

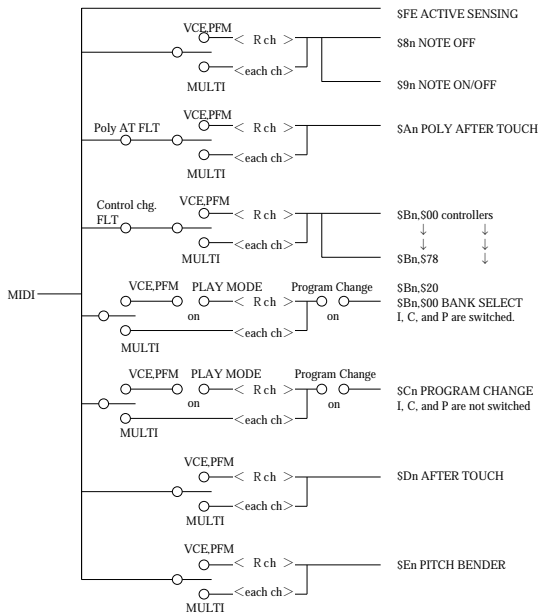
# TG500

## MIDI DATA FORMAT

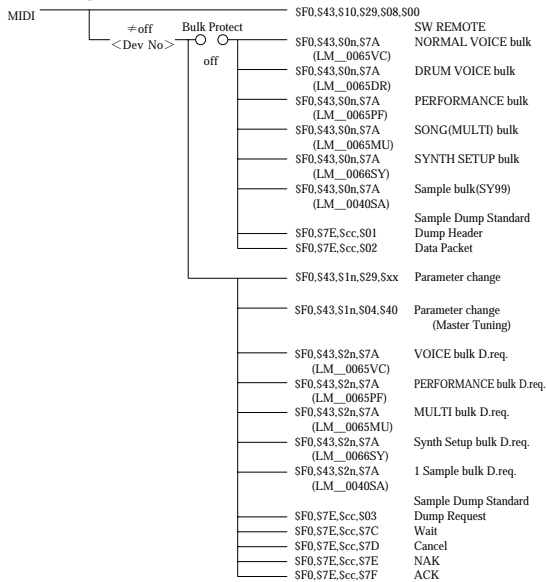
### 1. Synthesizer mode

#### 1. MIDI reception/transmission block diagram

<MIDI reception conditions> 1/2  
R ch ---- Voice Receive ch.

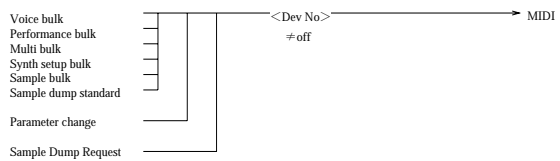


<MIDI reception conditions> 2/2



Dev No = Device Number

<MIDI transmission conditions>



### 2. Channel message

#### 2.1 Reception

##### 2.1.1 Note Off

Reception note range = C-2...G8  
Velocity range = Not received

##### 2.1.2 Note On/Off

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

##### 2.1.3 Polyphonic After Touch

Polyphonic After Touch is received when it is set to on during system setup.

Reception note range = E0...G6

If the received note exceeds the above range, the effect is applied to the maximum and minimum note values.

##### 2.1.4 Control change

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

cntrl	parameter	data rng
10	Pan*	0 ~ 127
16	Effect Control 1	0 ~ 127
17	Effect Control 2	0 ~ 127
18	MIDI Control 3	0 ~ 127
19	MIDI Control 4	0 ~ 127
0 ~ 119	Volume	0 ~ 127
0 ~ 120	MIDI Control 1	0 ~ 127
0 ~ 120	MIDI Control 2	0 ~ 127
0 ~ 120	MIDI Control 3 (add)	0 ~ 127
0 ~ 120	MIDI Control 4 (add)	0 ~ 127
0 ~ 120	Effect Control 1 (add)	0 ~ 127
0 ~ 120	Effect Control 2 (add)	0 ~ 127
64	Sustain Switch	0, 127

\* Pan is received only when MULTI is generated.

### 2.1.5 Program change

When a program change is received, the TG500 performs the following operations.  
Three reception mode types can be set during 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.  
Program change Nos. are assigned as follows in accordance with the mode.

