Consult your local Korg dealer for more infomation on MIDI System Exclusive implementation.

1.TRANSMITTED DATA

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	(Sequence/Arpeggiator data)	A
9n	kk (kk)	vv (vv)	Note On (vv)=1-127	(Sequence/Arpeggiator data)	A
An	kk (kk)	vv (vv)	Poly Key Pressure	(Sequence data)	T,Q
Bn	00 (00)	mm (mm)	Bank Select(MSB)	(BANK keys, Prog/Combi change) *1	PB
Bn	01 (01)	vv (vv)	Modulation1	(Knob-B = MIDI CC#01)	C
Bn	02 (02)	vv (vv)	Modulation2	(Knob-B = MIDI CC#02)	C
Bn	04 (04)	vv (vv)	Foot Pedal	(Knob-B = MIDI CC#04)	C
Bn	05 (05)	vv (vv)	Portamento Time	(Knob-B = Porta.Time,M Chg)	C
Bn	06 (06)	vv (vv)	Data Entry (MSB)	(ARP ON/OFF, GATE, VELOCITY) *2	C
Bn	07 (07)	vv (vv)	Volume	(Knob-B = Volume, M/C Chg)	C
Bn	08 (08)	vv (vv)	Post IFX Panpot	(Knob-B = IFX Pan,M Chg)	C
Bn	0A (10)	vv (vv)	Panpot	(Knob-B = Pan,M Chg)	C
Bn	0B (11)	vv (vv)	Expression	(Knob-B = Expression)	C
Bn	0C (12)	vv (vv)	Effect Control 1	(Knob-B = FX Ctrl 1)	C
Bn	0D (13)	vv (vv)	Effect Control 2	(Knob-B = FX Ctrl 2)	C
Bn	10 (16)	vv (vv)	Multi Purpose Ctrl1	(Knob-B = MIDI CC#16)	C
Bn	11 (17)	vv (vv)	Multi Purpose Ctrl2	(Knob-B = Knob Mod.1)	C
Bn	12 (18)	vv (vv)	Multi Purpose Ctrl3	(Knob-B = MIDI CC#18)	C
Bn	13 (19)	vv (vv)	Multi Purpose Ctrl4	(Knob-B = Knob Mod.2)	C
Bn	14 (20)	vv (vv)		(Knob-B = Knob Mod.3)	C
Bn	15 (21)	vv (vv)		(Knob-B = Knob Mod.4)	C
Bn	20 (32)	bb (bb)	Bank Select(LSB)	(BANK keys, Prog/Combi change) *1	PB
Bn	40 (64)	vv (vv)	Hold1	(Knob-B = MIDI CC#64)	C
Bn	41 (65)	00/7F (00/127)	Portamento Off/On	(SW1/SW2 = Porta.SW, M Chg)	C
Bn	42 (66)	vv (vv)	Sostenuto Off/On	(Knob-B = MIDI CC#66)	C
Bn	43 (67)	vv (vv)	Soft Pedal	(Knob-B = MIDI CC#67)	C
Bn	46 (70)	vv (vv)	Sound Controller 1	(Knob-B = F/A Sus.)	C
Bn	47 (71)	vv (vv)	Sound Controller 2	(Knob-2A, Knob-B = Flt Reso.)	C
Bn	48 (72)	vv (vv)	Sound Controller 3	(Knob-4A, Knob-B = F/A Rel.)	C
Bn	49 (73)	vv (vv)	Sound Controller 4	(Knob-B = F/A Attack)	C
Bn	4A (74)	vv (vv)	Sound Controller 5	(Knob-1A, Knob-B = Flt Cutoff)	C
Bn	4B (75)	vv (vv)	Sound Controller 6	(Knob-B = F/A Decay)	C
Bn	4C (76)	vv (vv)	Sound Controller 7	(Knob-B = P LFO1 Spd)	C
Bn	4D (77)	vv (vv)	Sound Controller 8	(Knob-B = P LFO1 Dep)	C
Bn	4E (78)	vv (vv)	Sound Controller 9	(Knob-B = P LFO1 Dly)	C
Bn	4F (79)	vv (vv)	Sound Controller 10	(Knob-3A, Knob-B = Flt EG Int.)	C
Bn	50 (80)	00/7F (00/127)	Multi Purpose Ctrl5	(SW1 = SW1 Mod.)	C
Bn	51 (81)	00/7F (00/127)	Multi Purpose Ctrl6	(SW2 = SW2 Mod.)	C
Bn	52 (82)	vv (vv)	Multi Purpose Ctrl7	(Knob-B = Foot SW)	C
Bn	53 (83)	vv (vv)	Multi Purpose Ctrl8	(Knob-B = MIDI CC#83)	C
Bn	5B (91)	vv (vv)	Effect 1 Depth	(Knob-B = MFX Send2, M Chg)	C
Bg	5C (92)	00/7F (00/127)	Effect 2 Depth	(All Insert FX Off/On)	C
Bn	5D (93)	vv (vv)	Effect 3 Depth	(Knob-B = MFX Send1, M Chg)	C
Bg	5E (94)	00/7F (00/127)	Effect 4 Depth	(Master FX1 Off/On)	C
Bg	5F (95)	00/7F (00/127)	Effect 5 Depth	(Master FX2 Off/On)	C
Bn	cc (cc)	vv (vv)	Control (cc)=0-95	(Knob-B = MIDI CC#00-95)	C
Bn	62 (98)	ss (ss)	NRPN Param No.(LSB)	(ARP ON/OFF, GATE, VELOCITY) *2	C
Bn	63 (99)	tt (tt)	NRPN Param No.(MSB)	(ARP ON/OFF, GATE, VELOCITY) *2	C
Bn	cc (cc)	vv (vv)	Control (cc)=0-101	(Sequence data)	Q
Cn	pp (pp)	-- --	Program Change	(Prog/Combi change) *1	P
Dn	vv (vv)	-- --	Channel Pressure	(Sequence data)	T
En	bb (bb)	bb (bb)	Bender Change	(Sequence data)	C

M Chg : Transmitted when change a Multi No. (Status = EXT,EX2,BTH)
C/M Chg : Transmitted when change a Combination or Multi No. (Status = EXT,EX2,BTH)
Sequence data : Pattern, Audition Riff and Demo data.

n : MIDI Channel No. (0 - 15) ..... Usually Global Channel.
When in Combination/Multi mode, each timbre's/track's channel.(Status = EXT,EX2 or BTH)
g : Always Global Channel No. (0 - 15)
kk = 00 - 127

ENA = A : Always Enabled
C : Enabled when Enable Control Change in Global mode is checked
P : Enabled when Enable Program Change in Global mode is checked
PB: Enabled when Enable Program and Bank Change in Global mode is checked
T : Enabled when Enable After Touch in Global mode is checked
Q : Enabled when Pattern is playing(transmit), recording(receive)

*1 :

Program	Combination	MIDI Out[Hex] (Bank Map is KORG)	(Bank Map is GM(2))
BankINT-A 0 - 127	BankINT-A 000 - 127	mm,bb,pp = 00,00, 00 - 7F	= 3F,00, 00 - 7F
INT-B 0 - 127	INT-B 000 - 127	00,01, 00 - 7F	3F,01, 00 - 7F
INT-C 0 - 127	INT-C 000 - 127	00,02, 00 - 7F	3F,02, 00 - 7F
INT-D 0 - 127	INT-D 000 - 127	00,03, 00 - 7F	3F,03, 00 - 7F
INT-E 0 - 127	INT-E 000 - 127	00,04, 00 - 7F	3F,04, 00 - 7F
INT-F 0 - 127		00,05, 00 - 7F	3F,05, 00 - 7F
G 1 - 128		79,00, 00 - 7F	79,00, 00 - 7F
g(1)-(9) 1 - 128		79,01-09,00 - 7F	79,01-09,00 - 7F
g(d) 1 - 128		78,00, 00 - 7F	78,00, 00 - 7F
EXB-A 0 - 127	BankEXB-A 000 - 127	00,08, 00 - 7F	3F,08, 00 - 7F

EXB-B 0 - 127 :	EXB-B 000 - 127 :	00,09,	00 - 7F	3F,09, 00 - 7F
EXB-C 0 - 127 :	EXB-C 000 - 127 :	00,0A,	00 - 7F	3F,0A, 00 - 7F
EXB-D 0 - 127 :	EXB-D 000 - 127 :	00,0B,	00 - 7F	3F,0B, 00 - 7F
EXB-E 0 - 127 :	EXB-E 000 - 127 :	00,0C,	00 - 7F	3F,0C, 00 - 7F
EXB-F 0 - 127 :	EXB-F 000 - 127 :	00,0D,	00 - 7F	3F,0D, 00 - 7F
EXB-G 0 - 127 :	EXB-G 000 - 127 :	00,0E,	00 - 7F	3F,0E, 00 - 7F
EXB-H 0 - 127 :	EXB-H 000 - 127 :	00,0F,	00 - 7F	3F,0F, 00 - 7F

*2 : ARP ON/OFF :[Bn,63,00,Bn,62,02,Bn,06,mm] mm = 00(Off),7F(On)
ARP-GATE (REALTIME CONTROLS C Knob2) :[Bn,63,00,Bn,62,0A,Bn,06,mm] mm = 00-7F
ARP-VELOCITY (REALTIME CONTROLS C Knob3) :[Bn,63,00,Bn,62,0B,Bn,06,mm] mm = 00-7F

When in Program/Combination mode, Global channel.
When in Multi mode, Control Track's channel.

1-2 SYSTEM COMMON MESSAGES [H] :Hex, [D] :Decimal

Status [Hex]	Second [H] [D]	Third [H] [D]	Description (Transmitted when)
F3	ss (ss)		Song Select (Multi is selected) ss : Multi(0-127) No.

Transmits Song Select message when in Multi mode (Internal Clock)

1-3 SYSTEM REALTIME MESSAGES

Status[Hex]	Description (Transmitted when ...)	
F8	Timing Clock (Always in Prog/Combi/Multi mode)	*
FA	Start (START Pattern in Multi mode)	*
FC	Stop (STOP Pattern in Multi mode)	*
FE	Active Sensing (Always)	

* Transmits these messages when MIDI Clock in Global mode is Internal.

1-4 SYSTEM EXCLUSIVE
1-4-1 UNIVERSAL SYSTEM EXCLUSIVE MESSAGE (NON REALTIME)
DEVICE INQUlRY REPLY (Transmits when received a INQUIRY MESSAGE REQUEST)
[F0,7E,0g,06,02,42,50,00,1C,00,nn,00,vv,00,F7]
3rd byte g : Global Channel
6th byte 42 : KORG ID
7th byte 50 : TRITON series ID
9th byte : TRITON-Rack member code
System V1.0.0~V1.1.0 = 00
System V1.1.1~ = 1C
11th byte nn : System No. (01 -)
13th byte vv : System Version (01 -)

1-4-2 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 : Value(MSB)
mm,vv = 00,00 - 7F,7F : Min - Max

2.RECOGNIZED RECEIVE DATA

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

Status [Hex]	Second [H] [D]	Third [H] [D]	Description (Use .....)		ENA
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 (as AMS)		T,Q
Bn	00 (00)	mm (mm)	Bank Select(MSB) (for Prog/Combi change)	*1	PB
Bn	01 (01)	vv (vv)	Modulation1 (as AMS & FX Dmod Src =JS+Y)		C
Bn	02 (02)	vv (vv)	Modulation2 (as AMS & FX Dmod Src =JS-Y)		C
Bn	04 (04)	vv (vv)	Foot Pedal (as AMS & FX Dmod Src =Pedal)		C
Bn	05 (05)	vv (vv)	Portamento Time		C
Bn	06 (06)	vv (vv)	Data Entry (MSB) (for RPC edit)		C
Bn	07 (07)	vv (vv)	Volume		C
Bn	08 (08)	vv (vv)	Balance Control (for Post IFX Panpot control)	*2	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 Dmod Src =FX1)		C
Bn	0D (13)	vv (vv)	Effect Control 2 (as FX Dmod Src =FX2)		C
Bn	10 (16)	vv (vv)	Multi Purpose Ctrl1 (as AMS & FX Dmod Src =Ribbon)		C
Bn	11 (17)	vv (vv)	Multi Purpose Ctrl2 (as AMS & FX Dmod Src =KnobM1)		C
Bn	12 (18)	vv (vv)	Multi Purpose Ctrl3 (as AMS & FX Dmod Src =Slider)		C
Bn	13 (19)	vv (vv)	Multi Purpose Ctrl4 (as AMS & FX Dmod Src =KnobM2)		C
Bn	14 (20)	vv (vv)	(as AMS & FX Dmod Src =KnobM3)		C
Bn	15 (21)	vv (vv)	(as AMS & FX Dmod Src =KnobM4)		C

Bn	20 (32)	bb (bb)	Bank Select(LSB)	(for Prog / Combi change)	*1	PB
Bn	26 (38)	vv (vv)	Data Entry (LSB)	(for RPC edit)		C
Bn	40 (64)	vv (vv)	Hold1	(as Damper)		C
Bn	41 (65)	<=3F/>=40(<=63/>=64)	Portamento Off/On			C
Bn	42 (66)	<=3F/>=40(<=63/>=64)	Sostenuto Off/On			C
Bn	43 (67)	vv (vv)	Soft Pedal			C
Bn	46 (70)	vv (vv)	Sound Controller 1	(for Sustain Level control)		C
Bn	47 (71)	vv (vv)	Sound Controller 2	(for Resonance/HPF Cutoff ctrl)		C
Bn	48 (72)	vv (vv)	Sound Controller 3	(for Release Time control)		C
Bn	49 (73)	vv (vv)	Sound Controller 4	(for Attack Time control)		C
Bn	4A (74)	vv (vv)	Sound Controller 5	(for LPF Cutoff control)		C
Bn	4B (75)	vv (vv)	Sound Controller 6	(for Decay Time control)		C
Bn	4C (76)	vv (vv)	Sound Controller 7	(for LFO1 Speed control)		C
Bn	4D (77)	vv (vv)	Sound Controller 8	(for LFO1 Pitch Depth control)		C
Bn	4E (78)	vv (vv)	Sound Controller 9	(for LFO1 Delay control)		C
Bn	4F (79)	vv (vv)	Sound Controller 10	(for Filter EG Intencity ctrl)		C
Bn	50 (80)	vv (vv)	Multi Purpose Ctrl5	(as AMS & FX Dmod Src =SW 1)		C
Bn	51 (81)	vv (vv)	Multi Purpose Ctrl6	(as AMS & FX Dmod Src =SW 2)		C
Bn	52 (82)	vv (vv)	Multi Purpose Ctrl7	(as AMS & FX Dmod Src =FootSW)		C
Bn	53 (83)	vv (vv)	Multi Purpose Ctrl8	(as AMS & FX Dmod Src)		C
Bn	5B (91)	vv (vv)	Effect 1 Depth	(for Send 2 Level control)		C
Bg	5C (92)	00/!=00 (00/!=000)	Effect 2 Depth	(for All Insert FX Off/On)		C
Bn	5D (93)	vv (vv)	Effect 3 Depth	(for Send 1 Level control)		C
Bg	5E (94)	00/!=00 (00/!=000)	Effect 4 Depth	(for Master FX1 Off/On)		C
Bg	5F (95)	00/!=00 (00/!=000)	Effect 5 Depth	(for Master FX2 Off/On)		C
Bn	60 (96)	00 (00)	Data Increment	(for RPC edit)		C
Bn	61 (97)	00 (00)	Data Decrement	(for RPC edit)		C
Bn	62 (98)	ss (ss)	NRPN Param No.(LSB)	(for NRPN select)	*3	C
Bn	63 (99)	tt (tt)	NRPN Param No.(MSB)	(for NRPN select)	*3	C
Bn	64(100)	0r (0r)	RPN Param No. (LSB)	(for RPN select)	*4	C
Bn	65(101)	00 (00)	RPN Param No. (MSB)	(for RPN select)	*4	C
Bn	cc (cc)	vv (vv)	Control data	(for Pattern recording (cc)=0-101)		C,Q
Bn	78(120)	00 (00)	All Sound Off			C
Bn	79(121)	00 (00)	Reset All Controllers			C
Bn	79(121)	00/7F (00/127)	Local Control Off/On			A
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 All Notes Off)		A
Bn	7E(126)	<=10 (<=00)	Mono Mode On	(as All Notes Off)		A
Bn	7F(127)	00 (00)	Poly mode On	(as All Notes Off)		A
Cn	pp (pp)	-- --	Program Change	(for Prog/Combi change)	*1	P
Dn	vv (vv)	-- --	Channel Pressure	(as After Touch)		T
En	bb (bb)	bb (bb)	Bender Change			C

AMS : Alternate Modulation Source
FX Dmod Src: Effect Dynamic Modulation Source

n : MIDI Channel No. (0 - 15) ..... Usually Global Channel.
When in Combination/Multi mode, each timbre's/track's channel.(Status is INT or BTH)
g : Always Global Channel No. (0 - 15)
x : Random
ENA : Same as Transmitted data

*1 : When Bank Map in Global mode is KORG;

