2	0	0	26	#32-2	1	0	26	#57-2	2	0	26
# 7-3	0	0	27	#32-3	1	0	27	#57-3	2	0	27
# 7-4	0	0	28	#32-4	1	0	28	#57-4	2	0	28
# 8-1	0	0	29	#33-1	1	0	29	#58-1	2	0	29
# 8-2	0	0	30	#33-2	1	0	30	#58-2	2	0	30
# 8-3	0	0	31	#33-3	1	0	31	#58-3	2	0	31

```
# 8-4 =  0  0   32   #33-4 =  1  0   32   #58-4 =  2  0   32
# 9-1 =  0  0   33   #34-1 =  1  0   33   #59-1 =  2  0   33
# 9-2 =  0  0   34   #34-2 =  1  0   34   #59-2 =  2  0   34
# 9-3 =  0  0   35   #34-3 =  1  0   35   #59-3 =  2  0   35
# 9-4 =  0  0   36   #34-4 =  1  0   36   #59-4 =  2  0   36
#10-1 =  0  0   37   #35-1 =  1  0   37   #60-1 =  2  0   37
#10-2 =  0  0   38   #35-2 =  1  0   38   #60-2 =  2  0   38
#10-3 =  0  0   39   #35-3 =  1  0   39   #60-3 =  2  0   39
#10-4 =  0  0   40   #35-4 =  1  0   40   #60-4 =  2  0   40
#11-1 =  0  0   41   #36-1 =  1  0   41   #61-1 =  2  0   41
#11-2 =  0  0   42   #36-2 =  1  0   42   #61-2 =  2  0   42
#11-3 =  0  0   43   #36-3 =  1  0   43   #61-3 =  2  0   43
#11-4 =  0  0   44   #36-4 =  1  0   44   #61-4 =  2  0   44
#12-1 =  0  0   45   #37-1 =  1  0   45   #62-1 =  2  0   45
#12-2 =  0  0   46   #37-2 =  1  0   46   #62-2 =  2  0   46
#12-3 =  0  0   47   #37-3 =  1  0   47   #62-3 =  2  0   47
#12-4 =  0  0   48   #37-4 =  1  0   48   #62-4 =  2  0   48
#13-1 =  0  0   49   #38-1 =  1  0   49   #63-1 =  2  0   49
#13-2 =  0  0   50   #38-2 =  1  0   50   #63-2 =  2  0   50
#13-3 =  0  0   51   #38-3 =  1  0   51   #63-3 =  2  0   51
#13-4 =  0  0   52   #38-4 =  1  0   52   #63-4 =  2  0   52
#14-1 =  0  0   53   #39-1 =  1  0   53   #64-1 =  2  0   53
#14-2 =  0  0   54   #39-2 =  1  0   54   #64-2 =  2  0   54
#14-3 =  0  0   55   #39-3 =  1  0   55   #64-3 =  2  0   55
#14-4 =  0  0   56   #39-4 =  1  0   56   #64-4 =  2  0   56
#15-1 =  0  0   57   #40-1 =  1  0   57   #65-1 =  2  0   57
#15-2 =  0  0   58   #40-2 =  1  0   58   #65-2 =  2  0   58
#15-3 =  0  0   59   #40-3 =  1  0   59   #65-3 =  2  0   59
#15-4 =  0  0   60   #40-4 =  1  0   60   #65-4 =  2  0   60
#16-1 =  0  0   61   #41-1 =  1  0   61
#16-2 =  0  0   62   #41-2 =  1  0   62
#16-3 =  0  0   63   #41-3 =  1  0   63
#16-4 =  0  0   64   #41-4 =  1  0   64
#17-1 =  0  0   65   #42-1 =  1  0   65
#17-2 =  0  0   66   #42-2 =  1  0   66
#17-3 =  0  0   67   #42-3 =  1  0   67
#17-4 =  0  0   68   #42-4 =  1  0   68
#18-1 =  0  0   69   #43-1 =  1  0   69
#18-2 =  0  0   70   #43-2 =  1  0   70
#18-3 =  0  0   71   #43-3 =  1  0   71
#18-4 =  0  0   72   #43-4 =  1  0   72
#19-1 =  0  0   73   #44-1 =  1  0   73
#19-2 =  0  0   74   #44-2 =  1  0   74
#19-3 =  0  0   75   #44-3 =  1  0   75
#19-4 =  0  0   76   #44-4 =  1  0   76
#20-1 =  0  0   77   #45-1 =  1  0   77
#20-2 =  0  0   78   #45-2 =  1  0   78
#20-3 =  0  0   79   #45-3 =  1  0   79
#20-4 =  0  0   80   #45-4 =  1  0   80
#21-1 =  0  0   81   #46-1 =  1  0   81
#21-2 =  0  0   82   #46-2 =  1  0   82
#21-3 =  0  0   83   #46-3 =  1  0   83
#21-4 =  0  0   84   #46-4 =  1  0   84
#22-1 =  0  0   85   #47-1 =  1  0   85
#22-2 =  0  0   86   #47-2 =  1  0   86
#22-3 =  0  0   87   #47-3 =  1  0   87
#22-4 =  0  0   88   #47-4 =  1  0   88
#23-1 =  0  0   89   #48-1 =  1  0   89
#23-2 =  0  0   90   #48-2 =  1  0   90
#23-3 =  0  0   91   #48-3 =  1  0   91
#23-4 =  0  0   92   #48-4 =  1  0   92
#24-1 =  0  0   93   #49-1 =  1  0   93
#24-2 =  0  0   94   #49-2 =  1  0   94
#24-3 =  0  0   95   #49-3 =  1  0   95
#24-4 =  0  0   96   #49-4 =  1  0   96
#25-1 =  0  0   97   #50-1 =  1  0   97
#25-2 =  0  0   98   #50-2 =  1  0   98
#25-3 =  0  0   99   #50-3 =  1  0   99
#25-4 =  0  0  100   #50-4 =  1  0  100
```

■ SYSTEM EXCLUSIVE MESSAGE

STATUS	Data Byte	Status
F0H	iiH,ddH...eeH	F7H

F0H = System Exclusive
ii = Manufacturer ID : 41H (Roland)
dd ,..ee = Data : 00H - 7FH (0 - 127)
F7H = EOX (End of Exclusive / System common)

* For more details, please refer to “Roland Exclusive Message”.

3. EXCLUSIVE COMMUNICATION

The VG-88 uses exclusive messages to transmit or receive data for all internal settings.

The model ID for VG-88 exclusive messages is 00H 27H, and you can set up the device ID at 00H– 1FH.

■ ONE WAY COMMUNICATION

● Request Data 1 RQ1 (11H)

Byte	Description
F0H	Exclusive Status
41H	Manufacturer ID(Roland)
Dev	Device ID(Dev=00H-1FH)
00H	Model ID(VG-88)MSB
27H	Model ID(VG-88)LSB
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 System Exclusive)

* This message can only be received, and is not transmitted from the VG-88.

● Data Set 1 DT1 (12H)

Byte	Description
F0H	Exclusive Status
41H	Manufacturer ID(Roland)
Dev	Device ID(Dev=00H-1FH)
00H	Model ID(VG-88)MSB
27H	Model ID(VG-88)LSB
12H	Command ID(DT1)
aaH	Address MSB
bbH	Address
ccH	Address
ddH	Address LSB
eeH	Data
:	:
ffH	Data
sum	Checksum
F7H	EOX (End of System Exclusive)

4. ADDRESS MAPPING OF PARAMETER

The address and size are displayed under 7-bit hexadecimal notation.

Address	MSB			LSB
Binary	0aaa aaaa	0bbb bbbb	0ccc cccc	0ddd dddd
7-bit Hexadecimal	AA	BB	CC	DD

Address	MSB			LSB
Binary	0sss ssss	0ttt tttt	0uuu uuuu	0vvv vvvv
7-bit Hexadecimal	SS	TT	UU	VV

Address Block Map

Address	Block	Sub Block	Note
00 00 00 00	DISPLAY CONTRAST		*Refer to Table 'DISPLAY'
01 00 00 00	GK FUNC		*Refer to Table 'GK FUNC'
02 00 00 00	GLOBAL		*Refer to Table 'GLOBAL'
03 00 00 00	TUNER		*Refer to Table 'TUNER'
04 00 00 00	OUTPUT SELECT		*Refer to Table 'OUTPUT SELECT'
05 00 00 00	SYSTEM	DRIVER	*Refer to Table 'DRIVER'
06 00 00 00		PEDAL	*Refer to Table 'PEDAL'
07 00 00 00		DIAL	*Refer to Table 'DIAL'
09 00 00 01		MIDI	*Refer to Table 'MIDI'
09 00 02 00		PROGRAM MAP(BANK0)	*Refer to Table 'PROGRAM MAP(BANK0)'
09 00 04 00		PROGRAM MAP(BANK1)	*Refer to Table 'PROGRAM MAP(BANK1)'
09 00 06 00		PROGRAM MAP(BANK2)	*Refer to Table 'PROGRAM MAP(BANK2)'
0C 00 00 00	USER Patch	#1-1	*Refer to Table 'PATCH'
0C 01 00 00		#1-2	
⋮		⋮	
0C 62 00 00		#25-3	
0C 63 00 00		#25-4	
0E 00 00 00	PRESET Patch	#26-1	*Refer to Table 'PATCH' (Read only)
0E 01 00 00		#26-2	
⋮		⋮	
0E 7F 00 00		#57-4	
0F 00 00 00		#58-1	
⋮		⋮	
0F 1E 00 00		#65-3	
0F 1F 00 00		#65-4	

* Bulk data can be received only in the load-ready state of the MIDI parameter screen.
* In order to receive a data request, select the load-ready state in the MIDI parameter screen.
* When a data request is received, the data is transmitted in units of blocks that include the specified address (specified by the upper two bytes of the address).
* Parameters for which Size is 2 or higher should not be separated; make sure these are sent in the same packet.

Table 'DISPLAY'

Address(H)	Size(H)	Data(H)	Parameter	Description
00 00 00 00	00 00 00 01	01 - 10	CONTRAST	1 - 16

Table 'GK FUNC'

Address(H)	Size(H)	Data(H)	Parameter	Description
01 00 00 00	00 00 00 01	00 - 05	DOWN/S1 UP/S2	00 : ASSIGNABLE 01 : MASTER LEVEL 02 : PEDAL FUNC 03 : PATCH SELECT 04 : PU SELECT 05 : TUNER/BPM
01 00 00 01	00 00 00 01	00 - 03	SYNTH VOL	00 : ASSIGNABLE 01 : PICKUP LEVEL 02 : MIXER LEVEL 03 : MASTER LEVEL

Table 'GLOBAL'

Address(H)	Size(H)	Data(H)	Parameter	Description
02 00 00 00	00 00 00 01	00 - 01	ON/OFF	00 : OFF 01 : ON
02 00 00 01	00 00 00 01	00 - 28	LOW G	- 20dB - +20dB
02 00 00 02	00 00 00 01	00 - 28	HIGH G	- 20dB - +20dB
02 00 00 03	00 00 00 01	00 - 28	NS	- 20dB - +20dB
02 00 00 04	00 00 00 01	00 - 64	REVERB	0% - 200%
02 00 00 05	00 00 00 01	** - **	dummy data	
02 00 00 06	00 00 00 01	** - **	dummy data	
02 00 00 07	00 00 00 01	** - **	dummy data	

Table 'TUNER'

Address(H)	Size(H)	Data(H)	Parameter	Description
03 00 00 00	00 00 00 01	00 - 0A	PITCH	435Hz - 445Hz
03 00 00 01	00 00 00 01	00 - 01	MUTE	00 : OFF 01 : ON

Table 'OUTPUT SELECT'

Address(H)	Size(H)	Data(H)	Parameter	Description
04 00 00 00	00 00 00 01	00 - 04	OUTPUT SELECT	00 : GUITAR AMP COMBO 01 : GUITAR AMP STACK 02 : POWER AMP + SP/RETURN COMBO 03 : POWER AMP + SP/RETURN STACK 04 : LINE/PHONES

Table 'DRIVER'

Address(H)	Size(H)	Data(H)	Parameter	Description
05 00 00 00	00 00 00 01	00 - 04	SETTING	A - E
05 00 00 01	00 00 00 01	** - **	dummy data	
05 00 00 02	00 00 00 01	** - **	dummy data	
05 00 00 03	00 00 00 01	** - **	dummy data	
[SETTING = A]				
05 00 00 04	00 00 00 01	00 - 02	A TYPE	00 : GK-2A 01 : GK-2 02 : PIEZO
05 00 00 05	00 00 00 01	00 - 01	A DIRECTION	00 : NORMAL 01 : REVERSE
05 00 00 06	00 00 00 01	00 - 2A	A SCALE	00 : 620mm : : 28 : 660mm 29 : ST 2A : LP
05 00 00 07	00 00 00 01	00 - 01	A GT PU PHASE	00 : NORMAL 01 : INVERSE
05 00 00 08	00 00 00 01	00 - 01	A S1/S2 POSITION	00 : NORMAL 01 : REVERSE
05 00 00 09	00 00 00 01	20 - 7F	A SETTING NAME 1	*Refer to Table 'Name1'
05 00 00 0A	00 00 00 01	20 - 7F	A SETTING NAME 2	*Refer to Table 'Name1'
: :	: :		:	
05 00 00 10	00 00 00 01	20 - 7F	A SETTING NAME 8	*Refer to Table 'Name1'
05 00 00 11	00 00 00 01	00	dummy data	
05 00 00 12	00 00 00 01	00 - 14	A PU BRIDGE 1	
05 00 00 13	00 00 00 01	00 - 14	A PU BRIDGE 2	
05 00 00 14	00 00 00 01	00 - 14	A PU BRIDGE 3	
05 00 00 15	00 00 00 01	00 - 14	A PU BRIDGE 4	
05 00 00 16	00 00 00 01	00 - 14	A PU BRIDGE 5	
05 00 00 17	00 00 00 01	00 - 14	A PU BRIDGE 6	00 : 10mm : : 14 : 30mm
05 00 00 18	00 00 00 01	00 - 64	A SENSITIBITY 1	0 - 100
05 00 00 19	00 00 00 01	00 - 64	A SENSITIBITY 2	0 - 100
05 00 00 1A	00 00 00 01	00 - 64	A SENSITIBITY 3	0 - 100
05 00 00 1B	00 00 00 01	00 - 64	A SENSITIBITY 4	0 - 100
05 00 00 1C	00 00 00 01	00 - 64	A SENSITIBITY 5	0 - 100
05 00 00 1D	00 00 00 01	00 - 64	A SENSITIBITY 6	0 - 100
05 00 00 1E	00 00 00 01	** - **	dummy data	
05 00 00 1F	00 00 00 01	** - **	dummy data	
[SETTING = B]				
05 00 00 20	00 00 00 01	00 - 02	B TYPE	
: :	: :			
05 00 00 39	00 00 00 01	00 - 64	B SENSITIBITY 6	0 - 100
05 00 00 3A	00 00 00 01	** - **	dummy data	
05 00 00 3B	00 00 00 01	** - **	dummy data	
[SETTING = C]				
05 00 00 3C	00 00 00 01	00 - 02	C TYPE	
: :	: :			
05 00 00 55	00 00 00 01	00 - 64	C SENSITIBITY 6	0 - 100
05 00 00 56	00 00 00 01	** - **	dummy data	

```
05 00 00 57  00 00 00 01  ** - **   dummy data

[SETTING = D]
05 00 00 58  00 00 00 01  00 - 02   D TYPE
    :            :
05 00 00 71  00 00 00 01  00 - 64   D SENSITIBITY 6      0 - 100
05 00 00 72  00 00 00 01  ** - **   dummy data
05 00 00 73  00 00 00 01  ** - **   dummy data

[SETTING = E]
05 00 00 74  00 00 00 01  00 - 02   E TYPE
    :            :
05 00 01 0D  00 00 00 01  00 - 64   E SENSITIBITY 6      0 - 100
05 00 01 0E  00 00 00 01  ** - **   dummy data
05 00 01 0F  00 00 00 01  ** - **   dummy data
```