			Data (dec.)
Voice	Internal1	0~63	00~63
	Internal2	0~63	00~63
	Preset1	0~63	00~63
	Preset2	0~63	00~63
	Preset3	0~63	00~63
	Preset4	0~63	00~63
	Card1	0~63	00~63
	Card2	0~63	00~63
Perfor- -mance	Card3	0~63	00~63
	Card4	0~63	00~63
	Internal1	0~63	00~63
	Internal2	0~63	00~63

- 3) direct : In voice mode, voice 00~63 correspond to the program change data 00~63. INT1, 2, PRE 1-4, and CARD1-4 change in accordance with the program bank change.  
Program change data 64~127 are not received.  
In performance mode, performance 00~63 correspond to the program change data 00~63. INT1, PRE1, 2, and Card 1, 2 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.  
Program bank change Nos. are assigned as follows in accordance with the mode.

Bn 00 xx 20 xx	Data (dec.)
Internal1 Voice	00.00
Internal2 Voice	00.03
Preset1 Voice	00.02
Preset2 Voice	00.05
Preset3 Voice	00.08
Preset4 Voice	00.11
Card1 Voice	00.01
Card2 Voice	00.04
Card3 Voice	00.07
Card4 Voice	00.10
Internal1 Performance	00.64
Preset1 Performance	00.66
Preset2 Performance	00.69
Card1 Performance	00.65
Card2 Performance	00.68
Internal1 Multi	00.16
Internal1 Voice(multi)	00.32
Internal2 Voice(multi)	00.35
Preset1 Voice (multi)	00.34
Preset2 Voice (multi)	00.37
Preset3 Voice (multi)	00.40
Preset4 Voice (multi)	00.43
Card1 Voice(multi)	00.33
Card2 Voice(multi)	00.36
Card3 Voice(multi)	00.39
Card4 Voice(multi)	00.42
Internal1 Perf(multi)	00.80
Preset1 Perf (multi)	00.82
Preset2 Perf (multi)	00.85
Card1 Perf(multi)	00.81
Card2 Perf(multi)	00.84

- 4) table : Reception is carried out in accordance with the PROGRAM CHANGE TABLE.

### 2.1.6 Pitch bend

Pitch bend is received only on the MSB side.

### 2.1.7 After touch

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

### 2.1.8 Channel mode message

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

## 3. System exclusive message

### 3.1 Parameter change

The TG500 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 the MIDI switches, except for Device Number off.

#### 3.1.1 TG500 Data parameter change

##### (1) Format

```

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

##### (2) Parameter Group Number,Sub Group Number

Parameter Group Name	gggg	sssssss	
Multi Data	0	0.1..16	*1
Performance Data	1	0.1..4	*2
Normal Voice Data	2	0	*3
Drum Voice Data	3	0.36..84	*4
Setup Data	4	0	*5
Program Change Table	7	0.63	*6
Switch Remote	8	0	

- \*1:1..16:Inst Number,0:common data
- \*2:1..4:Layer Number,0:common data
- \*3:0=Voice
- \*4:36..84=Key Number,0:common data
- \*5:0=syn
- \*6:Program Number

##### (3) Parameter Number,Data Value

See the appended table 1.

(4) Operation

(Transmission)

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

(Reception)

1)~4)

The TG500 has three sound generation modes: Voice, Performance and Multi. Only when the sound generation mode of the transmitting side and receiving side match, Reception is possible. The mode on the receiving side does not change and the page does not change. 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 control is possible with all panel switches. This message has the same effect as pressing the switch.

3.1.2 Master Tuning parameter change

(1) Format

```
11110000 F0
01000011 43
0001nnnn nnnn = Device Number
00101001 04
01000000 40
0vvvvvvv vvvvvvv = 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 previously stated transmission conditions.

(Reception)

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

4. Bulk dump

The TG500 transmits and receives the following 7 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 bulk dump
- 5). Synthesizer Setup bulk dump
- 6). Sample bulk dump

(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(ascii"L")
7 01001101 4D(ascii"M")
8 00100000 20(ascii" ")
9 00100000 20(ascii" ")
10 0d4d4d4d C d4d4d4d = Data Format Name(ascii)
11 0d3d4d4d H d3d4d4d = Data Format Name(ascii)
12 0d2d4d4d E d2d4d4d = Data Format Name(ascii)
13 0d1d4d4d C d1d4d4d = Data Format Name(ascii)
14 0d0d4d4d K d0d4d4d = Data Format Name(ascii)
15 0d4d4d4d C d4d4d4d = Data Format Name(ascii)
16 00000000 S 00
↓ ↓
↓ ↓
29 00000000 U 00
30 0ttttttt M ttttttt = Memory_type
31 0mmmmmmm mmmmmmm = Memory Number
32 0vvvvvvv vvvvvvv = data value
↓ ↓
0syyyyyy syyyyyy = 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	ddddd	tttttt	mmmmmm
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
Sample	0040SA	0	0.63

\*1:0-int1.3-int2.127=edit\_buffer  
 \*2:0-int1.3-int2.127=edit\_buffer  
 \*3:0-int1.127=edit\_buffer  
 \*4:When memory number exceeds the upper limit, it is handled as an upper limit value during bulk reception, and it is ignored during dump request reception.  
 \*5: When a memory type is not defined during bulk dump reception: with 4)~7), it is ignored and handled as int. with 1) and 2), =127 edit\_buffer =0~2 int1 =3~7 int2 =other bit3~bit7 are ignored and the above process is performed with 3), =127 edit\_buffer =0~2 int1 =other bit 2~bit7 are ignored and the above process is performed.

