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1. TRANSMITTED DATA

1-1 SYSTEM REALTIME MESSAGE

+-----+-----+-----+-----+-----+				
	Status[H]		Description	(Everytime transmitted)
	FE		Active Sensing	
+-----+-----+-----+-----+-----+				

1-2 SYSTEM EXCLUSIVE

1-2-1 UNIVERSAL SYSTEM EXCLUSIVE MESSAGE (NON REALTIME)

* DEVICE INQUIRY REPLY (Transmits when received a INQUIRY MESSAGE REQUEST)
 [F0,7E,0g,06,02,42,3B,00,20,00,nn,00,vv,00,F7] 3rd byte g : Global Channel
 6th byte 42 : KORG ID
 7th byte 3B : TRINITY series ID
 9th byte 20 : TR-Rack
 (01: Trinity, 09:Tri plus)
 (12: Tri pro, 1B:Tri proX)
 11th byte nn : System No. (01..)
 13th byte vv : System Version (01..)

1-2-2 KORG SYSTEM EXCLUSIVE See "3. MIDI SYSTEM EXCLUSIVE FORMAT"

* There are 14 transmit Messages, and their format is as below.
 [F0,42,3g,3B,[Func],[Data]....,F7] 3rd byte g : Global Channel
 5th byte [Func] : Function Code (See below Table)

Transmits Message List		"Func" : Function Code		
Func	Description	R	D	E
40	CURRENT PROGRAM PARAMETER DUMP	o		
4C	PROGRAM PARAMETER DUMP	o	o	
49	CURRENT COMBINATION PARAMETER DUMP	o		
4D	COMBINATION PARAMETER DUMP	o	o	
48	MULTI DATA DUMP	o	o	
51	GLOBAL DATA DUMP	o	o	
52	DRUMKIT DATA DUMP	o	o	
50	ALL DATA (GLOBAL, DRUM, COMB1, PROG, MLT) DUMP	o	o	
42	MODE DATA	o		
26	RECEIVED MESSAGE FORMAT ERROR	o		o
23	DATA LOAD COMPLETED (ACK)			o
24	DATA LOAD ERROR (NAK)			o
21	WRITE COMPLETED			o
22	WRITE ERROR			o

Transmitted when

R : Request Message is received
 D : Data dump by SW (Don't respond to Exclusive ENA,DIS)
 E : EX.Message received

Some Request Message is not received in some mode. See 2-2-3.

* When transmits series of EX Messages to TRINITY, please wait for message[DATA LOAD COMPLETED] or [WRITE COMPLETED] before sending a next message.

2.RECOGNIZED RECEIVE DATA

2-1 RECOGNIZED RECEIVE MESSAGES [H]:Hex, [D]:Decimal

Status	Second	Third	Description	ENA
[Hex]	[H] [D]	[H] [D]	(Use ...)	
CHANNEL MESSAGES				
8n	kk (kk)	xx (xx)	Note Off	A
9n	kk (kk)	00 (00)	Note Off	A
9n	kk (kk)	vv (vv)	Note On vv=1..127	A
An	kk (kk)	vv (vv)	Poly Key Pressure (for Alternate Mod)	T
Bn	00 (00)	mm (mm)	Bank Select(MSB) (for Prog/Combi Change)	*1 P
Bn	01 (01)	vv (vv)	Modulation1 Depth (for OSC LFO mod)	C
Bn	02 (02)	vv (vv)	Modulation2 Depth (for Filter LFO mod)	C
Bn	04 (04)	vv (vv)	Foot Pedal (for Alternate Mod)	C
Bn	06 (06)	vv (vv)	Data Entry (MSB) (for RPC Edit)	C
Bn	07 (07)	vv (vv)	Volume	C
Bn	0A (10)	vv (vv)	Panpot	C
Bn	0B (11)	vv (vv)	Expression	C
Bn	0C (12)	vv (vv)	Effect Control 1 (as FX Dyn Mod Src = MIDI Cnt1)	C
Bn	0D (13)	vv (vv)	Effect Control 2 (as = MIDI Cnt2)	C
Bn	10 (16)	vv (vv)	Multi Purpose Cntl1 (as Ribbon Controller(X))	C
Bn	11 (17)	vv (vv)	Multi Purpose Cntl2 (as (Z))	C
Bn	12 (18)	vv (vv)	Multi Purpose Cntl3 (as Value Slider)	C
Bn	13 (19)	vv (vv)	Multi Purpose Cntl4 (for AM & FX mod)	C
Bn	20 (32)	bb (bb)	Bank Select(LSB) (for Prog / Combi Change)	*1 P
Bn	26 (38)	vv (vv)	Data Entry (LSB) (for RPC Edit)	C
Bn	40 (64)	~3F/40~ (~63/64~)	Hold1 Off/On	C
Bn	48 (72)	vv (vv)	Release Time (as Perf Edit Release Time)	*2 C
Bn	49 (73)	vv (vv)	Attack Time (as Attack Time)	*2 C
Bn	4A (74)	vv (vv)	Brightness (as Cutoff Freq)	*2 C
Bn	50 (80)	vv (vv)	Multi Purpose Cntl5 (as Panel SW 1)	C
Bn	51 (81)	vv (vv)	Multi Purpose Cntl6 (as 2)	C
Bn	52 (82)	vv (vv)	Multi Purpose Cntl7 (as Pedal SW)	C
Bn	53 (83)	vv (vv)	Multi Purpose Cntl8 (for AM & FX mod)	C

	Bn		5B (91)		vv	(vv)		Effect1 Level	(as Send 2 Level)		C		
	Bg		5C (92)		00/01~	(00/01~)		Effect2 Level	(for All Insert FX Off/On)		C		
	Bn		5D (93)		vv	(vv)		Effect3 Level	(as Send 1 Level)		C		
	Bg		5E (94)		00/01~	(00/01~)		Effect4 Level	(for Master FX (Mod) Off/On)		C		
	Bg		5F (95)		00/01~	(00/01~)		Effect5 Level	(for (R/D) Off/On)		C		
	Bn		60 (96)		00	(00)		Data Increment	(for RPC Edit)		C		
	Bn		61 (97)		00	(00)		Data Decrement	(for)		C		
	Bn		64 (100)		0r	(0r)		RPN Param No. (LSB)	(for RPN Select)		*3	C	
	Bn		65 (101)		00	(00)		RPN Param No. (MSB)	(for)		*3	C	
	Bn		78 (120)		00	(00)		All Sound Off			C		
	Bn		79 (121)		00	(00)		Reset All Controllers			C		
	Bn		7B (123)		00	(00)		All Notes Off			A		
	Bn		7C (124)		00	(00)		Omni Mode Off	(as All Notes Off)		A		
	Bn		7D (125)		00	(00)		Omni Mode On	(as)		A		
	Bn		7E (126)		0~10	(0~16)		Mono Mode On	(as)		A		
	Bn		7F (127)		00	(00)		Poly mode On	(as)		A		
	Cn		pp (pp)		--	--		Program Change	(for Prog/Combi Change)		*1,4	P	
	Dn		vv (vv)		--	--		Channel Pressure	(as After Touch)		T		
	En		bb (bb)		bb	(bb)		Bender Change			C		
+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+													
	SYSTEM REALTIME MESSAGES												
	F8		--		--			Timing Clock	(Alternate Mod, Eff Dyna Mod)		A		
	FE		--		--			Active Sensing	(MIDI Connect check)		A		
+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+													

