KORG

microKorg

MIDI IMPLEMENTATION



Revision 1.4

(2002.06.27)

1-1 CHANNEL MESSAGES [H]:Hex, [D]:Decimal

Status [Hex]	Second [H] [D]	Third [H] [D]	Description	(Transmitted by)	ENA
8n	kk (kk)	40 (64)	Note Off	*1	A
9n	kk (kk)	vv (vv)	Note On vv=1~127	*1	A
Bn	01 (01)	vv (vv)	Modulation1	(Mod Wheel)	C
Bn	06 (06)	vv (vv)	Data Entry (MSB)	(Panel Control) *2	C
Bn	62 (98)	vv (vv)	NRPN (LSB)	(P.C) *2	C
Bn	63 (99)	vv (vv)	NRPN (MSB)	(P.C) *2	C
Bn	cc (cc)	vv (vv)	Control Change cc=00~95	(P.C, S.C) *3	C
Cn	pp (pp)	-- --	Program Change	(Prog Change)	P
En	bb (bb)	bb (bb)	Pitch Bender Change	(Bend Wheel)	B

n : MIDI Channel = 0 ~ F
vv : Value

P.C: Panel Control
S.C: Sync Control

ENA = A : Always Enable
C : Enabled when Global CtrlChg is enabled.
P : Enabled when Global ProgChg is enabled.
B : Enabled when Global P.Bend is enabled.

*1 : kk = 0 ~ 127 (37Keys + OCT + Transpose)

*2 : Non Registered Parameter Number (NRPN)

MSB [H]	LSB [H]	Parameter	Data Entry(MSB) Value
00	02	Arpeggio On/Off	00~3F/40~7F:OFF/ON
00	03	Arpeggio Octaves	00~03 :1~4 Oct.
00	04	Arpeggio Latch On/Off	00~3F/40~7F:OFF/ON
00	07	Arpeggio Type	*2-1
00	0A	Arpeggio Gate	*2-2
		(Synth Mode /Vocoder Mode)	
04	00	Patch1 Source/Fc Mod Source	*2-3 / *2-3
04	01	Patch2 Source	*2-3
04	02	Patch3 Source	*2-3
04	03	Patch4 Source	*2-3
04	08	Patch1 Destination	*2-4
04	09	Patch2 Destination	*2-4
04	0A	Patch3 Destination	*2-4
04	0B	Patch4 Destination	*2-4
		(Synth Mode /Vocoder Mode)	
04	10	/BAND[1] LEVEL	/ 00~7F:0~127
04	12	/BAND[2] LEVEL	/ 00~7F:0~127
04	14	/BAND[3] LEVEL	/ 00~7F:0~127
04	16	/BAND[4] LEVEL	/ 00~7F:0~127
04	18	/BAND[5] LEVEL	/ 00~7F:0~127
04	1A	/BAND[6] LEVEL	/ 00~7F:0~127
04	1C	/BAND[7] LEVEL	/ 00~7F:0~127
04	1E	/BAND[8] LEVEL	/ 00~7F:0~127
04	20	/BAND[1] PAN	/ *2-7
04	22	/BAND[2] PAN	/ *2-7
04	24	/BAND[3] PAN	/ *2-7
04	26	/BAND[4] PAN	/ *2-7
04	28	/BAND[5] PAN	/ *2-7
04	2A	/BAND[6] PAN	/ *2-7
04	2C	/BAND[7] PAN	/ *2-7
04	2E	/BAND[8] PAN	/ *2-7

