

SY85

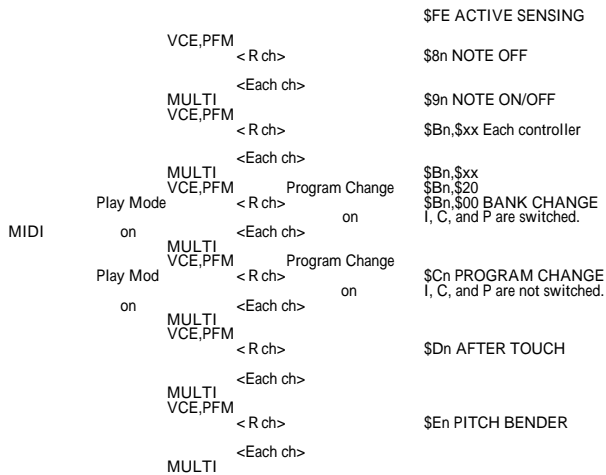
MIDI Data Format

1. Synthesizer mode

1.1 MIDI reception/transmission block diagram

<MIDI reception condition> 1/2

R ch ---- Voice Receive ch.

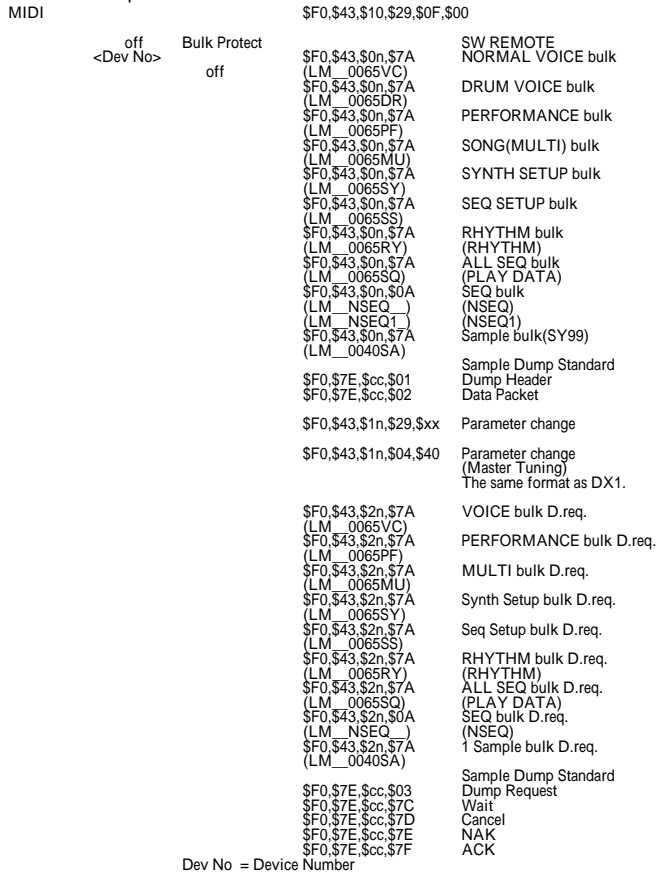


<MIDI Transmission condition>

ACTIVE SENSING

NOTE ON/OFF	\$9n	
MODULATION WHEEL	\$Bn , \$01	
FOOT CONTROL	\$Bn , \$04	
VOLUME	\$Bn , \$07	
SUSTAIN SWITCH	\$Bn , \$40	
CS	\$Bn , \$10 ~ \$13	
AFTER TOUCH	\$Dn	
PITCH BEND	\$En	
BANK CHANGE	\$Bn , \$00 \$20	Program Change on
PROGRAM CHANGE	\$Cn	Program Change on
		< T ch> transmit ch
		MIDI
Voice bulk		
Performance bulk		
Multi bulk		
Synth setup bulk		
Seq setup bulk		
SEQ data bulk(NSEQ)		
Seq all data bulk		
RHYTHM data bulk		
Sample bulk		
Sample dump standard		
Parameter change		
Sample Dump Request		

<MIDI reception condition> 2/2



1.2 Channel message

1.2.1 Transmission

1.2.1.1 Note Off

Transmission note range = C1(36)...C6(96)

Velocity range = 1...127

1.2.1.2 Note On

Transmission note range = C1(36)...C6(96)

Velocity range = 1...127

1.2.1.3 Control change

Control change is output to MIDI when the following controllers are operated.

ctrl#	parameter	data rng
1	Modulation wheel	0 ~ 127
4	Foot control	0 ~ 127
7	Volume pedal	0 ~ 127
64	Sustain switch	0 ~ 127
16 ~ 19	CS	0 ~ 127

1.2.1.4 Program bank change

Program bank change is transmitted, when a voice is selected in voice mode, when a performance is selected in performance mode.

Program bank change No. is assigned as shown below in accordance with the mode.

Bn 00 xx 20 xx	Data
Internal1 Voice	00,00
Internal2 Voice	00,03
Internal3 Voice	00,06
Internal4 Voice	00,09
Card1 Voice	00,01
Card2 Voice	00,04
Card3 Voice	00,07
Card4 Voice	00,10
Internal1 Performance	00,64
Internal2 Performance	00,67
Card1 Performance	00,65
Card2 Performance	00,68
Internal1 Voice(multi)	00,32
Internal2 Voice(multi)	00,35
Internal3 Voice(multi)	00,38
Internal4 Voice(multi)	00,41
Card1 Voice(multi)	00,33

Bn 00 xx 20 xx	Data
Card2 Voice(multi)	00,36
Card3 Voice(multi)	00,39
Card4 Voice(multi)	00,42
Internal1 Perf(multi)	00,80
Internal2 Perf(multi)	00,83
Card1 Perf(multi)	00,81
Card2 Perf(multi)	00,84

When the mode is set to off the program change is not transmitted.

When the mode is set to table, the conversion format contained in the program transmission table is applied and transmitted.

1.2.1.5 Program change

Program change is transmitted, when a voice is selected in voice mode, when a performance is selected in performance mode.

Program change No. is assigned as shown below in accordance with the mode.

			Data
Voice	Internal1	0 ~ 63	00 ~ 63
	Internal2	0 ~ 63	00 ~ 63
	Internal3	0 ~ 63	00 ~ 63
	Internal4	0 ~ 63	00 ~ 63
	Card1	0 ~ 63	00 ~ 63
	Card2	0 ~ 63	00 ~ 63
	Card3	0 ~ 63	00 ~ 63
	Card4	0 ~ 63	00 ~ 63
Performance	Internal1	0 ~ 63	00 ~ 63
	Internal2	0 ~ 63	00 ~ 63
	Card1	0 ~ 63	00 ~ 63
	Card2	0 ~ 63	00 ~ 63

When the mode is set to off the program change is not transmitted.

When the mode is set to table, the conversion format contained in the program transmission table is applied and transmitted.

1.2.1.6 Pitch bend

Pitch bend is transmitted with a resolution of 7 bits.

1.2.1.7 After touch

After touch is output when it is operated.

1.2.1.8 Channel mode message

Channel mode message is not transmitted.

1.2.2 Reception

1.2.2.1 Note Off

Reception note range = C-2 ~ G8
Velocity range = not received.

1.2.2.1 Note On/Off

Reception note range = C-2 ~ G8
Velocity range = 0 ~ 127

1.2.2.2 Control change

The parameters in the table below can be controlled by MIDI.

cntrl#	parameter	data rng
1	Modulation wheel	0 ~ 127
4	Foot control	0 ~ 127
7	Foot Volume	0 ~ 127
10	Pan	0 ~ 127
0 ~ 119	Volume	0 ~ 127
1 ~ 120	Effect Param1	0 ~ 127
1 ~ 120	Effect Param2	0 ~ 127
16 ~ 19	CS Param	0 ~ 127
64	Sustain Switch	0, 127

Pan is received only when MULTI is generated.

1.2.2.3 Program change

When a program change message is received, the SY85 performs the following operations.

Three types of reception modes can be set with the system setup.

1) off:

Program change is not received.

2) normal:

In each play mode, the program No. changes in accordance with 00 ~ 63 of the current mode.

The program bank change is not received.

3) direct:

In voice mode, voice A1 ~ H8 correspond to the program change data 00 ~ 63. INT1, INT2 and CARD change in accordance with the program bank change.

Program change data 64 ~ 127 is not received. In performance mode, performance A1 ~ H8 correspond to program change data 00 ~ 63. Int1, Int2, and CARD change in accordance with the program bank change.