n : MIDI Channel No. (0..15) Usually Global Channel.
When in Combi/Multi mode, each timbre's/track's channel.
g : Always Global Channel No. (0..15)

x : Random

ENA = A : Always Enabled
C : Enabled when Control Filter is ENA
P : Program Filter is ENA
T : Aftertouch Filter is ENA

*1 : MIDI In [Hex] Program/Combination
mm,bb,pp = 00,00,00..7F : BankA 00..127
00,01,00..7F : B 00..127
00,02,00..7F : C 00..127
00,03,00..7F : D 00..127

```
*2 : vv < 40 : Fast or Dark
      = 40 : Default
      > 40 : Slow or Bright
```

```
*3 : r = 0 : Pitch Bend Sens ( Only in MULTI Mode ).
      = 1 : Detune           (           ). When received Ch = Global Ch,
      = 2 : Transpose        (           ).           work as Master Tune ( Other mode ).
```

```
*4 : At the end of process ( While Exclusive Filter is set to ENA ),
    Transmits Exclusive Message[DATA LOAD COMPLETED]or[DATA LOAD ERROR].
```

2-2 SYSTEM EXCLUSIVE

2-2-1 UNIVERSAL SYSTEM EXCLUSIVE MESSAGE (NON REALTIME)

```
* DEVICE INQUIRY ( When received this message, transmits INQUIRY MESSAGE REPLY )
  [ F0,7E,nn,06,01,F7 ]           3rd byte  nn : Channel = 0..F : Global Channel
                                     = 7F      : Any Channel
```

2-2-2 UNIVERSAL SYSTEM EXCLUSIVE MESSAGES (REALTIME)

```
* MASTER VOLUME
  [ F0,7F,0g,04,01,vv,mm,F7 ]
```

3rd byte	g	: Global Channel
6th byte	vv	: Value (LSB)
7th byte	mm	: (MSB)

```

* MASTER BALANCE
[ F0,7F,0g,04,02,vv,mm,F7 ]
3rd byte   g : Global Channel
6th byte   vv : Value (LSB)
7th byte   mm : (MSB)
mm,vv = 00,00:L, 40,00:C, 7F,7F:R

```

2-2-3 KORG SYSTEM EXCLUSIVE See "3.MIDI SYSTEM EXCLUSIVE FORMAT"

There are 22 received messages and their format is as below.

[F0,42,3g,3B,[Func],[Data]....,F7] 3rd byte g : Global Channel
5th byte [Func] : Function Code (See below Table)

Received Message List		"Func" : Function Code				
Func	Description	G	C	P	A	No.

12	MODE DATA DUMP REQUEST	o	o	o	o	42
10	CURRENT PROGRAM PARAMETER DUMP REQUEST	o	o	o	o	40
1C	PROGRAM PARAMETER DUMP REQUEST	A	o	o	o	4C
19	CURRENT COMBINATION PARAMETER DUMP REQUEST	o	o	o	o	49
1D	COMBINATION PARAMETER DUMP REQUEST	A	o	o	o	4D
18	MULTI DATA DUMP REQUEST	A	o	o	o	48
0E	GLOBAL DATA DUMP REQUEST	A	o	o	o	51
0D	DRUMKIT DATA DUMP REQUEST	A	o	o	o	52
0F	ALL DATA (GLOBL, DRUM, COMBL, PROG, MULTI) DUMP REQ	A	o	o	o	50
11	PROGRAM WRITE REQUEST			o		21
1A	COMBINATION WRITE REQUEST		o			21
4E	MODE CHANGE	o	o	o	o	23
41	PARAMETER CHANGE		o	o		23
53	DRUM KIT PARAMETER CHANGE	o				23
40	CURRENT PROGRAM PARAMETER DUMP			o		23
4C	PROGRAM PARAMETER DUMP	A	o	o	o	23
49	CURRENT COMBINATION PARAMETER DUMP		o			23
4D	COMBINATION PARAMETER DUMP	A	o	o	o	23
48	MULTI DATA DUMP	A	o	o	o	23
51	GLOBAL DATA DUMP	A	o	o	o	23
52	DRUMKIT DATA DUMP	A	o	o	o	23
50	ALL DATA (GLOBAL, DRUMS, COMBI, PROG, MULTI) DUMP	A	o	o	o	23

Received when in

G : GLOBAL mode. (A ... Does not respond to Exclusive ENA,DIS in DATA DUMP page)

C : COMBI PLAY, COMBI EDIT mode.

P : PROG PLAY, PROG EDIT mode.

A : Any other mode.

No. : MIDI Out Function No.

(transmitted when the message has been received)

3.KORG SYSTEM EXCLUSIVE FORMAT

3-1 Structure of TRINITY series SYSTEM EXCLUSIVE MESSAGES

```

+---+-----+
| 1st Byte = F0H : Exclusive Status      |---+
| 2nd Byte = 42H : KORG ID                | EX. Header
| 3rd Byte = 3qH : Format ID              | ( q:Global Ch )
+---+-----+

```

	4th Byte = 3BH : TRINITY series ID	--+	
	5th Byte = ffH : Function Code (See Func Code List)		
	6th Byte = ddH : Data (Some messages doesn't have data)		
	LastByte = F7H : End of Exclusive.		
+--		--+	

When transmits series of EX Messages to SG series, please wait for messages [DATA LOAD COMPLETED] or [WRITE COMPLETED] before sending a next message.

3-2 Each Exclusive message's format

R: Receive, T: Transmit
 xx : Random (The value would be 00 for safe)

- (1) MODE DATA DUMP REQUEST R
 [F0,42,3g,3B,12,F7]
 Receives this message, and transmits Func=42 message.

- (2) CURRENT PROGRAM PARAMETER DUMP REQUEST R
 [F0,42,3g,3B,10,xx,F7]
 Receives this message, and transmits Func=40 or Func=24 message.