Table 'PEDAL'

Address(H)	Size(H)	Data(H)	Parameter	Description
06 00 00 00	00 00 00 01	00 - 02	BANK SW MODE	00 : WAIT NUM 01 : NUMBER 1 02 : SAME NUM
06 00 00 01	00 00 00 01	01 - 41	BANK AREA(MIN)	1 - 65
06 00 00 02	00 00 00 01	01 - 41	BANK AREA(MAX)	1 - 65
06 00 00 03	00 00 00 01	00 - 04	SUB CTL1	
06 00 00 04	00 00 00 01	00 - 04	SUB CTL2	00 : ASSIGNABLE 01 : TUNER 02 : BPM(TAP) 03 : PU to FRONT 04 : PU to REAR
06 00 00 05	00 00 00 01	00 - 01	EXP/GK VOL HOLD	00 : OFF 01 : ON
06 00 00 06	00 00 00 01	00 - 7F	EXP PEDAL CALIBRATION RELEASE	*1 0 - 127
06 00 00 07	00 00 00 01	00 - 7F	EXP PEDAL CALIBRATION PRESS	*1 0 - 127

Table 'DIAL'

Address(H)	Size(H)	Data(H)	Parameter	Description
07 00 00 00	00 00 00 01	00 - 01	FUNCTION	00 : P.NUMBER&VALUE 01 : VALUE ONLY

Table 'MIDI'

Address(H)	Size(H)	Data(H)	Parameter	Description
09 00 00 01	00 00 00 01	00 - 0F	CHANNEL	00 : 1 : : 0F : 16
09 00 00 02	00 00 00 01	00 - 01	OMNI MODE	00 : OMNI OFF 01 : OMNI ON
09 00 00 03	00 00 00 01	00 - 01	PROGRAM CHANGE OUT	00 : OFF 01 : ON
09 00 00 04	00 00 00 01	00 - 01	PC MAP SELECT	00 : FIX 01 : PROG
09 00 00 05	00 00 00 01	00 - 3F	EXP PEDAL NUMBER	
09 00 00 06	00 00 00 01	00 - 3F	CTL PEDAL NUMBER	
09 00 00 07	00 00 00 01	00 - 3F	SUB CTL 1 NUMBER	
09 00 00 08	00 00 00 01	00 - 3F	SUB CTL 2 NUMBER	00 : OFF 01 : CC#1 : : 1F : CC#31 20 : CC#64 : : 3F : CC#95
09 00 00 09	00 00 00 01	** - **	dummy data	
09 00 00 0A	00 00 00 01	** - **	dummy data	
09 00 00 0B	00 00 00 01	** - **	dummy data	
09 00 00 0C	00 00 00 01	** - **	dummy data	
09 00 00 0D	00 00 00 01	** - **	dummy data	
09 00 00 0E	00 00 00 01	** - **	dummy data	
09 00 00 0F	00 00 00 01	** - **	dummy data	

Table 'PROGRAM MAP(BANK0)'

Address(H)	Size(H)	Data(H)	Parameter	Description
09 00 02 00	00 00 00 02	0000 - 0203	BANK 0 , PC 1	*Refer to Table 'Program Map'
:		:		
09 00 02 7E	00 00 00 02	0000 - 0203	BANK 0 , PC 64	*Refer to Table 'Program Map'
09 00 03 00	00 00 00 02	0000 - 0203	BANK 0 , PC 65	*Refer to Table 'Program Map'
:		:		
09 00 03 7E	00 00 00 02	0000 - 0203	BANK 0 , PC 128	*Refer to Table 'Program Map'

Table 'PROGRAM MAP(BANK1)'

Address(H)	Size(H)	Data(H)	Parameter	Description
09 00 04 00	00 00 00 02	0000 - 0203	BANK 1 , PC 1	*Refer to Table 'Program Map'
:		:		
09 00 04 7E	00 00 00 02	0000 - 0203	BANK 1 , PC 64	*Refer to Table 'Program Map'
09 00 05 00	00 00 00 02	0000 - 0203	BANK 1 , PC 65	*Refer to Table 'Program Map'
:		:		
09 00 05 7E	00 00 00 02	0000 - 0203	BANK 1 , PC 128	*Refer to Table 'Program Map'

Table 'PROGRAM MAP(BANK2)'

Address(H)	Size(H)	Data(H)	Parameter	Description
09 00 06 00	00 00 00 02	0000 - 0203	BANK 2 , PC 1	*Refer to Table 'Program Map'
:	:	:	:	:
09 00 06 7E	00 00 00 02	0000 - 0203	BANK 2 , PC 64	*Refer to Table 'Program Map'
09 00 07 00	00 00 00 02	0000 - 0203	BANK 2 , PC 65	*Refer to Table 'Program Map'
:	:	:	:	:
09 00 07 7E	00 00 00 02	0000 - 0203	BANK 2 , PC 128	*Refer to Table 'Program Map'

Table 'PATCH'

Offset(H)	Size(H)	Data(H)	Parameter	Description

* All data is transmitted as nibble data.

===== COSM =====

* The significance of the parameters of each address will change as follows, depending on the [VARI GUITAR] – [BRASS] type.

[VARI GUITAR]

----- Pickup -----				
** ** 00 00	00 00 00 02	00 - 3F	REAR PICKUP POSITION	*Refer to Table 'Pickup_Position'
** ** 00 02	00 00 00 02	00 - 7E	REAR PICKUP ANGLE	*Refer to Table 'Pickup_Angle'
** ** 00 04	00 00 00 02	00 - 3F	FRONT PICKUP POSITION	*Refer to Table 'Pickup_Position'
** ** 00 06	00 00 00 02	00 - 7E	FRONT PICKUP ANGLE	*Refer to Table 'Pickup_Angle'
** ** 00 08	00 00 00 02	00 - 0A	MODEL	*Refer to Table 'Pickup_Model'
** ** 00 0A	00 00 00 02	00 - 04	PICKUP	*Refer to Table 'Pickup_Pickup'
** ** 00 0C	00 00 00 02	00 - 64	TONE	-50 - +50
** ** 00 0E	00 00 00 02	00 - 64	LEVEL	0 - 100
** ** 00 10	00 00 00 02	00 - 01	PHASE	00 : IN
				01 : OUT
** ** 00 12	00 00 00 02	00 - 03	REAR PICKUP TYPE	*Refer to Table 'Pickup_Type'
** ** 00 14	00 00 00 02	00 - 03	FRONT PICKUP TYPE	*Refer to Table 'Pickup_Type'
** ** 00 16	00 00 00 02		dummy data	
----- Pitch Shift -----				
** ** 00 18	00 00 00 02	00 - 01	MODE	00 : SHIFT
				01 : HARMO
** ** 00 1A	00 00 00 02	00 - 30	SHIFT1	
** ** 00 1C	00 00 00 02	00 - 30	SHIFT2	
** ** 00 1E	00 00 00 02	00 - 30	SHIFT3	
** ** 00 20	00 00 00 02	00 - 30	SHIFT4	
** ** 00 22	00 00 00 02	00 - 30	SHIFT5	
** ** 00 24	00 00 00 02	00 - 30	SHIFT6	-24 - +24
** ** 00 26	00 00 00 02	00 - 64	FINE1	
** ** 00 28	00 00 00 02	00 - 64	FINE2	
** ** 00 2A	00 00 00 02	00 - 64	FINE3	
** ** 00 2C	00 00 00 02	00 - 64	FINE4	
** ** 00 2E	00 00 00 02	00 - 64	FINE5	
** ** 00 30	00 00 00 02	00 - 64	FINE6	-50 - +50
** ** 00 32	00 00 00 02	00 - 64	E.LEVEL1	
** ** 00 34	00 00 00 02	00 - 64	E.LEVEL2	
** ** 00 36	00 00 00 02	00 - 64	E.LEVEL3	
** ** 00 38	00 00 00 02	00 - 64	E.LEVEL4	
** ** 00 3A	00 00 00 02	00 - 64	E.LEVEL5	
** ** 00 3C	00 00 00 02	00 - 64	E.LEVEL6	0 - 100
** ** 00 3E	00 00 00 02	00 - 64	D.LEVEL1	
** ** 00 40	00 00 00 02	00 - 64	D.LEVEL2	
** ** 00 42	00 00 00 02	00 - 64	D.LEVEL3	
** ** 00 44	00 00 00 02	00 - 64	D.LEVEL4	
** ** 00 46	00 00 00 02	00 - 64	D.LEVEL5	
** ** 00 48	00 00 00 02	00 - 64	D.LEVEL6	0 - 100
** ** 00 4A	00 00 00 02	00 - 1C	HARMO1	
** ** 00 4C	00 00 00 02	00 - 1C	HARMO2	
** ** 00 4E	00 00 00 02	00 - 1C	HARMO3	
** ** 00 50	00 00 00 02	00 - 1C	HARMO4	
** ** 00 52	00 00 00 02	00 - 1C	HARMO5	
** ** 00 54	00 00 00 02	00 - 1C	HARMO6	*Refer to Table 'VariGT_Harm'
** ** 00 56	00 00 00 02		dummy data	
----- Body -----				
** ** 00 58	00 00 00 02	00 - 64	ATTACK	0 - 100
** ** 00 5A	00 00 00 02	00 - 64	BODY	0 - 100
** ** 00 5C	00 00 00 02	00 - 0A	LOW CUT	*Refer to Table 'Low_Cut_2'
** ** 00 5E	00 00 00 02	00 - 64	LEVEL	0 - 100
** ** 00 60	00 00 00 02	00 - 04	BODY-TYPE	*Refer to Table 'Body_Type'
** ** 00 62	00 00 00 02	00 - 64	RESO	0 - 100
** ** 00 64	00 00 00 02	00 - 64	SIZE	-50 - +50
** ** 00 66	00 00 00 02		dummy data	
** ** 00 68	00 00 00 02	00 - 01	PT SHIFT ON/OFF	00 : OFF
				01 : ON
** ** 00 6A	00 00 00 02		dummy data	
** ** 00 6C	00 00 00 02		dummy data	
** ** 00 6E	00 00 00 02		dummy data	

[ACOUSTIC]

----- Pickup -----				
** ** 00 00	00 00 00 02	00 - 64	TONE	-50 - +50
** ** 00 02	00 00 00 02	00 - 64	LEVEL	0 - 100
** ** 00 04	00 00 00 02	00 - 01	TYPE	00 : PIEZO
				01 : MIC
** ** 00 06	00 00 00 02		dummy data	
----- Body -----				
** ** 00 08	00 00 00 02	00 - 64	ATTACK	0 - 100
** ** 00 0A	00 00 00 02	00 - 64	BODY	0 - 100
** ** 00 0C	00 00 00 02	00 - 0A	LOW CUT	*Refer to Table 'Low_Cut_2'
** ** 00 0E	00 00 00 02	00 - 64	LEVEL	0 - 100
** ** 00 10	00 00 00 02	00 - 04	BODY-TYPE	*Refer to Table 'Body_Type'
** ** 00 12	00 00 00 02	00 - 64	RESO	0 - 100
** ** 00 14	00 00 00 02	00 - 64	SIZE	-50 - +50
** ** 00 16	00 00 00 02		dummy data	
:	:	:	:	:
** ** 00 6E	00 00 00 02		dummy data	

[NYLON STRINGS]

----- Body -----				
** ** 00 00	00 00 00 02	00 - 64	LEVEL	0 - 100
** ** 00 02	00 00 00 02	00 - 0A	BOTTOM	0 - 10

```
** ** 00 04  00 00 00 02  00 - 0A   RESO                0 - 10
** ** 00 06  00 00 00 02  00 - 64   SIZE              -50 - +50
** ** 00 08  00 00 00 02            dummy data
          :
** ** 00 6E  00 00 00 02            dummy data
```

[OPEN TUNE]

```
----- Pickup -----
** ** 00 00  00 00 00 02  00 - 3F   REAR PICKUP POSITION   *Refer to Table 'Pickup_Position'
** ** 00 02  00 00 00 02  00 - 7E   REAR PICKUP ANGLE      *Refer to Table 'Pickup_Angle'
** ** 00 04  00 00 00 02  00 - 3F   FRONT PICKUP POSITION  *Refer to Table 'Pickup_Position'
** ** 00 06  00 00 00 02  00 - 7E   FRONT PICKUP ANGLE     *Refer to Table 'Pickup_Angle'
** ** 00 08  00 00 00 02  00 - 0A   MODEL               *Refer to Table 'Pickup_Model'
** ** 00 0A  00 00 00 02  00 - 04   PICKUP              *Refer to Table 'Pickup_Pickup'
** ** 00 0C  00 00 00 02  00 - 64   TONE              -50 - +50
** ** 00 0E  00 00 00 02  00 - 64   LEVEL               0 - 100
** ** 00 10  00 00 00 02  00 - 01   PHASE               00 : IN
                                                       01 : OUT
** ** 00 12  00 00 00 02  00 - 03   REAR PICKUP TYPE    *Refer to Table 'Pickup_Type'
** ** 00 14  00 00 00 02  00 - 03   FRONT PICKUP TYPE   *Refer to Table 'Pickup_Type'
** ** 00 16  00 00 00 02            dummy data
----- Tune -----
** ** 00 18  00 00 00 02  00 - 06   TYPE                00 : OPEN-D
                                                       01 : OPEN-E
                                                       02 : OPEN-G
                                                       03 : OPEN-A
                                                       04 : DROP-D
                                                       05 : NASH-VILLE
                                                       06 : USER
** ** 00 1A  00 00 00 02  00 - 30   SHIFT1
** ** 00 1C  00 00 00 02  00 - 30   SHIFT2
** ** 00 1E  00 00 00 02  00 - 30   SHIFT3
** ** 00 20  00 00 00 02  00 - 30   SHIFT4
** ** 00 22  00 00 00 02  00 - 30   SHIFT5
** ** 00 24  00 00 00 02  00 - 30   SHIFT6            -24 - +24
** ** 00 26  00 00 00 02            dummy data;
----- Body -----
** ** 00 28  00 00 00 02  00 - 64   ATTACK              0 - 100
** ** 00 2A  00 00 00 02  00 - 64   BODY                0 - 100
** ** 00 2C  00 00 00 02  00 - 0A   LOW CUT             *Refer to Table 'Low_Cut_2'
** ** 00 2E  00 00 00 02  00 - 64   LEVEL               0 - 100
** ** 00 30  00 00 00 02  00 - 04   BODY-TYPE           *Refer to Table 'Body_Type'
** ** 00 32  00 00 00 02  00 - 64   RESO                0 - 100
** ** 00 34  00 00 00 02  00 - 64   SIZE              -50 - +50
** ** 00 36  00 00 00 02            dummy data

** ** 00 38  00 00 00 02  00 - 01   OPEN TUNE ON/OFF    00 : OFF
                                                       01 : ON
** ** 00 3A  00 00 00 02            dummy data
          :
** ** 00 6E  00 00 00 02            dummy data
```