Program change data 64 ~ 127 are not received.

In Multi mode, each INST program changes in accordance with the above.

Refer to during transmission for the bank change.

4) table:

Reception applies to 3) direct.

Transmission is carried out in accordance with the PROGRAM CHANGE TABLE.

1.2.2.4 Pitch bend

Pitch bend is received only on the MSB side.

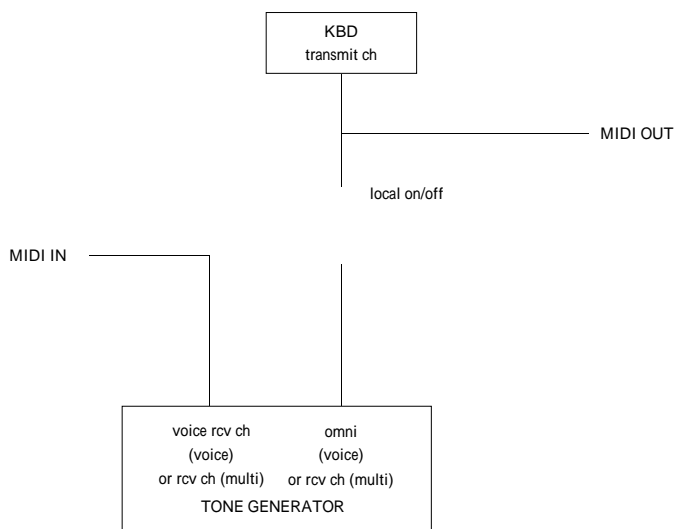
1.2.2.5 After touch

After touch is received in accordance with the reception channel of each mode.

1.2.2.6 Channel mode message

cntrl#	parameter	data rng
120	All Sound Off	0
121	Reset All Controller	0
123	All Notes Off	0

1.2.3 Configuration of keyboard section and tone generator



Note 1) In voice mode, sound is generated even if the Voice receive channel and the Keyboard Trans. channel do not match.

Note 2) Note On from the keyboard and Note On from MIDI are distinguished. Controller information from the keyboard and controller information from the MIDI (control change, after touch, pitch bend, etc.) are not distinguished except for sustain switch.

2. System exclusive message

2.1 Parameter change

The SY85 transmits and receives the following eight parameter change types.

(7) Remote switch is received only.) 7) Remote switch will be the same as the screen when the switch is pressed.

- 1). Multi Data
- 2). Performance Data
- 3). Normal Voice Data
- 4). Drum Voice Data
- 5). Setup Data
- 6). Program Change Table
- 7). Switch Remote
- 8). Master Tuning

The parameter change reception cannot be turned off with each MIDI switch, except for Device Number off.

2.1.1 SY85 Data parameter change

(1)Format

```

11110000    F0
01000011    43
0001nnnn    nnnn    = Device Number
00101001    29
0000gggg    gggg    = Parameter Group Number
0sssssss    ssssss    = Parameter Sub Group Number
0ppppppp    pppppp    = Parameter Number MS7bit
0ppppppp    pppppp    = Parameter Number LS7bit
0vvvvvvv    vvvvvv    = Data Value MS7bit
0vvvvvvv    vvvvvv    = Data Value LS7bit
11110111    F7
  
```

(2)Parameter Group Number,Sub Group Number

Parameter Group Name	gggg	ssssss	
Multi Data	0	0, 1..16	*1
Performance Data	1	0, 1..4	*2
Normal Voice Data	2	0, 1..4	*3
Drum Voice Data	3	0,36..84	*4
Setup Data	4	0..2	*5
Program Change Table	5	0..63	*6
Switch Remote	6	0	

*1:1..16; Inst Number, 0;common data

*2:1..4; Layer Number, 0;common data

*3:1..4 = Layer Number (Layer Voice Edit), 0 = Voice

*4:36..84 = Key Number,0;common data

*5:0=syn, 1 = seq, 2 = ry

*6:Program Number

(3) Parameter Number, Data Value

See the appended table 1.

(4) Operation

(Transmission)

When data is edited with the panel switch, the parameter change is transmitted in accordance with the above transmission conditions.

(Reception)

1) ~ 4)

The SY85 has four sound generation modes: Voice, Performance, Multi, Wave. Only when the sound generation mode of the transmitting side and receiving side match, it is received. The mode on the receiving side does not change and the page does not move. However, the data display will be updated.

5) ~ 6)

All modes: Modes are received as they are. (no page change)

7)

This parameter change is only for reception. Remote controlling is possible with all the panel switches. This message has the same effect as pressing the switch.

2.1.2 Master Tuning parameter change

(1)Format

```

11110000    F0
01000011    43
0001nnnn    nnnn    = Device Number
00101001    04
01000000    40
0vvvvvvv    vvvvvv    = Data Value
11110111    F7
  
```

(2) Operation

(Transmission)

When the master tune data is edited with the panel switch, the parameter change is transmitted in accordance with the above transmission conditions.

(Reception)

All modes: Modes are received as they are. (no page change)

3. Bulk dump

The SY85 transmits and receives the following ten bulk dump types.

Reception is not possible during performance and recording.

Transmission is performed when MIDI UTILITY #bulk dump# is executed, or when a dump request is received.

- 1). Normal Voice bulk dump
- 2). Drum Voice bulk dump
- 3). Performance bulk dump
- 4). Multi(Song) bulk dump
- 5). Synthesizer Setup bulk dump
- 6). Seq Setup bulk dump
- 7). Sample bulk dump
- 8). Rhythm bulk dump
- 9). All Seq bulk dump
- 10). Nseq bulk dump

3.1.1 Bulk Dump 1) ~ 7)

(1)Format

```

0    11110000    F0
1    01000011    43
2    0000nnnn    nnnn    = Device Number
3    01111010    7A
4    0bbbbbbb    ] No. of bytes
5    0bbbbbbb
6    01001100    4C(asci i"L")
7    01001101    C 4D(asci i"M")
8    00100000    H 20(asci i" ")
9    00100000    E 20(asci i" ")
10   0ddddddd    C ddddddd = Data Format Name(asci i)
11   0ddddddd    K ddddddd = Data Format Name(asci i)
12   0ddddddd    ddddddd = Data Format Name(asci i)
13   0ddddddd    S ddddddd = Data Format Name(asci i)
14   0ddddddd    U ddddddd = Data Format Name(asci i)
15   0ddddddd    M ddddddd = Data Format Name(asci i)
16   00000000    00

29   00000000    00
30   01111111    tttttt = Memory_type
31   00mmmmmm    mmmmmm = Memory Number
32   0vvvvvvv    vvvvvv = data value

0sssssss    ssssss = check_sum
11110111    F7
  
```

4 and 5 are not available during a Dump Request and 32 becomes F7.

(2)Data Format Name

Bulk Dump Type	ddddddd	tttttt	mmmmmmm
Normal Voice	0065VC	*1	0..62
Drum Voice	0065DR	*2	63
Performance	0065PF	*3	0..63
Multi(Song)	0065MU	0	0..9
Synthesizer Setup	0065SY	0	0
Seq Setup	0065SS	0	0
Sample	0040SA	0	0..63

*1:0=int1,3=int2,6=int3,9=int4,127=edit_buffer

*2:0=int1,3=int2,6=int3,9=int4,127=edit_buffer

*3:0=int1,3=int2,127=edit_buffer

*4: When memory number exceeds the upper limit, it is handled as the upper limit value during the bulk reception, and it is ignored during the dump request reception.

*5: When the memory type is not defined during bulk dump reception;

with 4) ~ 8), it is ignored and handled as int.

with 1) ~ 2),

= 127 edit_buffer

= 0 ~ 2 int1

= 3 ~ 5 int2

= 6 ~ 8 int3

= 9 ~ 15 int4

= other bit 4 ~ bit 7 are ignored and the above process is performed.

with 3)

= 127 edit_buffer

= 0 ~ 2 int1

= 3 ~ 7 int2

= other bit 3 ~ bit 7 are ignored and the above process is performed.

When the memory type is not defined during dump request reception, it is ignored.

(3) Data Format

See the appended table 1.

(4) Operation

(Transmission)

While being transmitted with the BULK UTILITY using 1) ~ 4),during

All Voices Bulk transmission

Memory_type = 00 (INT1)

Memory Number = Transmission is carried out up to 63 starting from 0 sequentially.