- (3) PROGRAM PARAMETER (In Memory) DUMP REQUEST R
 [F0,42,3g,3B,1C,kb,pp,xx,F7]
 k : Kind = 0 : All Programs
 1 : 1 Bank Programs (Use b)
 2 : 1 Program (Use b & pp)
 b : Bank = 0..3 : A..D
 pp: Prog = 00..7F : 00..127
 Receives this message, and transmits Func=4C message.

- (4) CURRENT COMBINATION PARAMETER DUMP REQUEST R
 [F0,42,3g,3B,19,xx,F7]
 Receives this message, and transmits Func=49 or Func=24 message.

- (5) COMBINATION PARAMETER (In Memory) DUMP REQUEST R
 [F0,42,3g,3B,1D,kb,cc,xx,F7]
 k : Kind = 0 : All Combinations
 1 : 1 Bank Combinations (Use b)
 2 : 1 Combination (Use b & cc)
 b : Bank = 0..3 : A..D
 cc: Comb = 00..7F : 00..127

Receives this message, and transmits Func=4D message.

(6) MULTI DATA (In Memory) DUMP REQUEST R
[F0,42,3g,3B,18,xx,F7]
Receives this message, and transmits Func=48 or Func=24 message.

(7) GLOBAL DATA DUMP REQUEST R
[F0,42,3g,3B,0E,xx,F7]
Receives this message, and transmits Func=51 message.

(8) DRUMKIT DATA DUMP REQUEST R
[F0,42,3g,3B,0D,kd,xx,F7]
k : Kind = 0 : All Drumkits
 1 : 1 Drumkit (use d)
d : Drum = 0..17 : 00..23
Receives this message, and transmits Func=52 message.

(9) ALL DATA(GLOB,DRUMS,COMBI,PROG,MULTI) DUMP REQUEST R
[F0,42,3g,3B,0F,xx,F7]
Receives this message, and transmits Func=50 or Func=24 message.

(10) PROGRAM WRITE REQUEST R
[F0,42,3g,3B,11,0b,pp,F7]
b : Dest Prog Bank = 0..3 : A..D
pp: Dest Prog No. = 00..7F : 00..127
Receives this message, writes the program to dest No. and transmits Func=21 message.

(11) COMBINATION WRITE REQUEST R
[F0,42,3g,3B,1A,0b,cc,F7]
b : Dest Comb Bank = 0..3 : A..D
cc: Dest Comb No. = 00..7F : 00..127
Receives this message, writes the Combination to dest No. and transmits Funk = 21 message.

(12) MODE CHANGE
[F0,42,3g,3B,4E,0m,xx,F7]
m : Mode = 0:Combination, 1:Combi Edit, 2:Program,
 3:Prog Edit, 4:Multi, 5:Global
Receives this message, change a mode and transmits Func=23 message.

(13) PARAMETER CHANGE R
[F0,42,3g,3B,41,0m,pp,00,qq,00,vv,ww,F7]
m : Mode (Only use for mode check)

= 0:Combination, 1:Combi Edit, 2:Program,
3:Prog Edit, 4:Multi, 5:Global

pp: Parameter ID

See TABLE1,2,3,4,5

qq: Parameter SUB ID

See TABLE1,2,3,4,5

vv: Value (MSB bit 7..13)

*1

ww: Value (LSB bit 0..6)

*1

Receives this message, check the mode, select a parameter, change a value
and transmits Func= 23 message.

(14) DRUMKIT PARAMETER CHANGE

R

[F0,42,3g,3B,53,kk,ss,pp,qq,vv,ww,F7]

kk: Drumkit = 00..17 : Drumkit00..23

ss: Key No. = 15..6C : A0..C8

pp: Parameter No.(MSB)

See TABLE6

qq: Parameter No (LSB)

See TABLE6

vv: Value (MSB bit7..13)

*1

ww: Value (LSB bit0..6)

*1

Receives this message, select a Drumkit,Key,Parameter, change a value
and transmits Func= 23 message.

(15) CURRENT PROGRAM PARAMETER DUMP

R,T

[F0,42,3g,3B,40,00,dd, ... ,F7]

dd: [Param No.00]....[Param No.432]

See TABLE1

433Bytes = 7x61+6 -> 8x61+(1+6) = 495Bytes

*2

Receives this message & data, and transmits Func=23 or Func=24 message.

Receives Func=10 message, and transmits this message & data.

(16) PROGRAM PARAMETER (In Memory) DUMP

R,T

[F0,42,3g,3B,4C,01,kb,pp,xx,dd,....,F7]

k : Kind = 0 : All Programs

1 : 1 Bank Programs (Use b)

2 : 1 Program (Use b & pp)

b : Bank = 0..3 : A..D

pp : Prog = 00..7F : 00..127

dd : Data

See TABLE1

*ALL [A00(433Bytes)], .. , [D127(433Bytes)]

433x512Bytes = 7x31670+6 -> 8x31670+(1+6) = 253367Bytes

*2

*1BANK [A00(433Bytes)], .. , [A127(433Bytes)]

433x128Bytes = 7x7917+5 -> 8x7917+(1+5) = 63342Bytes

*2

*1PROG 433Bytes = 7x61+6 -> 8x61+(1+6) = 495Bytes

*2

Receives this message & data, and transmits Func=23 or Funk=24 message.

Receives Funk=1C message, and transmits this message & data.

Transmits this message & data when DATA DUMP is executed.

- (17) CURRENT COMBINATION PARAMETER DUMP R,T
[F0,42,3g,3B,49,xx,dd, ... ,F7]
dd: [Param No.00]....[Param No.387] See TABLE2
388Bytes = 7x55+3 -> 8x55+(1+3) = 444Bytes *2
Receives this message & data, and transmits Func=23 or Funk=24 message.
Receives Funk=19 message, and transmits this message & data.
- (18) COMBINATION PARAMETER (In Memory) DUMP R,T
[F0,42,3g,3B,4D,01,kb,cc,xx,dd,.....,F7]
k : Kind = 0 : All Combinations
1 : 1 Bank Combinations (Use b)
2 : 1 Combination (Use b & cc)
b : Bank = 0..3 : A..D
cc: Comb = 00..7F : 00..127
dd: Data See TABLE2
*ALL [A00(388Bytes)], .. , [D127(388Bytes)]
388x512Bytes = 7x28379+3 -> 8x28379+(1+3) = 227036Bytes *2
*1BANK [A00(388Bytes)], .. , [A127(388Bytes)]
388x128Bytes = 7x7094+6 -> 8x7094+(1+6) = 56759Bytes *2
*1COMBI 388Bytes = 7x55+3 -> 8x55+(1+3) = 444Bytes *2
Receives this message & data, and transmits Func=23 or Func=24 message.
Receives Func=1D message, and transmits this message & data.
Transmits this message & data when DATA DUMP is executed.
- (19) MULTI DATA (In Memory) DUMP R,T
Use TRINITY's Sequencer's song0 area.
[F0,42,3g,3B,48,xx,00,00,00,00,dd, ... ,F7]
dd: [Param No.00]....[Param No.4001] See TABLE7
4002Bytes = 7x571+5 -> 8x571+(1+5) = 4574Bytes *2
Receives this message & data, and transmits Func=23 or Func=24 message.
Receives Func=18 message, and transmits this message & data.
Transmits this message & data when DATA DUMP is executed.
- (20) GLOBAL DATA DUMP R,T
[F0,42,3g,3B,51,xx,dd, ... ,F7]
dd: [Global Data (1172Bytes)] See TABLE3
1172Bytes = 7x167+3 -> 8x167+(1+3) = 1340Bytes *2
Receives this message & data, and transmits Func=23 or Func=24 message.
Receives Func=0E message, and transmits this message & data.
Transmits this message & data when DATA DUMP is executed.