(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  
 VOICE

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 All Performance Bulk transmission,  
 PERFORMANCE

Memory\_type = 00(INT1)  
 Memory Number = Transmission is carried out up to 63 starting from 0 sequentially.

during All Multi Bulk transmission,  
 MULTI

Memory\_type = 00(INT)  
 Memory Number = Transmission is carried out up to 15 starting from 0 sequentially.

5 Sample Dump

For the sample dump the TG500 uses the Sample Dump Standard and the SY99 Sample Bulk Dump. Both of them can be received.

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

With the Sample Dump Standard and the SY99 Sample Bulk Dump, \$1f is the upper limit of the Sample (memory) Number; numbers exceeding this are 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>,11,F7
DUMP HEADER F0,7E,cc,01,ss,ss,ee,ff,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 8~16 bits.)
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.)
ll : checksum(XOR of 7E cc 02 kk <120 bytes>)
```

6. Status FE (Active sensing)

a) Reception

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

< Table 1 >

(1) MIDI Parameter Change table ( Multi )

SF0,\$43,\$1n,\$29,\$00,sub\_group,p\_msb,p\_lsb,v\_msb,v\_lsb,SF7

Note) n ; Device Number

s ; parameter sub\_group number

p ; parameter number

v ; parameter value

[MULTI PARAMETERS]

1. COMMON s=0

PARAMETER	BULK NUMBER	PARAM NUMBER	DATA RANGE	DISP
reserved	0	—	0	
effect mode	1	1	0..2	off,seri,para
effect1 type	2	2	0..90	0..90
effect2 type	3	3	0..90	0..90
effect control1 parameter	4	4	0..31	off..Ef_Ins2b
effect control1 add controller	5	5	0..124	0..124
effect control2 parameter	6	6	0..31	off..Ef_Ins2b
effect control2 add controller	7	7	0..124	0..124
effect control2 min limit	8	8	0..100	0..100
effect control2 max limit	9	9	0..100	0..100
effect1 parameter1	10	10	0.???	???
effect1 parameter2		11	0.???	???
effect1 parameter3	Not in order	12	0.???	???
effect1 parameter4		13	0.???	???
effect1 parameter5		14	0.???	???
effect1 parameter6		15	0.???	???
effect1 parameter7		16	0.???	???
effect1 parameter8	33	17	0.???	???
effect1 level-a	34	18	0..100	0..100
effect1 level-b	35	19	0..100	0..100
effect2 parameter1	36	20	0.???	???
effect2 parameter2		21	0.???	???
effect2 parameter3	Not in order	22	0.???	???
effect2 parameter4		23	0.???	???
effect2 parameter5		24	0.???	???
effect2 parameter6		25	0.???	???
effect2 parameter7		26	0.???	???
effect2 parameter8	59	27	0.???	???
effect2 level-a	60	28	0..100	0..100
effect2 level-b	61	29	0..100	0..100
effect mix level	62	30	0..100	0..100
effect balance out1	63	31	0..100	0..100
effect balance out2	64	32	0..100	0..100
effect control1 min limit	65	33	0..100	0..100
effect control1 max limit	66	34	0..100	0..100
effect lfo wave	67	35	0..6	tri..1tm
effect lfo speed	68	36	0..99	0..99
effect lfo delay time	69	37	0..99	0..99
effect insert 1b	70	38	0..100	0..100
effect insert 2a	71	39	0..100	0..100

(To be continued)

PARAMETER	BULK NUMBER	PARAM NUMBER	DATA RANGE	DISP
effect insert 2b	72	40	0..100	0..100
multi name top	73	49	32..127	ASCII
multi name	74	50	32..127	ASCII
multi name	75	51	32..127	ASCII
multi name	76	52	32..127	ASCII
multi name	77	53	32..127	ASCII
multi name	78	54	32..127	ASCII
multi name	79	55	32..127	ASCII
multi name bottom	80	56	32..127	ASCII
reserved	81	—	0	
reserved	82	—	0	
reserved	83	—	0	
reserved	84	—	0	
reserved	85	—	0	
reserved	86	—	0	
reserved	87	—	0	