Memory_type = 03 (INT2)

Memory Number = Transmission is carried out up to 63 starting from 0 sequentially.during

= 06 (INT3)

= 09 (INT4)

All Performance Bulk transmission

Memory_type = 00 (INT1)

Memory Number = Transmission is carried out up to 63 starting from 0 sequentially.during

= 03 (INT2)

All SONG Bulk transmission

Memory_type = 00 (INT)

Memory Number = Transmission is carried out up to 9 starting from 0 sequentially.during

3.1.2 SY85 Format Bulk Dump 8), 9)

(1)Format

0	11110000	F0	
1	01000011	43	
2	0000nnnn	nnnn = Device Number	
3	00001010	7A	
4	0bbbbbbb	No. of bytes	
5	0bbbbbbb	max.538	
6	01001100	4C(ascii"L")	
7	01001101	4D(ascii"M")	
8	00100000	20(ascii" ")	b
9	00100000	20(ascii" ")	y
10	0ddddddd	d(ascii)= Data	t
11	0ddddddd	d(ascii) Format	e
12	0ddddddd	d(ascii) Name	
13	0ddddddd	d(ascii)	
14	0ddddddd	d(ascii)	
15	0ddddddd	d(ascii)	
16	00000000	00	
31	00000000	00	
32	0vvvvvvv	vvvvvvv = data value	
	0sssssss	sssssss = check_sum	
	11110111	F7	

When the number of bytes is less than 538, the number will become the number of bytes. When the number of bytes exceeds 538, the number is divided by 538 from the upper number, and number of bytes ~ check_sum is repeated.

4 and 5 are not available during a Dump Request and 32 becomes F7.

(2)Data Format Name

Bulk Dump Type	ddddddd
Rhythm	0065RY
All Seq	0065SQ

(3) Operation

Rhythm transmits and receives Rhythm track data and Pattern data.

All Seq transmits and receives Normal track data and Song 1 ~ 10 sequentially.

3.1.3 NSEQ Format Bulk Dump 10)

(1)Format

0	11110000	F0	
1	01000011	43	
2	0000nnnn	nnnn = Device Number	
3	00001010	0A	
4	0bbbbbbb	No. of bytes	
5	0bbbbbbb	max.4096	
6	01001100	4C(ascii"L")	
7	01001101	4D(ascii"M")	
8	00100000	20(ascii" ")	b
9	00100000	20(ascii" ")	y
10	0ddddddd	d(ascii) = Data	t
11	0ddddddd	d(ascii) Format	e
12	0ddddddd	d(ascii) Name	
13	0ddddddd	d(ascii)	
14	0ddddddd	d(ascii)	
15	0ddddddd	d(ascii)	
16	0vvvvvvv	vvvvvvv = data value	
	0sssssss	sssssss = check_sum	
	11110111	F7	

When the number of bytes is less than 4096, the number will become the number of bytes. When the number of bytes exceeds 4096, the number is divided by 4096 from the upper number, and number of bytes ~ check_sum is repeated.

4 and 5 are not available during a Dump Request and 32 becomes F7.

(2)Data Format Name

Bulk Dump Type	ddddddd
NSEQ	NSEQ
NSEQ1	NSEQ1

Receive only

(3) Data Format

See the appended table 2

(4) Operation

Normal track data of the current song is transmitted and received.

4. Sample Dump

For the sample dump the SY85 uses the Sample Dump Standard and SY99 Sample Bulk Dump.

Both of them can be received.

For transmission, the above two data types are transmitted successively when Sample Dump of the Sample Utility is executed. When receiving Sample Dump Standard Dump Request, and SY99 Sample Bulk Dump Request, each data type is transmitted.

With Sample Dump Standard and SY99 Sample Bulk Dump, \$1f is the upper limit of the Sample (memory) Number and the number exceeding this is handled as \$1f.

Sample Dump Standard

DUMP REQ	F0,7E,cc,03,ss,ss,F7
ACK	F0,7E,cc,7F,pp,F7
NAK	F0,7E,cc,7E,pp,F7
CANCEL	F0,7E,cc,7D,pp,F7
WAIT	F0,7E,cc,7C,pp,F7
DATA PACKET	F0,7E,cc,02,kk,<120 byte>,II,F7
DUMP HEADER	F0,7E,cc,01,ss,ss,ee,ff,ff,gg,gg,gg,hh,hh,hh,ii,ii,ii,jj,F7

pp	: packet number
cc	: channel number
ss ss	: sample number (LSB first)
ee	: sample format (SY99 handles 8 16bits.)
ff ff ff	: sample period (LSB first)
gg gg gg	: sample length (LSB first)
hh hh hh	: loop start (LSB first)
ii ii ii	: loop end (LSB first)
jj	: loop type (00=normal Loop,01=alternate Loop, 7F=Loop off)
kk	: running packet count(0-127)(sequential packet No.)
II	: checksum(XOR of 7E cc 02 kk <120 bytes>)

5.2 Channel message

Reception is carried out only during recording. Transmission is performed only when playing and over-dubbing.

Refer to the Receive flow chart and Transmit flow chart for the transmission and reception conditions.

5.3 Mode message

Transmission and reception are not carried out.

5.4 System common message

Only \$F2 is received and the others are not transmitted or received.

5.5 System real time message

5.5.1 Status F8, FA, FB, FC are received.

5.5.2 Nothing is carried out with Status F9, FD, and FF after being read.

6. Status FE (active sensing)

a) Transmission

FE is transmitted approximately every 170 msec.

b) Reception

If a signal is not output from MIDI for longer than approximately 300msec after receiving FE, the MIDI reception buffer is cleared, and if key on remains it is turned off.

5. Sequencer mode

5.1 MIDI reception/transmission block diagram

(Receive flow chart)

MIDI IN	sw2	sw3		\$9n note on \$8n note off
				\$Bn control change
				\$En pitch bend
		sw4		\$Cn program change
	sw1			\$Dn after touch
	sw5			\$F8 MIDI clock
				\$F2 song position pointer \$FA start \$FB continue \$FC stop
	sw6			see synth mode

(Note) sw1 It turns on when clock is set to MIDI in SEQ SETUP.
 sw2 Receiving channel in SEQ SETUP during recording
 sw3 Velocity setting 1 ~ 127, kbd in SEQ SETUP during recording
 sw4 After touch on/off in SEQ SETUP during recording
 sw5 MIDI control on/off in SEQ SETUP
 sw6 Device Number setting in SETUP

(Transmit flow chart)

MIDI OUT				\$9n note on/off \$Bn control change \$En pitch bend \$Cn program change \$Dn after touch
	sw1	sw2		\$F8 MIDI clock \$FA start \$FB continue \$FC stop
		sw3		see synth mode

(Note) sw1 MIDI control on/off in SEQ SETUP
 sw2 It turns on when the clock is set to internal in SEQ SETUP
 sw3 Device Number setting in SETUP

<Appended table 1>

(1)MIDI Parameter Change table (Multi)

\$F0,\$43,\$1n,\$29,\$00,sub_group,p_msb,p_lsb,v_msb,v_lsb,\$F7

Note) n ; Device Number

s ; parameter sub_group number

p ; parameter number

v ; parameter value

[SONG_MULTI PARAMETERS]