MIDI In [Hex]		Program		Combination	
mm,bb,pp = 00,00,	00 - 7F :	Bank INT-A	000 - 127 :	Bank INT-A	000 - 127
00,01,	00 - 7F :	INT-B	000 - 127 :	INT-B	000 - 127
00,02,	00 - 7F :	INT-C	000 - 127 :	INT-C	000 - 127
00,03,	00 - 7F :	INT-D	000 - 127 :	INT-D	000 - 127
00,04,	00 - 7F :	INT-E	000 - 127 :	INT-E	000 - 127
00,05,	00 - 7F :	INT-F	000 - 127		
00,08,	00 - 7F :	EXB-A	000 - 127 :	EXB-A	000 - 127
00,09,	00 - 7F :	EXB-B	000 - 127 :	EXB-B	000 - 127
00,0A,	00 - 7F :	EXB-C	000 - 127 :	EXB-C	000 - 127
00,0B,	00 - 7F :	EXB-D	000 - 127 :	EXB-D	000 - 127
00,0C,	00 - 7F :	EXB-E	000 - 127 :	EXB-E	000 - 127
00,0D,	00 - 7F :	EXB-F	000 - 127 :	EXB-F	000 - 127
00,0E,	00 - 7F :	EXB-G	000 - 127 :	EXB-G	000 - 127
00,0F,	00 - 7F :	EXB-H	000 - 127 :	EXB-H	000 - 127
79,00,	00 - 7F :	G	001 - 128		
79,01-09,	00 - 7F :	g(1)-g(9)	001 - 128		
78,00,	00 - 7F :	g(d)	001 - 128		
38,00,	00 - 7F :	G	001 - 128		
3E,00,	00 - 7F :	g(d)	001 - 128		

When Bank Map in Global mode is GM(2);

MIDI In [Hex]		Program		Combination	
mm,bb,pp = 3F,00,	00 - 7F :	Bank INT-A	000 - 127 :	Bank INT-A	000 - 127
3F,01,	00 - 7F :	INT-B	000 - 127 :	INT-B	000 - 127
3F,02,	00 - 7F :	INT-C	000 - 127 :	INT-C	000 - 127
3F,03,	00 - 7F :	INT-D	000 - 127 :	INT-D	000 - 127
3F,04,	00 - 7F :	INT-E	000 - 127 :	INT-E	000 - 127
3F,05,	00 - 7F :	INT-F	000 - 127		
3F,08,	00 - 7F :	EXB-A	000 - 127 :	EXB-A	000 - 127
3F,09,	00 - 7F :	EXB-B	000 - 127 :	EXB-B	000 - 127
3F,0A,	00 - 7F :	EXB-C	000 - 127 :	EXB-C	000 - 127
3F,0B,	00 - 7F :	EXB-D	000 - 127 :	EXB-D	000 - 127

```
                3F,0C,   00 - 7F :      EXB-E    000 - 127 :      EXB-E 000 - 127
                3F,0D,   00 - 7F :      EXB-F    000 - 127 :      EXB-F 000 - 127
                3F,0E,   00 - 7F :      EXB-G    000 - 127 :      EXB-G 000 - 127
                3F,0F,   00 - 7F :      EXB-H    000 - 127 :      EXB-H 000 - 127

                79,00,   00 - 7F :          G    001 - 128
                79,01-09,00 - 7F :     g(1)-g(9) 001 - 128
                78,00,   00 - 7F :          g(d) 001 - 128

                00,00,   00 - 7F :          G    001 - 128
                38,00,   00 - 7F :          G    001 - 128
                3E,00,   00 - 7F :          g(d) 001 - 128
                3F,7F,   00 - 7F :          Mute (KORG MUTE)
             (XG) 00,01 -        :          Assign correspond program in G, g(1) - g(9)
             (GS) 01,00 -        :          Assign correspond program in G, g(1) - g(9)
```

*2 : When in Program/Sampling mode, Global channel
When in Combination/Multi mode, each IFX's channel.

*3 : tt,ss = 00,02 : Arpeggiator Off/On
= 00,0A : Arpeggiator Gate control
= 00,0B : Arpeggiator Velocity control

When in Program/Combination mode, Global channel message is valid.
When in Multi mode, Control Track's channel message is valid.
Data Entry LSB value has no effect.

tt,ss = 01,08 : Vibrato Rate
tt,ss = 01,09 : Vibrato Depth
tt,ss = 01,0A : Vibrato Delay
tt,ss = 01,20 : Filter Cutoff
tt,ss = 01,21 : Filter Resonance
tt,ss = 01,63 : EG Attack Time
tt,ss = 01,64 : EG Decay Time
tt,ss = 01,66 : EG Release Time
tt,ss = 14,kk : Drum Filter Cutoff *
tt,ss = 15,kk : Drum Filter Resonance *
tt,ss = 16,kk : Drum EG Attack Time *
tt,ss = 17,kk : Drum EG Decay Time *
tt,ss = 18,kk : Drum Coarse Tune *
tt,ss = 19,kk : Drum Fine Tune *
tt,ss = 1A,kk : Drum Volume *
tt,ss = 1C,kk : Drum Panpot *
tt,ss = 1D,kk : Drum Rev Send(Send2) *
tt,ss = 1E,kk : Drum Cho Send(Send1) *

* Only valid when Part Mode is Drum, MDrm1 - Mdrm4.
kk: Drum Inst No. (0C - 6C = C0 - C8)
Data Entry LSB value has no effect.

*4 : r = 0 : Pitch Bend Sensitivity (Bend Range)
= 1 : Fine Tune (Detune)
= 2 : Coarse Tune (Transpose)
For drum program, both of Fine Tune and Coase Tune affect to Detune.
Data Entry LSB value has no effect for Pitch Bend Sensitivity and Coarse Tune.

2-2 SYSTEM COMMON MESSAGES [H] :Hex, [D] :Decimal

Status [Hex]	Second [H] [D]	Third [H] [D]	Description (Use for .....)
F2	ss (ss)	tt (tt)	Song Position Pointer (Arpeggiator Control) ss : Least significant [LSB] tt : Most significant [MSB]
F3	ss (ss)		Song Select (Multi select) ss : Multi(0-127)

Receive Song Position Pointer when in Program/Combination/Multi mode(External Clock)
Receive Song Select when in Multi mode (External Clock)

2-3 SYSTEM REALTIME MESSAGES

Status[Hex]	Description (Use for.....)	
F8	Timing Clock (Tempo, AMS. & FX Dmod Src)	*
FA	Start (Arpeggiator Control)	*
FB	Continue (Arpeggiator Control)	*
FC	Stop (Arpeggiator Control)	*
FE	Active Sensing (MIDI Connect check)	

* Receive when MIDI Clock in Global mode is External.

2-4 SYSTEM EXCLUSIVE
2-4-1 UNIVERSAL SYSTEM EXCLUSIVE MESSAGE (NON REALTIME)
DEVICE INQUlRY (When received this message, transmits INQUlRY MESSAGE REPLY)
[F0,7E,nn,06,01,F7] 3rd byte nn : Channel = 0 - F : Global Channel
= 7F : Any Channel

```
        GM System On ( Receive when in Multi mode )
        [ F0,7E,nn,09,01,F7 ]                    3rd byte  nn : Channel = 0 - F : Global Channel
                                                                = 7F    : Any Channel


2-4-2 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 : Value(MSB)
                                                           mm,vv = 00,00 - 7F,7F : Min - Max
        Master Balance
        [ F0,7F,0g,04,02,vv,mm,F7 ]              3rd byte   g : Global Channel
                                                 6th byte  vv : Value(LSB)
                                                 7th byte  mm : Value(MSB)
                                                          mm,vv = 00,00:Left, 40,00:Center, 7F,7F:Right
        Master Fine Tune ( Control Master Tune(cent) in Global )
        [ F0,7F,0g,04,03,vv,mm,F7 ]              3rd byte   g : Global Channel
                                                 6th byte  vv : Value(LSB)
                                                 7th byte  mm : Value(MSB)
                                                           mm,vv = 20,00:-50, 40,00:+00, 60,00:+50
        Master Coarse Tune ( Control Transpose (chromatic step) in Global )
        [ F0,7F,0g,04,04,vv,mm,F7 ]              3rd byte   g : Global Channel
                                                 6th byte  vv : Value(LSB)
                                                 7th byte  mm : Value(MSB)
                                                           mm,vv = 34,00:-12, 40,00:+00, 4C,00:+12


3.KORG System Exclusive Message Received Function Code List (5th byte of Exclusive message) List

      +-----+-------------------------------------------------------------+
      |Func |  Description                                                |
      +-----+-------------------------------------------------------------+
      | 12  |MODE REQUEST                                                 |
      | 10  |CURRENT PROGRAM PARAMETER DUMP REQUEST                       |
      | 1C  |PROGRAM PARAMETER DUMP REQUEST                               |
      | 19  |CURRENT COMBINATION PARAMETER DUMP REQUEST                   |
      | 1D  |COMBINATION PARAMETER DUMP REQUEST                           |
      | 18  |MULTI DATA DUMP REQUEST                                      |
      | 0E  |GLOBAL DATA DUMP REQUEST                                     |
      | 0D  |DRUMKIT DATA DUMP REQUEST                                    |
      | 34  |ARPEGGIO PATTERN DATA DUMP REQUEST                           |
      | 0F  |ALL DATA(PROG,COMBI,GLOBAL,DRUMS,ARPPAT,MULTI)DUMP REQUEST   |
      | 11  |PROGRAM WRITE REQUEST                                        |
      | 1A  |COMBINATION WRITE REQUEST                                    |
      |     |                                                             |
      | 40  |CURRENT PROGRAM PARAMETER DUMP                               |
      | 4C  |PROGRAM PARAMETER DUMP                                       |
      | 49  |CURRENT COMBINATION PARAMETER DUMP                           |
      | 4D  |COMBINATION PARAMETER DUMP                                   |
      | 48  |MULTI DATA DUMP                                              |
      | 51  |GLOBAL DATA DUMP                                             |
      | 52  |DRUMKIT DATA DUMP                                            |
      | 69  |ARPEGGIO PATTERN DATA DUMP                                   |
      |     |                                                             |
      | 4E  |MODE CHANGE                                                  |
      | 41  |PARAMETER CHANGE                                             |
      | 53  |DRUMKIT PARAMETER CHANGE                                     |
      | 6D  |ARPEGGIO PATTERN PARAMETER CHANGE                            |
      +-----+-------------------------------------------------------------+

(1) MODE REQUEST                                                          R
    F0, 42, 3g, 50  Excl Header
    12              Function
    F7              End of Excl
(Receives this message, and transmits Func=42 message)


(2) CURRENT PROGRAM PARAMETER DUMP REQUEST                                R
    F0, 42, 3b, 50  Excl Header
    10              Function
    00              Reserved
    F7              End of Excl
(Receives this message, and transmits Func=40 or Func=24 message)


(3) PROGRAM PARAMETER DUMP REQUEST                                        R
    F0, 42, 3g, 50  Excl Header
    1C              Function
    00kk bbbb       Kind and Bank              (*1)
    0ppp pppp       Program No.
    00              Reserved
    F7              End of Excl
(Receives this message, and transmits Func=4C or Func=24 message)


(4) CURRENT COMBINATION PARAMETER DUMP REQUEST                            R
    F0, 42, 3g, 50  Excl Header
    19              Function
    00              Reserved
```

```
    F7              End of Excl
(Receives this message, and transmits Func=49 or Func=24 message)


(5) COMBINATION PARAMETER DUMP REQUEST                                  R
    F0, 42, 3g, 50  Excl Header
    1D              Function
    00kk bbbb       Kind and Bank               (*2)
    0ccc cccc       Combination No.
    00              Reserved
    F7              End of Excl
(Receives this message, and transmits Func=4D or Func=24 message)


(6) MULTI DATA (In Memory) DUMP REQUEST                                 R
    F0, 42, 3g, 50  Excl Header
    18              Function
    00              Reserved
    F7              End of Excl
(Receives this message, and transmits Func=48 or Func=24 message)


(7) GLOBAL DATA DUMP REQUEST                                            R
    F0, 42, 3g, 50  Excl Header
    0E              Function
    00              Reserved
    F7              End of Excl
(Receives this message, and transmits Func=51 or Func=24 message)


(8) DRUMKIT DATA (In Memory) DUMP REQUEST                               R
    F0, 42, 3g, 50  Excl Header
    0D              Function
    000d 00kk       Kind & MSB of Dkit No.      (*3-1)
    0ddd dddd       Drumkit No.                 (*3-1)
    00              Reserved
    F7              End of Excl
(Receives this message, and transmits Func=52 or Func=24 message)


(9) ARPEGGIO PATTERN DATA DUMP REQUEST                                  R
    F0, 42, 3g, 50  Excl Header
    34              Function
    0kk0 0000       Kind                        (*3-2)
    0000 00aa       ARPPAT No.(MSB)             (*3-2)
    0aaa aaaa       ARPPAT No.(LSB)             (*3-2)
    F7              End of Excl
(Receives this message, and transmits Func=52 or Func=24 message)


(10) ALL DATA(PROG,COMBI,GLOBAL,DRUMS,ARPPAT,SEQ)DUMP REQUEST           R
    F0, 42, 3g, 50  Excl Header                 (*10)
    0F              Function
    00              Reserved
    F7              End of Excl
(Receives this message, and transmits Func=50 or Func=24 message)

(10) PROGRAM WRITE REQUEST                                              R
    F0, 42, 3g, 50  Excl Header
    11              Function
    0000 bbbb       Write Program Bank          (*4)
    0ppp pppp       Write Program No.
    F7              End of Excl
(Receives this message, write the data and transmits Func=21 or Func=22 message)


(11) COMBINATION WRITE REQUEST                                          R
    F0, 42, 3g, 50  Excl Header
    1A              Function
    0000 bbbb       Write Combination Bank      (*4)
    0ccc cccc       Write Combination No.
    F7              End of Excl
(Receives this message, write the data and transmits Func=21 or Func=22 message)


(12) CURRENT PROGRAM PARAMETER DUMP                                     R , T
    F0, 42, 3g, 50  Excl Header
    40              Function
    0000 000t       Program Type(t = 0 : PCM, 1 : MOSS)
    0ddd dddd       Data                        (*5, TABLE1,2)
    F7              End of Excl
(Receives this message & data, and transmits Func=23 or Func=24 message)
Receives Func=10 message, and transmits this message & data.
When Enter the EDIT PROGRAM Page or Edit the PEEERFORMANCE EDIT by SW, transmits this
message & data.


(13) PROGRAM PARAMETER DUMP                                             R , T
    F0, 42, 3g, 50  Excl Header
    4C              Function
    0000 000v       Available Bank              (*6)
```

```
    00kk bbbb       Kind and Bank               (*6)
    0ppp pppp       Program No.
    0ddd dddd       Data                        (*5, TABLE1,2)
    F7              End of Excl
(Receives this message & data, and transmits Func=23 or Func=24 message)
Receives Func=1C message, and transmits this message & data.
Transmits this message & data when DATA DUMP is executed.


(14) CURRENT COMBINATION PARAMETER DUMP                                 R , T
    F0, 42, 3g, 50  Excl Header
    49              Function
    00              Reserved
    0ddd dddd       Data                        (*5, TABLE3)
    F7              End of Excl
(Receives this message & data, and transmits Func=23 or Func=24 message)
Receives Func=19 message, and transmits this message & data.
When the Combi No. is changed by SW, transmits this message & data.


(15) COMBINATION PARAMETER DUMP                                         R , T
    F0, 42, 3g, 50  Excl Header
    4D              Function
    00              Reserved
    00kk bbbb       Kind and Bank               (*7)
    0ppp pppp       Combination No.
    0ddd dddd       Data                        (*5, TABLE3)
    F7              End of Excl
(Receives this message & data, and transmits Func=23 or Func=24 message)
Receives Func=1C message, and transmits this message & data.
Transmits this message & data when DATA DUMP is executed.


(16) MULTI DATA (In Memory) DUMP                                        R , T
    F0, 42, 3g, 50  Excl Header
    48              Function
    00              Reserved
    0sss ssss       Multi Data Size[4Bytes]     (*8)
      :               :
    0mmm mmmm       Multi Data Parameters       (*5,TABLE10)
      :               :
    0ccc cccc       Cue Lists Data              (*5,TABLE11)
      :               :
    0ddd dddd       Multi Data                  (*5,TABLE12)
      :               :
    F7              End of Excl
(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.


(17) GLOBAL DATA DUMP                                                   R , T
    F0, 42, 3g, 50  Excl Header
    51              Function
    00              Reserved
    0ddd dddd       Data                        (*5, TABLE4)
      :
    F7              End of Excl
(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.


(18) DRUMKIT DATA DUMP                                                  R , T
    F0, 42, 3g, 50  Excl Header
    52              Function
    000d 00kk       Kind & MSB of Dkit No.      (*9-1)
    0ddd dddd       Drumkit No.                 (*9-1)
    00              Reserved
    0ddd dddd       Data                        (*5, TABLE7)
      :
    F7              End of Excl
(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.


(19) ARPEGGIO PATTERN DATA DUMP                                         R , T
    F0, 42, 3g, 50  Excl Header
    69              Function
    0kk0 0000       Kind                        (*9-2)
    0000 00aa       ARPPAT No. MSB              (*9-2)
    0aaa aaaa       ARPPAT No. LSB              (*9-2)
    0ddd dddd       Data                        (*5, TABLE9)
      :
    F7              End of Excl
(Receives this message & data, and transmits Func=23 or Func=24 message)
Receives Func=34 message, and transmits this message & data.
Transmits this message & data when DATA DUMP is executed.
```

```
(21) MODE CHANGE                                                    R , T
    F0, 42, 3g, 50  Excl Header
    4E              Function
    0000 mmmm       Mode                        (*11)
    F7              End of Excl
(Receives this message & data, changes the Mode, and transmits Func=23 or Func=24
When the Mode is changed by SW, transmits this message & data.


(22) PARAMETER CHANGE                                               R , T
    F0, 42, 3g, 50  Excl Header
    41              Function
    0000 mmmm       Mode                        (*11)
    0000 0000       Parameter ID(MSB)
    0ppp pppp       Parameter ID(LSB)           (TABLE 1,2,3,5,6,12)
    0000 0000       Parameter SUB ID(MSB)
    0qqq qqqq       Parameter SUB ID(LSB)       (TABLE 1,2,3,5,6,12)
    0vvv vvvv       Value(MSB bit7-18)          (*12)
    0vvv vvvv       Value(LSB bit0-6)           (*12)
    F7              End of Excl
(Receives this message & data, and transmits Func=23 or Func=24 messages)
When the Parameter No. is changed by SW, transmits this message & data.


(23) DRUMKIT PARAMETER CHANGE                                       R , T
    F0, 42, 3g, 50  Excl Header
    53              Function
    0kkk kkkk       Drumkit No.(kk = 00-8F( : 00-143 with MSB))
    0sss ssss       Index No.(ss = 00-57( : A0-C8))
    0000 000k       MSB of Drumkit No.
    0ppp pppp       Parameter No.(LSB)          (TABLE 7)
    0vvv vvvv       Value(MSB bit7~18)          (*12)
    0vvv vvvv       Value(LSB bit0~6)           (*12)
    F7              End of Excl
(Receives this message & data, and transmits Func=23 or Func=24 messages)


(24) ARPEGGIO PATTERN PARAMETER CHANGE                              R , T
    F0, 42, 3g, 50  Excl Header
    6D              Function
    0000 000b       Arppegio AorB(b = 0 : Arppegio A 1 : Arppegio B)
    0000 00aa       Pattern No.(MSB)            (bit 7)
    0aaa aaaa       Pattern No.(LSB)            (bit 6-0) a = 000-147 ( : 000-327)
    0sss ssss       Step No.(ss = 00-2F ( : 00-47))
    0ttt tttt       Tone No.(tt = 00-0B ( : 00-11))
    0ppp pppp       Parameter No.(MSB)          (TABLE 9)
    0000 0000       Parameter No.(LSB)          (TABLE 9)
    0vvv vvvv       Value(MSB bit7~18)          (*12)
    0vvv vvvv       Value(LSB bit0~6)           (*12)
    F7              End of Excl
(Receives this message & data, and transmits Func=23 or Func=24 messages)


(25) MODE DATA                                                      T
    F0, 42, 3g, 50  Excl Header
    42              Function
    0000 mmmm       Mode                        (*11)
    0ooo oooo       Option                      (*13)
    0sss ssss       Setuped data1               (*13)
    0ddd dddd       Setuped data2               (*13)
    00              Reserved
    F7              End of Excl
(Receives FUNC=12 message, and transmits this message & data.)


(26) MIDI IN DATA FORMAT ERROR                                      T
    F0, 42, 3g, 50  Excl Header
    26              MIDI IN DATA FORMAT ERROR
    0ccc cccc       Error Code                  (*14)
    F7              End of Excl
(Transmits this message when there is an error in the MIDI IN message (ex.data length).)


(27) DATA LOAD COMPLETED (ACK)                                      T
    F0, 42, 3g, 50  Excl Header
    23              DATA LOAD COMPLETED
    F7              End of Excl
(Transmits this message when DATA LOAD,PROCESSING have been completed.)


(28) DATA LOAD ERROR (NAC)                                          T
    F0, 42, 3g, 50  Excl Header
    24              DATA LOAD ERROR
    0ccc cccc       Error Code                  (*15)
    F7              End of Excl
(Transmits this message when DATA LOAD,PROCESSING have not been completed (ex. protected).)


(29) WRITE COMPLETED                                                T
    F0, 42, 3g, 50  Excl Header
    21              WRITE COMPLETED
```

```
    F7              End of Excl
(Transmits this message when DATA WRITE MIDI have been completed.)


(30) WRITE ERROR                                                    T
    F0, 42, 3g, 50  Excl Header
    22              WRITE ERROR
    0ccc cccc       Error Code                  (*16)
    F7              End of Excl
(Transmits this message when DATA WRITE MIDI have not been completed.)


//////// * The each bank's value is same as value of the internal bank
*1
    k = 0 : Dump Program Bank IA~IE(IF) (size is same as TRITON)
        1 : 1 Bank Programs (Use b)
        2 : 1 Program   (Use b & pp)

    b = 0 -  4 : Bank Int A-E
             5 : Bank Int F
        6 - 13 : Bank EXB A-H

*2
    k = 0 : Dump Combination Bank IA~ID (size is same as TRITON)
        1 : 1 Bank Combinations(Use b)
        2 : 1 Combination(Use b & cc)

    b = 0 -  4 : Bank Int A-E
        5 - 12 : Bank EXB A-H

*3
  3-1
    k = 00 : All Drumkits[0-63](For TRITON)
        01 : 1 Drumkit(Use d)
        10 : All Drumkits[0-143](For TRITON-Rack)

    d = 0-8F : Drumkit 0-143(with MSB)

  3-2
    k = 00 : All Arpeggio Patterns[0-231](For TRITON)
        10 : 1 Arpeggio Pattern(Use a)
        01 : All Arpeggio Patterns[0-327](For TRITON-Rack)

    a = 0-147 : Arpeggio Pattern 0-327


*4 PROGRAM,COMBINATION BANK
    b = 0 -  4 : Bank Int A-E
             5 : Bank Int F(Only for Program)
        6 - 13 : Bank EXB A-H

*5 DATA CONVERT METHOD(INTERNAL DATA<-->MIDI DATA)
+-------------------------------------------------------------------------------------+
|  Internal 7byte data <--convert--> MIDI 8 byte data                                 |
|  example) Internal data(bit image) MIDI data(bit image)                             |
|                Aaaaaaaa            0ABCDEFG                                         |
|                Bbbbbbbb            0aaaaaaa                                         |
|                Ccccccc             0bbbbbbb                                         |
|                Ddddddd             0ccccccc                                         |
|                Eeeeeee             0ddddddd                                         |
|                Fffffff             0eeeeeee                                         |
|                Ggggggg             0fffffff                                         |
|                Hhhhhhh             0ggggggg                                         |
|                Iiiiiii             0HIJKLMN                                         |
|                   :                0hhhhhhh                                         |
|                   :                   :                                             |
|                Vvvvvvv             0VW00000                                         |
|                Wwwwwww             0vvvvvvv                                         |
|                                    0wwwwwww                                         |
|                                    11110111 (EOX=7FH)                               |
+-------------------------------------------------------------------------------------+

*6
    v = 0 : Bank Int A-E,Bank EXB A-H
        1 : Bank Int A-F,Bank EXB A-H

    k = 1 : 1 Bank Program      (Use v & b)
        2 : 1 Program           (Use b & pp)

    b = 0 -  5 : Bank Int A-F
        6 - 13 : Bank EXB A-H


*7
    k = 1 : 1 Bank Combination  (Use b)
        2 : 1 Combination       (Use b & cc)

    b = 0 -  4 : Bank Int A-E
        5 - 12 : Bank EXB A-H
```

```
*8 Multi(Sequence) Data Size (4Bytes)
   'Multi(Sequence) Data Size' is a all multi data's length. A unit is Byte.
        [Data Size (bit21~27)],
        [Data Size (bit14~20)],
        [Data Size (bit 7~13)],
        [Data SIze (bit 0~ 6)]
   'All multi data' is 'MULTI DATA PARAMETERS(TABLE 10)','CUE LISTS DATA(TABLE 11)' and
    'MULTI DATA(TABLE 12)'.

*9
  9-1
    k = 00 : All Drumkits For TRITON[0-63]
        01 : 1 Drumkit      (Use d)
        10 : All Drumkits For TRITON-Rack[0-143]

    d = 0-8F : Drumkit 0-143(with MSB)

  9-2
    k = 00 : All Arpeggio Patterns[0-231]   (For TRITON)
        10 : 1 Arpeggio Pattern     (Use a)
        01 : All Arpeggio Patterns[0-327]   (For TRITON-Rack)

    a = 0-147 : Arpeggio Pattern 0-327


*10 All DATA (PROG,COMBI,GLOBAL,DRUMS,ARPPAT,MULTI) DUMP FORMAT (For request, size is same as TRITON)
    [Global Data],
    [Drums Data],                       (Drumkits[0-63])
    [Arpeggio Pattern DATA],            (Arpeggio Patterns[0-231])
    [All Combination Parameter Data],   (Combination Bank IA~ID)
    [All Program Parameter Data],       (Program Bank IA~IE(IF))
    [Multi Data Parameters],            (TABLE 10)
    [Cue Lists Data],                   (For TRITON)
    [Multi Data & Multi Event Data]     (TABLE 12, "MULTI EVENT DATA FORMAT")

*11
    mmm = 0 : COMBI PLAY
          1 : COMBI EDIT
          2 : PROG PLAY
          3 : PROG EDIT
          4 : MULTI
          5 : DEMO/SNG
          6 : SANPLING
          7 : GLOBAL
          8 : DISK

*12 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
    Value Data  SSSHHHHH LLLLLLLL  (S=Sign H,L=13bit data)
    MIDI Data   0SHHHHHL 0LLLLLLL

*13
    oo : bit 0   = 0 : No MOSS Synthesizer,     = 1 : MOSS Synthesizer is loaded

    ss : bit 0,1 = 0 : Note Receive is EVEN,    = 1 : ODD,  = 2 : ALL
         bit 3,4 = 0 : Multi Clock is internal, = 1 : External  = 2 : External mLAN

    dd : bit 0   = 0 : Prog Mem is not protected,   = 1 : protected
         bit 1   = 0 : Combi Mem is not protected,  = 1 : protected
         bit 2   = 0 : Multi Mem is not protected,  = 1 : protected
         bit 3   = 0 : Drums Mem is not protected,  = 1 : protected
         bit 4   = 0 : ArpPat Mem is not protected, = 1 : ptotected

*14
    cc =  0 : Received Data Length is wrong
          1 : Received Function code is not registered
         40 : Another type error

*15
    cc =  0 : Dest Memory is protected
          1 : Dest Bank/Prog/Param is not exist
          2 : The mode is wrong
          3 : Memory over flow
         40 : Another type error

*16
    cc =   0 : Dest Memory is protected
           1 : Dest Bank/Prog is not exist
           2 : The mode is wrong
          40 : Another type error

 [ TABLE 1 ]           PROGRAM PARAMETERS (for PCM Synth)
  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.
+-----------+--------------------+-------------------------+------------------------------+---------+
|  No. (bit)|      PARAMETER     |  DATA(Hex) : VALUE      |         DESCRIPTION          | PARA No.|
+-----------+--------------------+-------------------------+------------------------------+---------+
|  00       |  PROGRAM NAME (Head)|                        |                              |         |
|   :       |         :          |  20~~7F                 |                              |   ----  |
```