[STRINGS 12]

```
----- Pickup -----
** ** 00 00  00 00 00 02  00 - 3F   REAR PICKUP POSITION   *Refer to Table 'Pickup_Position'
** ** 00 02  00 00 00 02  00 - 7E   REAR PICKUP ANGLE      *Refer to Table 'Pickup_Angle'
** ** 00 04  00 00 00 02  00 - 3F   FRONT PICKUP POSITION  *Refer to Table 'Pickup_Position'
** ** 00 06  00 00 00 02  00 - 7E   FRONT PICKUP ANGLE     *Refer to Table 'Pickup_Angle'
** ** 00 08  00 00 00 02  00 - 0A   MODEL               *Refer to Table 'Pickup_Model'
** ** 00 0A  00 00 00 02  00 - 04   PICKUP              *Refer to Table 'Pickup_Pickup'
** ** 00 0C  00 00 00 02  00 - 64   TONE              -50 - +50
** ** 00 0E  00 00 00 02  00 - 64   LEVEL               0 - 100
** ** 00 10  00 00 00 02  00 - 01   PHASE               00 : IN
                                                       01 : OUT
** ** 00 12  00 00 00 02  00 - 03   REAR PICKUP TYPE    *Refer to Table 'Pickup_Type'
** ** 00 14  00 00 00 02  00 - 03   FRONT PICKUP TYPE   *Refer to Table 'Pickup_Type'
** ** 00 16  00 00 00 02            dummy data
----- Detune -----
** ** 00 18  00 00 00 02  00 - 64   DETUNE               0 - 100
** ** 00 1A  00 00 00 02            dummy data
** ** 00 1C  00 00 00 02            dummy data
** ** 00 1E  00 00 00 02            dummy data
----- Body -----
** ** 00 20  00 00 00 02  00 - 64   ATTACK              0 - 100
** ** 00 22  00 00 00 02  00 - 64   BODY                0 - 100
** ** 00 24  00 00 00 02  00 - 0A   LOW CUT             *Refer to Table 'Low_Cut_2'
** ** 00 26  00 00 00 02  00 - 64   LEVEL               0 - 100
** ** 00 28  00 00 00 02  00 - 04   BODY-TYPE           *Refer to Table 'Body_Type'
** ** 00 2A  00 00 00 02  00 - 64   RESO                0 - 100
** ** 00 2C  00 00 00 02  00 - 64   SIZE              -50 - +50
** ** 00 2E  00 00 00 02            dummy data

** ** 00 30  00 00 00 02  00 - 01   DETUNE ON/OFF       00 : OFF
                                                       01 : ON
** ** 00 32  00 00 00 02            dummy data
          :
** ** 00 6E  00 00 00 02            dummy data
```

[PD SHIFT]

```
----- Pickup -----
** ** 00 00  00 00 00 02  00 - 3F   REAR PICKUP POSITION   *Refer to Table 'Pickup_Position'
** ** 00 02  00 00 00 02  00 - 7E   REAR PICKUP ANGLE      *Refer to Table 'Pickup_Angle'
** ** 00 04  00 00 00 02  00 - 3F   FRONT PICKUP POSITION  *Refer to Table 'Pickup_Position'
** ** 00 06  00 00 00 02  00 - 7E   FRONT PICKUP ANGLE     *Refer to Table 'Pickup_Angle'
** ** 00 08  00 00 00 02  00 - 0A   MODEL               *Refer to Table 'Pickup_Model'
** ** 00 0A  00 00 00 02  00 - 04   PICKUP              *Refer to Table 'Pickup_Pickup'
** ** 00 0C  00 00 00 02  00 - 64   TONE              -50 - +50
** ** 00 0E  00 00 00 02  00 - 64   LEVEL               0 - 100
** ** 00 10  00 00 00 02  00 - 01   PHASE               00 : IN
                                                       01 : OUT
** ** 00 12  00 00 00 02  00 - 03   REAR PICKUP TYPE    *Refer to Table 'Pickup_Type'
** ** 00 14  00 00 00 02  00 - 03   FRONT PICKUP TYPE   *Refer to Table 'Pickup_Type'
** ** 00 16  00 00 00 02            dummy data
----- PD Shift -----
** ** 00 18  00 00 00 04  0000      PITCH           0000 : -24        *2
                          - 12C0                      :   :
                                                0960 :  0
                                                  :   :
                                                12C0 : +24
** ** 00 1C  00 00 00 02  00 - 01   STRING1
** ** 00 1E  00 00 00 02  00 - 01   STRING2
** ** 00 20  00 00 00 02  00 - 01   STRING3
** ** 00 22  00 00 00 02  00 - 01   STRING4
** ** 00 24  00 00 00 02  00 - 01   STRING5
** ** 00 26  00 00 00 02  00 - 01   STRING6             00 : OFF
```

```
                                                          01 : ON
----- Body -----
** ** 00 28  00 00 00 02  00 - 64   ATTACK                 0 - 100
** ** 00 2A  00 00 00 02  00 - 64   BODY                   0 - 100
** ** 00 2C  00 00 00 02  00 - 0A   LOW CUT                *Refer to Table 'Low_Cut_2'
** ** 00 2E  00 00 00 02  00 - 64   LEVEL                  0 - 100
** ** 00 30  00 00 00 02  00 - 04   BODY-TYPE              *Refer to Table 'Body_Type'
** ** 00 32  00 00 00 02  00 - 64   RESO                   0 - 100
** ** 00 34  00 00 00 02  00 - 64   SIZE                 -50 - +50
** ** 00 36  00 00 00 02            dummy data

** ** 00 38  00 00 00 02  00 - 01   DETUNE ON/OFF          00 : OFF
                                                          01 : ON
** ** 00 3A  00 00 00 02            dummy data
             :
** ** 00 6E  00 00 00 02            dummy data
```

[POLY DIST]

```
----- Pickup -----
** ** 00 00  00 00 00 02  00 - 3F   REAR PICKUP POSITION   *Refer to Table 'Pickup_Position'
** ** 00 02  00 00 00 02  00 - 7E   REAR PICKUP ANGLE      *Refer to Table 'Pickup_Angle'
** ** 00 04  00 00 00 02  00 - 3F   FRONT PICKUP POSITION  *Refer to Table 'Pickup_Position'
** ** 00 06  00 00 00 02  00 - 7E   FRONT PICKUP ANGLE     *Refer to Table 'Pickup_Angle'
** ** 00 08  00 00 00 02  00 - 0A   MODEL                *Refer to Table 'Pickup_Model'
** ** 00 0A  00 00 00 02  00 - 04   PICKUP               *Refer to Table 'Pickup_Pickup'
** ** 00 0C  00 00 00 02  00 - 64   TONE                -50 - +50
** ** 00 0E  00 00 00 02  00 - 64   LEVEL                 0 - 100
** ** 00 10  00 00 00 02  00 - 01   PHASE                 00 : IN
                                                          01 : OUT
** ** 00 12  00 00 00 02  00 - 03   REAR PICKUP TYPE     *Refer to Table 'Pickup_Type'
** ** 00 14  00 00 00 02  00 - 03   FRONT PICKUP TYPE    *Refer to Table 'Pickup_Type'
** ** 00 16  00 00 00 02            dummy data
----- Dist -----
** ** 00 18  00 00 00 02  00 - 04   MODE                  00 : CLA OD
                                                          01 : TURBO OD
                                                          02 : DS1
                                                          03 : DS2
                                                          04 : FUZZ
** ** 00 1A  00 00 00 02  00 - 64   DRIVE                 0 - 100
** ** 00 1C  00 00 00 02  00 - 09   HIGH CUT              *Refer to Table 'High_Cut'
** ** 00 1E  00 00 00 02  00 - 64   LEVEL                 0 - 100
** ** 00 20  00 00 00 02  00 - 64   POLY BAL              0 - 100
** ** 00 22  00 00 00 02  00 - 64   DRV BAL               0 - 100
** ** 00 24  00 00 00 02            dummy data
** ** 00 26  00 00 00 02            dummy data

** ** 00 28  00 00 00 02  00 - 01   DIST ON/OFF          00 : OFF
                                                          01 : ON
** ** 00 2A  00 00 00 02            dummy data
             :
** ** 00 6E  00 00 00 02            dummy data
```

[POLY COMP]

```
----- Pickup -----
** ** 00 00  00 00 00 02  00 - 3F   REAR PICKUP POSITION   *Refer to Table 'Pickup_Position'
** ** 00 02  00 00 00 02  00 - 7E   REAR PICKUP ANGLE      *Refer to Table 'Pickup_Angle'
** ** 00 04  00 00 00 02  00 - 3F   FRONT PICKUP POSITION  *Refer to Table 'Pickup_Position'
** ** 00 06  00 00 00 02  00 - 7E   FRONT PICKUP ANGLE     *Refer to Table 'Pickup_Angle'
** ** 00 08  00 00 00 02  00 - 0A   MODEL                *Refer to Table 'Pickup_Model'
** ** 00 0A  00 00 00 02  00 - 04   PICKUP               *Refer to Table 'Pickup_Pickup'
** ** 00 0C  00 00 00 02  00 - 64   TONE                -50 - +50
** ** 00 0E  00 00 00 02  00 - 64   LEVEL                 0 - 100
** ** 00 10  00 00 00 02  00 - 01   PHASE                 00 : IN
                                                          01 : OUT
** ** 00 12  00 00 00 02  00 - 03   REAR PICKUP TYPE     *Refer to Table 'Pickup_Type'
** ** 00 14  00 00 00 02  00 - 03   FRONT PICKUP TYPE    *Refer to Table 'Pickup_Type'
** ** 00 16  00 00 00 02            dummy data
----- Comp -----
** ** 00 18  00 00 00 02  00 - 01   MODE                  00 : COMP
                                                          01 : LIMITER
** ** 00 1A  00 00 00 02  00 - 64   SUSTAIN               0 - 100
** ** 00 1C  00 00 00 02  00 - 64   ATTACK                0 - 100
** ** 00 1E  00 00 00 02  00 - 64   TONE                -50 - +50
** ** 00 20  00 00 00 02  00 - 64   LEVEL                 0 - 100
** ** 00 22  00 00 00 02  00 - 64   CMP BAL               0 - 100
** ** 00 24  00 00 00 02  00 - 64   THRESHOLD             0 - 100
** ** 00 26  00 00 00 02  00 - 64   RELEASE               0 - 100

** ** 00 28  00 00 00 02  00 - 01   COMP ON/OFF          00 : OFF
                                                          01 : ON
** ** 00 2A  00 00 00 02            dummy data
             :
** ** 00 6E  00 00 00 02            dummy data
```

[POLY OCT]

```
----- Pickup -----
** ** 00 00  00 00 00 02  00 - 3F   REAR PICKUP POSITION   *Refer to Table 'Pickup_Position'
** ** 00 02  00 00 00 02  00 - 7E   REAR PICKUP ANGLE      *Refer to Table 'Pickup_Angle'
** ** 00 04  00 00 00 02  00 - 3F   FRONT PICKUP POSITION  *Refer to Table 'Pickup_Position'
** ** 00 06  00 00 00 02  00 - 7E   FRONT PICKUP ANGLE     *Refer to Table 'Pickup_Angle'
** ** 00 08  00 00 00 02  00 - 0A   MODEL                *Refer to Table 'Pickup_Model'
** ** 00 0A  00 00 00 02  00 - 04   PICKUP               *Refer to Table 'Pickup_Pickup'
** ** 00 0C  00 00 00 02  00 - 64   TONE                -50 - +50
** ** 00 0E  00 00 00 02  00 - 64   LEVEL                 0 - 100
** ** 00 10  00 00 00 02  00 - 01   PHASE                 00 : IN
                                                          01 : OUT
** ** 00 12  00 00 00 02  00 - 03   REAR PICKUP TYPE     *Refer to Table 'Pickup_Type'
** ** 00 14  00 00 00 02  00 - 03   FRONT PICKUP TYPE    *Refer to Table 'Pickup_Type'
** ** 00 16  00 00 00 02            dummy data
----- Octave -----
** ** 00 18  00 00 00 02  00 - 64   -1OCT1
** ** 00 1A  00 00 00 02  00 - 64   -1OCT2
** ** 00 1C  00 00 00 02  00 - 64   -1OCT3
** ** 00 1E  00 00 00 02  00 - 64   -1OCT4
** ** 00 20  00 00 00 02  00 - 64   -1OCT5
** ** 00 22  00 00 00 02  00 - 64   -1OCT6                0 - 100
** ** 00 24  00 00 00 02  00 - 64   -2OCT1
** ** 00 26  00 00 00 02  00 - 64   -2OCT2
** ** 00 28  00 00 00 02  00 - 64   -2OCT3
** ** 00 2A  00 00 00 02  00 - 64   -2OCT4
** ** 00 2C  00 00 00 02  00 - 64   -2OCT5
** ** 00 2E  00 00 00 02  00 - 64   -2OCT6                0 - 100
** ** 00 30  00 00 00 02  00 - 64   DIR1
** ** 00 32  00 00 00 02  00 - 64   DIR2
** ** 00 34  00 00 00 02  00 - 64   DIR3
```

```
** ** 00 36  00 00 00 02  00 - 64   DIR4
** ** 00 38  00 00 00 02  00 - 64   DIR5
** ** 00 3A  00 00 00 02  00 - 64   DIR6                0 - 100
** ** 00 3C  00 00 00 02            dummy data
** ** 00 3E  00 00 00 02            dummy data

** ** 00 40  00 00 00 02  00 - 01   OCT ON/OFF          00 : OFF
                                    01 : ON
** ** 00 42  00 00 00 02            dummy data
          :
** ** 00 6E  00 00 00 02            dummy data
```

[POLY SG]

```
----- Pickup -----
** ** 00 00  00 00 00 02  00 - 3F   REAR PICKUP POSITION   *Refer to Table 'Pickup_Position'
** ** 00 02  00 00 00 02  00 - 7E   REAR PICKUP ANGLE      *Refer to Table 'Pickup_Angle'
** ** 00 04  00 00 00 02  00 - 3F   FRONT PICKUP POSITION  *Refer to Table 'Pickup_Position'
** ** 00 06  00 00 00 02  00 - 7E   FRONT PICKUP ANGLE     *Refer to Table 'Pickup_Angle'
** ** 00 08  00 00 00 02  00 - 0A   MODEL                *Refer to Table 'Pickup_Model'
** ** 00 0A  00 00 00 02  00 - 04   PICKUP               *Refer to Table 'Pickup_Pickup'
** ** 00 0C  00 00 00 02  00 - 64   TONE                -50 - +50
** ** 00 0E  00 00 00 02  00 - 64   LEVEL                0 - 100
** ** 00 10  00 00 00 02  00 - 01   PHASE                00 : IN
                                    01 : OUT
** ** 00 12  00 00 00 02  00 - 03   REAR PICKUP TYPE     *Refer to Table 'Pickup_Type'
** ** 00 14  00 00 00 02  00 - 03   FRONT PICKUP TYPE    *Refer to Table 'Pickup_Type'
** ** 00 16  00 00 00 02            dummy data
----- Sg -----
** ** 00 18  00 00 00 02  00 - 64   RISE TIME             0 - 100
** ** 00 1A  00 00 00 02  00 - 64   SENS                 0 - 100

** ** 00 1C  00 00 00 02  00 - 01   SG ON/OFF           00 : OFF
                                    01 : ON
** ** 00 1E  00 00 00 02            dummy data
          :
** ** 00 6E  00 00 00 02            dummy data
```

[BOWED]

```
----- Filter -----
** ** 00 00  00 00 00 02  00 - 64   CUTOFF               0 - 100
** ** 00 02  00 00 00 02  00 - 64   RESO                 0 - 100
** ** 00 04  00 00 00 02  00 - 64   TOUCH-S              0 - 100
** ** 00 06  00 00 00 02            dummy data
 --- PBend ---
** ** 00 08  00 00 00 02  00 - 64   P-BEND               0 - 100
** ** 00 0A  00 00 00 02  00 - 64   P-BEND-Q             0 - 100
 --- Common ---
** ** 00 0C  00 00 00 02  00 - 64   SUSTAIN              0 - 100
** ** 00 0E  00 00 00 02            dummy data
          :
** ** 00 6E  00 00 00 02            dummy data
```