1.COMMON s=0

1.COMMON s=0

PARAMETER	BULK NUMBER	PARAM NUMBER	DATA RANGE	DISP	NOTES
EF\$RSV	0		0		reserved
EF\$MODE	1	1	0..2	off,seri,para	effect mode
EF\$1TYPE	2	2	0..90	0..90	effect1 type
EF\$2TYPE	3	3	0..90	0..90	effect2 type
EF\$C1PRM	4	4	0..31	off..InsLvl2b	effect cont1 parameter
EF\$C1NUM	5	5	0..124	0..124	effect cont1 add con
EF\$C2PRM	6	6	0..31	off..InsLvl2b	effect cont2 parameter
EF\$C2NUM	7	7	0..124	0..124	effect cont2 add con
EF\$C2MIN	8	8	0..100	0..100	effect cont2 min limit
EF\$C2MAX	9	9	0..100	0..100	effect cont2 max limit
EF\$1PRM1	10	10	0..???	???	effect1 param1
EF\$1PRM2	Not in order	11	0..???	???	effect1 param2
EF\$1PRM3	Not in order	12	0..???	???	effect1 param3
EF\$1PRM4	Not in order	13	0..???	???	effect1 param4
EF\$1PRM5	Not in order	14	0..???	???	effect1 param5
EF\$1PRM6	Not in order	15	0..???	???	effect1 param6
EF\$1PRM7	Not in order	16	0..???	???	effect1 param7
EF\$1PRM8	33	17	0..???	???	effect1 param8
EF\$1LVL1	34	18	0..100	0..100	effect1 levela
EF\$1LVL2	35	19	0..100	0..100	effect1 levelb
EF\$2PRM1	36	20	0..???	???	effect2 param1
EF\$2PRM2	Not in order	21	0..???	???	effect2 param2
EF\$2PRM3	Not in order	22	0..???	???	effect2 param3
EF\$2PRM4	Not in order	23	0..???	???	effect2 param4
EF\$2PRM5	Not in order	24	0..???	???	effect2 param5
EF\$2PRM6	Not in order	25	0..???	???	effect2 param6
EF\$2PRM7	Not in order	26	0..???	???	effect2 param7
EF\$2PRM8	59	27	0..???	???	effect2 param8
EF\$2LVL1	60	28	0..100	0..100	effect2 levela
EF\$2LVL2	61	29	0..100	0..100	effect2 levelb
EF\$MXLVL	62	30	0..100	0..100	effect mix level
EF\$BAL1	63	31	0..100	0..100	effect balance out1
EF\$BAL2	64	32	0..100	0..100	effect balance out2
EF\$C1MIN	65	33	0..100	0..100	effect cont1 min limit
EF\$C1MAX	66	34	0..100	0..100	effect cont1 max limit
EF\$LFWAVE	67	35	0..6	tri..1tm	effect lfo wave
EF\$LFSPD	68	36	0..99	0..99	effect lfo speed
EF\$LFDLY	69	37	0..99	0..99	effect lfo delay time
EF\$MXSND2	70	38	0..100	0..100	effect insert1b
EF\$MXSND3	71	39	0..100	0..100	effect insert2a
EF\$MXSND4	72	40	0..100	0..100	effect insert2b
MUL\$NAME1	73	49	32..127	ASCII	song name top
MUL\$NAME2	74	50	32..127	ASCII	song name
MUL\$NAME3	75	51	32..127	ASCII	song name
MUL\$NAME4	76	52	32..127	ASCII	song name
MUL\$NAME5	77	53	32..127	ASCII	song name
MUL\$NAME6	78	54	32..127	ASCII	song name
MUL\$NAME7	79	55	32..127	ASCII	song name
MUL\$NAME8	80	56	32..127	ASCII	song name bottom
MUL\$TCH1	81	57	0..15	0..15	track1 transmit ch
MUL\$TCH2	82	58	0..15	0..15	track2 transmit ch
MUL\$TCH3	83	59	0..15	0..15	track3 transmit ch
MUL\$TCH4	84	60	0..15	0..15	track4 transmit ch
MUL\$TCH5	85	61	0..15	0..15	track5 transmit ch
MUL\$TCH6	86	62	0..15	0..15	track6 transmit ch
MUL\$TCH7	87	63	0..15	0..15	track7 transmit ch

PARAMETER	BULK NUMBER	PARAM NUMBER	DATA RANGE	DISP	NOTES
MUL\$TCH8	88	64	0..15	0..15	track8 transmit ch
MUL\$TCH9	89	65	0..15	0..15	rhythm track transmit ch
MUL\$SONG_BEAT	90		0..15	1..16	time signature1(Numerator)
MUL\$SONG_TIME	91		2..4	4,8,16	time signature2(Denominator)
MUL\$SONG_TEMPO	92,93		30..240	30..240	tempo

2.INST s=1..16(inst number)

PARAMETER	BULK NUMBER	PARAM NUMBER	DATA RANGE	DISP	NOTES
MUL\$CH\$BNK	94,95	0	b0,1 b2,3 b4..b7	1..4 int/crd/(pre) 0..1	inst mem bank inst mem off/on for ind1..4
MUL\$CH\$VNUM	96,97	1	b0..5 b6 b7	0..63 pfm/vce off,on	inst voice number inst v,p select inst switch
MUL\$CH\$VOL	98	2	0..127	0..127	inst volume
MUL\$CH\$TUN	99	3	1..127	+ -63	inst tune
MUL\$CH\$NSFT	100	4	1..127	+ -63	inst note shift
MUL\$CH\$PAN	101	5	b0..b5 b6=0,1	+ -31 multi,vce/pfm	inst pan inst pan source
MUL\$CH\$EFSNDSW	102	6	b0..3 b4..5 b6	0..1 0..1 0..1	off/on for send1..4 off/on for out1,2 off/on for vce send
MUL\$CH\$EFSNDLVL	103 104..113 114..123 124..133 134..143 144..153 154..163 164..173 174..183 184..193 194..203 204..213 214..223 224..233 234..243 244..253	7	0..127	0..127	inst effect send

(2)MIDI Parameter Change table (Performance)

\$F0,\$43,\$1n,\$29,\$01,sub_group,p_msb,p_lsb,v_msb,v_lsb,\$F7

Note) n ; Device Number
s ; parameter sub_group number
p ; parameter number
v ; parameter value

1.COMMON s=0

1.COMMON s=0

PARAMETER	BULK NUMBER	PARAM NUMBER	DATA RANGE	DISP	NOTES
EF\$RSV	0		0		reserved
EF\$MODE	1	1	0..2	off,seri,para	effect1 mode
EF\$1TYPE	2	2	0..90	0..90	effect1 type
EF\$2TYPE	3	3	0..90	0..90	effect2 type
EF\$C1PRM	4	4	0..31	off..InsLvl2b	effect cont1 parameter
EF\$C1NUM	5	5	0..124	0..124	effect cont1 add con
EF\$C2PRM	6	6	0..31	off..InsLvl2b	effect cont2 parameter
EF\$C2NUM	7	7	0..124	0..124	effect cont2 add con
EF\$C2MIN	8	8	0..100	0..100	effect cont2 min limit
EF\$C2MAX	9	9	0..100	0..100	effect cont2 max limit
EF\$1PRM1	10	10	0..???	???	effect1 param1
EF\$1PRM2	Not in order	11	0..???	???	effect1 param2
EF\$1PRM3	Not in order	12	0..???	???	effect1 param3
EF\$1PRM4	Not in order	13	0..???	???	effect1 param4
EF\$1PRM5	Not in order	14	0..???	???	effect1 param5
EF\$1PRM6	Not in order	15	0..???	???	effect1 param6
EF\$1PRM7	Not in order	16	0..???	???	effect1 param7
EF\$1PRM8	33	17	0..???	???	effect1 param8
EF\$1LVL1	34	18	0..100	0..100	effect1 levela
EF\$1LVL2	35	19	0..100	0..100	effect1 levelb
EF\$2PRM1	36	20	0..???	???	effect2 param1
EF\$2PRM2	Not in order	21	0..???	???	effect2 param2
EF\$2PRM3	Not in order	22	0..???	???	effect2 param3
EF\$2PRM4	Not in order	23	0..???	???	effect2 param4
EF\$2PRM5	Not in order	24	0..???	???	effect2 param5
EF\$2PRM6	Not in order	25	0..???	???	effect2 param6
EF\$2PRM7	Not in order	26	0..???	???	effect2 param7
EF\$2PRM8	59	27	0..???	???	effect2 param8
EF\$2LVL1	60	28	0..100	0..100	effect2 levela
EF\$2LVL2	61	29	0..100	0..100	effect2 levelb
EF\$MXLVL	62	30	0..100	0..100	effect mix level
EF\$BAL1	63	31	0..100	0..100	effect balance out1
EF\$BAL2	64	32	0..100	0..100	effect balance out2
EF\$C1MIN	65	33	0..100	0..100	effect cont1 min limit
EF\$C1MAX	66	34	0..100	0..100	effect cont1 max limit
EF\$LFWAVE	67	35	0..6	tri..1tm	effect lfo wave
EF\$LFSPD	68	36	0..99	0..99	effect lfo speed
EF\$LFDLY	69	37	0..99	0..99	effect lfo delay time
EF\$MXSND2	70	38	0..100	0..100	effect insert1b
EF\$MXSND3	71	39	0..100	0..100	effect insert2a
EF\$MXSND4	72	40	0..100	0..100	effect insert2b
PFM\$NAME1	73	49	32..127	ASCII	performance name top
PFM\$NAME2	74	50	32..127	ASCII	performance name
PFM\$NAME3	75	51	32..127	ASCII	performance name
PFM\$NAME4	76	52	32..127	ASCII	performance name
PFM\$NAME5	77	53	32..127	ASCII	performance name
PFM\$NAME6	78	54	32..127	ASCII	performance name
PFM\$NAME7	79	55	32..127	ASCII	performance name
PFM\$NAME8	80	56	32..127	ASCII	performance name bottom
PFM\$RSV	81		0		reserved
PFM\$RSV	82		0		reserved
PFM\$VOL	83	59	0..127	0..127	perform total level