15	PROGRAM NAME (Tail)			
INSERT EFFECT PARAMETERS				
16 : 135	FX1~~5 (24Bytes * 5) (120 Bytes)			1E,00 : 23,??
MASTER EFFECT PARAMETERS				
136 : : 191	FX1~~2 (20Bytes * 2) Return, Chain & Master EQ (16 Bytes) (56 Bytes)			24,00 : : 27,??
	AUDITION PARAMETERS			
(154)	RIFF NO.(MSB)	0000~~017E : 0~~382		00,17
(155)	RIFF NO.(LSB)			
(156)	TRANSPOSE	E8~~18 : -24~~24		00,18
ARPEGGIATOR PARAMETERS				
192	TEMPO	28~~F0 : 40~~240		1C,00
193	SWITCH	0:OFF, 1:ON		1C,01
194	PATTERN NO.	00~~FF : 0~~255	0~~147 : 0~~327 **1-8	1D,00
b0~~1 195 b2~~4	OCTAVE RESOLUTION	00~~03 : 0~~4 0:16T, 1:16, 2:8T, 3:8, 4:4T, 5:4		1D,02 1D,01
b5	PATTERN NO. MSB	0 or 1	0~~147 : 0~~327 **1-8	1D,00
196	GATE	00~~64 : 0~~100[%], 65:Step		1D,03
197	VELOCITY	01~~7F : 1~~127, 80:Key, 81:Step		1D,04
198	SWING	9C~~64 : -100~~100		1D,05
bit0 bit1 199 bit2 bit3	SORT LATCH KEY SYNC. KEYBOARD	0:OFF, 1:ON 0:OFF, 1:ON 0:OFF, 1:ON 0:OFF, 1:ON		1D,06 1D,07 1D,08 1D,09
200	TOP KEY	00~~7F : C-1~~G9		1D,0A
201	BOTTOM KEY	00~~7F : C-1~~G9		1D,0B
202	TOP VELOCITY	01~~7F : 1~~127		1D,0C
203	BOTTOM VELOCITY	01~~7F : 1~~127		1D,0D
COMMON PARAMETERS				
b0~~1 bit2 bit3 204 b4~~5 bit6 bit7	OSCILLATOR MODE KEY ASSIGN LEGATO PRIORITY SINGLE TRIGGER HOLD	0:Single, 1:Double, 2:Drums 0:Poly, 1:Mono 0:OFF, 1:ON 0:Low, 1:High, 2:Last 0:OFF, 1:ON 0:OFF, 1:ON		00,01 00,02 00,03 00,04 00,05 00,06
b0~~6 205 bit7	BUS SELECT USE DKIT SETTING	00:L/R,01~~05:IFX1~~5,06~~09:1~~4,0A:1/2,0B:3/4,0C:Off 0:OFF, 1:ON		00,07 00,08
206	CATEGORY	00~~0F : 0~~15		00,00
207	SCALE TYPE	00~~1A : **1-1		00,09
208	SCALE KEY	00~~0C : C~~B		00,0A
209	RANDOM INTENSITY	00~~07 : 0~~7		00,0B
b0~~5 210 bit6 bit7	SW 1 ASSIGN TYPE SW1 TOGGLE/MOMENTARY SW 1 ON/OFF	00~~0C : **1-2 0:Toggle, 1:Momentary 0:OFF, 1:ON		00,0C 00,10 00,0E

	b0~~5	SW 2 ASSIGN TYPE	00~~0C : **1-2		00,0D
211	bit6	SW2 TOGGLE/MOMENTARY	0:Toggle, 1:Momentary		00,11
	bit7	SW 2 ON/OFF	0:OFF, 1:ON		00,0F
	b0~~6	KNOB 1 ASSIGN TYPE	00~~7C : **1-3		00,12
212	bit7	REALTIME CONTROLS	0:A, 1:B **1-9		00,16
	b0~~6	KNOB 2 ASSIGN	00~~7C : **1-3		00,13
213	bit7	REALTIME CONTROLS MSB	0:A or B, 1:C **1-9		00,19
214		KNOB 3 ASSIGN	00~~7C : **1-3		00,14
215		KNOB 4 ASSIGN	00~~7C : **1-3		00,15
PITCH EG					
216		START LEVEL	9D~~63 : -99~~99		01,00
217		ATTACK TIME	00~~63 : 00~~99		01,01
218		ATTACK LEVEL	9D~~63 : -99~~99		01,02
219		DECAY TIME	00~~63 : 00~~99		01,03
220		RELEASE TIME	00~~63 : 00~~99		01,04
221		RELEASE LEVEL	9D~~63 : -99~~99		01,05
222		A.M.SOURCE (LEVEL1)	00~~2A : **1-4	Alternate Modulation	01,08
223		INT BY A.M.(LEVEL1)	9D~~63 : -99~~99		01,09
224		A.M.SOURCE (LEVEL2)	00~~2A : **1-4	Alternate Modulation	01,0A
225		INT BY A.M.(LEVEL2)	9D~~63 : -99~~99		01,0B
226		A.M.SOURCE (TIME)	00~~2A : **1-4	Alternate Modulation	01,06
227		INT BY A.M.(TIME)	9D~~63 : -99~~99		01,07
	b0~~1	START (A.M.LEVEL1)	FF:-, 0:OFF, 1:+		01,0E
	b2~~3	ATTACK (A.M.LEVEL1)	FF:-, 0:OFF, 1:+		01,0F
228	b4~~5	START (A.M.LEVEL2)	FF:-, 0:OFF, 1:+		01,10
	b6~~7	ATTACK (A.M.LEVEL2)	FF:-, 0:OFF, 1:+		01,11
	b0~~1	ATTACK (A.M.TIME)	FF:-, 0:OFF, 1:+		01,0C
229	b2~~3	DECAY (A.M.TIME)	FF:-, 0:OFF, 1:+		01,0D
OSCILLATOR 1					
	bit7	HI START OFFSET	0:OFF, 1:ON		02,02
230	bit6	HI REVERSE	0:OFF, 1:ON		02,03
	b0~~6	HI SAMPLE NO.(MSB)	00~~03E7 : 00~~999		02,01
231		HI SAMPLE NO.(LSB)			
232		HI BANK	0:ROM, 1:RAM, ~~???	??? is depend on PCM option.	02,00
233		HI LEVEL	00~~7F : 00~~127		02,04
	bit7	LOW START OFFSET	0:OFF, 1:ON		02,07
234	bit6	LOW REVERSE	0:OFF, 1:ON		02,08
	b0~~6	LOW SAMPLE NO.(MSB)	00~~03E7 : 00~~999		02,06
235		LOW SAMPLE NO.(LSB)			
236		LOW BANK	0:ROM, 1:RAM, ~~???	??? is depend on PCM option.	02,05
237		LOW LEVEL	00~~7F : 00~~127		02,09
238		DELAY START	00~~60,61 : **1-5		02,0A
239		VEL M.SAMPLE SW	01~~7F : 01~~127	(For Vel Split)	02,0B
240		VEL ZONE BOTTOM	01~~7F : 01~~127		02,0C
241		VEL ZONE TOP	01~~7F : 01~~127		02,0D
OSCILLATOR 1 LFO 1					