(21) DRUMKIT DATA DUMP R,T

```

[ F0,42,3g,3B,52,01,kd,xx,dd, ... ,F7 ]
k(bit6): Kind = 0: All Drumkits
          1:1 Drumkit          ( Use d )
d : Drumkit No.= 0..17 : Drumkit 00..23
dd: Data
    *ALL DRUM [DRUM0(1426Bytes)], .. , [DRUM23(1426Bytes) ]
        1426x24Bytes = 7x4889+1 -> 8x4889+(1+1) = 39114Bytes *2
    *1DRUMKIT 1426Bytes = 7x203+5 -> 8x203+(1+5) = 1630Bytes *2

```

Receives this message & data, and transmits Func=23 or Func=24 message.
Receives Func=0D message, and transmits this message & data.
Transmits this message & data when DATA DUMP is executed.

(22) ALL DATA(GLOBAL,DRUMS,COMBI,PROG,MULTI) DUMP R,T

```

[ F0,42,3g,3B,50,01,xx,dd, ... ,F7 ]
dd: Data
    [Global Data(1172Bytes)], See TABLE3
    [Drums Data(1426x24Bytes)], See TABLE6
    [All Combi Param Data(388x512Bytes)], See TABLE2
    [All Prog Param Data(433x512Bytes)], See TABLE1
    [ ( Reserved ) (84Bytes)],
    [Multi Data(3918Bytes)] See TABLE7
    1172+34224+198656+221696+84+3918Bytes =7x65678+4
    -> 8x65678+(1+4) = 525429Bytes *2

```

Receives this message & data, and transmits Func=23 or Func=24 message.
Receives Func=0F message, and transmits this message & data.
Transmits this message & data when DATA DUMP is executed.

(23) MODE DATA T

```

[ F0,42,3g,3B,42,0m.00,s2,0d,xx,F7 ]
m : Mode = 0:Combi, 1:CombEdit, 2:Prog, 3:ProgEdit, 8 Global
s :(bit6)= 0: System Clock is Internal
          = 1: Word Clock
d :(bit0)= 0: Prog Mem is not protected, =1 : protected
          (bit1)= 0: Combi =1 :
          (bit2)= 0: Multi =1 :

```

Receives Func=12 message, and transmits this message & data.

(24) RECEIVED MESSAGE FORMAT ERROR T

```

[ F0,42,3g,3B,26,cc,F7 ]
cc: Error code = 0 : Received Data Length is wrong

```

```
40 : Another type error
```

(25) DATA LOAD COMPLETED (ACK) T

Transmits this message when DATA LOAD, PROCESSING have been completed.

(26) DATA LOAD ERROR (NAK) T

```
cc: Error code = 0 : Dest Memory is protected
```

```
1 : Dest Bank/Prog/Param is not exist
```

2 : The mode is wrong

```
40 : Another type error
```

Transmits this message when DATA LOAD, PROCESSING have not been completed (ex. protected).

(27) WRITE COMPLETED T

Transmits this message when DATA WRITE MIDI has been completed.

(28) WRITE ERROR T

```
cc: Error code = 0 : Dest Memory is protected
```

```
1 : Dest Bank/Prog is not exist
```

2 : The mode is wrong

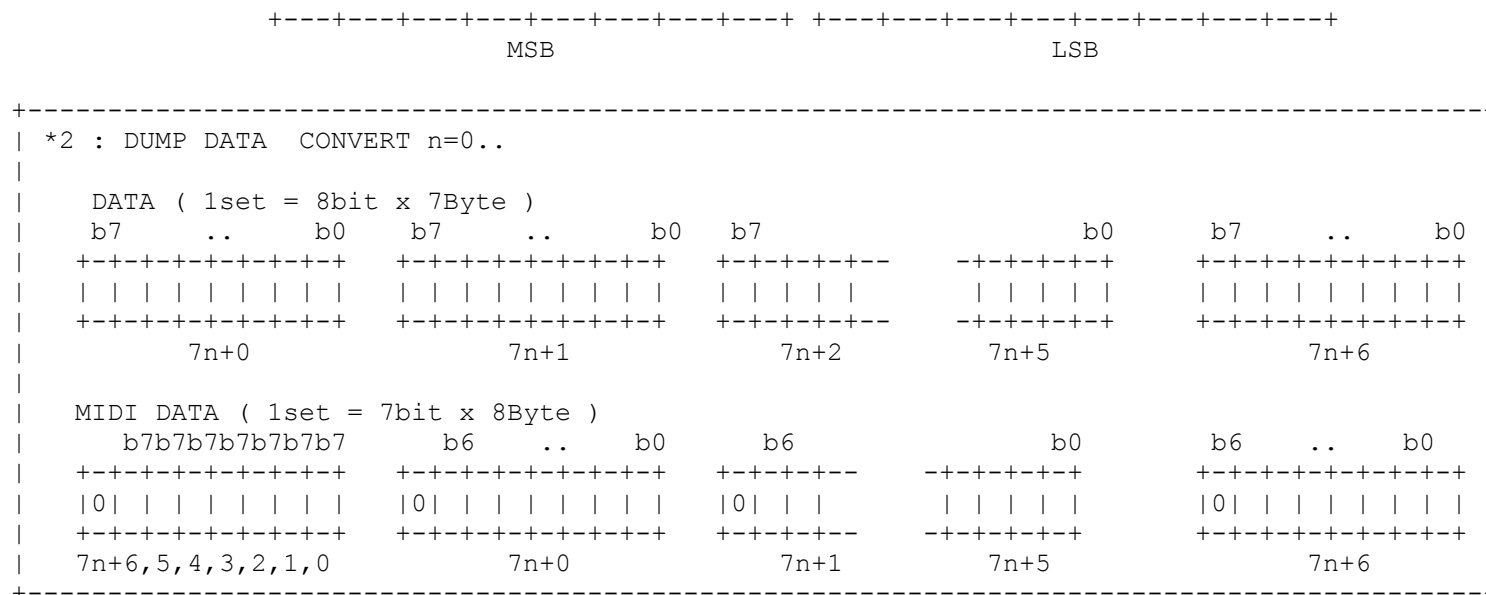
```
40 : Another type error
```

Transmits this message when DATA WRITE MIDI has not been completed.