2.LAYER s=1..4(layer number)

PARAMETER	BULK NUMBER	PARAM NUMBER	DATA RANGE	DISP	NOTES
PFM\$LY\$VBNK	84,85	0	b0,b1 b2 b3 b4..b7	1..4 0 int(card)/(pre) 0	layer mem bank reserved layer mem reserved
PFM\$LY\$VNUM	86,87	1	0..62 b7	0..62 off,on	layer voice number layer switch
PFM\$LY\$VOL	88	2	0..127	0..127	layer volume
PFM\$LY\$DET	89	3	b0..b3 b4,5	-7..+7 off/on	layer detune cs enable prm1,2
PFM\$LY\$NSFT	90	4	1..127	-63..+63	layer note shift
PFM\$LY\$PAN	91	5	0..63	-31..+31	layer pan
PFM\$LY\$EFSNDSW	92	6	b0..3 b4..5	off/on off/on	off/on for send1..4 off/on for out1,2
PFM\$LY\$EFSNDLVL	93	7	0..127	0..127	layer effect send
PFM\$LY\$EFSNDVEL	94,95	8	b0..b3 b4..b7	-7..+7 -7..+7	layer effect send vel sns. layer effect send scaling
PFM\$LY\$NLIML	96	9	0..127	C-2..G8	layer note limit lo
PFM\$LY\$NLIMH	97	10	0..127	C-2..G8	layer note limit hi
PFM\$LY\$VLIML	98	11	1..127	1..127	layer vel limit lo
PFM\$LY\$VLIMH	99	12	1..127	1..127	layer vel limit hi
PFM\$LY\$VAEGR1	100,101	13	0..255	-63..+63	layer AEG R1
PFM\$LY\$VAEGD1R	102,103	14	0..255	-63..+63	layer AEG D1R
PFM\$LY\$VAEGD2R	104,105	15	0..255	-63..+63	layer AEG D2R
PFM\$LY\$VAEGRR	106,107	16	0..255	-63..+63	layer AEG RR
PFM\$LY\$VAEGVEL	108,109	17	0..255	-14..+14	layer AEG vel sens.
PFM\$LY\$VFC	110,111	18	0..255	-127..+127	layer filter Fc
PFM\$LY\$VFVEL	112,113	19	0..255	-127..+127	layer filter vel sens.
PFM\$LY\$VFRES	114,115	20	0..255	-99..+99	layer filter resonance
PFM\$LY\$VLFSPD	116,117	21	0..255	-99..+99	layer LFO speed
PFM\$LY\$VLFDP	118,119	22	0..255	-99..+99	layer LFO depth
PFM\$LY\$VCTRL	120,121	23	b0,1,2 b3 b4,5,6 b7	off,use a,b,c,d off/on off,use a,b,c,d off/on	layer AT use layer AT->MW switch layer MW use layer MW->AT switch
PFM\$LY\$VSW	122,123	24	b0,1,2 b3 b4 b5	off,use a,b,c,d 0 off/on off/on	layer FC use reserved layer peg switch layer sustain switch
PFM\$LY\$FFIX	124,125	25	0..127 b7	C-2..G8 normal/fix	fixed mode note# freq. fix switch
PFM\$RSV	126 127..169 170..212 213..255		0		reserved

(3)MIDI Parameter Change table (Normal Voice)

\$F0,\$43,\$1n,\$29,\$02,\$00,p_msb,p_lsb,v_msb,v_lsb,\$F7

Note) n ; Device Number
 p ; parameter number
 v ; parameter value

PARAMETER	BULK NUMBER	PARAM NUMBER	DATA RANGE	DISP	NOTES
EF\$RSV	0		0	0	reserved
EF\$MODE	1	1	0..2	off,seri,para	effect mode
EF\$1TYPE	2	2	0..90	0..90	effect1 type
EF\$2TYPE	3	3	0..90	0..90	effect2 type
EF\$C1PRM	4	4	0..28	off..LFO dly	effect cont1 parameter
EF\$C1NUM	5	5	0..124	0..124	effect cont1 add con
EF\$C2PRM	6	6	0..28	off..LFO dly	effect cont2 parameter
EF\$C2NUM	7	7	0..124	0..124	effect cont2 add con
EF\$C2MIN	8	8	0..100	0..100	effect cont2 min limit
EF\$C2MAX	9	9	0..100	0..100	effect cont2 max limit
EF\$1PRM1	10	10	0..???	???	effect1 param1
EF\$1PRM2	Not in order	11	0..???	???	effect1 param2
EF\$1PRM3	Not in order	12	0..???	???	effect1 param3
EF\$1PRM4	Not in order	13	0..???	???	effect1 param4
EF\$1PRM5	Not in order	14	0..???	???	effect1 param5
EF\$1PRM6	Not in order	15	0..???	???	effect1 param6
EF\$1PRM7	Not in order	16	0..???	???	effect1 param7
EF\$1PRM8	33	17	0..???	???	effect1 param8
EF\$1LVL1	34	18	0..100	0..100	effect1 levela
EF\$1LVL2	35	19	0..100	0..100	effect1 levelb
EF\$2PRM1	36	20	0..???	???	effect2 param1
EF\$2PRM2	Not in order	21	0..???	???	effect2 param2
EF\$2PRM3	Not in order	22	0..???	???	effect2 param3
EF\$2PRM4	Not in order	23	0..???	???	effect2 param4
EF\$2PRM5	Not in order	24	0..???	???	effect2 param5
EF\$2PRM6	Not in order	25	0..???	???	effect2 param6
EF\$2PRM7	Not in order	26	0..???	???	effect2 param7
EF\$2PRM8	59	27	0..???	???	effect2 param8
EF\$2LVL1	60	28	0..100	0..100	effect2 levela
EF\$2LVL2	61	29	0..100	0..100	effect2 levelb
EF\$MXLVL	62	30	0..100	0..100	effect mix level
EF\$BAL1	63	31	0..100	0..100	effect balance out1
EF\$RSV	64		0	0	effect balance out2
EF\$C1MIN	65	33	0..100	0..100	effect cont1 min limit
EF\$C1MAX	66	34	0..100	0..100	effect cont1 max limit
EF\$LFWAVE	67	35	0..6	tri..1tm	effect lfo wave
EF\$LFSPD	68	36	0..99	0..99	effect lfo speed
EF\$LFDLY	69	37	0..99	0..99	effect lfo delay time
EF\$RSV	70..72		0		reserved
VCE\$NAME1	73	49	32..127	ASCII	voice name top
VCE\$NAME2	74	50	32..127	ASCII	voice name
VCE\$NAME3	75	51	32..127	ASCII	voice name
VCE\$NAME4	76	52	32..127	ASCII	voice name
VCE\$NAME5	77	53	32..127	ASCII	voice name
VCE\$NAME6	78	54	32..127	ASCII	voice name
VCE\$NAME7	79	55	32..127	ASCII	voice name
VCE\$NAME8	80	56	32..127	ASCII	voice name bottom
VCE\$RSV	81		0	0	reserved
VCE\$CARDID	82,83	58	0..16383		AWM_CARD ID#
VCE\$MW_PMDRNG	84	60	0..127	0..127	mw pmod range
VCE\$MW_AMDRNG	85	61	0..127	0..127	mw amod range
VCE\$MW_FMDRNG	86	62	0..127	0..127	mw fmod range
VCE\$MW_COFRNG	87,88	63	0..255	-127..+127	mw cutoff range
VCE\$MW_EBSRNG	89,90	64	0..255	-127..+127	mw egbias range
VCE\$FC_PMDRNG	91	65	0..127	0..127	fc pmod range
VCE\$FC_AMDRNG	92	66	0..127	0..127	fc amod range
VCE\$FC_FMDRNG	93	67	0..127	0..127	fc fmod range
VCE\$FC_COFRNG	94,95	68	0..255	-127..+127	fc cutoff range
VCE\$FC_EBSRNG	96,97	69	0..255	-127..+127	fc egbias range
VCE\$AT_PMDRNG	98	70	0..127	0..127	at pmod range
VCE\$AT_AMDRNG	99	71	0..127	0..127	at amod range