	b0~~4	WAVEFORM	0~~14 : **1-6		03,00
242					
	bit7	KEY SYNC.	0:OFF, 1:ON		03,01
243		FREQUENCY	00~~63 : 00~~99		03,02
244		OFFSET	9D~~63 : -99~~99		03,03
245		DELAY	00~~63 : 00~~99		03,04
246		FADE	00~~63 : 00~~99		03,05
	bit7	MIDI/TEMPO SYNC.	0:OFF, 1:ON		03,0A
247	b6~~4	SYNC BASE NOTE	0:16,1:8T,2:8,3:4T,4:4,5:2T,6:2,7:1		03,0B
	bit7	TIMES	00~~0F : 00~~16		03,0C
248		A.M.SOURCE (TIME1)	00~~2A : **1-4	Alternate Modulation	03,06
249		INT BY A.M.(TIME1)	9D~~63 : -99~~99		03,07
250		A.M.SOURCE (TIME2)	00~~2A : **1-4	Alternate Modulation	03,08
251		INT BY A.M.(TIME2)	9D~~63 : -99~~99		03,09
	OSCILLATOR 1 LFO 2				
252 : 261	Same as OSCILLATOR 1 LFO 1 (242~~251) (10 Bytes)				04,00 : 04,0C
	OSCILLATOR 1 PITCH				
262		OCTAVE	FE~~01 : 32~~4 [']		05,00
263		TRANSPOSE	F4~~0C : -12~~12		05,01
264		TUNE (MSB)	FB50~~04B0 : -1200~~1200		05,02
265		TUNE (LSB)	[Cent]		
266		A.M.SOURCE (PITCH)	00~~2A : **1-4	Alternate Modulation	05,03
267		INT BY A.M.(PITCH)	8D~~73 : **1-7		05,04
268		PITCH SLOPE	F6~~14 : -1.0~~2.0		05,05
269		INT BY PITCH EG	8D~~73 : **1-7		05,06
270		A.M.SOURCE (P.EG)	00~~2A : **1-4	Alternate Modulation	05,07
271		INT BY A.M.(P.EG)	8D~~73 : **1-7		05,08
272		INT BY OSC-1 LFO 1	8D~~73 : **1-7		05,09
273		INT BY OSC-1 LFO 2	8D~~73 : **1-7		05,0A
	bit0	PORTAMENTO	0:DIS, 1:ENA		05,0B
274					
	bit1	PORTAMENTO FINGERED	0:OFF, 1:ON		05,0C
275		PORTAMENTO TIME	00~~7F : 00~~127		05,0D
276		PITCH BY JS(+X)	C4~~0C : -60~~12		05,0E
277		PITCH BY JS(-X)	C4~~0C : -60~~12		05,0F
278		PITCH BY RIBBON(X)	F4~~0C : -12~~12		05,10
279		(RESERVED)			----
280		LFO1 INT BY JS(+Y)	8D~~73 : **1-7		05,11
281		LFO2 INT BY JS(+Y)	8D~~73 : **1-7		05,12
282		A.M.SOURCE(LFO1INT)	00~~2A : **1-4	Alternate Modulation	05,13
283		INT BY A.M.(LFO1INT)	8D~~73 : **1-7		05,14
284		A.M.SOURCE(LFO2INT)	00~~2A : **1-4	Alternate Modulation	05,15
285		INT BY A.M.(LFO2INT)	8D~~73 : **1-7		05,16
	OSCILLATOR 1 FILTER				
286		TYPE	0:LPF+RESO, 1:LPF+HPF		06,00
287		TRIM	00~~63 : 00~~99		06,01

288	RESONANCE	00~~63 : 00~~99		06,02
289	A.M.SOURCE(RESO.)	00~~2A : **1-4	Alternate Modulation	06,03
290	INT BY A.M.(RESO.)	9D~~63 : -99~~99		06,04
291	A.M.SOURCE(EG)	00~~2A : **1-4	Alternate Modulation	06,05
292	A.M.SOURCE(LFO1)	00~~2A : **1-4	Alternate Modulation	06,06
293	A.M.SOURCE(LFO2)	00~~2A : **1-4	Alternate Modulation	06,07
	OSCILLATOR 1 FILTER A			
294	FREQUENCY	00~~63 : 00~~99		07,00
295	KBD TRACK INTENSITY	9D~~63 : -99~~99		07,01
296	A.M.SOURCE(MOD1)	00~~2A : **1-4	Alternate Modulation	07,02
297	INT BY A.M.(MOD1)	9D~~63 : -99~~99		07,03
298	A.M.SOURCE(MOD2)	00~~2A : **1-4	Alternate Modulation	07,04
299	INT BY A.M.(MOD2)	9D~~63 : -99~~99		07,05
300	EG INTENSITY	9D~~63 : -99~~99		07,06
301	EG VELOCITY	9D~~63 : -99~~99		07,07
302	INT BY LFO 1	9D~~63 : -99~~99		07,08
303	INT BY LFO 2	9D~~63 : -99~~99		07,09
304	LFO 1 BY JS(-Y)	9D~~63 : -99~~99		07,0A
305	LFO 2 BY JS(-Y)	9D~~63 : -99~~99		07,0B
306	INT BY A.M.(EG)	9D~~63 : -99~~99	Alternate Modulation	07,0C
307	INT BY A.M.(LFO1)	9D~~63 : -99~~99	Alternate Modulation	07,0D
308	INT BY A.M.(LFO2)	9D~~63 : -99~~99	Alternate Modulation	07,0E
	OSCILLATOR 1 FILTER B			
309 : 323	Same as OSCILLATOR 1 FILTER B (294~~308) (15 Bytes)			08,00 : 08,0E
	OSCILLATOR 1 FILTER EG			
324	START LEVEL	9D~~63 : -99~~99		09,00
325	ATTACK TIME	00~~63 : 00~~99		09,01
326	ATTACK LEVEL	9D~~63 : -99~~99		09,02
327	DECAY TIME	00~~63 : 00~~99		09,03
328	BREAK POINT LEVEL	9D~~63 : -99~~99		09,04
329	SLOPE TIME	00~~63 : 00~~99		09,05
330	SUSTAIN LEVEL	9D~~63 : -99~~99		09,06
331	RELEASE TIME	00~~63 : 00~~99		09,07
332	RELEASE LEVEL	9D~~63 : -99~~99		09,08
b7~~b6	RELEASE (A.M.TIME1)	FF:-, 0:OFF, 1:+		09,12
b5~~b4	SLOPE (A.M.TIME1)	FF:-, 0:OFF, 1:+		09,11
333 b3~~b2	DECAY (A.M.TIME1)	FF:-, 0:OFF, 1:+		09,10
b1~~b0	ATTACK (A.M.TIME1)	FF:-, 0:OFF, 1:+		09,0F
b7~~b6	RELEASE (A.M.TIME2)	FF:-, 0:OFF, 1:+		09,16
b5~~b4	SLOPE (A.M.TIME2)	FF:-, 0:OFF, 1:+		09,15
334 b3~~b2	DECAY (A.M.TIME2)	FF:-, 0:OFF, 1:+		09,14
b1~~b0	ATTACK (A.M.TIME2)	FF:-, 0:OFF, 1:+		09,13
b5~~b4	BREAK (A.M.LEVEL)	FF:-, 0:OFF, 1:+		09,19
335 b3~~b2	ATTACK (A.M.LEVEL)	FF:-, 0:OFF, 1:+		09,18
b1~~b0	START (A.M.LEVEL)	FF:-, 0:OFF, 1:+		09,17

336	A.M.SOURCE(TIME1)	00~~2A : **1-4	Alternate Modulation	09,09
337	INT BY A.M.(TIME1)	9D~~63 : -99~~99		09,0A
338	A.M.SOURCE(TIME2)	00~~2A : **1-4	Alternate Modulation	09,0B
339	INT BY A.M.(TIME2)	9D~~63 : -99~~99		09,0C
340	A.M.SOURCE(LEVEL)	00~~2A : **1-4	Alternate Modulation	09,0D
241	INT BY A.M.(LEVEL)	9D~~63 : -99~~99		09,0E
OSCILLATOR 1 FILTER KEYBOARD TRACK				
342	KEY LOW	00~~7F : C-1~~G9		0A,00
343	RAMP LOW	9D~~63 : -99~~99		0A,01
344	KEY HIGH	00~~7F : C-1~~G9		0A,02
345	RAMP HIGH	9D~~63 : -99~~99		0A,03
OSCILLATOR 1 AMPLIFIER				
346	LEVEL	00~~7F : 00~~127		0B,00
347	INT BY VELOCITY	9D~~63 : -99~~99		0B,01
348	A.M.SOURCE	00~~2A : **1-4	Alternate Modulation	0B,02
349	INT BY A.M.	9D~~63 : -99~~99		0B,03
350	INT BY LFO 1	9D~~63 : -99~~99		0B,04
351	INT BY LFO 2	9D~~63 : -99~~99		0B,05
352	A.M.SOURCE(LFO1)	00~~2A : **1-4	Alternate Modulation	0B,06
353	INT BY A.M.(LFO1)	9D~~63 : -99~~99		0B,07
354	A.M.SOURCE(LFO2)	00~~2A : **1-4	Alternate Modulation	0B,08
355	INT BY A.M.(LFO2)	9D~~63 : -99~~99		0B,09
OSCILLATOR 1 AMPLIFIER EG				
356	START LEVEL	00~~63 : 00~~99		0C,00
357	ATTACK TIME	00~~63 : 00~~99		0C,01
358	ATTACK LEVEL	00~~63 : 00~~99		0C,02
359	DECAY TIME	00~~63 : 00~~99		0C,03
360	BREAK POINT LEVEL	00~~63 : 00~~99		0C,04
361	SLOPE TIME	00~~63 : 00~~99		0C,05
362	SUSTAIN LEVEL	00~~63 : 00~~99		0C,06
363	RELEASE TIME	00~~63 : 00~~99		0C,07
364	A.M.SOURCE(TIME1)	00~~2A : **1-4	Alternate Modulation	0C,08
365	INT BY A.M.(TIME1)	9D~~63 : -99~~99		0C,09
366	A.M.SOURCE(TIME2)	00~~2A : **1-4	Alternate Modulation	0C,0A
367	INT BY A.M.(TIME2)	9D~~63 : -99~~99		0C,0B
368	A.M.SOURCE(LEVEL)	00~~2A : **1-4	Alternate Modulation	0C,0C
369	INT BY A.M.(LEVEL)	9D~~63 : -99~~99		0C,0D
370 b0~~1	ATTACK (A.M.TIME1)	FF:-, 0:OFF, 1:+		0C,0E
370 b2~~3	DECAY (A.M.TIME1)	FF:-, 0:OFF, 1:+		0C,0F
370 b4~~5	SLOPE (A.M.TIME1)	FF:-, 0:OFF, 1:+		0C,10
370 b6~~7	RELEASE (A.M.TIME1)	FF:-, 0:OFF, 1:+		0C,11
371 b0~~1	ATTACK (A.M.TIME2)	FF:-, 0:OFF, 1:+		0C,12
371 b2~~3	DECAY (A.M.TIME2)	FF:-, 0:OFF, 1:+		0C,13
371 b4~~5	SLOPE (A.M.TIME2)	FF:-, 0:OFF, 1:+		0C,14
371 b6~~7	RELEASE (A.M.TIME2)	FF:-, 0:OFF, 1:+		0C,15

	b0~~1 | START (A.M.LEVEL)	FF:-, 0:OFF, 1:+		0C,16
372	b2~~3 | ATTACK (A.M.LEVEL)	FF:-, 0:OFF, 1:+		0C,17
	b4~~5 | BREAK (A.M.LEVEL)	FF:-, 0:OFF, 1:+		0C,18
273	(RESERVED)			----
	OSCILLATOR 1 AMPLIFIER KEYBOARD TRACK			
374	KEY LOW	00~~7F : C-1~~G9		0D,00
375	RAMP LOW	9D~~63 : -99~~99		0D,01
376	KEY HIGH	00~~7F : C-1~~G9		0D,02
377	RAMP HIGH	9D~~63 : -99~~99		0D,03
	OSCILLATOR 1 OUTPUT			
278	(RESERVED)			----
379	PAN	00:RND, 01~~7F : L001~~R127		0E,00
380	A.M.SOURCE(PAN)	00~~2A : **1-4	Alternate Modulation	0E,01
381	INT BY A.M.(PAN)	9D~~63 : -99~~99		0E,02
382	SEND1 (TO MFX1)	00~~7F: 00~~127		0E,03
383	SEND2 (TO MFX2)	00~~7F: 00~~127		0E,04
	OSCILLATOR 2			
384 : 537	Same as OSCILLATOR 1 (230~~383) (154 Bytes)			0F,00 : 1B,0E
538 : 539	(RESERVED)			----

**1-1 : 0 : Equal Temperament 1 : Pure Major 2 : Pure Minor
3 : Arabic 4 : Pythagoras 5 : Werkmeister
6 : Kirnberger 7 : Slendro 8 : Pelog
9 : Stretch A : User All Notes Scale
B~~1A : User Octave Scale 00 ~~15

**1-2 : 0 : OFF 1 : SW 1/2 Mod:CC#80/CC#81 2 : Porta SW
3 : Octave Down:N/A 4 : Octave Up:N/A 5 : JS X Lock:N/A
6 : JS+Y Lock:N/A 7 : JS-Y Lock:N/A 8 : Ribbon Lock:N/A
9 : JS X & Ribbon Lock:N/A A : JS+Y & Ribbon Lock:N/A B : JS-Y & Ribbon Lock:N/A
C : After Touch Lock:N/A
'N/A' means 'Not Available'.

**1-3 : 0 : Off 1 : Knob Mod.1:CC#17 2 : Knob Mod.2:CC#19
3 : Knob Mod.3:CC#20 4 : Knob Mod.4:CC#21 5 : Master Volume
6 : Portamento Time:CC#05 7 : Volume:CC#07 8 : Post IFX Pan:CC#08
9 : Pan:CC#10 A : Expression:CC#11 B : FX Control 1:CC#12
C : FX Control 2:CC#13 D : LPF Cutoff:CC#74 E : Resonance/HPF:CC#71
F : Filter EG Int.:CC#79 10 : F/A Attack:CC#73 11 : F/A Decay:CC#75
12 : F/A Sustain:CC#70 13 : F/A Release:CC#72 14 : Pitch LFO1 Spd:CC#76
15 : Pitch LFO1 Dep:CC#77 16 : Pitch LFO1 Dly:CC#78 17 : SW 1 Mod.:CC#80
18 : SW 2 Mod.:CC#81 19 : Foot Switch:CC#82 1A : MIDI CC#83
1B : MFX Send 1:CC#93 1C : MFX Send 2:CC#91 1D~~7C : MIDI CC#00~~MIDI CC#95

**1-4 : 0 : Off 1 : Pitch EG 2 : Filter EG 3 : Amp EG
4 : LFO 1 5 : LFO 2 6 : Flt KTrk +/+ 7 : Flt KTrk +/-
8 : Flt KTrk 0/+ 9 : Flt KTrk +/0 A : Amp KTrk +/+ B : Amp KTrk +/-
C : Amp KTrk 0/+ D : Amp KTrk +/0 E : Note Number F : Velocity
10 : Poly After 11 : After Touch 12 : JS X 13 : JS+Y:CC#01
14 : JS-Y:CC#02 15 : JS+Y & AT/2 16 : JS-Y & AT/2 17 : Pedal:CC#04
18 : Ribbon:CC#16 19 : Slider:CC#18 1A : KnobMod1:#17 1B : KnobMod2:#19
1C : KnobMod3:#20 1D : KnobMod4:#21 1E : KnobMod1 [+] 1F : KnobMod2 [+]
20 : KnobMod3 [+] 21 : KnobMod4 [+] 22 : Damper:#64 23 : Porta.SW:#65
24 : Sostenuto:#66 25 : Soft:CC#67 26 : SW 1:CC#80 27 : SW 2:CC#81
28 : Foot SW:#82 29 : MIDI:CC#83 2A : Tempo

**1-5 : Data Time[mSec] Step
00~~19 : 00~~ 50 (2mSec)
1A~~28 : 60~~ 200 (10mSec)
29~~38 : 250~~1000 (50mSec)
39~~60 : 1100~~5000 (100mSec) 61 : KeyOff

**1-6 : 0 : Triangle 0 1 : Triangle 90 2 : Triangle Random
3 : Saw 0 4 : Saw 180 5 : Square
6 : Sine 7 : Guitar 8 : Exponential Triangle
9 : Exponential Saw Down A : Exponential Saw Up B : Step Triangle-4
C : Step Triangle-6 D : Step Saw-4 E : Step Saw-6
F : Random1 (S/H) 10 : Random2 (S/H) 11 : Random3 (S/H)
12 : Random4 (Vector) 13 : Random5 (Vector) 14 : Random6 (Vector)

**1-7 : 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)

```
**1-8 : Arpeggio Pattern No. Format
        PATTERN NO.MSB(No.195 bit5) : N
        PATTERN NO.(No.194)         : nnnnnnnn
            Nnnnnnnnn = 0~~147 : 0~~327
**1-9 : Realtime Controls Format
        REALTIME CONTROLS MSB(No.212 bit7) : C
        REALTIME CONTROLS(No.213 bit7)     : c
            Cc = 0 : A
               = 1 : B
               = 2 : C
```

[TABLE 2-1] MOSS PROGRAM PARAMETERS (for Optional EXB-MOSS)

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.