*2-1 : 00~15 : Up

```
       16~2A : Down
       2B~3F : Alt1
       40~55 : Alt2
       56~6A : Random
       6B~7F : Trigger

*2-2 : 00~07 :  0,  0,  1,  2,  3,  3,  4,  5
       08~0F :  6,  7,  7,  8,  9, 10, 11, 11
       10~17 : 12, 13, 14, 14, 15, 16, 17, 18
       18~1F : 18, 19, 20, 21, 22, 22, 23, 24
       20~27 : 25, 26, 26, 27, 28, 29, 29, 30
       28~2F : 31, 32, 33, 33, 34, 35, 36, 37
       30~37 : 37, 38, 39, 40, 41, 41, 42, 43
       38~3F : 44, 44, 45, 46, 47, 48, 48, 49
       40~47 : 50, 51, 52, 52, 53, 54, 55, 56
       48~4F : 56, 57, 58, 59, 59, 60, 61, 62
       50~57 : 63, 63, 64, 65, 66, 67, 67, 68
       58~5F : 69, 70, 71, 71, 72, 73, 74, 74
       60~67 : 75, 76, 77, 78, 78, 79, 80, 81
       68~6F : 82, 82, 83, 84, 85, 86, 86, 87
       70~77 : 88, 89, 89, 90, 91, 92, 93, 93
       78~7F : 94, 95, 96, 97, 97, 98, 99,100

*2-3 : 00~0F : EG1           *2-4 : 00~0F : PITCH
       10~1F : EG2                  10~1F : OSC2PITCH
       20~2F : LFO1                 20~2F : OSC1CTRL1
       30~3F : LFO2                 30~3F : NOISE LEVEL
       40~4F : VELOCITY             40~4F : CUTOFF
       50~5F : KBD TRACK            50~5F : AMP
       60~6F : P.Bend(MIDI1)        60~6F : PAN
       70~7F : Mod(MIDI2)           70~7F : LFO2FREQ

*2-5 : 00~07 : -24,-24,-24,-23,-23,-23,-22,-22
       08~0F : -21,-21,-21,-20,-20,-20,-19,-19
       10~17 : -18,-18,-18,-17,-17,-16,-16,-16
       18~1F : -15,-15,-15,-14,-14,-13,-13,-13
       20~27 : -12,-12,-11,-11,-11,-10,-10,-10
       28~2F : - 9,- 9,- 8,- 8,- 8,- 7,- 7,- 7
       30~37 : - 6,- 6,- 5,- 5,- 5,- 4,- 4,- 3
       38~3F : - 3,- 3,- 2,- 2,- 2,- 1,- 1,  0
       40~47 :   0,  0,+ 1,+ 1,+ 2,+ 2,+ 2,+ 3
       48~4F : + 3,+ 3,+ 4,+ 4,+ 5,+ 5,+ 5,+ 6
       50~57 : + 6,+ 7,+ 7,+ 7,+ 8,+ 8,+ 8,+ 9
       58~5F : + 9,+10,+10,+10,+11,+11,+11,+12
       60~67 : +12,+13,+13,+13,+14,+14,+15,+15
       68~6F : +15,+16,+16,+16,+17,+17,+18,+18
       70~77 : +18,+19,+19,+20,+20,+20,+21,+21
       78~7F : +21,+22,+22,+23,+23,+23,+24,+24

*2-6 : 00,01~7F = -63,-63~+63
       00~07 : -63,-63,-62,-61,-60,-59,-58,-57
       08~0F : -56,-55,-54,-53,-52,-51,-50,-49
       10~17 : -48,-47,-46,-45,-44,-43,-42,-41
       18~1F : -40,-39,-38,-37,-36,-35,-34,-33
       20~27 : -32,-31,-30,-29,-28,-27,-26,-25
       28~2F : -24,-23,-22,-21,-20,-19,-18,-17
       30~37 : -16,-15,-14,-13,-12,-11,-10,- 9
       38~3F : - 8,- 7,- 6,- 5,- 4,- 3,- 2,- 1
       40~47 :   0,+ 1,+ 2,+ 3,+ 4,+ 5,+ 6,+ 7
       48~4F : + 8,+ 9,+10,+11,+12,+13,+14,+15
       50~57 : +16,+17,+18,+19,+20,+21,+22,+23
       58~5F : +24,+25,+26,+27,+28,+29,+30,+31
       60~67 : +32,+33,+34,+35,+36,+37,+38,+39
       68~6F : +40,+41,+42,+43,+44,+45,+46,+47
       70~77 : +48,+49,+50,+51,+52,+53,+54,+55
       78~7F : +56,+57,+58,+59,+60,+61,+62,+63

*2-7 : 00,01~40~7F = L63,L63~CNT~R63
       00~07 : L63,L63,L62,L61,L60,L59,L58,L57
       08~0F : L56,L55,L54,L53,L52,L51,L50,L49
       10~17 : L48,L47,L46,L45,L44,L43,L42,L41
       18~1F : L40,L39,L38,L37,L36,L35,L34,L33
       20~27 : L32,L31,L30,L29,L28,L27,L26,L25
       28~2F : L24,L23,L22,L21,L20,L19,L18,L17
       30~37 : L16,L15,L14,L13,L12,L11,L10,L09
```

```
        38~3F : L08,L07,L06,L05,L04,L03,L02,L01
        40~47 : CNT,R01,R02,R03,R04,R05,R06,R07
        48~4F : R08,R09,R10,R11,R12,R13,R14,R15
        50~57 : R16,R17,R18,R19,R20,R21,R22,R23
        58~5F : R24,R25,R26,R27,R28,R29,R30,R31
        60~67 : R32,R33,R34,R35,R36,R37,R38,R39
        68~6F : R40,R41,R42,R43,R44,R45,R46,R47
        70~77 : R48,R49,R50,R51,R52,R53,R54,R55
        78~7F : R56,R57,R58,R59,R60,R61,R62,R63
```

*3 :Panel Knob & Switch Control (assignable)