PARAMETER	BULK NUMBER	PARAM NUMBER	DATA RANGE	DISP	NOTES
VCE\$AT_FMDRNG	100	72	0..127	0..127	at fmod range
VCE\$AT_COFRNG	101,102	73	0..255	-127..+127	at cutoff range
VCE\$AT_EBSRNG	103,104	74	0..255	-127..+127	at egbias range
VCE\$AT_PBSRNG	105,106	75	b0..b4	-12..+12	at pitch bend range
VCE\$RSV	107,108		0		reserved
VCE\$PB_RNG	109	77	b0..b3 b4,5 b6	0..12 off/on	pitch bend range reserved sustain enable
VCE\$VOL_RNG	110	78	0..127	0..127	volume low limit
VCE\$CS3_PRM	111	79	0..75	0..75	cs parameter1
VCE\$CS3_PRMMIN	112	80	0..100	0..100	cs parameter1 min limit
VCE\$CS3_PRMMAX	113	81	0..100	0..100	cs parameter1 max limit
VCE\$CS4_PRM	114	82	0..75	0..75	cs parameter2
VCE\$CS4_PRMMIN	115	83	0..100	0..100	cs parameter2 min limit
VCE\$CS4_PRMMAX	116	84	0..100	0..100	cs parameter2 max limit
VCE\$VOL	117	85	0..127	0..127	voice total level
VCE\$EFSNDLVL	118	86	0..127	0..127	effect send level
VCE\$WAVEBNK	119	87	b0,b1 b2	pre1,pre2,crd,int off/on	wave data bank reverse switch
VCE\$WAVE	120,121	88	0..244	0..244	wave number
VCE\$FFIX	122,123	89	0..127 b7	C-2..G8 or -64..+63 normal/fix	fixed mode note#/note shift freq. fix switch
VCE\$FFINE	124	90	0..127	-63..+63	fine tune
VCE\$PSENS	125	91	b0..b2 b3 b4..b6	0 0 0..7	reserved reserved random pitch depth
VCE\$PEGR1	126	92	0..63	0..63	rate1
VCE\$PEGR2	127	93	0..63	0..63	rate2
VCE\$PEGR3	128	94	0..63	0..63	rate3
VCE\$PEGRR1	129	95	0..63	0..63	release rate1
VCE\$PEGL0	130	96	1..127	-63..+63	level0
VCE\$PEGL1	131	97	1..127	-63..+63	level1
VCE\$PEGL2	132	98	1..127	-63..+63	level2
VCE\$PEGL3	133	99	1..127	-63..+63	level3
VCE\$PEGRL1	134	100	1..127	-63..+63	release level1
VCE\$PEGRANGE	135	101	b0..3 b4,b5 b6	-7..+7 1/12,1/2,1,2 off/on	rate scaling range loop switch
VCE\$PEGVELSNS	136,137	102	b0..b3 b4..b7	-7..+7 -7..+7	velocity sens. rate vel sens.
VCE\$LFSSHAPE	138		0..3	user,vb,tr,wow	type for qed
VCE\$LFSPD	139	104	0..99	0..99	speed
VCE\$LFDLY	140	105	0..99	0..99	delay time
VCE\$LFPMOD	141	106	0..127	0..127	pmod depth
VCE\$LFAMOD	142	107	0..127	0..127	amod depth
VCE\$LFFMOD	143	108	0..127	0..127	fmod depth
VCE\$LFWAVE	144	109	b0..2	tr..S/H	wave
VCE\$LFPHS	145	110	0..180	0..180	phase
VCE\$LFSSSENS	146	111	b0..b3 -7..+7		lfo speed velocity sens.
VCE\$LFSSCL	147	112	b0..b3	b4..b6 0..7 -7..+7	lfo speed random sens. lfo speed key scaling
VCE\$AEGSHAPE	148		0..21		type for quick edit
VCE\$AEGMODE	149	114	b0..b3 b4 b6	-7..+7 0 attack,hold	rate scaling reserved mode
VCE\$AEGR1	150	115	0..63	0..63	rate1 or hold time
VCE\$AEGR2	151	116	0..63	0..63	rate2
VCE\$AEGR3	152	117	0..63	0..63	rate3
VCE\$AEGR4	153	118	0..63	0..63	rate4
VCE\$AEGRR	154	119	0..63	0..63	release rate
VCE\$AEGL2	155	120	0..63	0..63	level2
VCE\$AEGL3	156	121	0..63	0..63	level3
VCE\$ASBP1	157	122	0..124	C-2..G8	level scaling break point1
VCE\$ASBP2	158	123	1..125	C-2..G8	level scaling break point2
VCE\$ASBP3	159	124	2..126	C-2..G8	level scaling break point3
VCE\$ASBP4	160	125	3..127	C-2..G8	level scaling break point4

PARAMETER	BULK NUMBER	PARAM NUMBER	DATA RANGE	DISP	NOTES
VCE\$ASLVL1	161,162	126	1..255	-127..+127	level scaling level1
VCE\$ASLVL2	163,164	127	1..255	-127..+127	level scaling level2
VCE\$ASLVL3	165,166	128	1..255	-127..+127	level scaling level3
VCE\$ASLVL4	167,168	129	1..255	-127..+127	level scaling level4
VCE\$AEGVELSNS	169,170	130	b0..b3 b4..b7	-7..+7 -7..+7	velocity sens. rate velocity sens.
VCE\$FSHAPE	171	132	0..16	0..16	filter type for quick edit
VCE\$FTYPE12	172		b0..b2 b3 b4 b5 b6	THRU..LPF12 attack,shift 0 0eg,1lfo 0	filter type velocity sens type reserved filter control source reserved
VCE\$FRES	173	133	0..99	0..99	resonance(2lpf only)
VCE\$FVSENS	174	134	0..127	-63..+63	on vel sens
VCE\$RSV	175	136	0	0	reserved
VCE\$FVSENS_RATE	176		0..127	-63..+63	attack rate vel sens
VCE\$RSV	177	138	0		reserved
VCE\$FBAND	178		0..127	0..127	Fc Band Width
VCE\$F1C	179	139	0..127	0..127	cutoff freq.
VCE\$F1EGR1	180	140	0..63	0..63	rate1
VCE\$F1EGR2	181	141	0..63	0..63	rate2
VCE\$F1EGR3	182	142	0..63	0..63	rate3
VCE\$F1EGR4	183	143	0..63	0..63	rate4
VCE\$F1EGRR1	184	144	0..63	0..63	release rate1
VCE\$F1EGRR2	185	145	0..63	0..63	release rate2
VCE\$F1EGL0	186	146	1..127	-63..+63	level0
VCE\$F1EGL1	187	147	1..127	-63..+63	level1
VCE\$F1EGL2	188	148	1..127	-63..+63	level2
VCE\$F1EGL3	189	149	1..127	-63..+63	level3
VCE\$F1EGL4	190	150	1..127	-63..+63	level4
VCE\$F1EGL1	191	151	1..127	-63..+63	release level1
VCE\$F1EGL2	192	152	1..127	-63..+63	release level2
VCE\$F1EGRS	193	153	b0..b3	-7..+7	rate scaling
VCE\$F1SBP1	194	154	0..124	C-2..G8	coff scale break point1
VCE\$F1SBP2	195	155	1..125	C-2..G8	coff scale break point2
VCE\$F1SBP3	196	156	2..126	C-2..G8	coff scale break point3
VCE\$F1SBP4	197	157	3..127	C-2..G8	coff scale break point4
VCE\$F1SFC1	198,199	158	1..255	-127..+127	cutoff scaling freq1
VCE\$F1SFC2	200,201	159	1..255	-127..+127	cutoff scaling freq2
VCE\$F1SFC3	202,203	160	1..255	-127..+127	cutoff scaling freq3
VCE\$F1SFC4	204,205	161	1..255	-127..+127	cutoff scaling freq4

(4)MIDI Parameter Change table (Drum Voice)

\$F0,\$43,\$1n,\$29,\$03,sub_group,p_msb,p_lsb,v_msb,v_lsb,\$F7

Note) n ; Device Number
s ; parameter sub_group number
p ; parameter number
v ; parameter value