*1 : VALUE DATA FORMAT (Use at PARAMETER CHANGE, DRUM KIT PARAMETER CHANGE)

Bit15..13 of Value Data is the Sign Flag, and each bit has the same value

	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255	256	257	258	259	260	261	262	263	264	265	266	267	268	269	270	271	272	273	274	275	276	277	278	279	280	281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	300	301	302	303	304	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319	320	321	322	323	324	325	326	327	328	329	330	331	332	333	334	335	336	337	338	339	340	341	342	343	344	345	346	347	348	349	350	351	352	353	354	355	356	357	358	359	360	361	362	363	364	365	366	367	368	369	370	371	372	373	374	375	376	377	378	379	380	381	382	383	384	385	386	387	388	389	390	391	392	393	394	395	396	397	398	399	400	401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	417	418	419	420	421	422	423	424	425	426	427	428	429	430	431	432	433	434	435	436	437	438	439	440	441	442	443	444	445	446	447	448	449	450	451	452	453	454	455	456	457	458	459	460	461	462	463	464	46
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4 . TABLES

[TABLE 1] PROGRAM PARAMETERS

1997.09.29

No. : No. in the PROGRAM DUMP DATA.

PARA No. : Parameter ID & SUB ID [Hex] for PARAMETER CHANGE.

Left side of ', ' is Parameter ID, and right side is SUB ID.

\$: While Assign mode is Drum, these parameters are ignored.

: These parameters are ignored in Combination,Multi.

No. (bit)	PARAMETER	DATA (Hex) : VALUE	DESCRIPTION	PARA No.
00	PROGRAM NAME (Head)			
	:	20..7F : ' '.. '<-'		
	:			----
	:	[ASCII CODE]		
15	PROGRAM NAME (Tail)			
CATEGORY				

+-----+-----+-----+-----+-----+-----+-----+						
	b0..3	CATEGORY		0..F : 1..16	(Ex. for Instruments) *1	00,00
	16	b4..7	(Reserved)			
+-----+-----+-----+-----+-----+-----+-----+						
	OSCILLATOR					
+-----+-----+-----+-----+-----+-----+-----+						
	b0,1	OSCILLATOR MODE		0:SINGLE,1:DOUBLE,2:DRUM		00,02
+-----+-----+-----+-----+-----+-----+-----+						
	bit2	LEGATO SW	\$	0:OFF, 1:ON	Available when MONO	00,04
+-----+-----+-----+-----+-----+-----+-----+						
	bit3	KEY ASSIGN		0:POLY, 1:MONO		00,03
	17	bit4	HOLD		0:OFF, 1:ON	00,07
+-----+-----+-----+-----+-----+-----+-----+						
	b5,6	KEY PRIORITY		0:LOW, 1:HIGH, 2:LAST	Available when MONO	00,05
+-----+-----+-----+-----+-----+-----+-----+						
	bit7	POLY ASSIGN MODE		0:NORMAL, 1:PIANO	Available when POLY *2	00,06
+-----+-----+-----+-----+-----+-----+-----+						
	18	BOTTOM VEL OF OSC2 \$		01..7F : 01..127	Available when DOUBLE *3	01,16
+-----+-----+-----+-----+-----+-----+-----+						
	SCALE					
+-----+-----+-----+-----+-----+-----+-----+						
	b0..3	SCALE KEY	#	0..B : C..B		00,09
	19					
	b4..7	SCALE TYPE	#	0..C :	*4	00,08
+-----+-----+-----+-----+-----+-----+-----+						
	20	RANDOM INTENSITY	#	00..07 : 00..07	Normal = 0 *5	00,0A
+-----+-----+-----+-----+-----+-----+-----+						
	21	(Reserved)				
+-----+-----+-----+-----+-----+-----+-----+						
	OSCILLATOR EG (Linear Line)					
+-----+-----+-----+-----+-----+-----+-----+						
	22	START LEVEL		9D..63 : -99..99		06,00
+-----+-----+-----+-----+-----+-----+-----+						
	23	ATTACK TIME		00..63 : 00..99		06,01
+-----+-----+-----+-----+-----+-----+-----+						
	24	ATTACK LEVEL		9D..63 : -99..99		06,02
+-----+-----+-----+-----+-----+-----+-----+						
	25	DECAY TIME		00..63 : 00..99		06,03
+-----+-----+-----+-----+-----+-----+-----+						
	26	RELEASE TIME		00..63 : 00..99		06,04

27	RELEASE LEVEL	9D..63 : -99..99		06,05
OSCILLATOR EG TIME MOD (For EG Whole Time)				
28	INT BY VELOCITY	9D..63 : -99..99		06,06
29	A.M SOURCE	00..16 : *6	Alternate Modulation	06,07
30	INT BY A.M	9D..63 : -99..99		06,08
OSCILLATOR-1		Right side of '/'is SUB ID for OSC 2		
31	bit7 LOW MS OFFSET START\$	0:NORMAL, 1:OFFSET		01,04/0E
	b0..6 LOW MULTISAMPL(MSB)\$			
32	000..19E : 000..414		Lower Vel's Multisample *7	01,03/0D
	b0..6 LOW MULTISAMPL(LSB)\$			
33	bit7 HI M.S OFFSET START	0:NORMAL, 1:OFFSET	Drum is setupes by each Keys	01,01/0B
	b0..6 HI M.SMP,D.KIT(MSB)			
34	000..19E : 000..414		Hi Vel's Multi/DrumKit *7	01,00/0A
	b0..6 HI M.SMP,D.KIT(LSB)			
35	LOWER LEVEL \$	00..7F : 00..127		01,05/0F
36	HIGHER LEVEL	00..7F : 00..127		01,02/0C
37	BOTTOM VEL OF HI MS	01..7F : 01..127	(For Vel Split) *7	01,14/15
38	b0..4 TRANPOSE	F4..0C : -12..12 [S.T]		01,08/12
	b6,7 OCTAVE	00..03 : 32..4 [']		01,07/11
39	TUNE (MSB)	FB50..04B0 : -1200..1200		
40			Only change a Pitch	01,09/13
	TUNE (LSB)	[Cent]		
41	DELAY START	00..60,FF : *8	FF : Start by NOTE OFF!	01,06/10