No. (bit)	PARAMETER	DATA(Hex) : VALUE	DESCRIPTION	PARA No.
00	PROGRAM NAME (Head)			
	:	20~~7F		----
15	PROGRAM NAME (Tail)			
	INSERT EFFECT PARAMETERS			
16				1E,00
:	FX1~~5 (24Bytes * 5)			:
135	(120 Bytes)			4D,??
	MASTER EFFECT PARAMETERS			
136				24,00
:	FX1~~2 (20Bytes * 2)			:
:	Return, Chain & EQ (16 bytes)			:
191	(56 Bytes)			4E,??
	AUDITION PARAMETERS			
(154)	RIFF NO.(MSB)			
		0000~~017E : 0~~382		28,18
(155)	RIFF NO.(LSB)			
(156)	TRANSPOSE	E8~~18 : -24~~24		28,19
	ARPEGGIATOR PARAMETERS			
192				4B,00
	Same as PROGRAM [TABLE 1] ARPEGGIATOR (192~~213)			:
203	(12 Bytes)			4C,0D
	COMMON PARAMETERS			
b0~~1	(OSCILLATOR MODE)	3	3 Fixed (Means MOSS)	-----
b2~~3	VOICE ASSIGN	0:Mono Multi, 1:Mono Single, 2:Poly		28,03
204 b4~~5	KEY PRIORITY	0:Low, 1:High, 2:Last	Available when MONO	28,02
bit6	(Ignore)			
bit7	HOLD	0:OFF, 1:ON		28,01
205	BUS SELECT	00:L/R,01~~05:IFX1~~5,06~~09:1~~4,0A:1/2,0B:3/4,0C:Off		28,09
206	CATEGORY	00~~0F : 01~~16		28,00
207	SCALE TYPE	00~~1A : **1-1		28,0A
208	SCALE KEY	00~~0B : C ~~ B		28,0B
209	RANDOM INTENSITY	00~~63 : 0~~99		28,0C
210	SW 1			
b0~~5	ASSIGN	00~~0C : **1-2		28,0D
bit6	MODE	0:Toggle, 1:Momentary		28,11
bit7	SW	0:OFF, 1:ON		28,0E
211	SW 2 (Same as SW 1 (210))			28,10~~12
b0~~6	KNOB 1 ASSIGN TYPE	00~~7C : **1-3		28,13
212 bit7	REALTIME CONTROLS	0:A, 1:B **1-9		28,17
b0~~6	KNOB 2 ASSIGN	00~~7C : **1-3		28,14
213 bit7	REALTIME CONTROLS MSB	0:A or B, 1:C **1-9		28,1A
214	KNOB 3 ASSIGN	00~~7C : **1-3		28,15
215	KNOB 4 ASSIGN	00~~7C : **1-3		28,16

RETRIGGER CONTROL				
216	RETRIGGER CONTROLLER	00,0B~~29 : *2-1		28,04
217	THRESHOLD VELOCITY	01~~7F : 1~~127		28,05
UNISON				
b0~~1	UNISON TYPE	0:OFF, 1:2voices, 2:3voices, 3:6voices		28,06
218 bit2	(UNISON SW)	1	1 Fixed (Means Enable)	-----
bit3	UNISON MODE	0:Fixed, 1:Dynamic		28,07
219	UNISON DETUNE	00~~63 : 0~~99		28,08
EG1				
220	START LEVEL	9D~~63 : -99~~99		36,00
221	ATTACK TIME	00~~63 : 0~~99		36,01
222	ATTACK LEVEL	9D~~63 : -99~~99		36,02
223	DECAY TIME	00~~63 : 0~~99		36,03
224	BREAK LEVEL	9D~~63 : -99~~99		36,04
225	SLOPE TIME	00~~63 : 0~~99		36,05
226	SUSTAIN LEVEL	9D~~63 : -99~~99		36,06
227	RELEASE TIME	00~~63 : 0~~99		36,07
228	RELEASE LEVEL	9D~~63 : -99~~99		36,08
229	LEVEL AMS	00~~29 : *2-1	Alternate Modulation	36,09
230	INTENSITY	9D~~63 : -99~~99		36,0A
231	VELOCITY CONTROL	9D~~63 : -99~~99		36,0B
232	TIME AMS 1	00~~29 : *2-1	Alternate Modulation	36,0C
233	INTENSITY	9D~~63 : -99~~99		36,0D
234	TIME AMS 2	00~~29 : *2-1	Alternate Modulation	36,0E
235	ATTACK INTENSITY	9D~~63 : -99~~99		36,0F
236	DECAY INTENSITY	9D~~63 : -99~~99		36,10
237	SLOPE INTENSITY	9D~~63 : -99~~99		36,11
238	RELEASE INTENSITY	9D~~63 : -99~~99		36,12
EG 2 ~~ 4				
239 : 257	EG 2 (Same as EG 1 (220 ~~ 238)) (19 Bytes)			See above 18 parameters. ParamID = 37
258 : 276	EG 3 (Same as EG 1 (220 ~~ 238)) (19 Bytes)			See above 18 parameters. ParamID = 38
277 : 295	EG 4 (Same as EG 1 (220 ~~ 238)) (19 Bytes)			See above 18 parameters. ParamID = 39
LFO 1				
b0~~5	WAVEFORM	00:Triangle 0, 01:Triangle 90, 02:Triangle Random, 03:Sine, 04:Saw Up 0, 05:Saw Up 180, 06:Saw Down 0, 07:Saw Down 180, 08:Square, 09:Random-S/H, 0A:Random-Vector, 0B:Step Triangle-4, 0C:Step Triangle-6, 0D:Step Saw-4, 0E:Step Saw-6, 0F:Exponential Triangle, 10:Exponential Saw Up, 11:Exponential Saw Down		3A,00
296 b6~~7	KEY SYNC.	0:Off, 1:byTimbre, 2:byVoice		3A,01
297	FREQUENCY	00~~C7 : 0~~199		3A,02
298	FREQUENCY AMS 1	00~~29 : *2-1	Alternate Modulation	3A,03
299	INTENSITY	9D~~63 : -99~~99		3A,04
300	FREQUENCY AMS 2	00~~29 : *2-1	Alternate Modulation	3A,05

301	INTENSITY	9D~~63 : -99~~99		3A,06
302	FADE IN	00~~63 : 0~~99		3A,07
303	AMPLITUDE AMS	00~~29 : *2-1	Alternate Modulation	3A,08
304	INTENSITY	9D~~63 : -99~~99		3A,09
305	OFFSET	CE~~32 : -50~~50		3A,0A
	MIDI/TEMPO SYNC.			
b0~~3	TIMES	00~~0F : 1~~16		3A,0D
306 b4~~6	BASE NOTE	0:16,1:8T,2:8,3:4T,4:4,5:2T,6:2,7:1		3A,0C
bit7	SYNC. SW	0:OFF, 1:ON		3A,0B
LFO 2 ~~ 4				
307 : 317	LFO 2 (Same as LFO 1 (296 ~~ 306)) (11 Bytes)			See above 14 parameters. ParamID = 3B
318 : 328	LFO 3 (Same as LFO 1 (296 ~~ 306)) (11 Bytes)			See above 14 parameters. ParamID = 3C
329 : 339	LFO 4 (Same as LFO 1 (296 ~~ 306)) (11 Bytes)			See above 14 parameters. ParamID = 3D
OSC COMMON PITCH MODULATION				
340	JS(+X) INTENSITY	C4~~18 : -60~~24		29,04
341	JS(-X) INTENSITY	C4~~18 : -60~~24		29,05
	PITCH BEND STEP			
342 b0~~3	JS(+X)	00:Continuous, 01:1/8, 02:1/4, 03:1/2, 05~~0F:01~~12		29,06
b4~~7	JS(-X)			29,07
343	COMMON PITCH AMS	00~~29 : *2-1	Alternate Modulation	29,02
344	INTENSITY	9D~~63 : -99~~99		29,03
PORTAMENTO				
bit0	ENABLE SW	0:OFF, 1:ON		29,08
345 bit1	FINGERED MODE SW	0:OFF, 1:ON		29,09
346	PORTAMENTO TIME	00~~63 : 0~~99		29,0A
347	TIME AMS	00~~29 : *2-1	Alternate Modulation	29,0B
348	INTENSITY	9D~~63 : -99~~99		29,0C
OSC 1				
349	OSC TYPE	(Single Size) 00:Standard, 01:Comb Filter, 02:VPM, 03:Resonance, 04:Ring Mod, 05:Cross Mod, 06:Sync Mod, 07:Organ Model, 08:E.Piano Model, (Double Size) 09:Brass Model, 0A:Reed Model, 0B:Plucked String Model, 0C:Bowed String Model		29,00
350	OCTAVE	00:-2[32'], 01:-1[16'], 02:0[8'], 03:1[4']		2A,00
351	TRANSPOSE	F4~~0C : -12~~12		2A,01
352	TUNE	CE~~32 : -50~~50 [cent]		2A,02
353	FREQUENCY OFFSET	9C~~64 : -10.0~~10.0 [Hz]		2A,03
	PITCH SLOPE			
354	CENTER KEY	00~~7F : C-1~~G9		2A,04
355	RAMP LOW	CE~~64 : -1.00~~2.00		2A,05
356	RAMP HIGH	CE~~64 : -1.00~~2.00	0.01 by step.	2A,06
357	PITCH AMS 1	00~~29 : *2-1	Alternate Modulation	2A,07
358	INTENSITY	9D~~63 : -99~~99		2A,08
359	AMS 1 INTENSITY AMS	00~~29 : *2-1	Alternate Modulation	2A,09
360	INTENSITY	9D~~63 : -99~~99		2A,0A
361	PITCH AMS 2	00~~29 : *2-1	Alternate Modulation	2A,0B

362	INTENSITY	9D~~63 : -99~~99		2A,0C
363 : 400	OSC SET 38 bytes (Parameters are determined by OSC TYPE. See [Table 2-2].)			
OSC 2				
401	OSC TYPE	(SingleSize Only) 00:Standard, 01:Comb Filter, 02:VPM, 03:Resonance, 04:Ring Mod, 05:Cross Mod, 06:Sync Mod, 07:Organ Model, 08:E.Piano Model		29,01
402 : 452	OSC 2 (Much the same as OSC 1 (350 ~~ 400), except OSC TYPE.) (51 Bytes)		See above 51 parameters. ParamID = 2B	
SUB OSC				
453	OCTAVE	00:-2[32'], 01:-1[16'], 02:0[8'], 03:1[4']		2C,00
454	TRANSPOSE	F4~~0C : -12~~12		2C,01
455	TUNE	CE~~32 : -50~~50 [cent]		2C,02
456	FREQUENCY OFFSET	9C~~64 : -10.0~~10.0 [Hz]		2C,03
457	PITCH SLOPE CENTER KEY	00~~7F : C-1~~G9		2C,04
458	RAMP LOW	CE~~64 : -1.00~~2.00	0.01 by step.	2C,05
459	RAMP HIGH	CE~~64 : -1.00~~2.00		2C,06
460	PITCH AMS 1	00~~29 : *2-1	Alternate Modulation	2C,07
461	INTENSITY	9D~~63 : -99~~99		2C,08
462	AMS 1 INTENSITY AMS	00~~29 : *2-1	Alternate Modulation	2C,09
463	INTENSITY	9D~~63 : -99~~99		2C,0A
464	PITCH AMS 2	00~~29 : *2-1	Alternate Modulation	2C,0B
465	INTENSITY	9D~~63 : -99~~99		2C,0C
466	WAVEFORM	0:Saw, 1:Square, 2:Triangle, 3:Sine		2D,00
NOISE GENERATOR				
467	NOISE FILTER TYPE	0:THRU, 1:LPF, 2:HPF, 3:BPF		2D,01
468	FILTER INPUT TRIM	00~~63 : 00~~99		2D,02
469	FILTER FREQUENCY	00~~63 : 00~~99		2D,03
460	FREQUENCY AMS 1	00~~29 : *2-1	Alternate Modulation	2D,04
471	INTENSITY	9D~~63 : -99~~99		2D,05
472	FREQUENCY AMS 2	00~~29 : *2-1	Alternate Modulation	2D,06
473	INTENSITY	9D~~63 : -99~~99		2D,07
474	FILTER RESONANCE	00~~63 : 00~~99		2D,08
OSC MIXER				
475	OSC 1 -> Mixer1 LEVEL	00~~63 : 00~~99		2E,00
476	LEVEL AMS	00~~29 : *2-1	Alternate Modulation	2E,01
477	INTENSITY	9D~~63 : -99~~99		2E,02
478 : 480	OSC 1 -> Mixer2	(Same as OSC 1 -> Mixer1 (475 ~~ 477))	See above 3 parameters. SUB ID = 03~~05	
481 : 483	OSC 2 -> Mixer1	(Same as OSC 1 -> Mixer1 (475 ~~ 477))	See above 3 parameters. SUB ID = 06~~08	
484 : 486	OSC 2 -> Mixer2	(Same as OSC 1 -> Mixer1 (475 ~~ 477))	See above 3 parameters. SUB ID = 09~~0B	
487 : 489	SUB OSC -> Mixer1	(Same as OSC 1 -> Mixer1 (475 ~~ 477))	See above 3 parameters. SUB ID = 0C~~0E	
490			See above 3	

: 492	SUB OSC -> Mixer2 (Same as OSC 1 -> Mixer1 (475 ~~ 477))		parameters. SUB ID = 0F~~11
493 : 495	Noise -> Mixer1 (Same as OSC 1 -> Mixer1 (475 ~~ 477))		See above 3 parameters. SUB ID = 12~~14
496 : 498	Noise -> Mixer2 (Same as OSC 1 -> Mixer1 (475 ~~ 477))		See above 3 parameters. SUB ID = 15~~17
499 : 501	Feedback -> Mixer1 (Same as OSC 1 -> Mixer1 (475 ~~ 477))		See above 3 parameters. SUB ID = 18~~1A
502 : 504	Feedback -> Mixer2 (Same as OSC 1 -> Mixer1 (475 ~~ 477))		See above 3 parameters. SUB ID = 1B~~1D
	(INPUT SW)			
bit0	OSC 1	1	1 Fixed (Means Enable)	-----
bit1	OSC 2	1	1 Fixed (Means Enable)	-----
505 bit2	SUB OSC	1	1 Fixed (Means Enable)	-----
bit3	Noise	1	1 Fixed (Means Enable)	-----
FILTER ROUTING				
b0~~1	ROUTING	0:Serial 1, 1:Serial 2, 2:Parallel		2F,OO
506 bit2	LINK SW	0:OFF, 1:ON		2F,01
FILTER 1				
507	FILTER TYPE	0:LPF(A), 1:HPF(A), 2:BPF(A), 3:BRF(A), 4:DualBP(A/B)		30,00
508	INPUT TRIM	00~~63 : 00~~99		30,01
509	FILTER FREQUENCY	00~~63 : 00~~99		30,02
	FREQUENCY KBD TRACK			
510	KEY LOW	00~~7F : C-1~~G9		30,03
511	KEY HIGH	00~~7F : C-1~~G9		30,04
512	RAMP LOW	9D~~63 : -99~~99		30,05
513	RAMP HIGH	9D~~63 : -99~~99		30,06
514	FREQUENCY MOD.EG	00~~04 : EG1~~4, AmpEG	Alternate Modulation	30,07
515	INTENSITY	9D~~63 : -99~~99		30,08
516	FILTER AMS 1	00~~29 : *2-1	Alternate Modulation	30,09
517	INTENSITY	9D~~63 : -99~~99		30,0A
518	FILTER AMS 2	00~~29 : *2-1	Alternate Modulation	30,0B
519	INTENSITY	9D~~63 : -99~~99		30,0C
520	FILTER RESONANCE	00~~63 : 00~~99		30,0D
521	RESONANCE AMS	00~~29 : *2-1	Alternate Modulation	30,0E
522	INTENSITY	9D~~63 : -99~~99		30,0F
523	B:INPUT TRIM	00~~63 : 00~~99		32,00
524	B:FILTER FREQUENCY	00~~63 : 00~~99		32,01
	B:FREQ. KBD TRACK			
525	KEY LOW	00~~7F : C-1~~G9		32,02
526	KEY HIGH	00~~7F : C-1~~G9		32,03
527	RAMP LOW	9D~~63 : -99~~99		32,04
528	RAMP HIGH	9D~~63 : -99~~99		32,05
529	B:FREQ. EG INTENSITY	9D~~63 : -99~~99	Alternate Modulation	32,06
530	B:FREQ. AMS 1 INT.	9D~~63 : -99~~99	Alternate Modulation	32,07
531	B:FREQ. AMS 2 INT.	9D~~63 : -99~~99	Alternate Modulation	32,08
532	B:FILTER RESONANCE	00~~63 : 00~~99		32,09
533	B:RESONANCE INT.	9D~~63 : -99~~99	Alternate Modulation	32,0a

534 : 560	FILTER 2 (Same as FILTER 1 (507 ~~ 533)) (27 Bytes)		See above 27 parameters. ParamID = 31 or (B:) 33	
AMPLIFIER 1				
561	AMP LEVEL	00~~63 : 00~~99		34,00
562	KEYBOARD TRACK KEY LOW	00~~7F : C-1~~G9		34,01
563	KEY HIGH	00~~7F : C-1~~G9		34,02
564	RAMP LOW	9D~~63 : -99~~99		34,03
565	RAMP HIGH	9D~~63 : -99~~99		34,04
566	MOD.EG	00~~04 : EG1~~4, AmpEG		34,05
567	(Reserved)	99	99 Fixed	-----
568	AMS	00~~29 : *2-1	Alternate Modulation	34,06
569	INTENSITY	9D~~63 : -99~~99		34,07
570 : 578	AMPLIFIER 2 (Same as AMPLIFIER 1 (561 ~~ 569)) (9 Bytes)		See above 8 parameters. PARA No. :34,08~~34,0F	
AMP EG				
579	(Reserved)	0	0 Fixed	-----
580	ATTACK TIME	00~~63 : 0~~99		35,00
581	ATTACK LEVEL	00~~63 : 0~~99		35,01
582	DECAY TIME	00~~63 : 0~~99		35,02
583	BREAK LEVEL	00~~63 : 0~~99		35,03
584	SLOPE TIME	00~~63 : 0~~99		35,04
585	SUSTAIN LEVEL	00~~63 : 0~~99		35,05
586	RELEASE TIME	00~~63 : 0~~99		35,06
587	(Reserved)	0	0 Fixed	-----
588	LEVEL AMS	00~~29 : *2-1	Alternate Modulation	35,07
589	INTENSITY	9D~~63 : -99~~99		35,08
590	VELOCITY CONTROL	9D~~63 : -99~~99		35,09
591	TIME AMS 1	00~~29 : *2-1	Alternate Modulation	35,0A
592	INTENSITY	9D~~63 : -99~~99		35,0B
593	TIME AMS 2	00~~29 : *2-1	Alternate Modulation	35,0C
594	ATTACK INTENSITY	9D~~63 : -99~~99		35,0D
595	DECAY INTENSITY	9D~~63 : -99~~99		35,0E
596	SLOPE INTENSITY	9D~~63 : -99~~99		35,0F
597	RELEASE INTENSITY	9D~~63 : -99~~99		35,10
OUTPUT LEVEL/PAN				
598	PAN	00~~7F : L000~~R127		34,10
599	PAN AMS	00~~29 : *2-1	Alternate Modulation	34,11
600	INTENSITY	9D~~63 : -99~~99		34,12
601	OUTPUT LEVEL	00~~7F : 0~~127		34,13
602	SEND 1	00~~7F : 0~~127		34,14
603	SEND 2	00~~7F : 0~~127		34,15

[TABLE 2-2] MULTI OSCILLATOR PARAMETERS (for Optional EXB-MOSS)
No. : No. in the OSC SET (38 bytes).
SUB ID : Right side of '/' is SUB ID for OSC 2.