	Synth Mode	Vocoder Mode	
PITCH	Portamento	Portamento	00~7F:0~127
OSC1	Wave	Wave	*3-1
	Control1	Control1	00~7F:0~127
	Control2	Control2	*3-2
OSC2	Wave		*3-3
(AudioIn1)	OSC Mod		*3-4
	Semitone	HPF Level	*2-5/00~7F:0~127
	Tune	Threshold	*2-6/00~7F:0~127
MIXER	OSC1 Level	OSC1 Level	00~7F:0~127
	OSC2 Level	Inst Level	00~7F:0~127
	Noise Level	Noise Level	00~7F:0~127
FILTER	Type	Formant Shift	*3-5/*3-6
	Cutoff	Cutoff	00~7F:0~127/*2-6
	Resonance	Resonance	00~7F:0~127
	EG1 Int	Mod Int	*2-6
	KBD Track	E.F.Sense	*2-6/00~7F:0~127
AMP	Level	Level	00~7F:0~127
	Panpot	Direct Level	*2-7/00~7F:0~127
	Distortion	Distortion	00~3F/40~7F:OFF/ON
EG1	Attack		00~7F:0~127
	Decay		00~7F:0~127
	Sustain		00~7F:0~127
	Release		00~7F:0~127
EG2	Attack	Attack	00~7F:0~127
	Decay	Decay	00~7F:0~127
	Sustain	Sustain	00~7F:0~127
	Release	Release	00~7F:0~127
LFO1	Wave	Wave	*3-7
	Frequency	Frequency	*3-9
LFO2	Wave	Wave	*3-8
	Frequency	Frequency	*3-9
PATCH1	Intensity		*2-6
PATCH2	Intensity		*2-6
PATCH3	Intensity		*2-6
PATCH4	Intensity		*2-6
MOD FX	LFO Speed	LFO Speed	00~7F:0~127
	Depth	Depth	00~7F:0~127
DELAY FX	Delay Time	Delay Time	*3-10
	Depth	Depth	00~7F:0~127
Sync Control			00~3F/40~7F:No/Sync
Timbre Select			*3-11

```
*3-1 : 00~0F : Saw        *3-3 : 00~2A : Saw    *3-4 : 00~1F : OFF
       10~1F : Pulse             2B~55 : Squ           20~3F : Ring
       20~2F : Tri               56~7F : Tri           40~5F : Sync
       30~3F : Sin                                     60~7F : RingSync
       40~4F : Vox Wave
       50~5F : DWGS
       60~6F : Noise
       70~7F : Audio In


*3-2 : When OSC1Wave isn't "DWGS"   00~7F : 0~127

       When OSC1Wave is "DWGS"      00,01 : DWGS Wave No. 1
                                    02,03 :               2
                                       ''            ''
```

```
                                  7C,7D : DWGS Wave No.63
                                  7E,7F :              64

 *3-5 : 00~1F : 24LPF      *3-6 : 00~19 :  0
        20~3F : 12LPF             1A~33 : +1
        40~5F : 12BPF             34~4C : +2
        60~7F : 12HPF             4D~66 : -1
                                  67~7F : -2

 *3-7 : 00~1F : Saw        *3-8 : 00~1F : Saw
        20~3F : Squ               20~3F : Squ(+)
        40~5F : Tri               40~5F : Sin
        60~7F : S/H               60~7F : S/H

 *3-9 : When Tempo Sync is "OFF".   00~7F : 0~127

        When Tempo Sync is "ON".
         00~08 : 1/1     2B~33 : 1/3     56~5D : 3/32
         09~11 : 3/4     34~3B : 1/4     5E~66 : 1/12
         12~19 : 2/3     3C~44 : 3/16    67~6E : 1/16
         1A~22 : 1/2     45~4C : 1/6     6F~77 : 1/24
         23~2A : 3/8     4D~55 : 1/8     78~7F : 1/32

 *3-10: When Tempo Sync is "OFF".   00~7F : 0~127

        When Tempo Sync is "ON".
         00~08 : 1/32    2B~33 : 1/8     56~5D : 3/8
         09~11 : 1/24    34~3B : 1/6     5E~66 : 1/2
         12~19 : 1/16    3C~44 : 3/16    67~6E : 2/3
         1A~22 : 1/12    45~4C : 1/4     6F~77 : 3/4
         23~2A : 3/32    4D~55 : 1/3     78~7F : 1/1

 *3-11
         00    :Timbre1
         01    :Timbre1 & 2
         02~7F :Timbre2


1-2 SYSTEM REALTIME MESSAGES
+-----------+-----------------------------------------+
| Status[H] | Description                             |
+-----------+-----------------------------------------+
|    F8     | Timing Clock                        *4  |
|    FE     | Active Sensing                          |
+-----------+-----------------------------------------+

 *4 :This message is transmitted when the "Clock" is set to "Internal".


1-3 UNIVERSAL SYSTEM EXCLUSIVE MESSAGES

 DEVICE INQUIRY REPLY
+---------+-------------------------------------------------+
| Byte[H] |                Description                      |
+---------+-------------------------------------------------+
|   F0    | Exclusive Status                                |
|   7E    | Non Realtime Message                            |
|   0g    | MIDI Global Channel  ( Device ID )              |
|   06    | General Information                             |
|   02    | Identity Reply                                  |
|   42    | KORG ID              ( Manufacturers ID )       |
|   58    | MS2000 Series ID     ( Family ID   (LSB))       |
|   00    |                      ( Family ID   (MSB))       |
|   mm    |                      ( Member ID   (LSB))       |
|   00    |                      ( Member ID   (MSB))       |
|   xx    |                      ( Minor Ver.  (LSB))       |
|   xx    |                      ( Minor Ver.  (MSB))       |
|   xx    |                      ( Major Ver.  (LSB))       |
|   xx    |                      ( Major Ver.  (MSB))       |
|   F7    | END OF EXCLUSIVE                                |
+---------+-------------------------------------------------+

 mm = 11 : micro KORG

  This message is transmitted whenever a INQUIRY MESSAGE REQUEST is received.
```

1-4 SYSTEM EXCLUSIVE MESSAGES

Function ID [Hex]	Description/Function	*5
40	CURRENT PROGRAM DATA DUMP	R,D
4C	PROGRAM DATA DUMP	R,D
51	GLOBAL DATA DUMP	R,D
50	ALL DATA(PROGRAM,GLOBAL) DUMP	R,D
26	DATA FORMAT ERROR	E
23	DATA LOAD COMPLETED	E
24	DATA LOAD ERROR	E
21	WRITE COMPLETED	E
22	WRITE ERROR	E

*5 : Transmitted when
R : Request message is received.
D : Data dump from MIDI dump page.
(Doesn't respond to MIDI FILTER "SystemEx" parameter.)
E : Exclusive message is received.

2.RECOGNIZED RECEIVE DATA

2-1 CHANNEL MESSAGES

Status [Hex]	Second [H] [D]	Third [H] [D]	Description	
8n	kk (kk)	vv (vv)	Note Off vv=0~127	
9n	kk (kk)	00 (00)	Note Off	
9n	kk (kk)	vv (vv)	Note On vv=1~127	
Bn	01 (01)	vv (vv)	Pitch Modulation Depth	
Bn	06 (06)	vv (vv)	Data Entry(MSB)	*6
Bn	62 (98)	nl (nl)	NRPN LSB	*6
Bn	63 (99)	nm (nm)	NRPN MSB	*6
Bn	78(120)	00 (0)	All Sound Off	
Bn	79(121)	00 (0)	Reset All Controllers	
Bn	7B(123)	00 (0)	All Note Off	
Bn	7C(124)	00 (0)	Omni Mode Off (All Note OFF)	
Bn	7D(125)	00 (0)	Omni Mode On (All Note OFF)	
Bn	7E(126)	mm (mm)	Mono Mode On (All Note OFF)	
Bn	7F(127)	00 (0)	Poly Mode On (All Note OFF)	
Bn	cc (cc)	vv (vv)	Control Data cc=00~95	
Cn	pp (pp)	-- --	Program Change	
En	bb (bb)	bb (bb)	Pitch Bender Change	

n : MIDI Channel = 0 ~ F
vv : Value

*6 : Non Registered Parameter Number (NRPN)

MSB [H]	LSB [H]	Parameter	Data Entry(MSB) Value
00	02	Arpeggio On/Off	00~3F/40~7F:OFF/ON
00	03	Arpeggio Octaves	00~03 :1~4 Oct.
00	04	Arpeggio Latch On/Off	00~3F/40~7F:OFF/ON
00	07	Arpeggio Type	*2-1
00	0A	Arpeggio Gate	*2-2
		(Synth Mode /Vocoder Mode)	
04	00	Patch1 Source/Fc Mod Source	*2-3 / *2-3
04	01	Patch2 Source	*2-3
04	02	Patch3 Source	*2-3
04	03	Patch4 Source	*2-3
04	08	Patch1 Destination	*2-4
04	09	Patch2 Destination	*2-4
04	0A	Patch3 Destination	*2-4
04	0B	Patch4 Destination	*2-4
		(Synth Mode /Vocoder Mode)	
04	10	/BAND[1] LEVEL	/ 00~7F:0~127