+-----+-----+-----+-----+-----+-----+-----+						
OSC-1 PITCH MOD						
+-----+-----+-----+-----+-----+-----+-----+						
42	BY PITCH SLOPE	F6..14 : -1.0..2.0	Linear, Center Key is C4 *9	02,00		
+-----+-----+-----+-----+-----+-----+-----+						
43	INT BY OCS EG	8D..73 : -12.00..12.00	*10	02,08		
+-----+-----+-----+-----+-----+-----+-----+						
44	INT BY OSC-1 LFO	8D..73 : -12.00..12.00	*10	02,0C		
+-----+-----+-----+-----+-----+-----+-----+						
45	INT BY RIBBON(X)	F4..0C : -12..12[S.T]	Ribbon(X) : CC#16	02,01		
+-----+-----+-----+-----+-----+-----+-----+						
OSC-1 PITCH MOD BY JOY STICK (X)						
+-----+-----+-----+-----+-----+-----+-----+						
46	INT BY J.S(+X)	# C4..0C : -60..12	J.S(+X) : Pitch Bend(H) *11	02,02		
+-----+-----+-----+-----+-----+-----+-----+						
47	INT BY J.S(-X)	# C4..0C : -60..12	J.S(-X) : Pitch Bend(L) *11	02,04		
+-----+-----+-----+-----+-----+-----+-----+						
b0..3	STEP OF J.S(+X)	# 0..F :	*12 J.S(+X) : Pitch Bend(H)	02,03		
+-----+-----+-----+-----+-----+-----+-----+						
48	b4..7	STEP OF J.S(-X)	# 0..F :	*12 J.S(-X) : Pitch Bend(L)	02,05	
+-----+-----+-----+-----+-----+-----+-----+						
OSC-1 PITCH MOD BY ALTERNATE MOD						
+-----+-----+-----+-----+-----+-----+-----+						
49	A.M SOURCE	00..16 :	*6 Alternate Modulation	02,06		
+-----+-----+-----+-----+-----+-----+-----+						
50	INT BY A.M	8D..73 : -12.00..12.00	*10	02,07		
+-----+-----+-----+-----+-----+-----+-----+						
INTENSITY MODULATION OF OSC EG TO OSC-1 PITCH						
+-----+-----+-----+-----+-----+-----+-----+						
51	MOD INT BY VELOCITY	9D..63 : -99..99		02,09		
+-----+-----+-----+-----+-----+-----+-----+						
52	A.M SOURCE	00..16 :	*6 Alternate Modulation	02,0A		
+-----+-----+-----+-----+-----+-----+-----+						
53	INT BY A.M	8D..73 : -12.00..12.00	*10	02,0B		
+-----+-----+-----+-----+-----+-----+-----+						
OSC-1 LFO						
+-----+-----+-----+-----+-----+-----+-----+						
b0..4	WAVEFORM	0..12 :	*13	03,00		
+-----+-----+-----+-----+-----+-----+-----+						
54	b5,6	START MODE	0:ON, 1:OFF, 2:BOTH	*14	03,03	
+-----+-----+-----+-----+-----+-----+-----+						
bit7	KEY SYNC	0:OFF, 1:ON		03,04		

55	OFF SET	9D..63 : -99..99	Doesn't effect while DELAY	03,02
56	FREQUENCY	00..63 : 00..99		03,01
57	DELAY	00..63 : 00..99		03,05
58	FADE	9D..63 : -99..99	*15	03,06
OSC-1 LFO FREQUENCY MOD				
59	INT BY KBD TRK	9D..63 : -99..99	Linear, Center Key is C4	03,07
60	INT BY J.S(+Y)	00..63 : 00..99	J.S(+Y) : CC#01	03,08
61	A.M SOURCE	00..16 :	*6 Alternate Modulation	03,09
62	INT BY A.M	9D..63 : -99..99		03,0A
INTENSITY MODULATION OF OSC-1 LFO TO OSC-1 PITCH				
63	MOD INT BY J.S(+Y)	00..63 : 00..99	J.S(+Y) : CC#01	02,0D
64	MOD INT BY A.T	00..63 : 00..99		02,0E
65	A.M SOURCE	00..16 :	*6 Alternate Modulation	02,0F
66	INT BY A.M	8D..73 : -12.00..12.00	*10	02,10
FILTER-1				
b0,1	FILTER-1A TYPE	0..3 :	*16	07,01
67 b2,3	FILTER-1B TYPE	0..3 :	*16	07,06
b4,5	FILTER-1 ROUTING	0..3 :	*17	07,00
FILTER-1 EG (Up:Linear, Down:Exponential)				
68	START LEVEL	9D..63 : -99..99		0B,00
69	ATTACK TIME	00..63 : 00..99		0B,01

70	ATTACK LEVEL	9D..63 : -99..99		0B,02
71	DECAY TIME	00..63 : 00..99		0B,03
72	BREAK POINT LEVEL	9D..63 : -99..99		0B,04
73	SLOPE TIME	00..63 : 00..99		0B,05
74	SUSTAIN LEVEL	9D..63 : -99..99		0B,06
75	RELEASE TIME	00..63 : 00..99		0B,07
76	RELEASE LEVEL	9D..63 : -99..99		0B,08
FILTER-1 EG TIME(4POINTS) MOD BY KEYBOARD TRACK (Linear, Center Key is C4)				
77	ATTACK TIME	9D..63 : -99..99		0B,09
78	DECAY TIME	9D..63 : -99..99		0B,0A
79	SLOPE TIME	9D..63 : -99..99		0B,0B
80	RELEASE TIME	9D..63 : -99..99		0B,0C
FILTER-1 EG TIME(4POINTS) MOD BY VELOCITY				
81	ATTACK TIME	9D..63 : -99..99		0B,0D
82	DECAY TIME	9D..63 : -99..99		0B,0E
83	SLOPE TIME	9D..63 : -99..99		0B,0F
84	RELEASE TIME	9D..63 : -99..99		0B,10
FILTER-1 EG TIME MOD (For EG Whole Time)				
85	A.M SOURCE	00..16 :	*6 Alternate Modulation	0B,11
86	INT BY A.M	9D..63 : -99..99		0B,12