[DUAL]

```
----- Filter -----
** ** 00 00  00 00 00 02  00 - 64   CUTOFF               0 - 100
** ** 00 02  00 00 00 02  00 - 64   RESO                 0 - 100
** ** 00 04  00 00 00 02  00 - 64   TOUCH-S              0 - 100
** ** 00 06  00 00 00 02            dummy data
----- Glide -----
** ** 00 08  00 00 00 02  00 - 64   GLD-SENS             0 - 100
** ** 00 0A  00 00 00 02  00 - 64   GLD-TIME             0 - 100
----- Common -----
** ** 00 0C  00 00 00 02  00 - 64   SUSTAIN              0 - 100
** ** 00 0E  00 00 00 02            dummy data
          :
** ** 00 6E  00 00 00 02            dummy data
```

[FILTER BASS]

```
----- Filter -----
** ** 00 00  00 00 00 02  00 - 64   CUTOFF               0 - 100
** ** 00 02  00 00 00 02  00 - 64   RESO                 0 - 100
** ** 00 04  00 00 00 02  00 - 64   TOUCH-S              0 - 100
** ** 00 06  00 00 00 02  00 - 64   DECAY                0 - 100
----- Common -----
** ** 00 08  00 00 00 02  00 - 64   COLOR                0 - 100
** ** 00 0A  00 00 00 02            dummy data
          :
** ** 00 6E  00 00 00 02            dummy data
```

[PIPE]

```
----- Filter -----
** ** 00 00  00 00 00 02  00 - 64   CUTOFF               0 - 100
** ** 00 02  00 00 00 02  00 - 64   RESO                 0 - 100
** ** 00 04  00 00 00 02  00 - 64   TOUCH-S              0 - 100
** ** 00 06  00 00 00 02            dummy data
 --- PBend ---
** ** 00 08  00 00 00 02  00 - 64   P-BEND               0 - 100
** ** 00 0A  00 00 00 02  00 - 64   P-BEND-Q             0 - 100
 --- Common ---
** ** 00 0C  00 00 00 02  00 - 64   SUSTAIN              0 - 100
** ** 00 0E  00 00 00 02            dummy data
          :
** ** 00 6E  00 00 00 02            dummy data
```

[SOLO]

```
----- Filter -----
** ** 00 00  00 00 00 02  00 - 64   CUTOFF               0 - 100
** ** 00 02  00 00 00 02  00 - 64   RESO                 0 - 100
** ** 00 04  00 00 00 02  00 - 64   TOUCH-S              0 - 100
** ** 00 06  00 00 00 02            dummy data
----- Common -----
** ** 00 08  00 00 00 02  00 - 64   COLOR                0 - 100
** ** 00 0A  00 00 00 02  00 - 64   SUSTAIN              0 - 100
** ** 00 0C  00 00 00 02            dummy data
          :
** ** 00 6E  00 00 00 02            dummy data
```

[PWM]

```
----- Filter -----
** ** 00 00  00 00 00 02  00 - 64   CUTOFF               0 - 100
** ** 00 02  00 00 00 02  00 - 64   RESO                 0 - 100
```

```
** ** 00 04  00 00 00 02  00 - 64   TOUCH-S             0 - 100
** ** 00 06  00 00 00 02            dummy data
----- Mod -----
** ** 00 08  00 00 00 02  00 - 64   DEPTH               0 - 100
** ** 00 0A  00 00 00 02  00 - 64   RATE                0 - 100
----- Common -----
** ** 00 0C  00 00 00 02  00 - 64   SUSTAIN             0 - 100
** ** 00 0E  00 00 00 02            dummy data
         :
** ** 00 6E  00 00 00 02            dummy data
```

[CRYSTAL]

```
----- Mod -----
** ** 00 00  00 00 00 02  00 - 64   LENGTH              0 - 100
** ** 00 02  00 00 00 02  00 - 64   MOD-TUNE            0 - 100
** ** 00 04  00 00 00 02  00 - 64   LEVEL               0 - 100
** ** 00 06  00 00 00 02  00 - 64   MOD-DEP             0 - 100
----- Color -----
** ** 00 08  00 00 00 02  00 - 64   BODY LEV            0 - 100
----- Common -----
** ** 00 0A  00 00 00 02  00 - 64   SUSTAIN             0 - 100
** ** 00 0C  00 00 00 02            dummy data
         :
** ** 00 6E  00 00 00 02            dummy data
```

[ORGAN]

```
----- Drawbar -----
** ** 00 00  00 00 00 02  00 - 64   FEET-4              0 - 100
** ** 00 02  00 00 00 02  00 - 64   FEET-8              0 - 100
** ** 00 04  00 00 00 02  00 - 64   FEET-16             0 - 100
** ** 00 06  00 00 00 02            dummy data;
----- Common -----
** ** 00 08  00 00 00 02  00 - 64   SUSTAIN             0 - 100
** ** 00 0A  00 00 00 02            dummy data
         :
** ** 00 6E  00 00 00 02            dummy data
```

[BRASS]

```
----- Filter -----
** ** 00 00  00 00 00 02  00 - 64   CUTOFF              0 - 100
** ** 00 02  00 00 00 02  00 - 64   RESO                0 - 100
** ** 00 04  00 00 00 02  00 - 64   TOUCH-S             0 - 100
** ** 00 06  00 00 00 02            dummy data
----- Common -----
** ** 00 08  00 00 00 02  00 - 64   SUSTAIN             0 - 100
** ** 00 0A  00 00 00 02            dummy data
         :
** ** 00 6E  00 00 00 02            dummy data
```

===== COSM EQ =====

```
** ** 00 70  00 00 00 02  00 - 28   LEVEL           -20dB - +20dB
** ** 00 72  00 00 00 02  00 - 28   L-MID G         -20dB - +20dB
** ** 00 74  00 00 00 02  00 - 28   LOW G           -20dB - +20dB
** ** 00 76  00 00 00 02  00 - 28   HIGH G          -20dB - +20dB
** ** 00 78  00 00 00 02  00 - 28   H-MID G         -20dB - +20dB
** ** 00 7A  00 00 00 02  00 - 14   L-MID F            *Refer to Table 'EQ_Mid_f'
** ** 00 7C  00 00 00 02  00 - 05   L-MID Q            *Refer to Table 'EQ_Mid_Q'
** ** 00 7E  00 00 00 02  00 - 14   H-MID F            *Refer to Table 'EQ_Mid_f'
** ** 01 00  00 00 00 02  00 - 05   H-MID Q            *Refer to Table 'EQ_Mid_Q'
** ** 01 02  00 00 00 02            dummy data
** ** 01 04  00 00 00 02            dummy data
** ** 01 06  00 00 00 02            dummy data
```

===== COSM PAN =====

```
** ** 01 08  00 00 00 02  00 - 64   STRING-1
** ** 01 0A  00 00 00 02  00 - 64   STRING-2
** ** 01 0C  00 00 00 02  00 - 64   STRING-3
** ** 01 0E  00 00 00 02  00 - 64   STRING-4
** ** 01 10  00 00 00 02  00 - 64   STRING-5
** ** 01 12  00 00 00 02  00 - 64   STRING-6          00 : L=100 R=0
                                                       :     :
                                                      32 : L=50 R=50
                                                       :     :
                                                      64 : L=0 R=100
** ** 01 14  00 00 00 02            dummy data;
** ** 01 16  00 00 00 02            dummy data;
```

===== COSM MIXER =====

```
** ** 01 18  00 00 00 02  00 - 64   BALANCE           00 : CG=0 NP=100
                                                       :     :
                                                      32 : CG=50 NP=50
                                                       :     :
                                                      64 : CG=100 NP=0
** ** 01 1A  00 00 00 02  00 - 01   PU POLA           00 : NORMAL
                                                      01 : INVERT
** ** 01 1C  00 00 00 02  00 - 64   LEVEL              0 - 100
** ** 01 1E  00 00 00 02            dummy data
** ** 01 20  00 00 00 02  00 - 01   EQ ON/OFF         00 : OFF
                                                      01 : ON
```