04 12	/BAND[2] LEVEL	/ 00~7F:0~127
04 14	/BAND[3] LEVEL	/ 00~7F:0~127
04 16	/BAND[4] LEVEL	/ 00~7F:0~127
04 18	/BAND[5] LEVEL	/ 00~7F:0~127
04 1A	/BAND[6] LEVEL	/ 00~7F:0~127
04 1C	/BAND[7] LEVEL	/ 00~7F:0~127
04 1E	/BAND[8] LEVEL	/ 00~7F:0~127
	(Synth Mode /Vocoder Mode)	
04 20	/BAND[1] PAN	/ *2-7
04 22	/BAND[2] PAN	/ *2-7
04 24	/BAND[3] PAN	/ *2-7
04 26	/BAND[4] PAN	/ *2-7
04 28	/BAND[5] PAN	/ *2-7
04 2A	/BAND[6] PAN	/ *2-7
04 2C	/BAND[7] PAN	/ *2-7
04 2E	/BAND[8] PAN	/ *2-7

All these parameters can be changed by "Data Entry(MSB)".

2-2 SYSTEM REALTIME MESSAGES

Status[H]	Description	
F8	Timing Clock	*7
FA	Start	*7
FC	Stop (Arpeggiator stop)	*7
FE	Active Sensing	

*7 :This message is recognized when the "Clock" is set to "External" or "Auto".

2-3 UNIVERSAL SYSTEM EXCLUSIVE MESSAGE (NON REALTIME)

DEVICE INQUIRY MESSAGE REQUEST

Byte[H]	Description
F0	Exclusive Status
7E	Non Realtime Message
nn	MIDI Channel (Device ID)
06	General Information
01	Identity Request
F7	END OF EXCLUSIVE

nn : MIDI Channel = 0 ~ F :Global Channel
= 7F :Any Channel

2-4 UNIVERSAL SYSTEM EXCLUSIVE MESSAGE (REALTIME)

(1) MASTER VOLUME

Byte[H]	Description
F0	Exclusive Status
7F	Realtime Message
nn	MIDI Channel (Device ID)
04	Device Control
01	Master Volume
vv	Value (LSB)
mm	Value (MSB)
F7	END OF EXCLUSIVE

nn : MIDI Channel = 0 ~ F :Global Channel
= 7F :Any Channel
mm,vv : 00,00 ~ 7F,7F :Min ~ Max

(2) MASTER FINE TUNE

Byte[H]	Description
F0	Exclusive Status
7F	Realtime Message
nn	MIDI Channel (Device ID)
04	Device Control
03	Master Fine Tune
vv	Value (LSB)
mm	Value (MSB)
F7	END OF EXCLUSIVE

nn : MIDI Channel = 0 ~ F : Global Channel
= 7F : Any Channel
mm,vv : 00,00~40,00~7F,7F : -100 ~ 0 ~ <+100

2-5 SYSTEM EXCLUSIVE MESSAGE

Function ID [Hex]	Function
10	CURRENT PROGRAM DATA DUMP REQUEST
1C	PROGRAM DATA DUMP REQUEST
0E	GLOBAL DATA DUMP REQUEST
0F	ALL DATA(PROGRAM,GLOBAL) DUMP REQUEST
40	CURRENT PROGRAM DATA DUMP
4C	PROGRAM DATA DUMP
51	GLOBAL DATA DUMP
50	ALL DATA(PROGRAM,GLOBAL) DUMP
11	PROGRAM WRITE REQUEST

When the "SystemEx" parameter is set to "ENA", these messages are recognized.

MIDI EXCLUSIVE FORMAT (R:Receive, T:Transmit)

(1) CURRENT PROGRAM DATA DUMP REQUEST R

Byte	Description	
F0,42,3g,58	EXCLUSIVE HEADER	
0001 0000 (10)	CURRENT PROGRAM DATA DUMP REQUEST	10H
1111 0111 (F7)	EOX	

Receive this message, and transmits Func=40 or Func=24 message.

(2) PROGRAM DATA DUMP REQUEST R

Byte	Description	
F0,42,3g,58	EXCLUSIVE HEADER	
0001 1100 (1C)	PROGRAM DATA DUMP REQUEST	1CH
1111 0111 (F7)	EOX	

Receive this message, and transmits Func=4C or Func=24 message.

(3) GLOBAL DATA DUMP REQUEST R

Byte	Description	
F0,42,3g,58	EXCLUSIVE HEADER	
0000 1110 (0E)	GLOBAL DATA DUMP REQUEST	0EH
1111 0111 (F7)	EOX	

Receive this message, and transmits Func=51 or Func=24 message.

(4) ALL DATA DUMP REQUEST R

Byte	Description	
F0,42,3g,58	EXCLUSIVE HEADER	
0000 1111 (0F)	ALL DATA DUMP REQUEST	0FH
1111 0111 (F7)	EOX	

Receive this message, and transmits Func=50 or Func=24 message.

(5) PROGRAM WRITE REQUEST R

Byte	Description	
F0,42,3g,58	EXCLUSIVE HEADER	
0001 0001 (11)	PROGRAM WRITE REQUEST	11H
0000 0000 (00)		
0ppp pppp (pp)	Destination Program No.(0~127)	
1111 0111 (F7)	EOX	

Receive this message, and transmits Func=21 or Func=22 message.

(6) CURRENT PROGRAM DATA DUMP R/T

Byte	Description	
F0,42,3g,58	EXCLUSIVE HEADER	
0100 0000 (40)	CURRENT PROGRAM DATA DUMP	40H
0ddd dddd (dd)	Data	(NOTE 1,5)
:	:	
1111 0111 (F7)	EOX	

Receive this message & data, save them to Edit Buffer and transmits Func=23 or Func=24 message.
Receive Func=10 message, and transmits this message & data from Edit Buffer.