1.COMMON s=0

1.COMMON s=0

PARAMETER	BULK NUMBER	PARAM NUMBER	DATA RANGE	DISP	NOTES
EF\$RSV	0		0	0	reserved
EF\$MODE	1	1	0..2	off,seri,para	effect mode
EF\$1TYPE	2	2	0..90	0..90	effect1 type
EF\$2TYPE	3	3	0..90	0..90	effect2 type
EF\$C1PRM	4	4	0..31	off..InsLvl2b	effect cont1 parameter
EF\$C1NUM	5	5	0..124	0..124	effect cont1 add con
EF\$C2PRM	6	6	0..31	off..InsLvl2b	effect cont2 parameter
EF\$C2NUM	7	7	0..124	0..124	effect cont2 add con
EF\$C2MIN	8	8	0..100	0..100	effect cont2 min limit
EF\$C2MAX	9	9	0..100	0..100	effect cont2 max limit
EF\$1PRM1	10	10	0..???	???	effect1 param1
EF\$1PRM2	Not in order	11	0..???	???	effect1 param2

PARAMETER	BULK NUMBER	PARAM NUMBER	DATA RANGE	DISP	NOTES
EF\$1PRM3	Not in order	12	0..???	???	effect1 param3
EF\$1PRM4	Not in order	13	0..???	???	effect1 param4
EF\$1PRM5	Not in order	14	0..???	???	effect1 param5
EF\$1PRM6	Not in order	15	0..???	???	effect1 param6
EF\$1PRM7	Not in order	16	0..???	???	effect1 param7
EF\$1PRM8	33	17	0..???	???	effect1 param8
EF\$1LVL1	34	18	0..100	0..100	effect1 levela
EF\$1LVL2	35	19	0..100	0..100	effect1 levelb
EF\$2PRM1	36	20	0..???	???	effect2 param1
EF\$2PRM2	Not in order	21	0..???	???	effect2 param2
EF\$2PRM3	Not in order	22	0..???	???	effect2 param3
EF\$2PRM4	Not in order	23	0..???	???	effect2 param4
EF\$2PRM5	Not in order	24	0..???	???	effect2 param5
EF\$2PRM6	Not in order	25	0..???	???	effect2 param6
EF\$2PRM7	Not in order	26	0..???	???	effect2 param7
EF\$2PRM8	59	27	0..???	???	effect2 param8
EF\$2LVL1	60	28	0..100	0..100	effect2 levela
EF\$2LVL2	61	29	0..100	0..100	effect2 levelb
EF\$MXLVL	62	30	0..100	0..100	effect mix level
EF\$BAL1	63	31	0..100	0..100	effect balance out1
EF\$BAL2	64	32	0..100	0..100	effect balance out2
EF\$C1MIN	65	33	0..100	0..100	effect cont1 min limit
EF\$C1MAX	66	34	0..100	0..100	effect cont1 max limit
EF\$LFWAVE	67	35	0..6	tri..1tm	effect lfo wave
EF\$LFSPD	68	36	0..99	0..99	effect lfo speed
EF\$LFDLY	69	37	0..99	0..99	effect lfo delay time
EF\$MXSND2	70	38	0..100	0..100	effect insert1b
EF\$MXSND3	71	39	0..100	0..100	effect insert2a
EF\$MXSND4	72	40	0..100	0..100	effect insert2b
DRM\$NAME1	73	49	32..127	ASCII	drum name top
DRM\$NAME2	74	50	32..127	ASCII	drum name
DRM\$NAME3	75	51	32..127	ASCII	drum name
DRM\$NAME4	76	52	32..127	ASCII	drum name
DRM\$NAME5	77	53	32..127	ASCII	drum name
DRM\$NAME6	78	54	32..127	ASCII	drum name
DRM\$NAME7	79	55	32..127	ASCII	drum name
DRM\$NAME8	80	56	32..127	ASCII	drum name bottom
DRM\$RSV	81		0..1		reserved
DRM\$CARDID	82,83	58	0..16383		AWM_CARD ID#
DRM\$VOLRNG	84	60	0..127	0..127	volume low limit
DRM\$VOL	85	61	0..127	0..127	drum voice total level

2.KEY s=36..84(key number)

PARAMETER	BULK NUMBER	PARAM NUMBER	DATA RANGE	DISP	NOTES
DRM\$KEY\$WAVEBNK	86	0	bit0,1 b2 b3 b4..b7	pre1,pre2,crd,int off,on 0	wave mem bank reverse switch reserved reserved
DRM\$KEY\$WAVE	87,88	1	0..244	0..244	wave number
DRM\$KEY\$VOL	89,90	2	0..127	0..127	volume
DRM\$KEY\$TUN	91	3	0..127	-63..+63	tune
DRM\$KEY\$NSFT	92	4	16..100	-48..+36	note shift
DRM\$KEY\$PAN	93	5	0..63	-31..+31	pan
DRM\$KEY\$EFSNDSW	94	6	b0..b3 b4..b5	off/on off/on	send1..4 out1,2
DRM\$KEY\$EFSEND	95	7	0..127	0..127	effect send
DRM\$KEY\$EFSNDVL	96	8	0..15	-7..+7	effect send vel
DRM\$KEY\$ALTGRP	97	9	b0..b4 b5..b6	grp1..5 sh,nrm,lng,vlng	alternate group gatetime group
	98..109				

PARAMETER	BULK NUMBER	PARAM NUMBER	DATA RANGE	DISP	NOTES
DRM\$RSV	110..121 662..673 674	--	0	0	reserved

(5)MIDI Parameter Change table (Setup)

\$F0,\$43,\$1n,\$29,\$04,sub_group,p_msb,p_lsb,v_msb,v_lsb,\$F7

Note) n ; Device Number
s ; parameter sub_group number
p ; parameter number
v ; parameter value

1.SYSTEM s=0

PARAMETER	BULK NUMBER	PARAM NUMBER	DATA RANGE	DISP	NOTES
SY\$\$MNSFT	0	0	1..127	-63..+63	master note shift
SY\$\$MTUNE	1	1	1..127	-63..+63	master fine tune
SY\$\$TXCH	2	2	0..15	1..16	keyboard transmit ch
SY\$\$BCH	3	3	0..16	1..16,omni	voice receive ch
SY\$\$LOCAL	4	4	0..1	off/on	local switch
SY\$\$DEVNO	5	5	0..17	off,1..16,all	device number
SY\$\$PROT	6	6	0..1	off/on	bulk protect switch
SY\$\$PGMSW	7	7	0..3	off,nrm,dr,tbl	program change switch
SY\$\$VL_CTRL	8	8	0..121	0..120,at	volume ctrl dev. No.
SY\$\$CTRL_RST	9	9	0..1	off/on	controller reset
SY\$\$RSV	10		0		reserved
SY\$\$RSV	11		0		reserved
SY\$\$EFTCT_BYPS	12	12	0..1	off/on	effect switch
SY\$\$MDR_INT	13		1..10	1..10	MDR interval time
SY\$\$RSV	14		0		reserved
SY\$\$RSV	15		1		reserved
SY\$\$RSV	16		0		reserved
SY\$\$RSV	17		0		reserved
SY\$\$RSV	18		0		reserved
SY\$\$RSV	19		0		reserved
SY\$\$RSV	20		0		reserved
SY\$\$FIX_VEL	21	21	0..127	off,1..127	play fix velocity
SY\$\$VELCRV_ON	22	22	0..7	0..7	keyon velocity curve
SY\$\$RSV	23		0		reserved
SY\$\$WF_SRAM	24		0..64	0..64	sram waveform&sample start number
SY\$\$RSV	25		0		reserved
SY\$\$WMEM_SEL	26		0..1	vol,non_vol	wave ram default select
SY\$\$RSV	27..31		0		reserved

2.SEQ s=1

PARAMETER	BULK NUMBER	PARAM NUMBER	DATA RANGE	DISP	NOTES
SEQ\$F_CLICK	0		0..1	off,rec	click condition
SEQ\$F_SYNC	1		0..1	int,midi	clock source
SEQ\$REC_CH	2		0..17	1..16,omni,kbd	seq rec channel
SEQ\$F_REC_AT	3		0..1	off,on	after touch rec sw
SEQ\$F_REC_VEL	4		0		reserved
SEQ\$SONG_NUM	5		0..9	1..10	song number
SEQ\$REC_TYPE	6		0..3	over,repl,step	rec type
SEQ\$MIDI	7		0..1	punch	midi control
SEQ\$LOOP	8		0..1	off,on	song loop
SEQ\$CHAIN	9		0..1	off,on	song chain
SEQ\$RSV	10..15		0	off,on	reserved