reserved	88	—	0	
reserved	89	—	0	
reserved	90	—	0	
reserved	91	—	0	
reserved	92,93	—	0	

2. INST

s=1..16(inst number)

PARAMETER	BULK NUMBER	PARAM NUMBER	DATA RANGE	DISP
inst memory bank	94,95	0	b0,1	1..4
inst memory			b2,3	int/crd/ pre
off/on for ind1..4			b4..b7	0..1
inst voice number	96,97	1	b0..5	0..63
inst v,p select			b6	pfm/vce
inst switch			b7	off,on
inst volume	98	2	0..127	0..127
inst tune	99	3	1..127	+63
inst note shift	100	4	1..127	+63
inst pan	101	5	b0..b5	+31
inst pan source			b6=0,1	multi,vce/pfm
off/on for send1..4	102	6	b0..3	0..1
off/on for out1,2			b4..5	0..1
off/on for vce send			b6	0..1
inst effect send	103	7	0..127	0..127
	104..113			
	114..123			
	124..133			
	134..143			
	144..153			
	154..163			
	164..173			
	174..183			
	184..193			
	194..203			

(To be continued)

PARAMETER	BULK NUMBER	PARAM NUMBER	DATA RANGE	DISP
	204..213 214..223 224..233 234..243 244..253			

(2) MIDI Parameter Change table ( Performance )

SF0,\$43,\$1n,\$29,\$01,sub\_group,p\_msb,p\_lsb,v\_msb,v\_lsb,SF7

Note) n ; Device Number

s ; parameter sub group number

p ; parameter number

v ; parameter value

1. COMMON s=0

PARAMETER	BULK NUMBER	PARAM NUMBER	DATA RANGE	DISP
reserved	0	—	0	
effect mode	1	1	0..2	off,seri,par
effect1 type	2	2	0..90	0..90
effect2 type	3	3	0..90	0..90
effect control1 parameter	4	4	0..31	off..Ef_Ins2b
effect control1 add controller	5	5	0..124	0..124
effect control2 parameter	6	6	0..31	off..Ef_Ins2b
effect control2 add controller	7	7	0..124	0..124
effect control2 min limit	8	8	0..100	0..100
effect control2 max limit	9	9	0..100	0..100
effect1 parameter1	10	10	0..???	???
effect1 parameter2		11	0..???	???
effect1 parameter3	Not in order	12	0..???	???
effect1 parameter4		13	0..???	???
effect1 parameter5		14	0..???	???
effect1 parameter6		15	0..???	???
effect1 parameter7		16	0..???	???
effect1 parameter8	33	17	0..???	???
effect1 level-a	34	18	0..100	0..100
effect1 level-b	35	19	0..100	0..100
effect2 parameter1	36	20	0..???	???
effect2 parameter2		21	0..???	???
effect2 parameter3	Not in order	22	0..???	???
effect2 parameter4		23	0..???	???
effect2 parameter5		24	0..???	???
effect2 parameter6		25	0..???	???
effect2 parameter7		26	0..???	???
effect2 parameter8	59	27	0..???	???
effect2 level-a	60	28	0..100	0..100
effect2 level-b	61	29	0..100	0..100
effect mix level	62	30	0..100	0..100
effect balance out1	63	31	0..100	0..100
effect balance out2	64	32	0..100	0..100
effect control1 min limit	65	33	0..100	0..100
effect control1 max limit	66	34	0..100	0..100

(To be continued)

PARAMETER	BULK NUMBER	PARAM NUMBER	DATA RANGE	DISP
effect lfo wave	67	35	0..6	tri..1tm
effect lfo speed	68	36	0..99	0..99
effect lfo delay time	69	37	0..99	0..99
effect insert 1b	70	38	0..100	0..100
effect insert 2a	71	39	0..100	0..100
effect insert 2b	72	40	0..100	0..100
performance name top	73	49	32..127	ASCII
performance name	74	50	32..127	ASCII
performance name	75	51	32..127	ASCII
performance name	76	52	32..127	ASCII
performance name	77	53	32..127	ASCII
performance name	78	54	32..127	ASCII
performance name	79	55	32..127	ASCII
performance name bottom	80	56	32..127	ASCII
reserved	81	—	0	
reserved	82	—	0	
performance total level	83	59	0..127	0..127

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

PARAMETER	BULK NUMBER	PARAM NUMBER	DATA RANGE	DISP
layer memory bank	84,85	0	b0,b1	1..4
reserved			b2	0
layer memory	86,87	1	b3	int(card)/ pre
reserved			b4..b7	0
layer voice number	88	2	0..62	0..62