(7) PROGRAM DATA DUMP R/T

Byte	Description	
F0,42,3g,58	EXCLUSIVE HEADER	
0100 1100 (4C)	PROGRAM DATA DUMP	4CH
0ddd dddd (dd)	Data	(NOTE 2,5)
:	:	
1111 0111 (F7)	EOX	

Receive this message & data, save them to Internal Memory and transmits Func=23 or Func=24 message.
Receive Func=1C message, and transmits this message & data from Internal Memory.
When DATA DUMP is executed, transmit this message & data from Internal Memory.

(8) GLOBAL DATA DUMP R/T

Byte	Description	
F0,42,3g,58	EXCLUSIVE HEADER	
0101 0001 (51)	GLOBAL DATA DUMP	51H
0ddd dddd (dd)	Data	(NOTE 3,5)
:	:	
1111 0111 (F7)	EOX	

Receive this message & data, save them to Internal Memory and transmits Func=23 or Func=24 message.
Receive Func=0E message, and transmits this message & data from Edit Buffer.
When DATA DUMP is executed, transmit this message & data from Edit Buffer.

(9) ALL DATA DUMP R/T

Byte	Description	

F0,42,3g,58	EXCLUSIVE HEADER	
0101 0000 (50)	ALL DATA DUMP	50H
0ddd dddd (dd)	Data	(NOTE 4,5)
:	:	
1111 0111 (F7)	EOX	

Receive this message & data, save them to Internal Memory and transmits Func=23 or Func=24 message.
Receive Func=0F message, and transmits this message & data from Internal Memory or Edit Buffer(GLOBAL).
When DATA DUMP is executed, transmit this message & data from Internal Memory or Edit Buffer(GLOBAL).

(10) RECEIVE DATA FORMAT ERROR T

Byte	Description	
F0,42,3g,58	EXCLUSIVE HEADER	
0010 0110 (26)	DATA FORMAT ERROR	26H
1111 0111 (F7)	EOX	

When found an error in the received message (ex.data length), transmits this message.

(11) DATA LOAD COMPLETED (ACK) T

Byte	Description	
F0,42,3g,58	EXCLUSIVE HEADER	
0010 0011 (23)	DATA LOAD COMPLETED	23H
1111 0111 (F7)	EOX	

When DATA LOAD,PROCESSING have been completed, transmits this message.

(12) DATA LOAD ERROR (NAK) T

Byte	Description	
F0,42,3g,58	EXCLUSIVE HEADER	
0010 0100 (24)	DATA LOAD ERROR	24H
1111 0111 (F7)	EOX	

When DATA LOAD,PROCESSING have not been completed (ex.protect), transmits this message.

(13) WRITE COMPLETED T

Byte	Description	
F0,42,3g,58	EXCLUSIVE HEADER	
0010 0001 (21)	WRITE COMPLETED	21H
1111 0111 (F7)	EOX	

When DATA WRITE MIDI has been completed, transmits this message.

(14) WRITE ERROR T

Byte	Description	
F0,42,3g,58	EXCLUSIVE HEADER	
0010 0010 (22)	WRITE ERROR	22H
1111 0111 (F7)	EOX	

When DATA WRITE MIDI has not been completed, transmits this message.

NOTE 1: CURRENT PROGRAM DATA (IN CURRENT BUFFER) DUMP FORMAT
254Bytes = 7*36+2 -> 8*36+(1+2) => 291Bytes

(TABLE 1)

NOTE 2: PROGRAM DATA (IN INTERNAL MEMORY) DUMP FORMAT
[Prog A01(254Bytes)],....,[Prog H16(254Bytes)]
254*128Bytes = 7*4644+4 -> 8*4644+(1+4) => 37157Bytes
(TABLE 5)

NOTE 3: GLOBAL DATA (IN INTERNAL MEMORY) DUMP FORMAT
200Bytes = 7*28+4 -> 8*28+(1+4) => 229Bytes
(TABLE 6)

NOTE 4: ALL DATA (IN INTERNAL MEMORY) DUMP FORMAT
[Prog A01(254Bytes)],....,[Prog H16(254Bytes)],[Global Data].
254*128+200Bytes= 7*4673+1 -> 8*4673+(1+1) => 37386Bytes
(TABLE 7)

NOTE 5: The dump data conversion

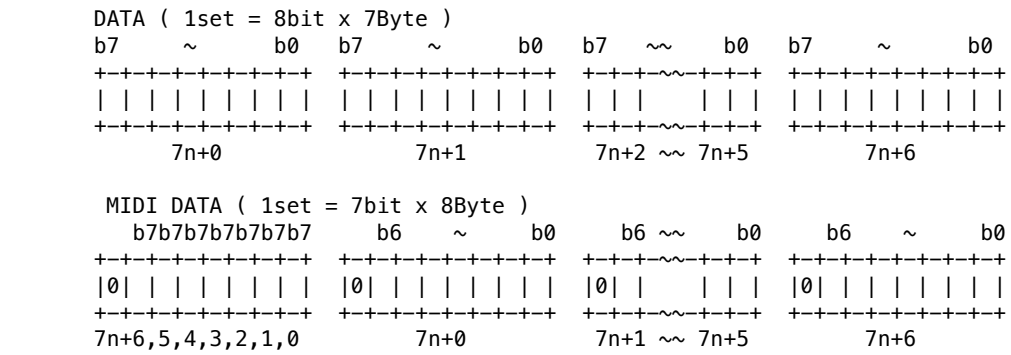


TABLE 1 : PROGRAM PARAMETER (1 PROGRAM, CURRENT PROGRAM)

0~11		program name	ASCII code [0]~[15]=1st~12th
12,13		(dummy bytes)	
ARPEGGIO (Trigger controll)			
14	B3~7	not use	(0,0,0,0,0)
	B0~2	Trigger Length	0~7=1(1 step)~8(all step)
15	B0~7	Trigger Pattern	"0"/"1":On/Off,B0~7:1st~8th
16	B6,7	not use	(*,*)
	B4,5	Voice Mode	0,2,3=Single,Layer,Vocoder
	B0~3	not use	(0,0,0,0)
17	B4~7	Scale Key	0=C
	B0~3	Scale Type	0=Equal Temp
18		(dummy byte)	
DELAY FX			
19	B7	Sync	0,1=Off,On
	B4~6	not use	(0,0,0)
	B0~3	Time Base	0~14=1/32~1/1 *T-1
20		Delay Time	0~127
21		Depth	0~127
22		Type	0~2=StereoDelay,CrossDelay, L/R Delay