No. (bit)	PARAMETER	DATA(Hex) : VALUE	DESCRIPTION	SUB ID

MULTI OSCILLATOR PARAMETERS 38 Bytes				
0:Standard				ParamID = 3E
	WAVE			
00	WAVE	0:Saw, 1:Pulse		00/16
01	WAVE EDGE	00~~63 : 0~~99		01/17
02	LEVEL	00~~63 : 0~~99		02/18
03	TRIANGLE LEVEL	00~~63 : 0~~99		03/19
04	SINE LEVEL	00~~63 : 0~~99		04/1A
05	PHASE SHIFT	9D~~63 : -99~~99		05/1B
	WAVEFORM			
06	WAVEFORM	9D~~63 : -99~~99		06/1C
07	MOD. LFO	00~~03 : LFO 1 ~~ 4	Alternate Modulation	07/1D
08	INTENSITY	9D~~63 : -99~~99		08/1E
09	AMS	00~~29 : *2-1	Alternate Modulation	09/1F
10	INTENSITY	9D~~63 : -99~~99		0A/20
	WAVE SHAPE			
11	INPUT LEVEL	00~~63 : 0~~99		0B/21
12	INPUT LEVEL AMS	00~~29 : *2-1	Alternate Modulation	0C/22
13	INTENSITY	9D~~63 : -99~~99		0D/23
14	OFFSET	9D~~63 : -99~~99		0E/24
15	TYPE	0:Clip, 1:Reso		0F/25
16	SHAPE	00~~63 : 0~~99		10/26
17	SHAPE AMS	00~~29 : *2-1	Alternate Modulation	11/27
18	INTENSITY	9D~~63 : -99~~99		12/28
19	BALANCE	00~~63 : 0~~99		13/29
20	BALANCE AMS	00~~29 : *2-1	Alternate Modulation	14/2A
21	INTENSITY	9D~~63 : -99~~99		15/2B
22~~37	(Reserved)	0	0 Fixed	-----
1:Comb Filter				ParamID = 3F
	INPUT			
00	INPUT WAVE	0:OSC2(1)+Noise, 1:Sub OSC+Noise, 2:Filter1+Noise, 3:Filter2+Noise, 4:Pulse Noise, 5:Impulse		00/0E
01	INPUT WAVE LEVEL	00~~63 : 0~~99		01/0F
02	NOISE LEVEL	00~~63 : 0~~99		02/10
03	PULSE WIDTH	00~~63 : 0~~99		03/11
04	INPUT LEVEL AMS	00~~29 : *2-1	Alternate Modulation	04/12
05	INTENSITY	9D~~63 : -99~~99		05/13
	FEEDBACK			
06	FEEDBACK	00~~63 : 0~~99		06/14
07	AMS 1	00~~29 : *2-1	Alternate Modulation	07/15
08	INTENSITY	9D~~63 : -99~~99		08/16
09	AMS 2	00~~29 : *2-1	Alternate Modulation	09/17
10	INTENSITY	9D~~63 : -99~~99		0A/18
	HIGH DAMP			
11	HIGH DAMP	00~~63 : 0~~99		0B/19
12	AMS	00~~29 : *2-1	Alternate Modulation	0C/1A
13	INTENSITY	9D~~63 : -99~~99		0D/1B
14~~37	(Reserved)	0	0 Fixed	-----
2:VPM				ParamID = 40

	CARRIER			
00	WAVE	0:Saw, 1:Square, 2:Triangle, 3:Sine		00/19
01	WAVE LEVEL	00~~63 : 0~~99		01/1A
02	LEVEL AMS 1	00~~29 : *2-1	Alternate Modulation	02/1B
03	INTENSITY	9D~~63 : -99~~99		03/1C
04	LEVEL AMS 2	00~~29 : *2-1	Alternate Modulation	04/1D
05	INTENSITY	9D~~63 : -99~~99		05/1E
06	WAVE SHAPE	00~~63 : 0~~99		06/1F
07	SHAPE AMS 1	00~~29 : *2-1	Alternate Modulation	07/20
08	INTENSITY	9D~~63 : -99~~99		08/21
09	SHAPE AMS 2	00~~29 : *2-1	Alternate Modulation	09/22
10	INTENSITY	9D~~63 : -99~~99		0A/23
11	WAVE SHAPE TYPE	00~~01 : 1~~2		0B/24
12	FEEDBACK	00~~63 : 0~~99		0C/25
	MODULATOR			
13	FREQUENCY COARSE	00~~10 : 0.5~~16		0D/26
14	FREQUENCY FINE	CE~~32 : -50~~50		0E/27
15	FREQUENCY AMS 1	00~~29 : *2-1	Alternate Modulation	0F/28
16	INTENSITY	9D~~63 : -99~~99		10/29
17	FREQUENCY AMS 2	00~~29 : *2-1	Alternate Modulation	11/2A
18	INTENSITY	9D~~63 : -99~~99		12/2B
19	WAVE	0:Saw, 1:Square, 2:Triangle, 3:Sine 4:OSC2(1), 5:Sub OSC, 6:Filter1, 7:Filter2		13/2C
20	WAVE LEVEL	00~~63 : 0~~99		14/2D
21	LEVEL AMS 1	00~~29 : *2-1	Alternate Modulation	15/2E
22	INTENSITY	9D~~63 : -99~~99		16/2F
23	LEVEL AMS 2	00~~29 : *2-1	Alternate Modulation	17/30
24	INTENSITY	9D~~63 : -99~~99		18/31
25~~37	(Reserved)	0	0 Fixed	-----

3:Resonance ParamID = 41

	INPUT			
00	INPUT WAVE	0:OSC2(1), 1:Sub OSC, 2:Noise, 3:Filter1, 4:Filter2		00/20
01	INPUT WAVE LEVEL	00~~63 : 0~~99		01/21
02	LEVEL AMS 1	00~~29 : *2-1	Alternate Modulation	02/22
03	INTENSITY	9D~~63 : -99~~99		03/23
04	LEVEL AMS 2	00~~29 : *2-1	Alternate Modulation	04/24
05	INTENSITY	9D~~63 : -99~~99		05/25
	BPF 1			
06	RESONANCE	00~~63 : 0~~99		06/26
07	FREQUENCY COARSE	00~~0F : 01~~16		07/27
08	FREQUENCY AMS	00~~29 : *2-1	Alternate Modulation	08/28
09	INTENSITY	F1~~0F : -15~~15		09/29
10	FREQUENCY FINE	9D~~63 : -99~~99		0A/2A
11	LEVEL	00~~63 : 0~~99		0B/2B
	BPF 2			
12	RESONANCE	00~~63 : 0~~99		0C/2C
13	FREQUENCY COARSE	00~~0F : 01~~16		0D/2D
14	FREQUENCY AMS	00~~29 : *2-1	Alternate Modulation	0E/2E

15	INTENSITY	F1~~0F : -15~~15		0F/2F
16	FREQUENCY FINE	9D~~63 : -99~~99		10/30
17	LEVEL	00~~63 : 0~~99		11/31
	BPF 3			
18	RESONANCE	00~~63 : 0~~99		12/32
19	FREQUENCY COARSE	00~~0F : 01~~16		13/33
20	FREQUENCY AMS	00~~29 : *2-1	Alternate Modulation	14/34
21	INTENSITY	F1~~0F : -15~~15		15/35
22	FREQUENCY FINE	9D~~63 : -99~~99		16/36
23	LEVEL	00~~63 : 0~~99		17/37
	BPF 4			
24	RESONANCE	00~~63 : 0~~99		18/38
25	FREQUENCY COARSE	00~~0F : 01~~16		19/39
26	FREQUENCY AMS	00~~29 : *2-1	Alternate Modulation	1A/3A
27	INTENSITY	F1~~0F : -15~~15		1B/3B
28	FREQUENCY FINE	9D~~63 : -99~~99		1C/3C
29	LEVEL	00~~63 : 0~~99		1D/3D
	RESONANCE MODULATION			
30	AMS	00~~29 : *2-1	Alternate Modulation	1E/3E
31	INTENSITY	9D~~63 : -99~~99		1F/3F
32~~37	(Reserved)	0	0 Fixed	-----

4:Ring Modulation — ParamID = 42

	WAVE			
00	INPUT WAVE	0:OSC2(1), 1:Sub OSC, 2:Noise, 3:Filter1, 4:Filter2		00/09
01	CARRIER WAVE	0:Saw, 1:Square, 2:Triangle, 3:Sine		01/0A
	MODULATION DEPTH			
02	DEPTH	00~~63 : 0~~99		02/0B
03	DEPTH AMS 1	00~~29 : *2-1	Alternate Modulation	03/0C
04	INTENSITY	9D~~63 : -99~~99		04/0D
05	DEPTH AMS 2	00~~29 : *2-1	Alternate Modulation	05/0E
06	INTENSITY	9D~~63 : -99~~99		06/0F
07	TYPE	00~~01 : 1~~2		07/10
08	WAVE EDGE	00~~63 : 0~~99		08/11
09~~37	(Reserved)	0	0 Fixed	-----

5:Cross Modulation — ParamID = 43

	WAVE			
00	INPUT WAVE	0:OSC2(1), 1:Sub OSC, 2:Noise, 3:Filter1, 4:Filter2		00/08
01	CARRIER WAVE	0:Saw, 1:Square, 2:Triangle, 3:Sine		01/09
	MODULATION DEPTH			
02	DEPTH	00~~63 : 0~~99		02/0A
03	DEPTH AMS 1	00~~29 : *2-1	Alternate Modulation	03/0B
04	INTENSITY	9D~~63 : -99~~99		04/0C
05	DEPTH AMS 2	00~~29 : *2-1	Alternate Modulation	05/0D
06	INTENSITY	9D~~63 : -99~~99		06/0E
07	WAVE EDGE	00~~63 : 0~~99		07/0F
08~~37	(Reserved)	0	0 Fixed	-----

6:Sync Modulation — ParamID = 44

	WAVE			
00	INPUT WAVE	0:OSC2(1), 1:Sub OSC, 2:Noise, 3:Filter1, 4:Filter2		00/03
01	SLAVE WAVE	0:Saw, 1:Square, 2:Triangle, 3:Sine		01/04

02	WAVE EDGE	00~~63 : 0~~99		02/05
03~~37	(Reserved)	0	0 Fixed	-----
7:Organ Model				ParamID = 45
00	DRAWBAR 1 WAVE	0:Sine1, 1:Sine2, 2:Sine3, 3:Triangle		00/19
01	HARMONICS COARSE	00~~0F: 1('16)~~16('1)		01/1A
02	HARMONICS FINE	9D~~63 : -99~~99		02/1B
03	LEVEL	00~~63 : 0~~99		03/1C
04	LEVEL AMS	00~~29 : *2-1	Alternate Modulation	04/1D
05	INTENSITY	9D~~63 : -99~~99		05/1E
06	PERCUSSION LEVEL	00~~63 : 0~~99		06/1F
07	DRAWBAR 2 WAVE	0:Sine1, 1:Sine2, 2:Sine3, 3:Triangle		07/20
08	HARMONICS COARSE	00~~0F: 1('16)~~16('1)		08/21
09	HARMONICS FINE	9D~~63 : -99~~99		09/22
10	LEVEL	00~~63 : 0~~99		0A/23
11	LEVEL AMS	00~~29 : *2-1	Alternate Modulation	0B/24
12	INTENSITY	9D~~63 : -99~~99		0C/25
13	PERCUSSION LEVEL	00~~63 : 0~~99		0D/26
14	DRAWBAR 3 WAVE	0:Sine1, 1:Sine2, 2:Sine3, 3:Triangle		0E/27
15	HARMONICS COARSE	00~~0F: 1('16)~~16('1)		0F/28
16	HARMONICS FINE	9D~~63 : -99~~99		10/29
17	LEVEL	00~~63 : 0~~99		11/2A
18	LEVEL AMS	00~~29 : *2-1	Alternate Modulation	12/2B
19	INTENSITY	9D~~63 : -99~~99		13/2C
20	PERCUSSION LEVEL	00~~63 : 0~~99		14/2D
21	PERCUSSION GENERATOR TRIGGER MODE	0:Single, 1:Multi		15/2E
22	DECAY	00~~63 : 0~~99		16/2F
23	LEVEL AMS	00~~29 : *2-1	Alternate Modulation	17/30
24	INTENSITY	9D~~63 : -99~~99		18/31
25~~37	(Reserved)	0	0 Fixed	-----
8:E.Piano Model				ParamID = 46
00	HAMMER FORCE	00~~63 : 0~~99		00/0E
01	VELOCITY CURVE	FF:Off, 0~~63 : 0~~99		01/0F
02	WIDTH	00~~63 : 0~~99		02/10
03	CLICK NOISE LEVEL	00~~63 : 0~~99		03/11
04	TONE GENERATOR DECAY	00~~63 : 0~~99		04/12
05	RELEASE	00~~63 : 0~~99		05/13
06	OVERTONE LEVEL	00~~63 : 0~~99		06/14
07	FREQUENCY	00~~63 : 0~~99		07/15
08	DECAY	00~~63 : 0~~99		08/16
09	PICKUP LOCATION	00~~63 : 0~~99		09/17
10	LOCATION AMS	00~~29 : *2-1	Alternate Modulation	0A/18

11	INTENSITY	9D~~63 : -99~~99		0B/19
	LOW EQ			
12	FREQUENCY	00~~31 : 0~~49		0C/1A
13	GAIN	EE~~12 : -18~~18 [dB]		0D/1B
14~~37	(Reserved)	0	0 Fixed	-----
9:Brass Model				ParamID = 47
00	INSTRUMENT TYPE	00~~02:Brass1~~3, 03~~04:Horn1~~2, 05:Reed Brass		00
	JUMP BEND SW			
bit0	JS(+X)	0:OFF, 1:ON		01
01				
bit1	JS(-X)	0:OFF, 1:ON		02
	BREATH PRESSURE			
02	MOD. EG	00~~04 : EG 1~~4, AmpEG	Alternate Modulation	03
03	INTENSITY	9D~~63 : -99~~99		04
04	AMS 1	00~~29 : *2-1	Alternate Modulation	05
05	INTENSITY	9D~~63 : -99~~99		06
06	AMS 2	00~~29 : *2-1	Alternate Modulation	07
07	INTENSITY	9D~~63 : -99~~99		08
08	(Reserved)	0	0 Fixed	-----
	LIP CHARACTER			
09	LIP	00~~63 : 0~~99		09
10	AMS	00~~29 : *2-1	Alternate Modulation	0A
11	INTENSITY	9D~~63 : -99~~99		0B
12~~14	(Reserved)			-----
	BELL CHARACTER			
15	TONE	00~~63 : 0~~99		0C
16	RESONANCE	00~~63 : 0~~99		0D
17	BREATH NOISE	00~~63 : 0~~99		0E
18~~27	(Reserved)			-----
	PEAKING EQ			
28	FREQUENCY	00~~31 : 0~~49		0F
29	Q	00~~1D : 0~~29		10
30	GAIN	EE~~12 : -18~~18 [dB]		11
31	STRENGTH	00~~63 : 0~~99		12
32~~37	(Reserved)			-----
10:Reed Model				ParamID = 48
00	INSTRUMENT TYPE	00~~02:Hard Sax 1~~3, 03~~04:Soft Sax 1~~2, 05~~06:Double Reed 1~~2, 07:Bassoon, 08:Clarinet, 09~~0A:Flute 1~~2, 0B:Pan Flute, 0C:Ocarina, 0D:Shakuhachi, 0E~~0F:Harmonica 1~~2, 10:Reed Synth		00
	JUMP BEND SW			
bit0	JS(+X)	0:OFF, 1:ON		01
01				
bit1	JS(-X)	0:OFF, 1:ON		02
	BREATH PRESSURE			
02	MOD. EG	00~~04 : EG 1~~4, AmpEG	Alternate Modulation	03
03	INTENSITY	9D~~63 : -99~~99		04
04	AMS 1	00~~29 : *2-1	Alternate Modulation	05
05	INTENSITY	9D~~63 : -99~~99		06
06	AMS 2	00~~29 : *2-1	Alternate Modulation	07
07	INTENSITY	9D~~63 : -99~~99		08
08~~12	(Reserved)			-----
13	BREATH NOISE	00~~63 : 0~~99		09