layer switch			b7	off,on
layer volume	89	3	0..127	0..127
layer detune			b0..b3	-7..+7
MC3,4 enable	90	4	b4,5	off/on
layer note shift			1..127	-63..+63
layer pan	91	5	0..63	-31..+31
off/on for send1..4			b0..3	off/on
off/on for out1,2	92	6	b4..5	off/on
layer effect send			0..127	0..127
layer effect send velocity sensitivity	94,95	8	b0..b3	-7..+7
layer effect send scaling			b4..b7	-7..+7
layer note limit low	96	9	0..127	C-2..G8
layer note limit high			0..127	C-2..G8
layer velocity limit low	98	11	1..127	1..127
layer velocity limit high			1..127	1..127
layer AEG R1	100,101	13	0..255	-63..+63
layer AEG D1R	102,103	14	0..255	-63..+63
layer AEG D2R	104,105	15	0..255	-63..+63
layer AEG RR	106,107	16	0..255	-63..+63
layer AEG velocity sensitivity	108,109	17	0..255	-14..+14
layer filter cutoff	110,111	18	0..255	-127..+127
layer filter velocity sensitivity	112,113	19	0..255	-127..+127
layer filter resonance	114,115	20	0..255	-99..+99
layer LFO speed	116,117	21	0..255	-99..+99

(To be continued)

PARAMETER	BULK NUMBER	PARAM NUMBER	DATA RANGE	DISP
layer LFO depth	118,119	22	0..255	-99..+99
layer AT use	120,121	23	b0,1,2	off,use a,b,c,d
reserved			b3	0
layer MIDI Control1 use			b4,5,6	off,use a,b,c,d
reserved			b7	0
layer MIDI Control2 use	122,123	24	b0,1,2	off,use a,b,c,d
reserved			b3	0
layer PEG switch			b4	off/on
layer sustain switch			b5	off/on
fixed mode note#	124,125	25	0..127	C-2..G8
frequency fix switch			b7	normal/fix
reserved	126		0	
	127..169			
	170..212			
	213..255			

(3) MIDI Parameter Change table ( Normal Voice )

SF0,\$43,\$1n,\$29,\$02,\$00,p\_msb,p\_lsb,v\_msb,v\_lsb,SF7

Note) n ; Device Number

p ; parameter number

v ; parameter value

PARAMETER	BULK NUMBER	PARAM NUMBER	DATA RANGE	DISP
reserved	0	—	0	
effect mode	1	1	0..2	off,seri,para
effect1 type	2	2	0..90	0..90
effect2 type	3	3	0..90	0..90
effect control1 parameter	4	4	0..28	off..LFO dly
effect control1 add controller	5	5	0..124	0..124
effect control2 parameter	6	6	0..28	off..LFO dly
effect control2 add controller	7	7	0..124	0..124
effect control2 min limit	8	8	0..100	0..100
effect control2 max limit	9	9	0..100	0..100
effect1 parameter1	10	10	0..???	???
effect1 parameter2		11	0..???	???
effect1 parameter3	Not in order	12	0..???	???
effect1 parameter4		13	0..???	???
effect1 parameter5		14	0..???	???
effect1 parameter6		15	0..???	???
effect1 parameter7		16	0..???	???
effect1 parameter8	33	17	0..???	???
effect1 level-a	34	18	0..100	0..100
effect1 level-b	35	19	0..100	0..100
effect2 parameter1	36	20	0..???	???
effect2 parameter2		21	0..???	???
effect2 parameter3	Not in order	22	0..???	???
effect2 parameter4		23	0..???	???
effect2 parameter5		24	0..???	???
effect2 parameter6		25	0..???	???

(To be continued)



PARAMETER	BULK NUMBER	PARAM NUMBER	DATA RANGE	DISP
effect2 parameter7		26	0..???	???
effect2 parameter8	59	27	0..???	???
effect2 level-a	60	28	0..100	0..100
effect2 level-b	61	29	0..100	0..100
effect mix level	62	30	0..100	0..100
effect balance out1	63	31	0..100	0..100
reserved	64		0	0
effect control1 min limit	65	33	0..100	0..100
effect control1 max limit	66	34	0..100	0..100
effect lfo wave	67	35	0..6	tri..1tm
effect lfo speed	68	36	0..99	0..99
effect lfo delay time	69	37	0..99	0..99
reserved	70..72		0	
voice name top	73	49	32..127	ASCII
voice name	74	50	32..127	ASCII
voice name	75	51	32..127	ASCII
voice name	76	52	32..127	ASCII
voice name	77	53	32..127	ASCII
voice name	78	54	32..127	ASCII