MOD FX			
23		LFO Speed	0~127
24		Depth	0~127
25		Type	0~2=Cho/Flg,Ensemble,Phaser
EQ			
26		Hi Freq	0~29=1.00~18.0 [KHz] *T-10
27		Hi Gain	64+/-12=0+/-12
28		Low Freq	0~29=40~1000 [Hz] *T-11
29		Low Gain	64+/-12=0+/-12
ARPEGGIO			
30		tempo (MSB)	20~300
31		(LSB)	(SEQ tempo)
32	B7	Arpeggio On/Off	0,1=Off,On
	B6	Latch	0,1=Off,On
	B4,5	Target	0~2=Both,Timb1,Timb2
	B1	not use	(0)
	B0	Key Sync	0,1=Off,On
33	B0~3	Type	0~5=Up~Trigger *T-12
	B4~7	Range	0~3=1~4 Octave
34		gate time	0~100=0~100[%]
35		Resolution	0~5=1/24,1/16,1/12,1/8,1/6,1/4
36		Swing	0+/-100=0+/-100[%]
KBD Octave			
37		KBD Octave	-3~0~+3=3OctDown~normal~3OctUp

Synth parameter (Mode = Single,Layer)

38~145		TIMBRE1 DATA	Timbre parameter (TABLE 2)

Synth parameter (Mode = Layer)

146~253		TIMBRE2 DATA	Timbre parameter (TABLE 2)

Vocoder parameter (Mode = Vocoder)

38~141		VOCODER DATA	Vocoder parameter (TABLE 3)
142~253		(dummy bytes)	

TABLE 2 : SYNTH PARAMETER (1 TIMBRE)

+0		MIDI ch.	-1=GLB
+1	B6,7	Assign Mode	0,1,2=Mono,Poly,Unison
	B5	EG2 reset	0,1=Off,On
	B4	EG1 reset	0,1=Off,On
	B3	Trigger Mode	0,1=Single,Multi (use Mono/Unison Mode)

	B0~1	Key Priority	0=Last
+2		Unison Detune	0~99=0~99[cent] (use Unison Mode)
PITCH			
+3		Tune	64+/-50=0+/-50[cent]
+4		Bend Range	64+/-12=0+/-12[note]
+5		Transpose	64+/-24=0+/-24[note]
+6		Vibrato Int	64+/-63=0+/-63
OSC1			
+7		Wave	0~7=Saw~Audio In *T-2
+8		Waveform CTRL1	0~127
+9		Waveform CTRL2	0~127
+10		DWGS Wave	0~63=DWGS No. 1~64 (when OSC1 Wave is "DWGS")
+11		(dummy byte)	
OSC2			
+12	B6,7	not use	(0,0)
	B4,5	Mod Select	0~3=Off,Ring,Sync,RingSync
	B2,3	not use	(0,0)
	B0,1	Wave	0~2=Saw,Squ,Tri
+13		Semitone	64+/-24=0+/-24[note]
+14		Tune	64+/-63=0+/-63
PITCH (2)			
+15	B7	not use	(0)
	B0~6	Portamento Time	0~127
MIXER			
+16		OSC1 Level	0~127
+17		OSC2 Level	0~127
+18		Noise	0~127
FILTER			
+19		Type	0~3=24LPF,12LPF,12BPF,12HPF
+20		Cutoff	0~127
+21		Resonance	0~127
+22		EG1 Intensity	64+/-63=0+/-63
+23		Velocity Sense	64=0
+24		Keyboard Track	64+/-63=0+/-63
AMP			
+25		Level	0~127
+26		Panpot	0~64~127=L64~CNT~R63

+27	B7	not use	(0)
	B6	Amp SW	0=EG2
	B1~5	not use	(0,0,0,0,0)
	B0	Distortion	0,1=Off,On
+28		Velocity Sense	64=0
+29		Keyboard Track	64+/-63=0+/-63
EG1			
+30		Attck	0~127
+31		Decay	0~127
+32		Sustain	0~127
+33		Release	0~127
EG2			
+34		Attack	0~127
+35		Decay	0~127
+36		Sustain	0~127
+37		Release	0~127
LFO1			
+38	B6,7	not use	(0,0)
	B4,5	Key Sync	0~2=OFF,Timbre,Voice
	B2,3	not use	(0,0)
	B0,1	Wave	0~3=Saw,Squ,Tri,S/H
+39		Frequency	0~127
+40	B7	Tempo Sync	0,1=Off,On
	B5,6	not use	(0,0)
	B0~4	Sync Note	0~14=1/1~1/32 *T-5
LFO2			
+41	B6,7	not use	(0,0)
	B4,5	Key Sync	0~2=OFF,Timbre,Voice
	B2,3	not use	(0,0)
	B0,1	Wave	0~3=Saw,Squ(+),Sin,S/H
+42		Frequency	0~127
+43	B7	Tempo Sync	0,1=Off,On
	B5,6	not use	(0,0)
	B0~4	Sync Note	0~14=1/1~1/32 *T-5
PATCH			
+44	B4~7	Patch1 Destination	0~7=PITCH~LFO2FREQ *T-4
	B0~3	Patch1 Source	0~7=EG1~Mod(MIDI2) *T-3

+45		Patch1 Intensity	64+/-63=0+/-63
+46	B4~7	Patch2 Destination	0~7=PITCH~LFO2FREQ *T-4
	B0~3	Patch2 Source	0~7=EG1~Mod(MIDI2) *T-3
+47		Patch2 Intensity	64+/-63=0+/-63
+48	B4~7	Patch3 Destination	0~7=PITCH~LFO2FREQ *T-4
	B0~3	Patch3 Source	0~7=EG1~Mod(MIDI2) *T-3
+49		Patch3 Intensity	64+/-63=0+/-63
+50	B4~7	Patch4 Destination	0~7=PITCH~LFO2FREQ *T-4
	B0~3	Patch4 Source	0~7=EG1~Mod(MIDI2) *T-3
+51		Patch4 Intensity	64+/-63=0+/-63
+52~107		(dummy bytes)	