===== COSM GT =====

```
** ** 01 22  00 00 00 02  00 - 12   TYPE              00 : VARI GT
                                                      01 : ACOUSTIC
                                                      02 : NYLON STRINGS
                                                      03 : OPEN TUNE
                                                      04 : 12STRINGS
                                                      05 : PD SHIFT
                                                      06 : POLY DIST
                                                      07 : POLY COMP
                                                      08 : POLY OCT
                                                      09 : POLY SG
                                                      0A : BOWED
                                                      0B : DUAL
                                                      0C : FILTER BASS
                                                      0D : PIPE
                                                      0E : SOLO
                                                      0F : PWM
                                                      10 : CRYSTAL
                                                      11 : ORGAN
                                                      12 : BRASS
** ** 01 24  00 00 00 02  00 - 01   ON/OFF            00 : OFF
```

```
                                                    01 : ON
** ** 01 26  00 00 00 02           dummy data
** ** 01 28  00 00 00 02  00 - 01   ON/OFF          00 : OFF
                                                    01 : ON
** ** 01 2A  00 00 00 02  00 - 0D   TYPE            00 : JC-120
                                                    01 : CLEAN TWIN
                                                    02 : CRUNCH
                                                    03 : MATCH DRIVE
                                                    04 : VO DRIVE
                                                    05 : BLUES
                                                    06 : BG LEAD
                                                    07 : MS1959 (I)
                                                    08 : MS1959 (II)
                                                    09 : MS1959 (I+II)
                                                    0A : SLDN LEAD
                                                    0B : METAL 5150
                                                    0C : METAL DRIVE
                                                    0D : AC.GUITAR
** ** 01 2C  00 00 00 02           dummy data
** ** 01 2E  00 00 00 02           dummy data

===== AMP =====
** ** 01 30  00 00 00 02  00 - 64   VOLUME            0 - 100
----- Presence -----
** ** 01 32  00 00 00 02  00 - 64   PRESENCE          0 - 100
----- HighCut -----
** ** 01 32  00 00 00 02  00 - 64   HIGH CUT          0 - 100
----- Common -----
** ** 01 34  00 00 00 02  00 - 64   MASTER            0 - 100
** ** 01 36  00 00 00 02  00 - 64   BASS              0 - 100
** ** 01 38  00 00 00 02  00 - 64   MIDDLE            0 - 100
** ** 01 3A  00 00 00 02  00 - 64   TREBLE            0 - 100
** ** 01 3C  00 00 00 02  00 - 02   GAIN              00 : LOW
                                                    01 : NORMAL
                                                    02 : HIGH
** ** 01 3E  00 00 00 02  00 - 01   BRIGHT            00 : OFF
                                                    01 : ON
** ** 01 40  00 00 00 02  00 - 64   BALANCE           00 : MC=0 DI=100
                                                     :      :
                                                    32 : MC=50 DI=50
                                                     :      :
                                                    64 : MC=100 DI=0
** ** 01 42  00 00 00 02  00 - 0E   SPEAKER           00 : SMALL
                                                    01 : MIDDLE
                                                    02 : JC-120
                                                    03 : TWIN ON
                                                    04 : TWIN OFF
                                                    05 : MATCH ON
                                                    06 : MATCH OFF
                                                    07 : VO ON
                                                    08 : VO OFF
                                                    09 : BG STACK ON
                                                    0A : BG STACK OFF
                                                    0B : MS STACK ON
                                                    0C : MS STACK OFF
                                                    0D : METAL STACK
                                                    0E : ACOUSTIC
** ** 01 44  00 00 00 02  00 - 0A   MIC SET           00 : CENTER
                                                    01 : 1cm
                                                     :   :
                                                    0A : 10cm
** ** 01 46  00 00 00 02           dummy data
** ** 01 48  00 00 00 02  00 - 01   COMP ON/OFF
** ** 01 4A  00 00 00 02  00 - 01   WAH ON/OFF
** ** 01 4C  00 00 00 02  00 - 01   EQ ON/OFF
** ** 01 4E  00 00 00 02  00 - 01   MOD ON/OFF
** ** 01 50  00 00 00 02  00 - 01   DELAY ON/OFF
** ** 01 52  00 00 00 02  00 - 01   CHORUS ON/OFF
** ** 01 54  00 00 00 02  00 - 01   REVERB ON/OFF
** ** 01 56  00 00 00 02  00 - 01   NS ON/OFF         00 : OFF
                                                    01 : ON

===== COMP =====
** ** 01 58  00 00 00 02  00 - 01   TYPE              00 : COMP
                                                    01 : LIMITER
** ** 01 5A  00 00 00 02           dummy data
** ** 01 5C  00 00 00 02           dummy data
** ** 01 5E  00 00 00 02           dummy data
----- COMP -----
[ COMP ]
** ** 01 60  00 00 00 02  00 - 64   SUSTAIN           0 - 100
** ** 01 62  00 00 00 02  00 - 64   ATTACK            0 - 100
** ** 01 64  00 00 00 02  00 - 64   TONE            -50 - +50
** ** 01 66  00 00 00 02  00 - 64   LEVEL             0 - 100
[ LIMITER ]
** ** 01 60  00 00 00 02  00 - 64   THRESHOLD         0 - 100
** ** 01 62  00 00 00 02  00 - 64   RELEASE           0 - 100
** ** 01 64  00 00 00 02  00 - 64   TONE            -50 - +50
** ** 01 66  00 00 00 02  00 - 64   LEVEL             0 - 100

===== WAH =====
** ** 01 68  00 00 00 02  00 - 01   TYPE              00 : PEDAL WAH
                                                    01 : AUTO WAH
** ** 01 6A  00 00 00 02           dummy data
** ** 01 6C  00 00 00 02           dummy data
** ** 01 6E  00 00 00 02           dummy data
----- WAH -----
[ PEDAL WAH ]
** ** 01 70  00 00 00 02  00 - 64   FREQ              0 - 100
** ** 01 72  00 00 00 02  00 - 64   LEVEL             0 - 100
[ AUTO WAH ]
** ** 01 70  00 00 00 02  00 - 01   MODE              00 : LPF
                                                    01 : BPF
** ** 01 72  00 00 00 02  00 - 01   POLARITY          00 : DOWN
                                                    01 : UP
** ** 01 74  00 00 00 02  00 - 64   SENS              0 - 100
** ** 01 76  00 00 00 02  00 - 64   FREQ              0 - 100
** ** 01 78  00 00 00 02  00 - 64   PEAK              0 - 100
** ** 01 7A  00 00 00 02  00 - 71   RATE              *Refer to Table 'RATE'
** ** 01 7C  00 00 00 02  00 - 64   DEPTH             0 - 100
** ** 01 7E  00 00 00 02  00 - 64   LEVEL             0 - 100

===== EQ =====
** ** 02 00  00 00 00 02  00 - 28   LEVEL         -20dB - +20dB
```

```
** ** 02 02  00 00 00 02  00 - 28   L- MID G         -20dB - +20dB
** ** 02 04  00 00 00 02  00 - 28   LOW G           -20dB - +20dB
** ** 02 06  00 00 00 02  00 - 28   HIGH G          -20dB - +20dB
** ** 02 08  00 00 00 02  00 - 28   H-MID G         -20dB - +20dB
** ** 02 0A  00 00 00 02  00 - 14   L-MID F             *Refer to Table 'EQ_Mid_f'
** ** 02 0C  00 00 00 02  00 - 05   L-MID Q             *Refer to Table 'EQ_Mid_Q'
** ** 02 0E  00 00 00 02  00 - 14   H-MID F             *Refer to Table 'EQ_Mid_f'
** ** 02 10  00 00 00 02  00 - 05   H-MID Q             *Refer to Table 'EQ_Mid_Q'
** ** 02 12  00 00 00 02            dummy data
** ** 02 14  00 00 00 02            dummy data
** ** 02 16  00 00 00 02            dummy data

===== MOD =====
** ** 02 18  00 00 00 02  00 - 09   TYPE               00 : HARMONIST
                                                      01 : P.SHIFTER
                                                      02 : FLANGER
                                                      03 : PHASER
                                                      04 : SUB EQ
                                                      05 : 2x2CHORUS
                                                      06 : TREMOLO
                                                      07 : PAN
                                                      08 : PD SHIFT
                                                      09 : VIBRATO
** ** 02 1A  00 00 00 02            dummy data
** ** 02 1C  00 00 00 02            dummy data
** ** 02 1E  00 00 00 02            dummy data
----- MOD -----
[ HARMONIST ]
** ** 02 20  00 00 00 02  00 - 01   HR1 ON/OFF          00 : OFF
                                                      01 : ON
** ** 02 22  00 00 00 02  00 - 1D   HR1 HARMONY         *Refer to Table 'HR_Harm'
** ** 02 24  00 00 00 02  00 - 64   HR1 PAN            00 : L=100 R=0
                                                       :       :
                                                      32 : L=50 R=50
                                                       :       :
                                                      64 : L=0 R=100
** ** 02 26  00 00 00 02  00 - 64   HR1 LEVEL           0 - 100
** ** 02 28  00 00 00 02  00 - 64   DIR LEVEL           0 - 100
** ** 02 2A  00 00 00 02  00 - 30   HR1 USER SCALE C   -24 - +24         *3
** ** 02 2C  00 00 00 02  00 - 30   HR1 USER SCALE Db  -24 - +24         *3
** ** 02 2E  00 00 00 02  00 - 30   HR1 USER SCALE E   -24 - +24         *3
** ** 02 30  00 00 00 02  00 - 30   HR1 USER SCALE F   -24 - +24         *3
** ** 02 32  00 00 00 02  00 - 30   HR1 USER SCALE Ab  -24 - +24         *3
** ** 02 34  00 00 00 02  00 - 30   HR1 USER SCALE A   -24 - +24         *3
** ** 02 36  00 00 00 02  00 - 30   HR1 USER SCALE D   -24 - +24         *3
** ** 02 38  00 00 00 02  00 - 30   HR1 USER SCALE Eb  -24 - +24         *3
** ** 02 3A  00 00 00 02  00 - 30   HR1 USER SCALE F#  -24 - +24         *3
** ** 02 3C  00 00 00 02  00 - 30   HR1 USER SCALE G   -24 - +24         *3
** ** 02 3E  00 00 00 02  00 - 30   HR1 USER SCALE Bb  -24 - +24         *3
** ** 02 40  00 00 00 02  00 - 30   HR1 USER SCALE B   -24 - +24         *3
** ** 02 42  00 00 00 02  00 - 01   HR2 ON/OFF          00 : OFF
                                                      01 : ON
** ** 02 44  00 00 00 02  00 - 1D   HR2 HARMONY         *Refer to Table 'HR_Harm'
** ** 02 46  00 00 00 02  00 - 64   HR2 PAN            00 : L=100 R=0
                                                       :       :
                                                      32 : L=50 R=50
                                                       :       :
                                                      64 : L=0 R=100
** ** 02 48  00 00 00 02  00 - 64   HR2 LEVEL           0 - 100
** ** 02 4A  00 00 00 02  00 - 30   HR2 USER SCALE C   -24 - +24         *3
** ** 02 4C  00 00 00 02  00 - 30   HR2 USER SCALE Db  -24 - +24         *3
** ** 02 4E  00 00 00 02  00 - 30   HR2 USER SCALE E   -24 - +24         *3
** ** 02 50  00 00 00 02  00 - 30   HR2 USER SCALE F   -24 - +24         *3
** ** 02 52  00 00 00 02  00 - 30   HR2 USER SCALE Ab  -24 - +24         *3
** ** 02 54  00 00 00 02  00 - 30   HR2 USER SCALE A   -24 - +24         *3
** ** 02 56  00 00 00 02  00 - 30   HR2 USER SCALE D   -24 - +24         *3
** ** 02 58  00 00 00 02  00 - 30   HR2 USER SCALE Eb  -24 - +24         *3
** ** 02 5A  00 00 00 02  00 - 30   HR2 USER SCALE F#  -24 - +24         *3
** ** 02 5C  00 00 00 02  00 - 30   HR2 USER SCALE G   -24 - +24         *3
** ** 02 5E  00 00 00 02  00 - 30   HR2 USER SCALE Bb  -24 - +24         *3
** ** 02 60  00 00 00 02  00 - 30   HR2 USER SCALE B   -24 - +24         *3
** ** 02 62  00 00 00 02            dummy data
** ** 02 64  00 00 00 02            dummy data
** ** 02 66  00 00 00 02            dummy data
[ PITCH SHIFTER ]
** ** 02 20  00 00 00 04  0000      PS1 PRE DLY          *Refer to Table 'PS_PreDly'    *2
                          - 0139
** ** 02 24  00 00 00 04  0000      PS2 PRE DLY          *Refer to Table 'PS_PreDly'    *2
                          - 0139
** ** 02 28  00 00 00 02  00 - 01   PS1 ON/OFF          00 : OFF
                                                      01 : ON
** ** 02 2A  00 00 00 02  00 - 01   PS1 MODE           00 : POLY
                                                      01 : MONO
** ** 02 2C  00 00 00 02  00 - 30   PS1 SHIFT         -24 - +24
** ** 02 2E  00 00 00 02  00 - 64   PS1 FINE          -50 - +50
** ** 02 30  00 00 00 02  00 - 64   PS1 FEEDBACK        0 - 100
** ** 02 32  00 00 00 02  00 - 64   PS1 PAN            00 : L=100 R=0
                                                       :       :
                                                      32 : L=50 R=50
                                                       :       :
                                                      64 : L=0 R=100
** ** 02 34  00 00 00 02  00 - 64   PS1 LEVEL           0 - 100
** ** 02 36  00 00 00 02  00 - 64   DIR LEV             0 - 100
** ** 02 38  00 00 00 02  00 - 01   PS2 ON/OFF          00 : OFF
                                                      01 : ON
** ** 02 3A  00 00 00 02  00 - 01   PS2 MODE           00 : POLY
                                                      01 : MONO
** ** 02 3C  00 00 00 02  00 - 30   PS2 SHIFT         -24 - +24
** ** 02 3E  00 00 00 02  00 - 64   PS2 FINE          -50 - +50
** ** 02 40  00 00 00 02  00 - 64   PS2 PAN            00 : L=100 R=0
                                                       :       :
                                                      32 : L=50 R=50
                                                       :       :
                                                      64 : L=0 R=100
** ** 02 42  00 00 00 02  00 - 64   PS2 LEVEL           0 - 100
** ** 02 44  00 00 00 02            dummy data
         :
** ** 02 66  00 00 00 02            dummy data
[ FLANGER ]
** ** 02 20  00 00 00 02  00 - 71   RATE                *Refer to Table 'Rate'
** ** 02 22  00 00 00 02  00 - 64   DEPTH               0 - 100
** ** 02 24  00 00 00 02  00 - 64   MANUAL              0 - 100
** ** 02 26  00 00 00 02  00 - 64   RESO                0 - 100
** ** 02 28  00 00 00 02  00 - 64   LEVEL               0 - 100
** ** 02 2A  00 00 00 02  00 - 64   SEPARATE            0 - 100
** ** 02 2C  00 00 00 02            dummy data
         :
```

```
** ** 02 66  00 00 00 02            dummy data
[ PHASER ]
** ** 02 20  00 00 00 02  00 - 71   RATE                *Refer to Table 'Rate'
** ** 02 22  00 00 00 02  00 - 64   DEPTH                0 - 100
** ** 02 24  00 00 00 02  00 - 64   MANUAL               0 - 100
** ** 02 26  00 00 00 02  00 - 64   RESO                 0 - 100
** ** 02 28  00 00 00 02  00 - 64   LEVEL                0 - 100
** ** 02 2A  00 00 00 02  00 - 03   STAGE               00 : 4STAGE
                                                       01 : 8STAGE
                                                       02 : 12STAGE
                                                       03 : BI-PHASE
** ** 02 2C  00 00 00 02  00 - 72   STEP                 *Refer to Table 'Step_Rate'
** ** 02 2E  00 00 00 02            dummy data
         :
** ** 02 66  00 00 00 02            dummy data
[ SUB EQ ]
** ** 02 20  00 00 00 02  00 - 28   LEVEL           -20dB - +20dB
** ** 02 22  00 00 00 02  00 - 28   L-MID G         -20dB - +20dB
** ** 02 24  00 00 00 02  00 - 28   LOW G           -20dB - +20dB
** ** 02 26  00 00 00 02  00 - 28   HIGH G          -20dB - +20dB
** ** 02 28  00 00 00 02  00 - 28   H-MID G         -20dB - +20dB
** ** 02 2A  00 00 00 02  00 - 14   L-MID F             *Refer to Table 'EQ_Mid_f'
** ** 02 2C  00 00 00 02  00 - 05   L-MID Q             *Refer to Table 'EQ_Mid_Q'
** ** 02 2E  00 00 00 02  00 - 14   H-MID F             *Refer to Table 'EQ_Mid_f'
** ** 02 30  00 00 00 02  00 - 05   H-MID Q             *Refer to Table 'EQ_Mid_Q'
** ** 02 32  00 00 00 02            dummy data
         :
** ** 02 66  00 00 00 02            dummy data
[ 2x2 CHORUS ]
** ** 02 20  00 00 00 02  00 - 10   X OVER F             *Refer to Table 'Xover_f'
** ** 02 22  00 00 00 02  00 - 71   LOW RATE            *Refer to Table 'Rate'
** ** 02 24  00 00 00 02  00 - 64   LOW DEPTH            0 - 100
** ** 02 26  00 00 00 02  00 - 50   LOW PRE DLY    0.0msec - 40.0msec (0.5msec step)
** ** 02 28  00 00 00 02  00 - 64   LOW LEVEL            0 - 100
** ** 02 2A  00 00 00 02  00 - 71   HIGH RATE           *Refer to Table 'Rate'
** ** 02 2C  00 00 00 02  00 - 64   HIGH DEPTH           0 - 100
** ** 02 2E  00 00 00 02  00 - 50   HIGH PRE DLY   0.0msec - 40.0msec (0.5msec step)
** ** 02 30  00 00 00 02  00 - 64   HIGH LEVEL           0 - 100
** ** 02 32  00 00 00 02            dummy data
         :
** ** 02 66  00 00 00 02            dummy data
[ TREMOLO ]
** ** 02 20  00 00 00 02  00 - 64   WAVE                 0 - 100
** ** 02 22  00 00 00 02  00 - 71   RATE                 *Refer to Table 'Rate'
** ** 02 24  00 00 00 02  00 - 64   DEPTH                0 - 100
** ** 02 26  00 00 00 02            dummy data
         :
** ** 02 66  00 00 00 02            dummy data
[ PAN ]
** ** 02 20  00 00 00 02  00 - 64   WAVE                 0 - 100
** ** 02 22  00 00 00 02  00 - 71   RATE                 *Refer to Table 'Rate'
** ** 02 24  00 00 00 02  00 - 64   DEPTH                0 - 100
** ** 02 26  00 00 00 02            dummy data
         :
** ** 02 66  00 00 00 02            dummy data
[ PD SHIFT ]
** ** 02 20  00 00 00 04  0000      PITCH              0000 : -24
                          - 12C0                        :    :
                                                      0960 :   0
                                                        :    :
                                                      12C0 : +24
** ** 02 24  00 00 00 02  00 - 01   MODE                 00 : MONO
                                                       01 : POLY
** ** 02 26  00 00 00 02            dummy data
         :
** ** 02 66  00 00 00 02            dummy data
[ VIBRATO ]
** ** 02 20  00 00 00 02  00 - 01   TRIGGER              00 : OFF
                                                       01 : ON
** ** 02 22  00 00 00 02  00 - 71   RATE                 *Refer to Table 'Rate'
** ** 02 24  00 00 00 02  00 - 64   DEPTH                0 - 100
** ** 02 26  00 00 00 02  00 - 64   RISE TIME            0 - 100
** ** 02 28  00 00 00 02            dummy data
         :
** ** 02 66  00 00 00 02            dummy data

===== DELAY =====
** ** 02 68  00 00 00 04  0000      DLY TIME              *Refer to Table 'DD_DlyTime'    *2
                          - 0715
** ** 02 6C  00 00 00 02  00 - 65   TAP TIME             00 : OFF
                                                       01 : 0%
                                                        :    :
                                                       65 : 100%
** ** 02 6E  00 00 00 02  00 - 64   FEEDBACK             0 - 100
** ** 02 70  00 00 00 02  00 - 09   HIGH CUT             *Refer to Table 'High_Cut'
** ** 02 72  00 00 00 02  00 - 78   DLY LEV              0 - 120
** ** 02 74  00 00 00 02            dummy data
** ** 02 76  00 00 00 02            dummy data

===== CHORUS =====
** ** 02 78  00 00 00 02  00 - 01   MODE                 00 : MONO
                                                       01 : STEREO
** ** 02 7A  00 00 00 02  00 - 71   RATE                 *Refer to Table 'Rate'
** ** 02 7C  00 00 00 02  00 - 64   DEPTH                0 - 100
** ** 02 7E  00 00 00 02  00 - 50   PRE DLY        0.0msec - 40.0msec (0.5msec step)
** ** 03 00  00 00 00 02  00 - 09   HIGH CUT             *Refer to Table 'High_Cut'
** ** 03 02  00 00 00 02  00 - 64   CE LEVEL             0 - 100
** ** 03 04  00 00 00 02            dummy data
** ** 03 06  00 00 00 02            dummy data

===== REVERB =====
** ** 03 08  00 00 00 02  00 - 04   MODE                 00 : ROOM1
                                                       01 : ROOM2
                                                       02 : HALL1
                                                       03 : HALL2
                                                       04 : PLATE
** ** 03 0A  00 00 00 02  01 - 64   REV TIME             01 : 0.1sec
                                                        :    :
                                                       64 : 10.0sec
** ** 03 0C  00 00 00 02  00 - 09   LOW CUT              *Refer to Table 'Low_Cut'
** ** 03 0E  00 00 00 02  00 - 09   HIGH CUT             *Refer to Table 'High_Cut'
** ** 03 10  00 00 00 02  00 - 64   PRE DLY              00 : 0msec
                                                        :    :
                                                       64 : 100msec
** ** 03 12  00 00 00 02  00 - 64   REV LEV              0 - 100
```

```
** ** 03 14  00 00 00 02  00 - 0A   DENSITY              0 - 10
** ** 03 16  00 00 00 02            dummy data

===== NS =====
** ** 03 18  00 00 00 02  00 - 64   THRESHOLD            0 - 100
** ** 03 1A  00 00 00 02  00 - 64   RELEASE              0 - 100

===== FV =====
** ** 03 1C  00 00 00 02  00 - 64   LEVEL                0 - 100
** ** 03 1E  00 00 00 02            dummy data

===== ASSIGN =====
** ** 03 20  00 00 00 04  0000      ASSIGN1 TARGET       *Refer to Table 'Target'    *2
                          - 00D6
** ** 03 24  00 00 00 04            ASSIGN1 MIN          *4
** ** 03 28  00 00 00 04            ASSIGN1 MAX          *4
** ** 03 2C  00 00 00 02  00 - 45   ASSIGN1 SOURCE       *Refer to Table 'Source'
** ** 03 2E  00 00 00 02  00 - 01   ASSIGN1 MODE        00 : NORMAL (DEC/INC)
                                                        01 : TOGGLE
** ** 03 30  00 00 00 04  0000      ASSIGN2 TARGET       *Refer to Table 'Target'    *2
                          - 00D6
** ** 03 34  00 00 00 04            ASSIGN2 MIN          *4
** ** 03 38  00 00 00 04            ASSIGN2 MAX          *4
** ** 03 3C  00 00 00 02  00 - 45   ASSIGN2 SOURCE       *Refer to Table 'Source'
** ** 03 3E  00 00 00 02  00 - 01   ASSIGN2 MODE        00 : NORMAL (DEC/INC)
                                                        01 : TOGGLE
** ** 03 40  00 00 00 04  0000      ASSIGN3 TARGET       *Refer to Table 'Target'    *2
                          - 00D6
** ** 03 44  00 00 00 04            ASSIGN3 MIN          *4
** ** 03 48  00 00 00 04            ASSIGN3 MAX          *4
** ** 03 4C  00 00 00 02  00 - 45   ASSIGN3 SOURCE       *Refer to Table 'Source'
** ** 03 4E  00 00 00 02  00 - 01   ASSIGN3 MODE        00 : NORMAL (DEC/INC)
                                                        01 : TOGGLE
** ** 03 50  00 00 00 04  0000      ASSIGN4 TARGET       *Refer to Table 'Target'    *2
                          - 00D6
** ** 03 54  00 00 00 04            ASSIGN4 MIN          *4
** ** 03 58  00 00 00 04            ASSIGN4 MAX          *4
** ** 03 5C  00 00 00 02  00 - 45   ASSIGN4 SOURCE       *Refer to Table 'Source'
** ** 03 5E  00 00 00 02  00 - 01   ASSIGN4 MODE        00 : NORMAL (DEC/INC)
                                                        01 : TOGGLE
** ** 03 60  00 00 00 04  0000      ASSIGN5 TARGET       *Refer to Table 'Target'    *2
                          - 00D6
** ** 03 64  00 00 00 04            ASSIGN5 MIN          *4
** ** 03 68  00 00 00 04            ASSIGN5 MAX          *4
** ** 03 6C  00 00 00 02  00 - 45   ASSIGN5 SOURCE       *Refer to Table 'Source'
** ** 03 6E  00 00 00 02  00 - 01   ASSIGN5 MODE        00 : NORMAL (DEC/INC)
                                                        01 : TOGGLE
** ** 03 70  00 00 00 04  0000      ASSIGN6 TARGET       *Refer to Table 'Target'    *2
                          - 00D6
** ** 03 74  00 00 00 04            ASSIGN6 MIN          *4
** ** 03 78  00 00 00 04            ASSIGN6 MAX          *4
** ** 03 7C  00 00 00 02  00 - 45   ASSIGN6 SOURCE       *Refer to Table 'Source'
** ** 03 7E  00 00 00 02  00 - 01   ASSIGN6 MODE        00 : NORMAL (DEC/INC)
                                                        01 : TOGGLE
** ** 04 00  00 00 00 04  0000      ASSIGN7 TARGET       *Refer to Table 'Target'    *2
                          - 00D6
** ** 04 04  00 00 00 04            ASSIGN7 MIN          *4
** ** 04 08  00 00 00 04            ASSIGN7 MAX          *4
** ** 04 0C  00 00 00 02  00 - 45   ASSIGN7 SOURCE       *Refer to Table 'Source'
** ** 04 0E  00 00 00 02  00 - 01   ASSIGN7 MODE        00 : NORMAL (DEC/INC)
                                                        01 : TOGGLE
** ** 04 10  00 00 00 04  0000      ASSIGN8 TARGET       *Refer to Table 'Target'    *2
                          - 00D6
** ** 04 14  00 00 00 04            ASSIGN8 MIN          *4
** ** 04 18  00 00 00 04            ASSIGN8 MAX          *4
** ** 04 1C  00 00 00 02  00 - 45   ASSIGN8 SOURCE       *Refer to Table 'Source'
** ** 04 1E  00 00 00 02  00 - 01   ASSIGN8 MODE        00 : NORMAL (DEC/INC)
                                                        01 : TOGGLE

===== EXP =====
** ** 04 20  00 00 00 04  0000      EXP TARGET           *Refer to Table 'Target'    *2
                          - 00D6
** ** 04 24  00 00 00 04            EXP MIN              *4
** ** 04 28  00 00 00 04            EXP MAX              *4

===== CTL =====
** ** 04 2C  00 00 00 04  0000     CTL TARGET           *Refer to Table 'Target'     *2
                          - 00D6
** ** 04 30  00 00 00 04            CTL MIN              *4
** ** 04 34  00 00 00 04            CTL MAX              *4
** ** 04 38  00 00 00 02  00 - 01   CTL MODE            00 : NORMAL
                                                        01 : TOGGLE
** ** 04 3A  00 00 00 02            dummy data

===== GK VOL =====
** ** 04 3C  00 00 00 04  0000      GK VOL TARGET        *Refer to Table 'Target'    *2
                          - 00D6
** ** 04 40  00 00 00 04            GK VOL MIN           *4
** ** 04 44  00 00 00 04            GK VOL MAX           *4

===== GK S1/S2 =====
** ** 04 48  00 00 00 04  0000     GK S1/S2 TARGET      *Refer to Table 'Target'     *2
                          - 00D6
** ** 04 4C  00 00 00 04            GK S1/S2 MIN         *4
** ** 04 50  00 00 00 04            GK S1/S2 MAX         *4
** ** 04 54  00 00 00 02  00 - 01   GK S1/S2 MODE       00 : DEC/INC
                                                        01 : TOGGLE
** ** 04 56  00 00 00 02            dummy data

===== ASSIGN =====
** ** 04 58  00 00 00 02  00 - 7E   ASSIGN1 ACTIVE RANGE LO      0 - 126     *5
** ** 04 5A  00 00 00 02  00 - 7E   ASSIGN2 ACTIVE RANGE LO      0 - 126     *5
** ** 04 5C  00 00 00 02  00 - 7E   ASSIGN3 ACTIVE RANGE LO      0 - 126     *5
** ** 04 5E  00 00 00 02  00 - 7E   ASSIGN4 ACTIVE RANGE LO      0 - 126     *5
** ** 04 60  00 00 00 02  00 - 7E   ASSIGN5 ACTIVE RANGE LO      0 - 126     *5
** ** 04 62  00 00 00 02  00 - 7E   ASSIGN6 ACTIVE RANGE LO      0 - 126     *5
** ** 04 64  00 00 00 02  00 - 7E   ASSIGN7 ACTIVE RANGE LO      0 - 126     *5
** ** 04 66  00 00 00 02  00 - 7E   ASSIGN8 ACTIVE RANGE LO      0 - 126     *5
** ** 04 68  00 00 00 02  01 - 7F   ASSIGN1 ACTIVE RANGE HI      1 - 127     *5
** ** 04 6A  00 00 00 02  01 - 7F   ASSIGN2 ACTIVE RANGE HI      1 - 127     *5
```