14~~25	(Reserved)			-----
26	REED CHARACTER AMS	00~~29 : *2-1	Alternate Modulation	0A
27	INTENSITY	9D~~63 : -99~~99		0B
28	BELL CHARACTER TONE	00~~63 : 0~~99		0C
29	RESONANCE	00~~63 : 0~~99		0D
30	PEAKING EQ FREQUENCY	00~~31 : 0~~49		0E
31	Q	00~~1D : 0~~29		0F
32	GAIN	EE~~12 : -18~~18 [dB]		10
33	(Reserved)			-----
34	WAVE SHAPE OFFSET	9D~~63 : -99~~99		11
35 b0~~6	SHAPE	00~~63 : 0~~99		12
bit7	TYPE	0:Clip, 1:Reso		13
36	SHAPE AMS	00~~29 : *2-1	Alternate Modulation	14
37	INTENSITY	9D~~63 : -99~~99		15
11:Plucked String Model				ParamID = 49
00	ATTACK LEVEL	00~~63 : 0~~99		00
01	VELOCITY CTRL	9D~~63 : -99~~99		01
02	CURVE UP	00~~63 : 0~~99		02
03	VELOCITY CTRL	9D~~63 : -99~~99		03
04	CURVE DOWN	00~~63 : 0~~99		04
05	VELOCITY CTRL	9D~~63 : -99~~99		05
06	NOISE LEVEL	00~~63 : 0~~99		06
07	VELOCITY CTRL	9D~~63 : -99~~99		07
08	STRING PICKING POINT	00~~63 : 0~~99		08
09	POINT AMS	00~~29 : *2-1	Alternate Modulation	09
10	INTENSITY	9D~~63 : -99~~99		0A
11	DISPERSION	00~~63 : 0~~99		0B
12	DISPERSION AMS	00~~29 : *2-1	Alternate Modulation	0C
13	INTENSITY	9D~~63 : -99~~99		0D
14	DAMP	00~~63 : 0~~99		0E
15	DAMP KBD TRACK	9D~~63 : -99~~99		0F
16	DAMP AMS	00~~29 : *2-1	Alternate Modulation	10
17	INTENSITY	9D~~63 : -99~~99		11
18	DECAY	00~~63 : 0~~99		12
19	DECAY KBD TRACK	9D~~63 : -99~~99		13
20	RELEASE	00~~63 : 0~~99		14
21	HARMONICS HARMONICS POINT	00~~63 : 0~~99		15
22	HARMONICS CTRL	00~~29 : *2-1		16
23	INTENSITY	9D~~63 : -99~~99		17
24	PICKUP SW	0:OFF, 1:ON		18
25	LOCATION	00~~63 : 0~~99		19
26	LOCATION AMS	00~~29 : *2-1	Alternate Modulation	1A

27	INTENSITY	9D~~63 : -99~~99		1B
	LOW EQ			
28	FREQUENCY	00~~31 : 0~~49		1C
29	GAIN	EE~~12 : -18~~18 [dB]		1D
30	LOW BOOST	00~~63 : 0~~99		1E
31~~37	(Reserved)	0	0 Fixed	-----

12:Bowed String Model — ParamID = 4A

	BOW SPEED			
00	MOD. EG	00~~04 : EG 1~~4, AmpEG	Alternate Modulation	00
01	INTENSITY	9D~~63 : -99~~99		01
02	AMS 1	00~~29 : *2-1	Alternate Modulation	02
03	INTENSITY	9D~~63 : -99~~99		03
04	AMS 2	00~~29 : *2-1	Alternate Modulation	04
05	INTENSITY	9D~~63 : -99~~99		05
06	DIFFERENTIAL	0:OFF, 1:ON		06
	BOW PRESSURE			
07	MOD. EG	00~~04 : EG 1~~4, AmpEG	Alternate Modulation	07
08	INTENSITY	9D~~63 : -99~~99		08
09	AMS	00~~29 : *2-1	Alternate Modulation	09
10	INTENSITY	9D~~63 : -99~~99		0A
11	ROSIN	00~~63 : 0~~99		0B
	STRING			
12	BOWING POINT	00~~63 : 0~~99		0C
13	POINT AMS	00~~29 : *2-1	Alternate Modulation	0D
14	INTENSITY	9D~~63 : -99~~99		0E
15	DAMP	00~~63 : 0~~99		0F
	DAMP KBD TRACK			
16	KEY	00~~7F : C-1~~G9		10
17	RAMP LOW	9D~~63 : -99~~99		11
18	RAMP HIGH	9D~~63 : -99~~99		12
19	DAMP AMS	00~~29 : *2-1	Alternate Modulation	13
20	INTENSITY	9D~~63 : -99~~99		14
21	DISPERSION	00~~63 : 0~~99		15
22	DISPERSION AMS	00~~29 : *2-1	Alternate Modulation	16
23	INTENSITY	9D~~63 : -99~~99		17
24	REFLECTION	00~~63 : 0~~99		18
25	REFLECTION AMS	00~~29 : *2-1	Alternate Modulation	19
26	INTENSITY	9D~~63 : -99~~99		1A
	PEAKING EQ			
27	FREQUENCY	00~~31 : 0~~49		1B
28	Q	00~~1D : 0~~29		1C
29	GAIN	EE~~12 : -18~~18 [dB]		1D
30~~37	(Reserved)			-----

*2-1 : Alternate Modulation Source for MOSS

00 : Off,	01 : EG 1,	02 : EG 2,	03 : EG 3,
04 : EG 4,	05 : Amp EG,	06 : LFO 1,	07 : LFO 2,
08 : LFO 3,	09 : LFO 4,	0A : Portamento,	0B : Note No. Linear,
0C : Note No. Exp.,	0D : Note Split High,	0E : Note Split Low,	0F : Velocity Soft,
10 : Velocity Med.,	11 : Velocity Hard,	12 : After Touch,	13 : JS X,
14 : JS +Y:CC#01,	15 : JS -Y:CC#02,	16 : JS +Y & AT/2,	17 : JS -Y & AT/2,
18 : Pedal:CC#04,	19 : Ribbon:CC#16,	1A : Ribbon +X,	1B : Ribbon -X,
1C : Slider:CC#18,	1D : KnobMod1:#17,	1E : KnobMod2:#19,	1F : KnobMod3:#20,
20 : KnobMod4:#21,	21 : KnobMod1 [+],	22 : KnobMod2 [+],	23 : KnobMod3 [+],

24 : KnobMod4 [+], 25 : Damper:#64, 26 : SW 1:CC#80, 27 : SW 2:CC#81,
28 : Foot SW:#82, 29 : MIDI:CC#83

[TABLE 3] 1 COMBINATION PARAMETERS
PARA No. : Parameter ID & SUB ID [HEX] for PARAMETER CHANGE. n : Timbre No.(1~~8:T1~~T8)

No. (bit)	PARAMETER	DATA(Hex) : VALUE	DESCRIPTION	PARA No.
00	COMBI. NAME (Head)			
:	:	20~~7F		----
15	COMBI. NAME (Tail)			
	INSERT EFFECT PARAMETERS			
16				0C,00
:	FX1~~5 (24Bytes * 5)			:
135	(120 Bytes)			11,??
	MASTER EFFECT PARAMETERS			
136				12,00
:	FX1~~2 (20Bytes * 2)			:
:	Return, Chain & EQ (16 Bytes)			:
191	(56 Bytes)			15,??
	ARPEGGIATOR PARAMETERS			
192	TEMPO	28~~F0 : 40~~240		09,00
bit0	SWITCH	0:OFF, 1:ON		09,01
193 bit1	ARPEGGIATOR RUN A	0:OFF, 1:ON		09,02
bit2	ARPEGGIATOR RUN B	0:OFF, 1:ON		09,03
	ARPEGGIATOR A			
194	PATTERN NO.	00~~FF : 0~~255	0~~147 : 0~~327 **1-8	0A,00
b0~~1	OCTAVE	00~~03 : 1~~4		0A,02
195 b2~~4	RESOLUTION	0:16T, 1:16, 2:8T, 3:8, 4:4T, 5:4		0A,01
b5	PATTERN NO. MSB	0 or 1	0~~147 : 0~~327 **1-8	0A,00
196	GATE	00~~64 : 0~~100[%], 65:Step		0A,03
197	VELOCITY	01~~7F : 1~~127, 80:Key, 81:Step		0A,04
198	SWING	9C~~64 : -100~~100		0A,05
bit0	SORT	0:OFF, 1:ON		0A,06
bit1	LATCH	0:OFF, 1:ON		0A,07
199 bit2	KEY SYNC.	0:OFF, 1:ON		0A,08
bit3	KEYBOARD	0:OFF, 1:ON		0A,09
200	TOP KEY	00~~7F : C-1~~G9		0A,0A
201	BOTTOM KEY	00~~7F : C-1~~G9		0A,0B
202	TOP VELOCITY	01~~7F : 1~~127		0A,0C
203	BOTTOM VELOCITY	01~~7F : 1~~127		0A,0D
	ARPEGGIATOR B			
204				0B,00
:	Same as ARPEGGIATOR A (194~~203)			:
213	(10 Bytes)			0B,0D
	COMMON PARAMETERS			
b0~~3	CATEGORY	00~~0F : 0~~15		00,00
214 b4~~7	MOSS BUS SELECT	00~~07 : TIMBRE1~~8		00,0F
215	SCALE TYPE	00~~1A : **1-1		00,01
216	SCALE KEY	00~~0B : C~~B		00,02
217	RANDOM INTENSITY	00~~07 : 0~~7	Normal = 0	00,03
b0~~5	SW 1 ASSIGN TYPE	00~~0C : **1-2		00,04
218 bit6	SW1 TOGGLE/MOMENTARY	0:Toggle, 1:Momentary		00,08
bit7	SW 1 ON/OFF	0:OFF, 1:ON		00,06

	b0~~5	SW 2 ASSIGN TYPE	00~~0C : **1-2		00,05
219	bit6	SW2 TOGGLE/MOMENTARY	0:Toggle, 1:Momentary		00,09
	bit7	SW 2 ON/OFF	0:OFF, 1:ON		00,07
	b0~~6	KNOB 1 ASSIGN TYPE	00~~7C : **1-3		00,0A
220	bit7	REALTIME CONTROLS	0:A, 1:B **3-2		00,0E
	b0~~6	KNOB 2 ASSIGN TYPE	00~~7C : **1-3		00,0B
221	bit7	REALTIME CONTROLS MSB	0:A or B, 1:C **3-2		00,10
222		KNOB 3 ASSIGN TYPE	00~~7C : **1-3		00,0C
223		KNOB 4 ASSIGN TYPE	00~~7C : **1-3		00,0D
	TIMBRE 1 PARAMETER				
224		PROGRAM NO.	00~~7F : 00~~127		n,00
225		PROGRAM BANK	00~~10 : Bank A~~g(d)		n,00
226	b0~~b4	MIDI CHANNEL	00~~0F : MIDI Channel 1~~16, 10:Global Channel		n,04
	b5~~b7	STATUS	0:INT, 1:Off, 2:EXT, 3:EX2		n,03
227		BANK SELECT MSB	00~~7F : 00~~127	Available only when status is EXT2.	n,05
228		BANK SELECT LSB	00~~7F : 00~~127		n,06
229		VOLUME	00~~7F : 00~~127		n,02
230		PITCH BEND RANGE	E7:PROG, E8~~18 : -24~~24		n,0C
231		TRANSPOSE	E8~~18 : -24~~24		n,0A
232		DETUNE MSB	FB50~~4B0: -1200~~1200		n,0B
233		DETUNE LSB			
234		DELAY START	00~~60,61 : **1-5		n,0D
235		PAN	00:RND, 01~~7F : L001~~R127		n,01
236		SEND 1 LEVEL	00~~7F : 00~~127		n,29
237		SEND 2 LEVEL	00~~7F : 00~~127		n,2A
238	b0~~ 2	DRUMKIT IFX4 Patch			n,2E
	b3~~ 5	DRUMKIT IFX5 Patch			n,2F
239	b0~~ 2	DRUMKIT IFX1 Patch	0:IFX1, 1:IFX2, 2:IFX3, 3:IFX4, 4:IFX5, 5:L/R		n,2B
	b3~~ 5	DRUMKIT IFX2 Patch			n,2C
	b6~~ 8	DRUMKIT IFX3 Patch			n,2D
240		BUS SELECT	0:DKit,1:L/R,2~~6:IFX1~~5,7~~A:1~~4,B:1/2,C:3/4,D:Off		n,28
241	bit0	PROGRAM CHANGE FILT	0:DIS, 1:ENA		n,0F
	bit1	AFTER TOUCH FILTER	0:DIS, 1:ENA		n,10
	bit2	DAMPER FILTER	0:DIS, 1:ENA		n,11
	bit3	PORTAMENTO FILTER	0:DIS, 1:ENA		n,12
	bit4	JS(X) AS AMS FILTER	0:DIS, 1:ENA		n,13
	bit5	JS(Y+) FILTER	0:DIS, 1:ENA		n,14
	bit6	JS(Y-) FILTER	0:DIS, 1:ENA		n,15
	bit7	RIBBON FILTER	0:DIS, 1:ENA		n,16
	bit0	ASSIGN KNOB 1 FILTER	0:DIS, 1:ENA		n,17
	bit1	ASSIGN KNOB 2 FILTER	0:DIS, 1:ENA		n,18
	bit2	ASSIGN KNOB 3 FILTER	0:DIS, 1:ENA		n,19
	bit3	ASSIGN KNOB 4 FILTER	0:DIS, 1:ENA		n,1A
242	bit4	ASSIGN SW 1 FILTER	0:DIS, 1:ENA		n,1B
	bit5	ASSIGN SW 2 FILTER	0:DIS, 1:ENA		n,1C

	bit6	FOOT PEDAL/SW FILTER	0:DIS, 1:ENA		n,1D
	bit7	OTHER CONTROL FILTER	0:DIS, 1:ENA		n,1E
	b0,1	FORCE OSC MODE	0:Program, 1:Poly, 2:Mono, 3:Mono Legato		n,07
243	b2,3	OSC SELECT	0:BOTH, 1:OSC1, 2:OSC2		n,08
	b4,5	ARPEGGIATOR ASSIGN	0:OFF, 1:A, 2:B		n,27
	bit6	USE PROGRAM'S SCALE	0:DIS, 1:ENA		n,0E
244		PORTAMENT TIME	FF:PRG, 00:Off, 01~~7F : 1~~127		n,09
245		KEY Z TOP	00~~7F : C-1~~G9		n,1F
246		KEY Z BOTTOM	00~~7F : C-1~~G9		n,22
247	b0~~3	KEY Z TOP SLOPE	0~~F: **3-1		n,20
	b4~~7	KEY Z BOTTOM SLOPE	0~~F: **3-1		n,21
248		VEL Z TOP	01~~7F : 1~~127		n,23
249		VEL Z BOTTOM	01~~7F : 1~~127		n,26
250	b0~~3	VEL Z TOP SLOPE	0~~F : 0~~120 (Vel fade slope = Para value * 8)		n,24
	b4~~7	VEL Z BOTTOM SLOPE			n,25
251		MOSS VOICE	00~~06: 0~~6		n,30
	TIMBRE 2~~8 PARAMETERS				
252 : 447		Same as TIMBRE 1 (224~~251) (28 * 7 = 196 Bytes)			n,00 : n,30

**3-1 : 0 1 : 1 (Semi tone) 2 : 2 3 : 3
4 : 4 5 : 6 (0.5 Oct) 6 : 8 7 : 10
8 : 12 (1 Oct) 9 : 18 (1.5 Oct) A : 24 (2 Oct) B : 30 (2.5 Oct)
C : 36 (3 Oct) D : 48 (4 Oct) E : 60 (5 Oct) F : 72 (6 Oct)

**3-2 : Realtime Controls Format
REALTIME CONTROLS MSB(No.220 bit7) : C
REALTIME CONTROLS(No.221 bit7) : c
Cc = 0 : A
= 1 : B
= 2 : C

[TABLE 4] GLOBAL PARAMETERS
No. : No. in the GLOBAL DUMP DATA.