TABLE 3 : VOCODER PARAMETER

+0		MIDI ch.	-1=GLB
+1	B6,7	Assign Mode	0,1,2=Mono,Poly,Unison
	B5	EG2 reset	0,1=Off,On
	B4	EG1 reset	0=Off
	B3	Trigger Mode	0,1=Single,Multi (use Mono/Unison Mode)
	B0~1	Key Priority	0=Last
+2		Unison Detune	0~99=0~99[cent] (use Unison Mode)
PITCH			
+3		Tune	64+/-50=0+/-50[cent]
+4		Bend Range	64+/-12=0+/-12[note]
+5		Transpose	64+/-24=0+/-24[note]
+6		Vibrato Int	64+/-63=0+/-63
OSC			
+7		Wave	0~7=Saw~Audio In *T-2
+8		Waveform CTRL1	0~127
+9		Waveform CTRL2	0~127
+10		DWGS Wave	0~63=DWGS No. 1~64 (when OSC Wave is "DWGS")
+11		(dummy byte)	
AUDIO IN1			
+12	B1~7	not use	(0,0,0,0,0,0,0)
	B0	HPF Gate	0,1=Dis,Ena
+13		(dummy byte)	
PITCH (2)			

+14	B7	not use	(0)	
	B0~6	Portamento Time	0~127	
MIXER				
+15		OSC1 Level	0~127	
+16		Ext1 Level	0~127	
+17		Noise Level	0~127	
AUDIO IN1 (2)				
+18		HPF Level	0~127	
+19		Gate Sense	0~127	
+20		Threshold	0~127	
FILTER				
+21		Shift	0~4=0,+1,+2,−1,−2	
+22		Cutoff	64+/−63=0+/−63	
+23		Resonance	0~127	
+24		Mod Source	1~7=AEG~Mod(MIDI2)	∗T−13
+25		Intensity	64+/−63=0+/−63	
+26		E.F.Sense	0~126,127=0~126,Hold	
AMP				
+27		Level	0~127	
+28		Direct Level	0~127	
+29	B1~7	not use	(0,0,0,0,0,0,0)	
	B0	Distortion On/Off	0,1=Off,On	
+30		Vel.Sense	64=0	
+31		KeyTrack	64+/−63=0+/−63	
EG1				
+32		Attack	0	
+33		Decay	0	
+34		Sustain	127	
+35		Release	0	
EG2				
+36		Attack	0~127	
+37		Decay	0~127	
+38		Sustain	0~127	
+39		Release	0~127	
LFO1				
+40	B6,7	not use	(0,0)	
	B4,5	Key Sync	0~2=OFF,Timbre,Voice	
	B2,3	not use	(0,0)	

	B0,1	Wave	0~3=Saw,Squ,Tri,S/H
+41		Frequency	0~127
+42	B7	Tempo Sync	0,1=Off,On
	B5,6	not use	(0,0)
	B0~4	Sync Note	0~14=1/1~1/32 *T-5
LFO2			
+43	B6,7	not use	(0,0)
	B4,5	Key Sync	0~2=OFF,Timbre,Voice
	B2,3	not use	(0,0)
	B0,1	Wave	0~3=Saw,Squ(+),Sin,S/H
+44		Frequency	0~127
+45	B7	Tempo Sync	0,1=Off,On
	B5,6	not use	(0,0)
	B0~4	Sync Note	0~14=1/1~1/32 *T-5
CH LEVEL [0] = [1] = BAND[1] LEVEL			
CH LEVEL [2] = [3] = BAND[2] LEVEL			
CH LEVEL [4] = [5] = BAND[3] LEVEL			
CH LEVEL [6] = [7] = BAND[4] LEVEL			
CH LEVEL [8] = [9] = BAND[5] LEVEL			
CH LEVEL [10]=[11] = BAND[6] LEVEL			
CH LEVEL [12]=[13] = BAND[7] LEVEL			
CH LEVEL [14]=[15] = BAND[8] LEVEL			
+46~61		Level [0~15]	0~127
CH PAN [0] = [1] = BAND[1] PAN			
CH PAN [2] = [3] = BAND[2] PAN			
CH PAN [4] = [5] = BAND[3] PAN			
CH PAN [6] = [7] = BAND[4] PAN			
CH PAN [8] = [9] = BAND[5] PAN			
CH PAN [10]=[11] = BAND[6] PAN			
CH PAN [12]=[13] = BAND[7] PAN			
CH PAN [14]=[15] = BAND[8] PAN			
+62~77		Pan [0~15]	1~64~127=L63~CNT~R63
E.F Hold Level [0]~[15]=CH[1]~[16]			
			(use when E.F Sense is "Hold")
+78~141		[0]~[15]	0~7FFFFF00h (TABLE 4)

TABLE 4 : E.F Hold Level

+0	HIGH	
+1	MID HIGH	
+2	MID LOW	
+3	LOW	(00h)

TABLE 5 : ALL PROGRAM PARAMETER

000~ 253	Prog A01	(TABLE 1)
254~ 507	Prog A02	(TABLE 1)
508~ 761	Prog A03	(TABLE 1)

32004~32257	Prog H15		(TABLE 1)
32258~32511	Prog H16		(TABLE 1)