** ** 04 6C	00 00 00 02	01 - 7F	ASSIGN3 ACTIVE RANGE HI	1 - 127	*5
** ** 04 6E	00 00 00 02	01 - 7F	ASSIGN4 ACTIVE RANGE HI	1 - 127	*5
** ** 04 70	00 00 00 02	01 - 7F	ASSIGN5 ACTIVE RANGE HI	1 - 127	*5
** ** 04 72	00 00 00 02	01 - 7F	ASSIGN6 ACTIVE RANGE HI	1 - 127	*5
** ** 04 74	00 00 00 02	01 - 7F	ASSIGN7 ACTIVE RANGE HI	1 - 127	*5
** ** 04 76	00 00 00 02	01 - 7F	ASSIGN8 ACTIVE RANGE HI	1 - 127	*5
** ** 04 78	00 00 00 02	00 - 01	EXP ON/OFF	00 : OFF	
				01 : ON	
** ** 04 7A	00 00 00 02	00 - 01	CTL ON/OFF	00 : OFF	
				01 : ON	
** ** 04 7C	00 00 00 02	00 - 01	GK VOL ON/OFF	00 : OFF	
				01 : ON	
** ** 04 7E	00 00 00 02	00 - 01	GK S1/S2 ON/OFF	00 : OFF	
				01 : ON	
** ** 05 00	00 00 00 02	00 - 01	ASSIGN1 ON/OFF	00 : OFF	
				01 : ON	
** ** 05 02	00 00 00 02	00 - 01	ASSIGN2 ON/OFF	00 : OFF	
				01 : ON	
** ** 05 04	00 00 00 02	00 - 01	ASSIGN3 ON/OFF	00 : OFF	
				01 : ON	
** ** 05 06	00 00 00 02	00 - 01	ASSIGN4 ON/OFF	00 : OFF	
				01 : ON	
** ** 05 08	00 00 00 02	00 - 01	ASSIGN5 ON/OFF	00 : OFF	
				01 : ON	
** ** 05 0A	00 00 00 02	00 - 01	ASSIGN6 ON/OFF	00 : OFF	
				01 : ON	
** ** 05 0C	00 00 00 02	00 - 01	ASSIGN7 ON/OFF	00 : OFF	
				01 : ON	
** ** 05 0E	00 00 00 02	00 - 01	ASSIGN8 ON/OFF	00 : OFF	
				01 : ON	
** ** 05 10	00 00 00 04	0000	BPM	0028 : 40	*2
		-00FB		0029 : 41	
				: :	
				00FA : 250	
				00FB : MIDI	
** ** 05 14	00 00 00 02	00 - 64	LEVEL	0 - 200	
** ** 05 16	00 00 00 02	00 - 0B	KEY	00 : C (Am)	
				01 : Db (Bbm)	
				02 : D (Bm)	
				03 : Eb (Cm)	
				04 : E (C#m)	
				05 : F (Dm)	
				06 : F# (Ebm)	
				07 : G (Em)	
				08 : Ab (Fm)	
				09 : A (F#m)	
				0A : Bb (Gm)	
				0B : B (G#m)	
** ** 05 18	00 00 00 02	01 - 7F	NAME	*Refer to Table 'Name2'	
** ** 05 1A	00 00 00 02	01 - 7F	NAME	*Refer to Table 'Name2'	
** ** 05 1C	00 00 00 02	01 - 7F	NAME	*Refer to Table 'Name2'	
** ** 05 1E	00 00 00 02	01 - 7F	NAME	*Refer to Table 'Name2'	
** ** 05 20	00 00 00 02	01 - 7F	NAME	*Refer to Table 'Name2'	
** ** 05 22	00 00 00 02	01 - 7F	NAME	*Refer to Table 'Name2'	
** ** 05 24	00 00 00 02	01 - 7F	NAME	*Refer to Table 'Name2'	
** ** 05 26	00 00 00 02	01 - 7F	NAME	*Refer to Table 'Name2'	
** ** 05 28	00 00 00 02	00	dummy data		
** ** 05 2A	00 00 00 02	00 - 0A	CHAIN MIX		
** ** 05 2C	00 00 00 02	00 - 09	CHAIN1	*Refer to Table 'Chain'	*6
** ** 05 2E	00 00 00 02	00 - 09	CHAIN2	*Refer to Table 'Chain'	*6
** ** 05 30	00 00 00 02	00 - 09	CHAIN3	*Refer to Table 'Chain'	*6
** ** 05 32	00 00 00 02	00 - 09	CHAIN4	*Refer to Table 'Chain'	*6
** ** 05 34	00 00 00 02	00 - 09	CHAIN5	*Refer to Table 'Chain'	*6
** ** 05 36	00 00 00 02	00 - 09	CHAIN6	*Refer to Table 'Chain'	*6
** ** 05 38	00 00 00 02	00 - 09	CHAIN7	*Refer to Table 'Chain'	*6
** ** 05 3A	00 00 00 02	00 - 09	CHAIN8	*Refer to Table 'Chain'	*6
** ** 05 3C	00 00 00 02	00 - 09	CHAIN9	*Refer to Table 'Chain'	*6
** ** 05 3E	00 00 00 02	00 - 09	CHAIN10	*Refer to Table 'Chain'	*6

*1 It is not possible to set EXP PEDAL CALIBRATION RELEASE to a value greater than EXP PEDAL CALIBRATION PRESS.

*2 When transmitted, the lower byte is sent first. For example, the order for 1234H will be 34H and then 12H.

*3 This is for the case when the parameter name is KEY=C(Am). The correspondence between KEY and parameter name is shown below.

	KEY											
	C(Am)	Db(Bbm)	D(Bm)	Eb(Cm)	E(C#m)	F(Dm)	F#(Ebm)	G(Em)	Ab(Fm)	A(F#m)	Bb(Gm)	B(G#m)
ADDRESS												
** ** 02 2A	C	Db	D	Eb	E	F	F#	G	Ab	A	Bb	B
** ** 02 2C	Db	D	Eb	E	F	F#	G	Ab	A	Bb	B	C
** ** 02 2E	E	F	F#	G	Ab	A	Bb	B	C	Db	D	Eb
** ** 02 30	F	F#	G	Ab	A	Bb	B	C	Db	D	Eb	E
** ** 02 32	Ab	A	Bb	B	C	Db	D	Eb	E	F	F#	G
** ** 02 34	A	Bb	B	C	Db	D	Eb	E	F	F#	G	Ab
** ** 02 36	D	Eb	E	F	F#	G	Ab	A	Bb	B	C	Db
** ** 02 38	Eb	E	F	F#	G	Ab	A	Bb	B	C	Db	D
** ** 02 3A	F#	G	Ab	A	Bb	B	C	Db	D	Eb	E	F
** ** 02 3C	G	Ab	A	Bb	B	C	Db	D	Eb	E	F	F#
** ** 02 3E	Bb	B	C	Db	D	Eb	E	F	F#	G	Ab	A
** ** 02 40	B	C	Db	D	Eb	E	F	F#	G	Ab	A	Bb

*4 MIN and MAX will be according to the data of the parameter selected for TARGET.

*5 It is not possible to set ACTIVE RANGE LO above ACTIVE RANGE HI.

*6 From the input side, this is CHAIN1, 2, 3 ... 10. Transmit consecutive data for CHAIN1--10 so that effects do not overlap.