voice name	79	55	32..127	ASCII
voice name bottom	80	56	32..127	ASCII
wave card bank	81	57	0..1	1..2
AWM_CARD ID#	82,83	58	0..16383	
MC1 pmod range	84	60	0..127	0..127
MC1 amod range	85	61	0..127	0..127
MC1 fmod range	86	62	0..127	0..127
MC1 cutoff range	87,88	63	0..255	-127..+127
MC1 egbias range	89,90	64	0..255	-127..+127
MC2 pmod range	91	65	0..127	0..127
MC2 amod range	92	66	0..127	0..127
MC2 fmod range	93	67	0..127	0..127
MC2 cutoff range	94,95	68	0..255	-127..+127
MC2 egbias range	96,97	69	0..255	-127..+127
after touch pmod range	98	70	0..127	0..127
after touch amod range	99	71	0..127	0..127
after touch fmod range	100	72	0..127	0..127
after touch cutoff range	101,102	73	0..255	-127..+127
after touch egbias range	103,104	74	0..255	-127..+127
after touch pitch bend range	105,106	75	b0..b4	-12..+12
poly after touch switch	107,108	76	0..1	ch's, key's
pitch bend range	109	77	b0..b3	0..12
reserved			b4,5	
reserved			b6	
volume low limit	110	78	0..127	0..127
MC3 parameter	111	79	0..75	0..75
MC3 parameter min limit	112	80	0..100	0..100
MC3 parameter max limit	113	81	0..100	0..100
MC4 parameter	114	82	0..75	0..75
MC4 parameter min limit	115	83	0..100	0..100
MC4 parameter max limit	116	84	0..100	0..100

(To be continued)

PARAMETER	BULK NUMBER	PARAM NUMBER	DATA RANGE	DISP
voice total level	117	85	0..127	0..127
effect send level	118	86	0..127	0..127
wave memory bank	119	87	b0,b1	pre1,pre2,crd,int
reverse switch			b2	off/on
wave number	120,121	88	0..244	0..244
fixed mode note#/note shift	122,123	89	0..127	C-2..G8 or -64..+63
frequency fix switch			b7	normal/fix
fine tune	124	90	0..127	-63..+63
reserved	125	91	b0..b2	0
reserved			b3	0
random pitch depth			b4..b6	0..7
rate1	126	92	0..63	0..63
rate2	127	93	0..63	0..63
rate3	128	94	0..63	0..63
release rate1	129	95	0..63	0..63
level0	130	96	1..127	-63..+63
level1	131	97	1..127	-63..+63
level2	132	98	1..127	-63..+63
level3	133	99	1..127	-63..+63
release level1	134	100	1..127	-63..+63
rate scaling	135	101	b0..3	-7..+7
range			b4,b5	1/12,1/2,1,2
loop switch			b6	off/on
velocity sensitivity	136,137	102	b0..b3	-7..+7
rate vel sensitivity			b4..b7	-7..+7
type for quick edit	138	—	0..3	user,vb,tr,wow
speed	139	104	0..99	0..99
delay time	140	105	0..99	0..99e
pmod depth	141	106	0..127	0..127
amod depth	142	107	0..127	0..127
fmod depth	143	108	0..127	0..127
wave	144	109	b0..2	tr..S/H
phase	145	110	0..180	0..180
lfo speed velocity sensitivity	146	111	b0..b3	-7..+7
lfo speed random sensitivity			b4..b6	0..7
lfo speed key scaling	147	112	b0..b3	-7..+7
type for quick edit	148	—	0..21	
rate scaling	149	114	b0..b3	-7..+7
reserved			b4	0
mode			b6	attack,hold
rate1 or hold time	150	115	0..63	0..63
rate2	151	116	0..63	0..63
rate3	152	117	0..63	0..63
rate4	153	118	0..63	0..63
release rate	154	119	0..63	0..63
level2	155	120	0..63	0..63
level3	156	121	0..63	0..63
level scaling break point1	157	122	0..124	C-2..G8
level scaling break point2	158	123	1..125	C-2..G8
level scaling break point3	159	124	2..126	C-2..G8

(To be continued)

PARAMETER	BULK NUMBER	PARAM NUMBER	DATA RANGE	DISP
level scaling break point4	160	125	3..127	C-2..G8
level scaling level1	161,162	126	1..255	-127..+127
level scaling level2	163,164	127	1..255	-127..+127
level scaling level3	165,166	128	1..255	-127..+127
level scaling level4	167,168	129	1..255	-127..+127
velocity sensitivity	169,170	130	b0..b3	-7..+7
rate velocity sensitivity			b4..b7	-7..+7
filter type for quick edit	171	—	0..16	0..16