TABLE 6 : GLOBAL PARAMETER

0		Master Tune	0+/-100=430~440~450
1		Transpose	0+/-12
2	B1~7	not use	(0,0,0,0,0,0,0)
	B0	Position	0,1=PostKBD,PreTG
3		Vel.Value	1~127=1~127 *T-7
4		Vel.Curve	0~7,8=1~8,Const *T-7
5	B3~7	not use	(0,0,0,0,0)
	B2	Local Ctrl	0,1=Off,On
	B1	not use	(0)
	B0	Memory Protect	0,1=Off,On
6,7		(dummy bytes)	
8	B2~7	not use	(0,0,0,0,0,0)
	B0,1	Clock	0~2=Internal,External,Auto
9	B4~7	not use	(0,0,0,0)
	B0~3	MIDI Ch.	0~15=1~16
10		Sync Ctrl No.	-1,0~95=OFF,CC#00~95
11		TimbSel Ctrl No.	-1,0~95=OFF,CC#00~95
12,13		(dummy bytes)	
14		MIDI1 Ctrl No.	0=P.Bend
15		MIDI2 Ctrl No.	3=CC#01
16	B7	SystemEx Filter	0,1=Dis,Ena
	B2~6	not use	(0,0,0,0,0)
	B0,1	Note Receive	0=All
17	B7	not use	(0)
	B6	P.Bend Filter	0,1=Dis,Ena
	B3~5	not use	(0,0,0)
	B2	CtrlChg Filter	0,1=Dis,Ena
	B1	not use	(0)
	B0	ProgChg Filter	0,1=Dis,Ena
Knob & Switch Ctrl Change No. Map			
18~59		[0]~[41] Ctrl Change No.	-1,0~95=OFF,CC#00~95 *T-9
User Scale Parameter (not use)			
60~71		User Scale[C]~[B]	0+/-100=+/-100cent

MIDI In Program Change Map			
72~199	P.Chg[000]~[127] Internal Prog No.	[000]=00(A11)~[127]=7F(b88)	*T-8

TABLE 7 : ALL PARAMETER

000~32511	ALL PROGRAM DATA	Prog A01~H16	(TABLE 5)
32512~32711	GLOBAL DATA		(TABLE 6)

*T-1 :

0: 1/32	5: 1/8	10: 3/8
1: 1/24	6: 1/6	11: 1/2
2: 1/16	7: 3/16	12: 2/3
3: 1/12	8: 1/4	13: 3/4
4: 3/32	9: 1/3	14: 1/1

*T-2 :

0: Saw	4: Vox Wave
1: Pulse	5: DWGS
2: Tri	6: Noise
3: Sin(Cross)	7: Audio In

*T-3 :

0: EG1	4: VELOCITY
1: EG2	5: KBD TRACK
2: LFO1	6: P.Bend(MIDI1)
3: LFO2	7: Mod(MIDI2)

*T-4 :

0: PITCH	4: CUTOFF
1: OSC2 PITCH	5: AMP
2: OSC1 CNTL1	6: PAN
3: NOISE LEVEL	7: LFO2 FREQ

*T-5 :

0: 1/1	5: 1/3	10: 3/32
1: 3/4	6: 1/4	11: 1/12
2: 2/3	7: 3/16	12: 1/16
3: 1/2	8: 1/6	13: 1/24
4: 3/8	9: 1/8	14: 1/32

*T-6 :

0: 1/48	5: 3/32	10: 1/3	15: 1/1
1: 1/32	6: 1/8	11: 3/8	
2: 1/24	7: 1/6	12: 1/2	
3: 1/16	8: 3/16	13: 2/3	
4: 1/12	9: 1/4	14: 3/4	

*T-7 :

display	Vel.Value	Vel.Curve
Crv	***	2
1	1	8
2	2	8
''	''	''
127	127	8

*T-8 :

P.Chg[000]	00	(A11)
P.Chg[001]	01	(A12)
P.Chg[002]	02	(A13)
P.Chg[003]	03	(A14)
P.Chg[004]	04	(A15)
''	''	''
P.Chg[124]	7C	(b85)
P.Chg[125]	7D	(b86)
P.Chg[126]	7E	(b87)
P.Chg[127]	7F	(b88)

*T-9 :

[+00]: Portamento	[+20]: EG1 Attack	[+40]: Delay Feedback
[+01]: OSC1 Wave Sw	[+21]: EG1 Decay	[+41]: (dummy byte)
[+02]: OSC1 Ctrl1	[+22]: EG1 Sustain	
[+03]; OSC1 Ctrl2	[+23]: EG1 Release	
[+04]: OSC2 Wave Sw	[+24]: EG2 Attack	
[+05]: OSC2 Mod Sw	[+25]: EG2 Decay	
[+06]: OSC2 Semitone	[+26]: EG2 Sustain	
[+07]: OSC2 Tune	[+27]: EG2 Release	
[+08]: OSC1 Level	[+28]: LFO1 Wave	
[+09]: OSC2 Level	[+29]: LFO1 Freq	
[+10]: Noise Level	[+30]: LFO2 Wave	
[+11]: Filter Type Sw	[+31]: LFO2 Freq	
[+12]: Cutoff	[+32]: PATCH1 Int	
[+13]: Resonance	[+33]: PATCH2 Int	
[+14]: EG1 Int	[+34]: PATCH3 Int	
[+15]: FLT KbdTrack	[+35]: PATCH4 Int	
[+16]: AMP Level	[+36]: SEQ Off/On Sw	
[+17]: Panpot	[+37]: Mod Speed	
[+18]: EG2/Gate Sw	[+38]: Mod Depth	
[+19]: Distortion	[+39]: Delay Time	

*T-10 :

0: 1.00	10: 3.50	20: 6.00
1: 1.25	11: 3.75	21: 7.00
2: 1.50	12: 4.00	22: 8.00
3: 1.75	13: 4.25	23: 9.00
4: 2.00	14: 4.50	24: 10.0
5: 2.25	15: 4.75	25: 11.0
6: 2.50	16: 5.00	26: 12.0
7: 2.75	17: 5.25	27: 14.0
8: 3.00	18: 5.50	28: 16.0
9: 3.25	19: 5.75	29: 18.0

*T-11 :

0: 40	10: 220	20: 420
1: 50	11: 240	21: 440
2: 60	12: 260	22: 460
3: 80	13: 280	23: 480
4: 100	14: 300	24: 500
5: 120	15: 320	25: 600
6: 140	16: 340	26: 700
7: 160	17: 360	27: 800
8: 180	18: 380	28: 900
9: 200	19: 400	29: 1000

*T-12 :

0: Up
1: Down
2: Alt1
3: Alt2
4: Random
5: Trigger

*T-13 :

0: ---	4: VELOCITY
1: AEG	5: KBD TRACK
2: LFO1	6: P.Bend(MIDI1)
3: LFO2	7: Mod(MIDI2)

MEMO