Table 'Program Map'

Data(H)	Desc.	Data(H)	Desc.	Data(H)	Desc.	Data(H)	Desc.
00 00	# 1-1	00 50	#21-1	01 20	#41-1	01 70	#61-1
00 01	# 1-2	00 51	#21-2	01 21	#41-2	01 71	#61-2
00 02	# 1-3	00 52	#21-3	01 22	#41-3	01 72	#61-3
00 03	# 1-4	00 53	#21-4	01 23	#41-4	01 73	#61-4
00 04	# 2-1	00 54	#22-1	01 24	#42-1	01 74	#62-1
00 05	# 2-2	00 55	#22-2	01 25	#42-2	01 75	#62-2
00 06	# 2-3	00 56	#22-3	01 26	#42-3	01 76	#62-3
00 07	# 2-4	00 57	#22-4	01 27	#42-4	01 77	#62-4
00 08	# 3-1	00 58	#23-1	01 28	#43-1	01 78	#63-1
00 09	# 3-2	00 59	#23-2	01 29	#43-2	01 79	#63-2
00 0A	# 3-3	00 5A	#23-3	01 2A	#43-3	01 7A	#63-3
00 0B	# 3-4	00 5B	#23-4	01 2B	#43-4	01 7B	#63-4
00 0C	# 4-1	00 5C	#24-1	01 2C	#44-1	01 7C	#64-1
00 0D	# 4-2	00 5D	#24-2	01 2D	#44-2	01 7D	#64-2
00 0E	# 4-3	00 5E	#24-3	01 2E	#44-3	01 7E	#64-3
00 0F	# 4-4	00 5F	#24-4	01 2F	#44-4	01 7F	#64-4
00 10	# 5-1	00 60	#25-1	01 30	#45-1	02 00	#65-1
00 11	# 5-2	00 61	#25-2	01 31	#45-2	02 01	#65-2
00 12	# 5-3	00 62	#25-3	01 32	#45-3	02 02	#65-3
00 13	# 5-4	00 63	#25-4	01 33	#45-4	02 03	#65-4
00 14	# 6-1	00 64	#26-1	01 34	#46-1		
00 15	# 6-2	00 65	#26-2	01 35	#46-2		
00 16	# 6-3	00 66	#26-3	01 36	#46-3		
00 17	# 6-4	00 67	#26-4	01 37	#46-4		
00 18	# 7-1	00 68	#27-1	01 38	#47-1		
00 19	# 7-2	00 69	#27-2	01 39	#47-2		
00 1A	# 7-3	00 6A	#27-3	01 3A	#47-3		
00 1B	# 7-4	00 6B	#27-4	01 3B	#47-4		
00 1C	# 8-1	00 6C	#28-1	01 3C	#48-1		
00 1D	# 8-2	00 6D	#28-2	01 3D	#48-2		
00 1E	# 8-3	00 6E	#28-3	01 3E	#48-3		
00 1F	# 8-4	00 6F	#28-4	01 3F	#48-4		
00 20	# 9-1	00 70	#29-1	01 40	#49-1		
00 21	# 9-2	00 71	#29-2	01 41	#49-2		
00 22	# 9-3	00 72	#29-3	01 42	#49-3		
00 23	# 9-4	00 73	#29-4	01 43	#49-4		
00 24	#10-1	00 74	#30-1	01 44	#50-1		
00 25	#10-2	00 75	#30-2	01 45	#50-2		
00 26	#10-3	00 76	#30-3	01 46	#50-3		
00 27	#10-4	00 77	#30-4	01 47	#50-4		
00 28	#11-1	00 78	#31-1	01 48	#51-1		
00 29	#11-2	00 79	#31-2	01 49	#51-2		
00 2A	#11-3	00 7A	#31-3	01 4A	#51-3		
00 2B	#11-4	00 7B	#31-4	01 4B	#51-4		
00 2C	#12-1	00 7C	#32-1	01 4C	#52-1		
00 2D	#12-2	00 7D	#32-2	01 4D	#52-2		
00 2E	#12-3	00 7E	#32-3	01 4E	#52-3		
00 2F	#12-4	00 7F	#32-4	01 4F	#52-4		
00 30	#13-1	01 00	#33-1	01 50	#53-1		
00 31	#13-2	01 01	#33-2	01 51	#53-2		
00 32	#13-3	01 02	#33-3	01 52	#53-3		
00 33	#13-4	01 03	#33-4	01 53	#53-4		
00 34	#14-1	01 04	#34-1	01 54	#54-1		
00 35	#14-2	01 05	#34-2	01 55	#54-2		
00 36	#14-3	01 06	#34-3	01 56	#54-3		
00 37	#14-4	01 07	#34-4	01 57	#54-4		
00 38	#15-1	01 08	#35-1	01 58	#55-1		
00 39	#15-2	01 09	#35-2	01 59	#55-2		
00 3A	#15-3	01 0A	#35-3	01 5A	#55-3		
00 3B	#15-4	01 0B	#35-4	01 5B	#55-4		
00 3C	#16-1	01 0C	#36-1	01 5C	#56-1		
00 3D	#16-2	01 0D	#36-2	01 5D	#56-2		
00 3E	#16-3	01 0E	#36-3	01 5E	#56-3		
00 3F	#16-4	01 0F	#36-4	01 5F	#56-4		
00 40	#17-1	01 10	#37-1	01 60	#57-1		
00 41	#17-2	01 11	#37-2	01 61	#57-2		
00 42	#17-3	01 12	#37-3	01 62	#57-3		
00 43	#17-4	01 13	#37-4	01 63	#57-4		
00 44	#18-1	01 14	#38-1	01 64	#58-1		
00 45	#18-2	01 15	#38-2	01 65	#58-2		
00 46	#18-3	01 16	#38-3	01 66	#58-3		
00 47	#18-4	01 17	#38-4	01 67	#58-4		
00 48	#19-1	01 18	#39-1	01 68	#59-1		
00 49	#19-2	01 19	#39-2	01 69	#59-2		
00 4A	#19-3	01 1A	#39-3	01 6A	#59-3		
00 4B	#19-4	01 1B	#39-4	01 6B	#59-4		
00 4C	#20-1	01 1C	#40-1	01 6C	#60-1		
00 4D	#20-2	01 1D	#40-2	01 6D	#60-2		
00 4E	#20-3	01 1E	#40-3	01 6E	#60-3		
00 4F	#20-4	01 1F	#40-4	01 6F	#60-4		

Table 'Pickup_Position'

Data(H) Description

```
00 : 5mm
 :   :
3F : 320mm
```

Table 'Pickup_Angle'

Data(H) Description

```
00 : -315mm
 :   :
3F : 0mm
 :   :
7E : +315mm
```

Table 'Pickup_Model'

Data(H) Description

```
00 : LP
01 : CLA-ST
02 : MOD-ST
03 : TEL
04 : P-90
05 : LIPS
06 : P.A.F.
07 : RICK
08 : CHET
09 : S-S-H
0A : VARI
```

Table 'Pickup_Pickup'

Data(H) Description

```
00 : REAR (REAR)
01 : C+R
02 : CENTER (F+R)
03 : F+C
04 : FRONT (FRONT)
```

Table 'Pickup_Type'

Data(H) Description

```
00 : SINGLE
01 : DOUBLE
02 : PIEZO
03 : ACOUSTIC
```

Table 'Body_Type'

Data(H) Description

```
00 : FLAT
01 : ROUND
02 : f HOLE
03 : METAL
04 : BANJO
```

Table 'Rate'

Data(H) Description

```
00 : 0
 :
64 : 100
65 : 4.0*BPM
66 : 3.0*BPM
67 : 8/3*BPM
68 : 2.0*BPM
69 : 1.5*BPM
6A : 4/3*BPM
6B : 1.0*BPM
6C : 3/4*BPM
6D : 2/3*BPM
6E : 1/2*BPM
6F : 3/8*BPM
70 : 1/3*BPM
71 : 1/4*BPM
```

Table 'Step_Rate'

Data(H) Description

```
00 : OFF
01 : 0
 :
65 : 100
66 : 4.0*BPM
67 : 3.0*BPM
68 : 8/3*BPM
69 : 2.0*BPM
6A : 1.5*BPM
6B : 4/3*BPM
6C : 1.0*BPM
6D : 3/4*BPM
6E : 2/3*BPM
6F : 1/2*BPM
70 : 3/8*BPM
71 : 1/3*BPM
72 : 1/4*BPM
```

Table 'EQ_Mid_f'

Data(H) Description

```
00 :    100Hz
01 :    125Hz
02 :    160Hz
03 :    200Hz
04 :    250Hz
05 :    315Hz
06 :    400Hz
07 :    500Hz
08 :    630Hz
09 :    800Hz
0A :    1.00kHz
0B :    1.25kHz
0C :    1.60kHz
0D :    2.00kHz
0E :    2.50kHz
0F :    3.15kHz
10 :    4.00kHz
11 :    5.00kHz
12 :    6.30kHz
13 :    8.00kHz
14 :    10.0kHz
```

Table 'EQ_Mid_Q'

Data(H) Description

```
00 :    0.5
01 :    1
02 :    2
03 :    4
04 :    8
05 :    16
```

Table 'VariGT_Harm'

Data(H) Description

```
00 :    -2oct
01 :    -14th
02 :    -13th
03 :    -12th
04 :    -11th
05 :    -10th
06 :    -9th
07 :    -1oct
08 :    -7th
09 :    -6th
0A :    -5th
0B :    -4th
0C :    -3rd
0D :    -2nd
0E :    Tonic
0F :    +2nd
10 :    +3rd
11 :    +4th
12 :    +5th
13 :    +6th
14 :    +7th
15 :    +1oct
16 :    +9th
17 :    +10th
18 :    +11th
19 :    +12th
1A :    +13th
1B :    +14th
1C :    +2oct
```

Table 'HR_Harm'

Data(H) Description

```
00 :    -2oct
01 :    -14th
02 :    -13th
03 :    -12th
04 :    -11th
05 :    -10th
06 :    -9th
07 :    -1oct
08 :    -7th
09 :    -6th
0A :    -5th
0B :    -4th
0C :    -3rd
0D :    -2nd
0E :    Tonic
0F :    +2nd
10 :    +3rd
11 :    +4th
12 :    +5th
13 :    +6th
14 :    +7th
15 :    +1oct
16 :    +9th
17 :    +10th
18 :    +11th
19 :    +12th
1A :    +13th
1B :    +14th
1C :    +2oct
1D :    USER
```

Table 'PS_PreDly'

Data(H) Description

```
00 00 : 0ms
00 01 : 1ms
 :
00 7F : 127ms
00 80 : 128ms
 :
00 FF : 255ms
01 00 : 256ms
 :
01 2C : 300ms
01 2D : 1/4*BPM
01 2E : 1/3*BPM
01 2F : 3/8*BPM
01 30 : 1/2*BPM
01 31 : 2/3*BPM
01 32 : 3/4*BPM
01 33 : 1.0*BPM
01 34 : 4/3*BPM
01 35 : 1.5*BPM
01 36 : 2.0*BPM
01 37 : 8/3*BPM
01 38 : 3.0*BPM
01 39 : 4.0*BPM
```

Table 'DD_DlyTime'

Data(H) Description

```
00 00 : 0ms
00 01 : 1ms
 :
00 FF : 255ms
01 00 : 256ms
 :
07 08 : 1800ms
07 09 : 1/4*BPM
07 0A : 1/3*BPM
07 0B : 3/8*BPM
07 0C : 1/2*BPM
07 0D : 2/3*BPM
07 0E : 3/4*BPM
07 0F : 1.0*BPM
07 10 : 4/3*BPM
07 11 : 1.5*BPM
07 12 : 2.0*BPM
07 13 : 8/3*BPM
07 14 : 3.0*BPM
07 15 : 4.0*BPM
```

Table 'Low_Cut'

Data(H) Description

```
00 :    55.0Hz
01 :    110Hz
02 :    165Hz
03 :    200Hz
04 :    280Hz
05 :    340Hz
06 :    400Hz
07 :    500Hz
08 :    630Hz
09 :    800Hz
```

Table 'Low_Cut_2'

Data(H) Description

```
00 :    THRU
01 :    55.0Hz
02 :    110Hz
03 :    165Hz
04 :    200Hz
05 :    280Hz
06 :    340Hz
07 :    400Hz
08 :    500Hz
09 :    630Hz
0A :    800Hz
```

Table 'High_Cut'

Data(H) Description

```
00 :    700Hz
01 :    1.00kHz
02 :    1.40kHz
03 :    2.00kHz
04 :    3.00kHz
05 :    4.00kHz
06 :    6.00kHz
07 :    8.00kHz
08 :    11.0kHz
09 :    FLAT
```

Table 'Xover_f'

Data(H) Description

```
00 :    100Hz
01 :    125Hz
02 :    160Hz
03 :    200Hz
04 :    250Hz
05 :    315Hz
06 :    400Hz
07 :    500Hz
08 :    630Hz
09 :    800Hz
0A :    1.00kHz
0B :    1.25kHz
0C :    1.60kHz
0D :    2.00kHz
0E :    2.50kHz
0F :    3.15kHz
10 :    4.00kHz
```

Table 'Target'