+-----+-----+-----+-----+-----+-----+					
FILTER-1 EG LEVEL(3POINTS) MOD BY VELOCITY					
+-----+-----+-----+-----+-----+-----+					
87	START LEVEL	9D..63 : -99..99		0B,13	
+-----+-----+-----+-----+-----+-----+					
88	ATTACK LEVEL	9D..63 : -99..99		0B,14	
+-----+-----+-----+-----+-----+-----+					
89	BREAK POINT LEVEL	9D..63 : -99..99		0B,15	
+-----+-----+-----+-----+-----+-----+					
INTENSITY MODULATION OF FILTER-1 EG TO FILTER-1A & FILTER-1B CUTOFF FREQ BY A.M					
+-----+-----+-----+-----+-----+-----+					
90	A.M SOURCE	00..16 :	*6 Alternate Modulation	08,14	
+-----+-----+-----+-----+-----+-----+					
91	INT BY A.M	9D..63 : -99..99		08,15	
+-----+-----+-----+-----+-----+-----+					
FILTER-1 LFO					
+-----+-----+-----+-----+-----+-----+					
b0..4	WAVEFORM	0..12 :	*13	0C,00	
+-----+-----+-----+-----+-----+-----+					
92 b5,6	START MODE	0:ON, 1:OFF, 2:BOTH	*14	0C,03	
+-----+-----+-----+-----+-----+-----+					
bit7	KEY SYNC	0:OFF, 1:ON		0C,04	
+-----+-----+-----+-----+-----+-----+					
93	OFFSET	9D..63 : -99..99	Doesn't effect while DELAY	0C,02	
+-----+-----+-----+-----+-----+-----+					
94	FREQUENCY	00..63 : 00..99		0C,01	
+-----+-----+-----+-----+-----+-----+					
95	DELAY	00..63 : 00..99		0C,05	
+-----+-----+-----+-----+-----+-----+					
96	FADE	9D..63 : -99..99	*15	0C,06	
+-----+-----+-----+-----+-----+-----+					
FILTER-1 LFO FREQUENCY MOD					
+-----+-----+-----+-----+-----+-----+					
97	A.M SOURCE	00..16 :	*6 Alternate Modulation	0C,07	
+-----+-----+-----+-----+-----+-----+					
98	INT BY A.M	9D..63 : -99..99		0C,08	
+-----+-----+-----+-----+-----+-----+					
INTENSITY MODULATION OF FILTER-1 LFO TO FILTER-1A & FILTER-1B CUTOFF FREQ					
+-----+-----+-----+-----+-----+-----+					
99	MOD INT BY J.S(-Y)	00..63 : 00..99	J.S(+Y) : CC#02	08,16	
+-----+-----+-----+-----+-----+-----+					
100	MOD INT BY A.T	00..63 : 00..99		08,17	

101	A.M SOURCE	00..16 :	*6 Alternate Modulation	08,1A
102	INT BY A.M	9D..63 : -99..99		08,1B
	FILTER-1A		Right side of '/'is SUB ID for Filter-1B	
103	CUTOFF FREQ VALUE	00..63 : 00..99		07,02/07
104	INPUT GAIN	00..63 : 00..99		07,03/08
105	RESONANCE LEVEL	00..1F : 00..31		07,04/09
106	RESO LEVL MOD BY VEL	9D..63 : -99..99		07,05/0A
	FILTER-1A CUTOFF FREQ MOD		Right side of '/'is SUB ID for Filter-1B	
107	INT BY FILTER-1 EG	9D..63 : -99..99		08,12/13
108	EG INT MOD BY VEL	9D..63 : -99..99		08,10/11
109	INT BY FILTER-1 LFO	9D..63 : -99..99		08,18/19
110	INT BY J.S(X)	9D..63 : -99..99	J.S(X) : Pitch Bent	08,04/0C
111	INT BY A.T	00..63 : 00..99		08,05/0D
	FILTER-1A CUTOFF MOD BY KBD TRACK (Figured)	*18	Right side of '/'is SUB ID for Filter-1B	
112	LOW KEY	00..7F : C-1..G9		08,00/08
113	HIGH KEY	00..7F : C-1..G9		08,01/09
114	LOWER RAMP	9D..63 : -99..99		08,02/0A
115	HIGHER RAMP	9D..63 : -99..99		08,03/0B
	FILTER-1A CUTOFF FREQ MOD		Right side of '/'is SUB ID for Filter-1B	
116	A.M SOURCE	00..16 :	*6 Alternate Modulation	08,06/0E
117	INT BY A.M	9D..63 : -99..99		08,07/0F

FILTER-1B PARAMETERS			
118	SAME AS FILTER-1A(103..117)		Above 15 param No.'s
			right side of '/'is
132			SUB ID for Filter1-B

AMPLIFIER-1			
133	OUTPUT LEVEL	00..7F : 00..127	0F,00
AMPLIFIER-1 AMPLITUDE MOD BY KEYBOARD TRACK (Figured)			*18
134	LOW KEY	00..7F : C-1..G9	0F,01
135	HIGH KEY	00..7F : C-1..G9	0F,02
136	LOWER RAMP	9D..63 : -99..99	0F,03
137	HIGHER RAMP	9D..63 : -99..99	0F,04
AMPLIFIER-1 AMPLITUDE MOD			
138	INT BY VELOCITY	9D..63 : -99..99	0F,05
139	INT BY A.M	9D..63 : -99..99	0F,06
140	A.M SOURCE	00..16 : *6	Alternate Modulation 0F,07
141	INT BY A.M	9D..63 : -99..99	0F,08
AMPLIFIER-1 EG (Up:Linear, Down:Exponential)			
142	START LEVEL	00..63 : 00..99	10,00
143	ATTACK TIME	00..63 : 00..99	10,01
144	ATTACK LEVEL	00..63 : 00..99	10,02
145	DECAY TIME	00..63 : 00..99	10,03

146	BREAK POINT LEVEL	00..63 : 00..99		10,04	
147	SLOPE TIME	00..63 : 00..99		10,05	
148	SUSTAIN LEVEL	00..63 : 00..99		10,06	
149	RELEASE TIME	00..63 : 00..99		10,07	
AMPLIFIER-1 EG TIME(4POINTS) MOD BY KEYBOARD TRACK (Linear, Center Key is C4)					
150	ATTACK TIME	9D..63 : -99..99		10,08	
151	DECAY TIME	9D..63 : -99..99		10,09	
152	SLOPE TIME	9D..63 : -99..99		10,0A	
153	RELEASE TIME	9D..63 : -99..99		10,0B	
AMPLIFIER-1 EG TIME(4POINTS) MOD BY VELOCITY					
154	ATTACK TIME	9D..63 : -99..99		10,0C	
155	DECAY TIME	9D..63 : -99..99		10,0D	
156	SLOPE TIME	9D..63 : -99..99		10,0E	
157	RELEASE TIME	9D..63 : -99..99		10,0F	
AMPLIFIER-1 EG TIME MOD BY A.M SOURCE (For EG Whole Time)					
158	A.M SOURCE	00..16 :	*6 Alternate Modulation	10,10	
159	INT BY A.M	9D..63 : -99..99		10,11	
AMPLIFIER-1 EG LEVEL (3POINTS) MOD BY VELOCITY					
160	START LEVEL	9D..63 : -99..99		10,12	
161	ATTACK LEVEL	9D..63 : -99..99		10,13	
162	BREAK POINT LEVEL	9D..63 : -99..99		10,14	