filter type	172	132	b0..b2	THRU..LPF12
velocity sens type			b3	attack,shift
reserved			b4	0
filter control source			b5	0eg,1lfo
reserved			b6	0
resonance(LPF only)	173	133	0..99	0..99
velocity sensitivity	174	134	0..127	-63..+63
reserved	175	—	0	0
attack rate velocity sensitivity	176	136	0..127	-63..+63
reserved	177		0	
filter cutoff Band Width	178	138	0..127	0..127
cutoff frequency	179	139	0..127	0..127
rate1	180	140	0..63	0..63
rate2	181	141	0..63	0..63
rate3	182	142	0..63	0..63
rate4	183	143	0..63	0..63
release rate1	184	144	0..63	0..63
release rate2	185	145	0..63	0..63
level0	186	146	1..127	-63..+63
level1	187	147	1..127	-63..+63
level2	188	148	1..127	-63..+63
level3	189	149	1..127	-63..+63
level4	190	150	1..127	-63..+63
release level1	191	151	1..127	-63..+63
release level2	192	152	1..127	-63..+63
rate scaling	193	153	b0..b3	-7..+7
coeff scale break point1	194	154	0..124	C-2..G8
coeff scale break point2	195	155	1..125	C-2..G8
coeff scale break point3	196	156	2..126	C-2..G8
coeff scale break point4	197	157	3..127	C-2..G8
cutoff scaling freq1	198,199	158	1..255	-127..+127
cutoff scaling freq2	200,201	159	1..255	-127..+127
cutoff scaling freq3	202,203	160	1..255	-127..+127
cutoff scaling freq4	204,205	161	1..255	-127..+127

(4) MIDI Parameter Change table ( Drum Voice )

SF0,\$43,\$1n,\$29,\$03,sub\_group,p\_msb,p\_lsb,v\_msb,v\_lsb,SF7

Note) n ; Device Number

s ; parameter sub group number

p ; parameter number

v ; parameter value

1. COMMON s=0

PARAMETER	BULK NUMBER	PARAM NUMBER	DATA RANGE	DISP
reserved	0	—	0	
effect mode	1	1	0..2	off,seri,para
effect1 type	2	2	0..90	0..90
effect2 type	3	3	0..90	0..90
effect control1 parameter	4	4	0..31	off..Ef_Ins2b
effect control1 add controller	5	5	0..124	0..124
effect control2 parameter	6	6	0..31	off..Ef_Ins2b
effect control2 add controller	7	7	0..124	0..124
effect control2 min limit	8	8	0..100	0..100
effect control2 max limit	9	9	0..100	0..100
effect1 parameter1	10	10	0..???	???
effect1 parameter2		11	0..???	???
effect1 parameter3	Not in order	12	0..???	???
effect1 parameter4		13	0..???	???
effect1 parameter5		14	0..???	???
effect1 parameter6		15	0..???	???
effect1 parameter7		16	0..???	???
effect1 parameter8	33	17	0..???	???
effect1 level-a	34	18	0..100	0..100
effect1 level-b	35	19	0..100	0..100
effect2 parameter1	36	20	0..???	???
effect2 parameter2		21	0..???	???
effect2 parameter3	Not in order	22	0..???	???
effect2 parameter4		23	0..???	???
effect2 parameter5		24	0..???	???
effect2 parameter6		25	0..???	???
effect2 parameter7		26	0..???	???
effect2 parameter8	59	27	0..???	???
effect2 level-a	60	28	0..100	0..100
effect2 level-b	61	29	0..100	0..100
effect mix level	62	30	0..100	0..100
effect balance out1	63	31	0..100	0..100
effect balance out2	64	32	0..100	0..100
effect control1 min limit	65	33	0..100	0..100
effect control1 max limit	66	34	0..100	0..100
effect lfo wave	67	35	0..6	tri..1tm
effect lfo speed	68	36	0..99	0..99
effect lfo delay time	69	37	0..99	0..99
effect insert 1b	70	38	0..100	0..100
effect insert 2a	71	39	0..100	0..100
effect insert 2b	72	40	0..100	0..100
drum name top	73	49	32..127	ASCII
drum name	74	50	32..127	ASCII

(To be continued)

PARAMETER	BULK NUMBER	PARAM NUMBER	DATA RANGE	DISP
drum name	75	51	32..127	ASCII
drum name	76	52	32..127	ASCII
drum name	77	53	32..127	ASCII
drum name	78	54	32..127	ASCII
drum name	79	55	32..127	ASCII
drum name bottom	80	56	32..127	ASCII
wave card bank	81	57	0..1	1..2