Data(H) Description

```
00 00 : COSM GT      ON/OFF
00 01 : F-BASS        COLOR
00 02 : BODY         ATTACK
00 03 : BODY           BODY
00 04 : BODY        LOW CUT
00 05 : BODY          LEVEL
00 06 : COSM EQ      ON/OFF
00 07 : COSM EQ       LEVEL
00 08 : COSM EQ     L-MID G
00 09 : COSM EQ       LOW G
00 0A : COSM EQ      HIGH G
00 0B : COSM EQ     H-MID G
00 0C : PICKUP       PICKUP
00 0D : PICKUP         TONE
00 0E : PICKUP        LEVEL
00 0F : PT SHIFT     ON/OFF
00 10 : PT SHIFT     SHIFT1
00 11 : PT SHIFT     SHIFT2
00 12 : PT SHIFT     SHIFT3
00 13 : PT SHIFT     SHIFT4
00 14 : PT SHIFT     SHIFT5
00 15 : PT SHIFT     SHIFT6
00 16 : PT SHIFT      FINE1
00 17 : PT SHIFT      FINE2
00 18 : PT SHIFT      FINE3
00 19 : PT SHIFT      FINE4
00 1A : PT SHIFT      FINE5
00 1B : PT SHIFT      FINE6
00 1C : PT SHIFT   E.LEVEL1
00 1D : PT SHIFT   E.LEVEL2
00 1E : PT SHIFT   E.LEVEL3
00 1F : PT SHIFT   E.LEVEL4
00 20 : PT SHIFT   E.LEVEL5
00 21 : PT SHIFT   E.LEVEL6
00 22 : PT SHIFT   D.LEVEL1
00 23 : PT SHIFT   D.LEVEL2
00 24 : PT SHIFT   D.LEVEL3
00 25 : PT SHIFT   D.LEVEL4
00 26 : PT SHIFT   D.LEVEL5
00 27 : PT SHIFT   D.LEVEL6
00 28 : PT SHIFT     HARMO1
00 29 : PT SHIFT     HARMO2
00 2A : PT SHIFT     HARMO3
00 2B : PT SHIFT     HARMO4
00 2C : PT SHIFT     HARMO5
00 2D : PT SHIFT     HARMO6
00 2E : TUNE          ON/OFF
00 2F : TUNE      TUNE TYPE
00 30 : TUNE         SHIFT1
00 31 : TUNE         SHIFT2
00 32 : TUNE         SHIFT3
00 33 : TUNE         SHIFT4
00 34 : TUNE         SHIFT5
00 35 : TUNE         SHIFT6
00 36 : DETUNE        ON/OFF
00 37 : DETUNE        DETUNE
00 38 : COSM PAN   STRING-1
00 39 : COSM PAN   STRING-2
00 3A : COSM PAN   STRING-3
00 3B : COSM PAN   STRING-4
00 3C : COSM PAN   STRING-5
00 3D : COSM PAN   STRING-6
00 3E : PD SHIFT      ON/OFF
00 3F : PD SHIFT       PITCH
00 40 : PD SHIFT   STRING-1
00 41 : PD SHIFT   STRING-2
00 42 : PD SHIFT   STRING-3
00 43 : PD SHIFT   STRING-4
00 44 : PD SHIFT   STRING-5
00 45 : PD SHIFT   STRING-6
00 46 : DIST          ON/OFF
00 47 : DIST           DRIVE
00 48 : DIST           LEVEL
00 49 : DIST      POLY RATE
00 4A : DIST        DRV BAL
00 4B : COSM COMP     ON/OFF
00 4C : COSM COMP   SUSTAIN
00 4D : COSM COMP      TONE
00 4E : COSM COMP     LEVEL
00 4F : COSM COMPTHRESHOLD
00 50 : OCTAVE        ON/OFF
00 51 : OCTAVE       -1OCT1
00 52 : OCTAVE       -1OCT2
00 53 : OCTAVE       -1OCT3
00 54 : OCTAVE       -1OCT4
00 55 : OCTAVE       -1OCT5
00 56 : OCTAVE       -1OCT6
00 57 : OCTAVE       -2OCT1
00 58 : OCTAVE       -2OCT2
00 59 : OCTAVE       -2OCT3
00 5A : OCTAVE       -2OCT4
00 5B : OCTAVE       -2OCT5
00 5C : OCTAVE       -2OCT6
00 5D : OCTAVE         DIR1
00 5E : OCTAVE         DIR2
00 5F : OCTAVE         DIR3
00 60 : OCTAVE         DIR4
00 61 : OCTAVE         DIR5
00 62 : OCTAVE         DIR6
00 63 : SG            ON/OFF
00 64 : MIXER       BALANCE
00 65 : MIXER         LEVEL
00 66 : FILTER       CUTOFF
00 67 : FILTER        DECAY
00 68 : ATTACK       LENGTH
00 69 : ATTACK     MOD-TUNE
00 6A : ATTACK      MOD-DEP
00 6B : ATTACK        LEVEL
00 6C : ORGAN        FEET-4
00 6D : ORGAN        FEET-8
00 6E : ORGAN       FEET-16
00 6F : P-BEND     P-BEND Q
00 70 : GLIDE      GLD-SENS
00 71 : COSM MOD      DEPTH
00 72 : COSM MOD       RATE
00 73 : COSM AMP      ON/OFF
00 74 : COSM AMP      VOLUME
00 75 : COSM AMP   PRESENCE
00 76 : COSM AMP   HIGH CUT
00 77 : COSM AMP     MASTER
00 78 : COSM AMP       BASS
00 79 : COSM AMP     MIDDLE
00 7A : COSM AMP     TREBLE
00 7B : COSM AMP       GAIN
00 7C : COSM AMP     BRIGHT
00 7D : FX:COMP       ON/OFF
00 7E : FX:COMP     SUSTAIN
00 7F : FX:COMP        TONE
00 80 : FX:COMP       LEVEL
00 81 : FX:LM     THRESHOLD
00 82 : FX:LM          TONE
00 83 : FX:LM         LEVEL
00 84 : FX:WAH        ON/OFF
00 85 : FX:PD WAH      FREQ
00 86 : FX:PD WAH     LEVEL
00 87 : FX:AT WAH      FREQ
00 88 : FX:AT WAH      PEAK
00 89 : FX:AT WAH      RATE
00 8A : FX:AT WAH     DEPTH
00 8B : FX:AT WAH     LEVEL
00 8C : FX:EQ         ON/OFF
00 8D : FX:EQ          LEVEL
```

```
00 8E : FX:EQ      L-MID G
00 8F : FX:EQ        LOW G
00 90 : FX:EQ       HIGH G
00 91 : FX:EQ      H-MID G
00 92 : FX:MOD      ON/OFF
00 93 : FX:HARMO  1:ON/OFF
00 94 : FX:HARMO 1:HARMONY
00 95 : FX:HARMO     1:PAN
00 96 : FX:HARMO   1:LEVEL
00 97 : FX:HARMO   DIR LEV
00 98 : FX:HARMO  2:ON/OFF
00 99 : FX:HARMO 2:HARMONY
00 9A : FX:HARMO     2:PAN
00 9B : FX:HARMO   2:LEVEL
00 9C : FX:P.SFT  1:ON/OFF
00 9D : FX:P.SFT   1:SHIFT
00 9E : FX:P.SFT    1:FINE
00 9F : FX:P.SFT  1:F.BACK
00 A0 : FX:P.SFT     1:PAN
00 A1 : FX:P.SFT   1:LEVEL
00 A2 : FX:P.SFT DIR LEVEL
00 A3 : FX:P.SFT  2:ON/OFF
00 A4 : FX:P.SFT   2:SHIFT
00 A5 : FX:P.SFT    2:FINE
00 A6 : FX:P.SFT     2:PAN
00 A7 : FX:P.SFT   2:LEVEL
00 A8 : FX:FL         RATE
00 A9 : FX:FL        DEPTH
00 AA : FX:FL       MANUAL
00 AB : FX:FL    RESONANCE
00 AC : FX:FL        LEVEL
00 AD : FX:PH         RATE
00 AE : FX:PH        DEPTH
00 AF : FX:PH       MANUAL
00 B0 : FX:PH    RESONANCE
00 B1 : FX:PH        LEVEL
00 B2 : FX:PH         STEP
00 B3 : FX:SUB EQ    LEVEL
00 B4 : FX:SUB EQ  L-MID G
00 B5 : FX:SUB EQ    LOW G
00 B6 : FX:SUB EQ   HIGH G
00 B7 : FX:SUB EQ  H-MID G
00 B8 : FX:2x2CE    L-RATE
00 B9 : FX:2x2CE   L-DEPTH
00 BA : FX:2x2CE   L-LEVEL
00 BB : FX:2x2CE    H-RATE
00 BC : FX:2x2CE   H-DEPTH
00 BD : FX:2x2CE   H-LEVEL
00 BE : FX:TR         RATE
00 BF : FX:TR        DEPTH
00 C0 : FX:PAN        RATE
00 C1 : FX:PAN       DEPTH
00 C2 : FX:PD SFT    PITCH
00 C3 : FX:VB      TRIGGER
00 C4 : FX:VB         RATE
00 C5 : FX:VB        DEPTH
00 C6 : FX:DELAY    ON/OFF
00 C7 : FX:DELAY  DLY TIME
00 C8 : FX:DELAY  FEEDBACK
00 C9 : FX:DELAY DLY LEVEL
00 CA : FX:CHORUS   ON/OFF
00 CB : FX:CHORUS     RATE
00 CC : FX:CHORUS    DEPTH
00 CD : FX:CHORUS CE LEVEL
00 CE : FX:REVERB   ON/OFF
00 CF : FX:REVERB REV TIME
00 D0 : FX:REVERB  REV LEV
00 D1 : FX:NS       ON/OFF
00 D2 : FX:FV         LEVEL
00 D3 : MASTER        LEVEL
00 D4 : MASTER    BPM(TAP)
00 D5 : MASTER         KEY
00 D6 : TUNER       ON/OFF
```

Table 'Source'

Data(H)	Description
00 :	EXP PEDAL
01 :	CTL PEDAL
02 :	SUB EXP
03 :	SUB CTL1
04 :	SUB CTL2
05 :	GK VOL
06 :	GK S1/S2
07 :	MIDI #CC1
:	:
25 :	MIDI #CC31
26 :	MIDI #CC64
:	:
45 :	MIDI #CC95

Table 'Name1'

Data(H)	Description
20 :	
21 :	!
22 :	"
23 :	#
24 :	$
25 :	%
26 :	&
27 :	'
28 :	(
29 :	)
2A :	*
2B :	+
2C :	,
2D :	-
2E :	.
2F :	/
30 :	0
31 :	1
32 :	2
33 :	3
34 :	4
35 :	5
36 :	6
37 :	7
38 :	8
39 :	9
3A :	:
3B :	;
3C :	<
3D :	=
3E :	>
3F :	?
40 :	@
41 :	A
42 :	B
43 :	C
44 :	D
45 :	E
46 :	F
47 :	G
48 :	H
49 :	I
4A :	J
4B :	K
4C :	L
4D :	M
4E :	N
4F :	O
50 :	P
51 :	Q
52 :	R
53 :	S
54 :	T
55 :	U
56 :	V
57 :	W
58 :	X
59 :	Y
5A :	Z
5B :	[
5C :	\
5D :	]
5E :	^
5F :	_
60 :	`
61 :	a
62 :	b
63 :	c
64 :	d
65 :	e
66 :	f
67 :	g
68 :	h
69 :	i
6A :	j
6B :	k
6C :	l
6D :	m
6E :	n
6F :	o
70 :	p
71 :	q
72 :	r
73 :	s
74 :	t
75 :	u
76 :	v
77 :	w
78 :	x
79 :	y
7A :	z
7B :	{
7C :	|
7D :	}
7E :	->
7F :	<-

Table 'Name2'

Data(H)	Description
01 :	@
02 :	@
03 :	@
04 :	@
05 :	@
06 :	@
07 :	@
08 :	@
09 :	@
0A :	@
0B :	@
0C :	@
0D :	@
0E :	@
0F :	@
10 :	@
11 :	@
12 :	@
13 :	@
14 :	@
15 :	@
16 :	@
17 :	@
18 :	@
19 :	@
1A :	@
1B :	@
1C :	@
1D :	@
1E :	@
1F :	@
20 :	
21 :	!
22 :	"
23 :	#
24 :	$
25 :	%
26 :	&
27 :	'
28 :	(
29 :	)
2A :	*
2B :	+
2C :	,
2D :	-
2E :	.
2F :	/
30 :	0
31 :	1
32 :	2
33 :	3
34 :	4
35 :	5
36 :	6
37 :	7
38 :	8
39 :	9
3A :	:
3B :	;
3C :	<
3D :	=
3E :	>
3F :	?
40 :	@
41 :	A
42 :	B
43 :	C
44 :	D
45 :	E
46 :	F
47 :	G
48 :	H
49 :	I
4A :	J
4B :	K
4C :	L
4D :	M
4E :	N
4F :	O
50 :	P
51 :	Q
52 :	R
53 :	S
54 :	T
55 :	U
56 :	V
57 :	W
58 :	X
59 :	Y
5A :	Z
5B :	[
5C :	\
5D :	]
5E :	^
5F :	_
60 :	`
61 :	a
62 :	b
63 :	c
64 :	d
65 :	e
66 :	f
67 :	g
68 :	h
69 :	i
6A :	j
6B :	k
6C :	l
6D :	m
6E :	n
6F :	o
70 :	p
71 :	q
72 :	r
73 :	s
74 :	t
75 :	u
76 :	v
77 :	w
78 :	x
79 :	y
7A :	z
7B :	{
7C :	|
7D :	}
7E :	->
7F :	<-

Table 'Chain'

Data(H)	Description
00 :	COMP
01 :	WAH
02 :	AMP
03 :	EQ
04 :	FV
05 :	NS
06 :	MOD
07 :	DLY
08 :	CHO
09 :	REV

Roland Exclusive Messages

1. Data Format for Exclusive Messages

Roland's MIDI implementation uses the following data format for all Exclusive messages (type IV):

Byte	Description
F0H	Exclusive Status
41H	Manufacturer ID (Roland)
DEV	Device ID
MDL	Model ID
CMD	Command ID
[BODY]	Main data
F7H	End of exclusive

• MIDI status: F0H, F7H

An Exclusive message must be flanked by a pair of status codes, starting with a Manufacturer ID immediately after F0H (MIDI version 1.0).

• Manufacturer ID: 41H

The Manufacturer ID identifies the manufacturer of a MIDI instrument that sends an Exclusive message. Value 41H represents Roland's Manufacturer ID.

• Device ID: DEV

The Device ID contains a unique value that identifies individual devices in the implementation of several MIDI instruments. It is usually set to 00H–0FH, a value smaller by one than that of a basic channel, but value 00H–1FH may be used for a device with several basic channels.

• Model ID: MDL

The Model ID contains a value that identifies one model from another. Different models, however, may share an identical Model ID if they handle similar data.

The Model ID format may contain 00H in one or more places to provide an extended data field. The following are examples of valid Model IDs, each representing a unique model:

01H
02H
03H
00H, 01H
00H, 02H
00H, 00H, 01H

• Command ID: CMD

The Command ID indicates the function of an Exclusive message. The Command ID format may contain 00H in one or more places to provide an extended data field. The following are examples of valid Command IDs, each representing a unique function:

01H
02H
03H
00H, 01H
00H, 02H
00H, 00H, 01H

• Main data: BODY

This field contains a message to be exchanged across an interface. The exact data size and content will vary with the Model ID and Command ID.

2. Address-mapped Data Transfer

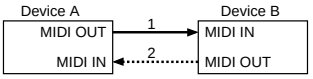
Address mapping is a technique for transferring messages conforming to the data format given in Section 1. It assigns a series of memory-resident records—waveform and tone data, switch status, and parameters, for example, to specific locations in a machine-dependent address space, thereby allowing access to data residing at the address a message specifies.

Address-mapped data transfer is therefore independent of models and data categories. This technique allows use of two different transfer procedures: one-way transfer and handshake transfer.

• One-way transfer procedure (See Section 3 for details.)

This procedure is suited to the transfer of a small amount of data. It sends out an Exclusive message completely independent of the receiving device's status.

Connection Diagram

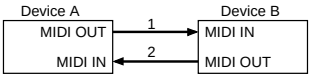


Connection at point 2 is essential for "Request data" procedures. (See Section 3.)

• Handshake-transfer procedure (This device does not use this procedure)

This procedure initiates a predetermined transfer sequence (handshaking) across the interface before data transfer takes place. Handshaking ensures that reliability and transfer speed are high enough to handle a large amount of data.

Connection Diagram



Connection at points 1 and 2 is essential.

Notes on the above procedures

** There are separate Command IDs for different transfer procedures.*

** Devices A and B cannot exchange data unless they use the same transfer procedure, share identical Device ID and Model ID, and are ready for communication.*

3. One-way Transfer Procedure

This procedure sends out data until it has all been sent and is used when the messages are so short that answerbacks need not be checked.
For longer messages, however, the receiving device must acquire each message in time with the transfer sequence, which inserts 20 milliseconds intervals.

Types of Messages

Message	Command ID
Request data 1	RQ1 (11H)
Data set 1	DT1 (12H)

• Request data #1: RQ1 (11H)

This message is sent out when there is a need to acquire data from a device at the other end of the interface. It contains data for the address and size that specify designation and length, respectively, of data required.
On receiving an RQ1 message, the remote device checks its memory for the data address and size that satisfy the request.
If it finds them and is ready for communication, the device will transmit a "Data set 1 (DT1)" message, which contains the requested data. Otherwise, the device won't send out anything.

Byte	Description
F0H	Exclusive Status
41H	Manufacturer ID (Roland)
DEV	Device ID
MDL	Model ID
11H	Command ID
aaH	Address MSB
|	|
|	|
	LSB
ssH	Size MSB
|	|
|	|
	LSB
sum	Check sum
F7H	End of exclusive

** The size of the requested data does not indicate the number of bytes that will make up a DT1 message, but represents the address fields where the requested data resides.*

** Some models are subject to limitations in data format used for a single transaction. Requested data, for example, may have a limit in length or must be divided into predetermined address fields before it is exchanged across the interface.*

** The same number of bytes comprises address and size data, which, however, vary with the Model ID.*

** The error-checking process uses a checksum that provides a bit pattern where the last 7 bits are zero when values for an address, size, and that checksum are summed.*

•Data set 1: DT1 (12H)

This message corresponds to the actual data transfer process.
Because every byte in the data is assigned a unique address, a DT1 message can convey the starting address of one or more bits of data as well as a series of data formatted in an address-dependent order.

The MIDI standards inhibit non real-time messages from interrupting an Exclusive one. This fact is inconvenient for devices that support a "soft-thru" function. To maintain compatibility with such devices, Roland has limited the DT1 to 256 bytes so that an excessively long message is sent out in separate 'segments'.

Byte	Description
F0H	Exclusive Status
41H	Manufacturer ID (Roland)
DEV	Device ID
MDL	Model ID
12H	Command ID
aaH	Address MSB
|	|
|	|
	LSB
ddH	Data MSB
|	|
|	|
	LSB
sum	Check sum
F7H	End of exclusive

** A DT1 message is capable of providing only the valid data among those specified by an RQ1 message.*

** Some models are subject to limitations in data format used for a single transaction. Requested data, for example, may have a limit in length or must be divided into predetermined address fields before it is exchanged across the interface.*

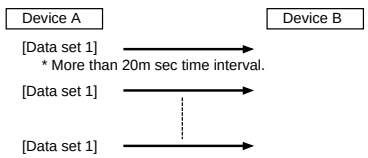
** The number of bytes comprising address data varies from one Model ID to another.*

** The error-checking process uses a checksum that provides a bit pattern where the last 7 bits are zero when values for an address, size, and that checksum are summed.*

•Example of Message Transactions

•Device A sending data to Device B

Transfer of a DT1 message is all that takes place.



•Device B requesting data from Device A

Device B sends an RQ1 message to Device A.
Checking the message, Device A sends a DT1 message back to Device B.