+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+									
OSC-1 BLOCK PANPOT & PANPOT MOD									
+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+									
163	L:R PAN	\$#	FF,0..7F : OFF,L00..R127					*19	0F,0B
+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+									
164	A.M SOURCE		00..16 :		*6	Alternate Modulation			0F,0C
+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+									
165	INT BY A.M		9D..63 : -99..99						0F,0D
+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+									
OSC-1 BLOCK SEND									
+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+									
166	SEND 1 LEVEL	\$#	00..7F : 00..127						0F,09
+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+									
167	SEND 2 LEVEL	\$#	00..7F : 00..127						0F,0A
+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+									
OSC-2 BLOCK PARAMETERS \$									
+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+									
168	SAME AS OSC-1 BLOCK(31..167)						OSC2's ParamID is calculated		
							by above each Param ID[02,		
304							03,07,08,0B,0C,0F,10] +2.		
+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+									
INSERT EFFECT PARAMETERS \$ #									
+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+									
305									13,00
	FX1..4 (22Bytes x 4)								
392									17,??
+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+									
MASTER EFFECT PARAMETERS #									
+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+									
393									18,00
432									1A,??
+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+									

*1 : Each Category's names are setupped in GLOBAL mode

*2 : PIANO MODE : Piano Assign (= self exclusive assign).

*3 : For OSC2 BLOCK ON/OFF by Velocity (OSC1 is always on by all range of velocity).

*4 : 0 : Equal Temperament

6 : Kirnberger

1 : Pure Major	7 : Slendro
2 : Pure Minor	8 : Pelog
3 : Arabic	9 : 1 Octave user Scale (RAM)
4 : Pythagoras	10 : Stretch
5 : Werckmeister	11 : All range user scale (RAM)

*5 : Range of Random pitch [Semi tone]

0 : 00	3 : -1/16..+1/16	6 : -1/2..+1/2
1 : -1/64..+1/64	4 : -1/8..+1/8	7 : -1 ..+1
2 : -1/32..+1/32	5 : -1/4..+1/4	

*6 : See the AMS table. below is a list of all AMS.

	(as MIDI In)		(as MIDI In)
0 : OFF		14 : Ribbon Controller (Z)	C.C #17
1 : OSC EG		15 : Assignable Pedal	C.C #04
2 : Filter EG in the same OSC		16 : Value Slider	C.C #18
3 : Amp EG in the same OSC		17 : MIDI Control Change #19	C.C #19
4 : OSC LFO in the same OSC		18 : Assignable Panel SW1	C.C #80
5 : Filter LFO in the same OSC		19 : Assignable Panel SW2	C.C #81
6 : Velocity (Vel of Note On!)		20 : Assignable Pedal SW	C.C #82
7 : Note No. (No. of Note On!)		21 : MIDI Control Change #83	C.C #83
8 : Poly After Poly After		22 : Tempo (Count of Clock)	
9 : After Touch After Touch		23 : Filter 1 EG (Only from OSC2)	
10 : Joy Stick (X) Pitch Bend		24 : Amp 1 EG (Only from OSC2)	
11 : Joy Stick (+Y) C.C #01		25 : OSC 1 LFO (Only from OSC2)	
12 : Joy Stick (-Y) C.C #02		26 : Filter 1 LFO (Only from OSC2)	
13 : Ribbon Controller (X) C.C #16			

*7 : Multisample is selected by velocity.

*8 : Data Time[mSec] Step

00..19 :	00.. 50	(2mSec)
1A..28 :	60.. 200	(10mSec)
29..38 :	250..1000	(50mSec)
39..60 :	1100..5000	(100mSec)
FF :	KEY OFF (Sound will start at NOTE OFF!)	

*9 : F6 : -1.0 (-12 S.T / Oct)

00 : 0.0 (Flat)

14 : +2.0 (24 S.T / Oct)

```

*10: 8D..C3 : -12.00 .. -1.20 ( 0.20 Step )
      C4..CD : -1.00 .. -0.55 ( 0.05 Step )
      CE..32 : -0.50 .. +0.50 ( 0.01 Step )
      33..3C : +0.55 .. +1.00 ( 0.05 Step )
      3D..73 : +1.20 ..+12.00 ( 0.20 Step )

```

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*11 : INTENSITY = C4 : -60 (-5Oct)

      00 : 00 (Off)

      0C : 12 (+1Oct)

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*12 : STEP = 0 : Continuous
      1 : 1/8 [ Semi Tone ]
      2 : 1/4
      3 : 1/2
      4 : 1
      :
      F : 12

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*13 : 0 : Triangle 00 deg.( )      10 : Sine 00 deg.( )
      1 : Triangle 90 deg.( )      11 : Sine 180 deg.( )
      2 : Triangle 180 deg.( )     12 : Guitar ( )
      3 : Triangle 270 deg.( )     13 : Random1 ( Time is fixed, Level is random )
      4 : Up saw 00 deg.( )        14 : Rondon2 ( Time is random, Level is fixed )
      5 : Up saw 180 deg.( )       15 : Random3 ( Time and Level are random )
      6 : Down saw 00 deg.( )      16 : Random4 ( Time is fixed, Level is random with Ramp )
      7 : Down saw 180 deg.( )     17 : Random5 ( Time is random, Level is fixed with Ramp )
      8 : Rectangle 00 deg.( )     18 : Random6 ( Time and Level are random with Ramp )
      9 : Rectangle 180 deg.( )

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*14 : ON : LFO is started at NOTE ON! ( Normal ).
      OFF : LFO is started at NOTE OFF!.
      BOTH: LFO is started at NOTE ON! and stopped at NOTE OFF!(Reversible).

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*15 : Fade < 0 : Fade out at Note on!      ( ON mode )
      Fade out at Note off!                ( OFF mode )
      Fade out at Note on!, and fade in at Note off! ( BOTH mode )
      > 0 : Fade in at Note on! : Normal    ( ON mode )
      Fade in at Note off!                ( OFF mode )
      Fade in at Note on!, and fade out at Note off! ( BOTH mode )

```

*16 : 0 : Low Pass
1 : High Pass
2 : Band Pass
3 : Band Reject

*17 : 0 : Parallel
1 : Serial
2 : Single
3 : Through

*18 : Between LOW KEY & HIGH KEY is connected by linear line. Lower(Higher) area of LOW(HIGH) KEY has a linear line, and its ramp will be decided by RAMP.

*19 : When panpot is controlled by Alternate Mod, it will act based on its initial setting.