AWM_CARD ID#	82,83	58	0..16383	
volume low limit	84	60	0..127	0..127
drum voice total level	85	61	0..127	0

2. KEY

s=36..84(key number)

PARAMETER	BULK NUMBER	PARAM NUMBER	DATA RANGE	DISP
wave memory bank	86	0	bit0,1	pre1,pre2,crd,int
reverse switch			b2	off,on
reverse			b3	0
lnd 1-4 switch			b4..b7	
wave number	87,88	1	0..244	0..244
volume	89,90	2	0..127	0..127
fine tune	91	3	0..127	-63..+63
note shift	92	4	16..100	-48..+36
pan	93	5	0..63	-31..+31
send1..4	94	6	b0..b3	off/on
out1,2			b4..b5	off/on
effect send	95	7	0..127	0..127
effect send velocity sensitivity	96	8	0..15	-7..+7
alternate group	97	9	b0..b4	grp1..5
gatetime group			b5..b6	sh,nrm,lng,vlng
	98..109			
	110..121			
	662..673			
reserved	674	—	0	0

(5) MIDI Parameter Change table ( Setup )

SF0,\$43,\$1n,\$29,\$04,sub\_group,p\_msb,p\_lsb,v\_msb,v\_lsb,SF7

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
master note shift	0	0	1..127	-63..+63
master fine tune	1	1	1..127	-63..+63
reserved	2	—	0	
voice recieve ch	3	3	0..16	1..16,omni
reserved	4	—	0	
device number	5	5	0..17	off,1..16,all
bulk protect switch	6	6	0..1	off/on

(To be continued)

PARAMETER	BULK NUMBER	PARAM NUMBER	DATA RANGE	DISP
program change switch	7	7	0..3	off,nrm,dr,tbl
volume control device number	8	8	0..119	0..119
controller reset	9	9	0..1	off/on
card 1 bank	10	10	0..1	bank1,bank2
card 2 bank	11	11	0..1	bank1,bank2
effect switch	12	12	0..1	off/on
reserved	13	—	0	
poly after touch switch	14	14	0..1	off/on
control change switch	15	15	0..1	off/on
output select	16	16	0..1	norm/indiv
MC1 device number	17	17	0..121	0..120, at
MC2 device number	18	18	0..121	0..120, at
MC3 device number	19	19	0..121	0..120, at
MC4 device number	20	20	0..121	0..120, at
reserved	21	—	0	
reserved	22	—	0	
reserved	23	—	0	
reserved	24	—	0	
reserved	25	—	0	
reserved	26	—	0	
reserved	27..31	—	0	

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

SF0,\$43,\$1n,\$29,\$07,sub\_group,p\_msb,p\_lsb,v\_msb,v\_lsb,SF7

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
bank(20)	0	0	0..127	bank select
program number	1	1	0..63	63
	2..3			
	4..5			
	254..255			

(7) MIDI Parameter Change table ( Switch Remote )

SF0,\$43,\$10,\$29,\$08,\$00,p\_msb,p\_lsb,v\_msb,v\_lsb,SF7

Note) p ; parameter number

v ; parameter value

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

pppppp	Sw Num	NOTES
0	SW1	[PLAY MODE]
1	SW2	[EDIT COMPARE]
2	SW3	[STORE/COPY]
3	SW4	[UTILITY/SELECT]
4	SW5	[<]
5	SW6	[>]
6	SW7	[PAGE]
7	SW8	[MEMORY]
8	SW9	[-1/NO]
9	SW10	[+1/YES]
10	SW11	[ENTER]
11	SW12	[EXIT]

Function...	Transmitted	Recognized	Remarks
Basic Default Channel Changed	1 - 16 1 - 16	1 - 16 1 - 16	memorized
Mode Default Messages Altered	3 x *****	1,3 x x	memorized
Note Number : True voice	x *****	0 - 127 1 - 127	
Velocity Note ON Note OFF	x	o v=1-127 x	
After Key's Touch Ch's	x x	o o	Poly at sw on
Pitch Bender	x	o 0-12 semi	7 bit resolution
Control 0,32 0 - 119 10 64 Change 16 - 19 0 - 120 120 121	x x x x x x x x	o o o *1 o o o o o	Bank select Volume Pan Sustain MC Assignable All sounds off Reset All cont.
Prog Change : True #	x *****	o 0-127	
System Exclusive	o *2	o *2	voice etc.
: Song Pos Common : Song Sel : Tune	x x x	x x x	
System : Clock Real Time : Commands	x x	x x	
Aux : Local ON/OFF : All Notes OFF Mes- : Active Sense sages : Reset	x x x x	x o o x	
Note *1 ; effect to next key on notes *2 ; transmit/receive if device No 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