3.RHYTHM s=2

PARAMETER	BULK NUMBER	PARAM NUMBER	DATA RANGE	DISP	NOTES
RY\$PTN_SONG	16		0..1	song,pattern	rhythm mode
RY\$REC_FLAG	17		0..1	real,step	rhythm rec type
RY\$PTN_NUM	18,19		0..99	10..99	pattern number
RY\$CLICK_VL	20		0..6	0..6	ptn rec click beat
RY\$QUANTIZE	21		0..7	0..7	ptn rec quantize
RY\$ACCENT_1	22		1..127	1..127	ptn rec acc1
RY\$ACCENT_2	23		1..127	1..127	ptn rec acc2
RY\$ACCENT_3	24		1..127	1..127	ptn rec acc3
RY\$ACCENT_VEL	25,26		1..128	1..127,kbd	ptn rec fix vel
RY\$RSV	27..32		0		reserved

(6)MIDI Parameter Change table (Program Change Table)

\$F0,\$43,\$1n,\$29,\$05,sub_group,p_msb,p_lsb,v_msb,v_lsb,\$F7

Note) n ; Device Number

s ; parameter sub_group number s=0..63(program number)

p ; parameter number

v ; parameter value

PARAMETER	BULK NUMBER	PARAM NUMBER	DATA RANGE	DISP	NOTES
PGM\$BNKM	32	0	0..127	0..127	bank(00)
PGM\$BNKL	33	1	0..127	0..127	bank(20)
PGM\$NUM	34	2	0..127	0..127	number
		35..37			
		38..40			
		!			
		221..223			

Bulk dump is output successively after Synth Setup.

\$F0,\$43,\$10,\$29,\$06,\$00,p_msb,p_lsb,v_msb,v_lsb,\$F7

Note) s ; parameter sub_group number

v ; parameter value

data range : off(\$00 ~ \$3F),on(\$40 ~ \$7F)

[illegible]

ppppppp	Sw Num	NOTES	ppppppp	Sw Num	NOTES
0	SW1	[<]	27	SW28	[EFFECT BYPASS]
1	SW2	[<<]	28	SW29	[ENTER]
2	SW3	[>>]	29	SW30	[<]
3	SW4	[REC]	30	SW31	[>]
4	SW5	[STOP]	31	SW32	[MENU]
5	SW6	[RUN]	32	SW33	[DEC]
6	SW7	[SUB1]	33	SW34	[INC]
7	8	[SUB2]	34	SW35	[INT1]
8	SW9	[SUB3]	35	SW36	[INT2]
9	SW10	[SUB4]	36	SW37	[CARD]
10	SW11	[SUB5]	37	SW38	[GRPA]
11	SW12	[PERFORMANCE]	38	SW39	[GRPB]
12	SW13	[VOICE]	39	SW40	[GRPC]
13	SW14	[SONG]	40	SW41	[GRPD]
14	SW15	[PATTERN]	41	SW42	[GRPE]
15	SW16	[UTILITY]	42	SW43	[GRPF]
16	SW17	[SHIFT]	43	SW44	[GRPG]
17	SW18	[PF1]	44	SW45	[GRPH]
18	SW19	[PF2]	45	SW46	[PGM1]
19	SW20	[PF3]	46	SW47	[PGM2]
20	SW21	[PF4]	47	SW48	[PGM3]
21	SW22	[PF5]	48	SW49	[PGM4]
22	SW23	[PF6]	49	SW50	[PGM5]
23	SW24	[PF7]	50	SW51	[PGM6]
24	SW25	[PF8]	51	SW52	[PGM7]
25	SW26	[EXIT]	52	SW53	[PGM8]
26	SW27	[STORE]	127	SWRST	RESET

NSEQ Bulk Dump

NSEQ data is output after 1 byte data is converted to 2-byte ASCII data.

Data for one song consists of multiple track data which starts with F0 On (n=track number) and ends with F2. If a track is empty the track is not included.

hex	description
F0	top of record track #1
00	
--	
--	time/event/control data
--	
F2	end of record track #1
--	
--	track #2 ~ #15 data
--	
F0	top of record track #16
0F	
--	
--	time/event/control data
--	
F2	end of record track #16

Function ...		Transmitted	Recognized	Remarks	
Basic Channel	Default	1 - 16	1 - 16	memorized	
	Changed	1 - 16	1 - 16		
Mode	Default	3	1,3	memorized	
	Messages	x	x		
	Altered	*****	x		
Note		28 - 103	0 - 127		
Number : True voice		*****	1 - 127		
Velocity	Note ON	o 9nH,v=1-127	o v=1-127		
	Note OFF	x 9nH,v=0	x		
After Touch	Key's	x	x		
	Ch's	o	o		
Pitch Bender		o	o 0-12 semi	7 bit resolution	
Control Change	0,32	o	o	Bank select	
	1	o M.Wheel	o	*1 Pan Sustain Assignable All Sounds off Reset All Cont.	
	4	o Foot cont.	o		
	7	o Foot volume	o		
	10	x	o		
	64	o Sustain sw.	o		
	16 - 19	o CS	o		
	1 - 120	x	o		
	120	x	o		
	121	x	o		
	Prog Change : True #		o 0-63 *****		o 0-63
	System Exclusive		o *2	o *2	voice etc.
Common : Song Pos : Song Sel : Tune		See the sequencer part.			
System :Clock Real Time :Commands					
Aux :Local ON/OFF :All Notes OFF Mes- :Active Sense sages:Reset		x	x		
		x	o		
		o	o		
		x	x		
Note *1 ; effect to next key on notes *2 ; transmit/receive if device No is not off.					

Function ...		Transmitted	Recognized	Remarks
Basic Channel	Default Changed	1 - 16 1 - 16	1 - 16 1 - 16	memorized
Mode	Default Messages Altered	x x *****	x x x	
Note Number : True voice		0 - 111 *****	0 - 111	
Velocity Note ON Note OFF		o 9nH,v=1-127 x 9nH,v=0	o v=1-127 *1 x	
After Touch	Key's Ch's	x o	x o *2	
Pitch Bender		o	o	
Control Change	0 - 120	o	o	
Prog Change : True #		o 0 - 127 *****	o 0 - 127	
System Exclusive		o *3	o *3	Song data etc.
System : Song Pos : Song Sel Common : Tune		x x x	o x x	except REC mode
System :Clock Real Time :Commands		o *5 o *5	o *4 o *5	
Aux :Local ON/OFF :All Notes OFF Mes- :Active Sense sages:Reset		x x o x	x x x x	
Notes: *1 = receive if velocity switch is kbd. *2 = receive if after touch switch is on. *3 = transmit/receive if deveice No is not off. *4 = receive in MIDI sync mode. *5 = transmit/receive if MIDI control is not off.				

Mode 1 : OMNI ON, POLY

Mode 2 : OMNI ON, MONO

o : Yes

Mode 3 : OMNI OFF, POLY

Mode 4 : OMNI OFF, MONO

x : No

Function ...		Transmitted	Recognized	Remarks
Basic Channel	Default	1 - 16	1 - 16	memorized
	Changed	1 - 16	1 - 16	
Mode	Default	x	x	
	Messages	x	x	
	Altered	*****	x	
Note Number : True voice		36 - 96 *****	36 - 96	
Velocity Note ON	Note OFF	o 9nH,v=1-127 x 9nH,v=0	o v=1-127 *1 x	
After Touch	Key's Ch's	x x	x x	
Pitch Bender		x	x	
Control Change		x	x	
Prog Change : True #		x *****	x	
System Exclusive		o *2	o *2	Song data etc.
System : Song Pos	: Song Sel	x x	o x	except REC mode
Common : Tune		x	x	
System :Clock	Real Time :Commands	o *4 o *4	o *3 o *4	
Aux :Local ON/OFF	:All Notes OFF	x x	x x	
Mes- :Active Sense		o	x	
sages:Reset		x	x	
Notes: *1 = receive if accent velocity is kbd. *2 = transmit/receive if deveice No is not off. *3 = receive in MIDI sync mode. *4 = transmit/receive if MIDI control is not off.				

Mode 1 : OMNI ON, POLY Mode 2 : OMNI ON, MONO o : Yes
Mode 3 : OMNI OFF, POLY Mode 4 : OMNI OFF, MONO x : No