No.	(bit)	PARAMETER	DATA(Hex) : VALUE	DESCRIPTION
GLOBAL PARAMETER				
00		MASTER TUNE	CE~~32 : -50~~50[Cent]	
01		KEY TRANSPOSE	F4~~0C : -12~~12	
02		VELOCITY CURVE	0~~7 : 1~~8	
03		AFTER TOUCH CURVE	0~~7 : 1~~8	
	b0~~2	(RESERVED)		
04	bit3	PROG AUTO ARP	0:OFF, 1:ON	
	bit4	COMBI AUTO ARP	0:OFF, 1:ON	
05		(RESERVED)		
06		(RESERVED)		
07		(RESERVED)		
08 : 199		USER SCALE (Octave) (12*16 Bytes)	9D~~63 : -99~~99 [Cent]	
200 : 327		USER SCALE (All Notes) (128 Bytes)	9D~~63 : -99~~99 [Cent]	
328 : 583		PROG CATEGORY NAME (16*16 Bytes)	20~~7F [ASCII CODE]	
584 :		COMBI CATEGORY NAME	20~~7F [ASCII CODE]	

839	(16*16 Bytes)		
AUDIO INPUT 1			
840	LEVEL	00~~7F : 00~~127	
841	PAN	00~~7F : L000~~R127	
842	SEND 1 LEVEL	00~~7F : 00~~127	
843	SEND 2 LEVEL	00~~7F : 00~~127	
844	BUS SELECT	00:L/R,01~~05:IFX1~~5,06~~09:1~~4,0A:1/2,0B:3/4,0C:Off	
AUDIO INPUT 2			
845 : 849	Same as AUDIO INPUT 1 (840~~844) (5 Bytes)		

[TABLE 5] Parameter No. at COMBINATION PLAY mode
n(=0~~7) : Timbre 1~~8

PARAMETER	DATA(Hex) : VALUE	DESCRIPTION	PARA No.
TIMBRE PARAMETER			
BANK/PROGRAM	00~~87F : A000~~g(d)128		n,00
PAN	00:RND, 01~~7F : L001~~R127		n,01
VOLUME	00~~7F : 0~~127		n,02
STATUS	0:INT, 1:Off, 2:EXT, 3:EX2		n,03
ARPEGGIO PARAMETER			
TEMPO	28~~F0 : 40~~240		08,00
SWITCH	0:OFF, 1:ON		08,01
ARPEGGIATOR RUN A	0:OFF, 1:ON		08,02
ARPEGGIATOR RUN B	0:OFF, 1:ON		08,03
GATE	C0~~3F : -64~~63	Arpeggiator gate knob parameter	08,04
VELOCITY	C0~~3F : -64~~63	Arpeggiator velocity knob parameter	08,05
ARPEGGIATOR-A PARAMETER			
PATTERN NO.	0~~147 : 0~~327		09,00
RESOLUTION	0:16T, 1:16, 2:8T, 3:8, 4:4T, 5:4		09,01
OCTAVE	00~~03 : 1~~4		09,02
SORT	0:OFF, 1:ON		09,06
LATCH	0:OFF, 1:ON		09,07
KEY SYNC.	0:OFF, 1:ON		09,08
KEYBOARD	0:OFF, 1:ON		09,09
ARPEGGIATOR-B PARAMETER			
Same as ARPEGGIATOR-A PARAMETER			0A,00~~09
SWITCH PARAMETER			
SW 1 ON/OFF	0:OFF, 1:ON		0B,00
SW 2 ON/OFF	0:OFF, 1:ON		0B,01
REALTIME CONTROLS	0:A, 1:B, 2:C		0B,02

[TABLE 6] Parameter No. at PROGRAM PLAY mode

PARAMETER	DATA(Hex) : VALUE	DESCRIPTION	PARA No.
PERFORMANCE EDITOR			
OCTAVE	FD~~03 : -3~~3		00,00
PITCH STRETCH	F4~~0C : -12~~12	Only for PCM program	00,01
OSC BALANCE	F6~~0A : -10~~10		00,02

AMP LEVEL	F6~~0A : -10~~10		00,03
ATTACK TIME	F6~~0A : -10~~10		00,04
DECAY TIME	F6~~0A : -10~~10		00,05
IFX BALANCE	F6~~0A : -10~~10		00,06
MFX BALANCE	F6~~0A : -10~~10		00,07
ARPEGGIATOR PARAMETER	Under Parameter's right side of '/' is Parameter ID of EXB-MOSS.		
TEMPO	28~~F0 : 40~~240		01/03,00
SWITCH	0:OFF, 1:ON		01/03,01
GATE	C0~~3F : -64~~63	Arpeggiator gate knob parameter	01/03,02
VELOCITY	C0~~3F : -64~~63	Arpeggiator velocity knob parameter	01/03,03
PATTERN NO.	0~~147 : 0~~327		02/04,00
RESOLUTION	0:16T, 1:16, 2:8T, 3:8, 4:4T, 5:4		02/04,01
OCTAVE	00~~03 : 1~~4		02/04,02
SORT	0:OFF, 1:ON		02/04,06
LATCH	0:OFF, 1:ON		02/04,07
KEY SYNC.	0:OFF, 1:ON		02/04,08
KEYBOARD	0:OFF, 1:ON		02/04,09
SWITCH PARAMETER	Under Parameter's right side of '/' is Parameter ID of EXB-MOSS.		
SW 1 ON/OFF	0:OFF, 1:ON		05/06,00
SW 2 ON/OFF	0:OFF, 1:ON		05/06,01
REALTIME CONTROLS	0:A, 1:B, 2:C		05/06,02

[TABLE 7] 1 DRUMKIT PARAMETERS
No. : No. in the DRUMKIT DUMP DATA.

No. (bit)	PARAMETER	DATA(Hex) : VALUE	DESCRIPTION	PARA No.
00 : 15	DRUMKIT NAME (Head) : DRUMKIT NAME (Tail)	20~~7F		----
KEY=C-1 PARAMETERS				
16	HIGHER BANK	0:ROM, 1:RAM, ~~???	??? is depend on PCM option.	00/0B
bit0 17 bit1	HIGHER START OFFSET HIGHER REVERSE	0:OFF, 1:ON 0:OFF, 1:ON		02/0D 03/0E
18 19	HIGH SAMPLE NO(MSB) HIGH SAMPLE NO(LSB)	00~~19C : 00~~412	Higher Vel's Drumsample	01/0C
20	HIGHER LEVEL	9D~~63 : -99~~99		04/0F
21	HIGHER TRANSPOSE	C0~~3F : -64~~63		05/10
22	HIGHER TUNE	9D~~63 : -99~~99		06/11
23	HIGHER ATTACK LEVEL	C0~~3F : -64~~63		07/12
24	HIGHER DECAY LEVEL	C0~~3F : -64~~63		08/13
25	HIGHER CUTOFF LEVEL	C0~~3F : -64~~63		09/14
26	HIGH RESONANCE LEVEL	C0~~3F : -64~~63		0A/15
27	(RESERVED)			----
28 : 39	LOWER Same as HIGHER (16~~27) (12 Bytes)	(Above Parameter's right side of '/' is PARA No. of LOWER.)		
40	PAN	00:RND, 01~~7F : L001~~R127		16
41	BUS SELECT	00:L/R,01~~05:IFX1~~5,06~~09:1~~4,0A:1/2,0B:3/4,0C:Off		17
42	SEND 1 LEVEL	00~~7F: 00~~127		18
43	SEND 2 LEVEL	00~~7F: 00~~127		19

44	EXCLUSIVE GROUP	00:Off, 01~~7F : 001~~127		1A
	bit0 VOICE ASSIGN	0:OFF, 1:ON		1B
	bit1 SINGLE TRIGGER	0:OFF, 1:ON		1C
45	bit2 RECEIVE NOTE ON	0:DIS, 1:ENA		1D
	bit3 RECEIVE NOTE OFF	0:DIS, 1:ENA		1E
46	VEL SAMPLE SW	01~~7F : 01~~127	For DRUMSAMPLE SELECT by Vel	1F
47	(RESERVED)			----
KEY=C#-1~~G9 PARAMETERS				
48				00
:	Same as KEY=C-1 (16~~47)			:
4111	(127 * 32 = 4064 Bytes)			1F

[TABLE 8] 1 ARPEGGIO PATTERN PARAMETERS
No. : No. in the ARPEGGIO PATTERN DUMP DATA.

No. (bit)	PARAMETER	DATA(Hex) : VALUE	DESCRIPTION	PARA No.
00	ARP. NAME (Head)			
:	:	20~~7F		----
15	ARP. NAME (Tail)			
b0~~1	OCTAVE MOTION	0:Up, 1:Down, 2:Both, 3:Parallel		01
b2~~3	TYPE	0:As Played,1:As Played(Fill),2:Running Up,3:Up&Down		00
16 bit4	TONE MODE	0:Normal, 1:Fixed Note		03
bit5	FIXED NOTE MODE	0:As Played, 1:All Tones		04
17	LENGTH	01~~30 : 1~~48		02
18	(RESERVED)			----
19	(RESERVED)			----
20	TONE 00 NOTE NO	00~~7F : C-1~~G9		05
21	TONE 01~~11 NOTE NO			05
:	Same as TONE 00 NOTE NO			:
31	(11 Bytes)			05
STEP 01 PARAMETERS				
32	PITCH OFFSET	D0~~30 : -48~~48		06
33	GATE	0:Off, 01~~64 : 1~~100[%], 65:Legato		07
34	VELOCITY	01~~7F : 1~~127, 80:Key		08
35	FLAM	9D~~63 : -99~~99		09
36 b0~~3	TONE9~~12	0:DIS, 1:ENA		0A
37 b0~~7	TONE1~~8	0:DIS, 1:ENA		: 15
STEP 02~~48 PARAMETERS				
38				06
:	Same as STEP 01 (32~~37)			:
319	(6 * 47 = 282 Bytes)			15
----	ARPEGGIATOR SELECT	0:A, 1:B	It's not dump data.	16

[TABLE 9] Arpegiator Parameter No. at GLOBAL

PARAMETER	DATA(Hex) : VALUE	DESCRIPTION	PARA No.
PATTERN NO.	0~~147 : 0~~327		68,00
RESOLUTION	0:16T, 1:16, 2:8T, 3:8, 4:4T, 5:4		68,01
OCTAVE	00~~03 : 1~~4		68,02
SORT	0:OFF, 1:ON		68,06
LATCH	0:OFF, 1:ON		68,07
KEY SYNC.	0:OFF, 1:ON		68,08
KEYBOARD	0:OFF, 1:ON		68,09

[TABLE 10] MULTI DATA PARAMETERS

00	EVENT DATA START ADDRESS(MSB)	
:	: (4 Bytes)	
03	EVENT DATA START ADDRESS(LSB)	
04	EVENT DATA FREE AREA START ADDRESS(MSB)	
:	: (4 Bytes)	
07	EVENT DATA FREE AREA START ADDRESS(LSB)	
08	MULTI 00 EVENT DATA ADDRESS(MSB)	
:	: (4 Bytes)	
11	MULTI 00 EVENT DATA ADDRESS(LSB)	
12	MULTI 001~~199, EVENT DATA ADDRESS	
:	Same as MULTI 00 EVENT (08~~11)	
807	(4 * 199 = 796 Bytes)	
808	CURRENT MULTI NO.	00~~C7 : 00~~199
809	CURRENT PAT NO.	00~~F9 : 00~~249
810	CURRENT FX MULTI NO.	00~~C7 : 00~~199
811	VALID MULTI	00~~C8 : 00~~200
812	VALID MULTI NO.	
:		00~~C7 : 00~~199
1011	(200 Bytes)	

[TABLE 11] CUE LISTS DATA

No. (bit)	PARAMETER	DATA(Hex) : VALUE
CUE LIST 0 PARAMETERS		
0	TEMPO	28~~F0 : 40~~240
1	TEMPO MODE	0:AUTO, 1:MANUAL
2	RESERVED	
CUE LIST 0 STEP 1		
3	SONG NO.	00~~FF : 00~~255 0~~C7 : 0~~199 = Song No. FE : 254 = Continue FF : 255 = End
bit0~~6	REPEAT	0~~64,127(foot sw)
4		
bit7	LOAD EFFECT	0(off)/1(on)
CUE LIST 0 STEP 2~~100		
5		
:	Same as CUE LIST 0 STEP 1(3~~4)	
202	(2 * 99 = 198 Bytes)	
CUE LIST 1~~19 PARAMETERS		
204		
:	Same as CUE LIST 0 (1~~19)	
3856	(203 * 19 = 3857Bytes)	

[TABLE 12] 1 MULTI DATA

No. (bit)	PARAMETER	DATA(Hex) : VALUE	DESCRIPTION	PARA No.
00	MULTI NAME (Head)			
:	:	20~~7F		----
15	MULTI NAME (Tail)			
INSERT EFFECT PARAMETERS				
16				36,00
:	FX1~~5 (24Bytes * 5)			:
135	(120 Bytes)			3B,??
MASTER EFFECT PARAMETERS				
136				3C,00
:	FX1~~2 (20Bytes * 2)			:
:	Return, Chain & EQ (16 Bytes)			:
191	(56 Bytes)			3F,??

ARPEGGIATOR PARAMETERS				
192 : 213	Same as COMBI.ARPEGGIATOR (192~~213) (22 Bytes)			33,00 : 35,0D
COMMON PARAMETERS				
214 : 223	Same as COMBI.COMMON PARAMETER (214~~223) (9 Bytes)			00,00 : 00,0D
TRACK 1~~16 PARAMETERS				
224 : 671	Same as TIMBRE 1 (224~~251) (28 * 16 = 448 Bytes)			n,00 : n,30
MULTI CONTROL DATA				
672	RPPR ON/OFF	0:OFF, 1:ON		----
673	TRACK SELECT	0~~F,10:TRK01~~15,MASTER		----
675	(RESERVED)			----
676	METER	**12-1		----
677	TEMPO	28~~F0 : 40~~240		----
678	METRONOME LEVEL	00~~7F : 00~~127		----
679	METRONOME BUS SELECT	0:L/R,1:L,2:R,3~~6:1~~4, 7:1/2,8:3/4		----
680	METRONOME PRECOUNT	00~~02 : 0~~2		----
681	TEMPO MODE	0:AUTO, 1:MANUAL, 2:REC		----
682	TRACK1~~8 MODE	0:PLAY, 1:MUTE		----
683	TRACK9~~16 MODE	0:PLAY, 1:MUTE		----
684 : 699	TRACK 1 NAME (Head) : TRACK 1 NAME (Tail)	20~~7F		----
700 : 939	TRACK 2~~16 NAME Same as TRACK 1 NAME (684~~699) (16 * 15 = 240 Bytes)			----
940 : 943	TR1 EVENT ADRS (MSB) : TR1 EVENT ADRS (LSB)	(4 Bytes)		----
944 : 1007	TRACK 2~~16, MASTER TRACK EVENT ADDRESS Same as TRACK 1 EVENT (940~~943) (4 * 16 = 64 Bytes)			----
1008 : 1011	(RESERVED) : :	(4 Bytes)		----
PATTERN 0				
1012 : : 1027	NAME (Head) : : NAME (Tail)	20~~7F [ASCII CODE]		----
1028	LENGTH	01~~63 : 00~~99		----
1029	METER	**12-1		----
1030	(RESERVED)			----
1031	(RESERVED)			----
1032 : 1035	EVENT DATA ADRS(MSB) : EVENT DATA ADRS(LSB)	(4 Bytes)		----
1036 : 3411	PATTERN 1~~99 Same as PATTERN 0 (1012~~1035) (24 * 99 = 2376 Bytes)			----
3412	TRACK1~~8 INT	0:OFF, 1:ON		----
3413	TRACK9~~16 INT	0:OFF, 1:ON		----

3414	TRACK1~~8 EXT	0:OFF, 1:ON		----
3415	TRACK9~~16 EXT	0:OFF, 1:ON		----
TRACK 1 PLAY LOOP				
bit7	ASSIGN	0:OFF, 1:ON		----
b0~~6	START MEASURE (MSB)	01~~3E7 : 001~~999		----
3417	START MEASURE (LSB)			
3418	END MEASURE (MSB)	01~~3E7 : 001~~999		----
3419	END MEASURE (LSB)			
3420 : 3479	TRACK 2~~16 Same as TRACK 1 PLAY LOOP (3416~~3419) (4 * 15 = 60 Bytes)			----
KEY=C-1 RPPR				
3480	PATTERN	00~~63 : U00~~U99 64~~F9 : P00~~P149		----
b0~~3	TRACK	00~~0F : 01~~16		----
b4~~7	SYNC	0:Off, 1:Beat, 2:Measure, 3:SEQ		----
b0~~3	MODE	0:Once, 1:Manual, 2:Endless		----
b4~~7	STATUS	0:NOTE,1:PAT,2:SHUTDOWN		----
3483	SHIFT NOTE	F4~~11 : -12~~12		----
3484 : 3991	KEY=C#-1~~G9 RPPR Same as KEY=C-1 RPPR (3480~~3483) (4 * 127 = 508 Bytes)			----

**12-1 : 10~~1F : 1/4~~ 16/4 20~~2F : 1/8~~ 16/8
30~~3F : 1/16~~16/16

MULTI EVENT DATA FORMAT

* MULTI EVENT DATA's address is showed by each track's EVENT ADDRESS (1 MULTI DATA's 940~~1007th, 1032~~3411th). And usually they are located just behind the 1 MULTI DATA.

x : Ignored

1st Data	2nd Data	3rd Data	4th Data	5th Data	6th Data
....	....	....	....	....	.... kkkk

kkkk : Evetn Data Kind

= 1 : Bar	at Master Track
= 3 : Track End	
= B : Tempo Change	
= 1 : Bar	at Track 1~~16
= 2 : Pattern	
= 3 : Track End	
= 9 : Note	
= A : Poly Key Pressure	
= B : Control Change	
= C : Program Change	
= D : After Touch	
= E : Pitch Bend	
= 1 : Bar	at Pattern
= 3 : Pattern End	
= 9 : Note	
= A : Poly Key Pressure	
= B : Control Change	
= C : Program Change	
= D : After Touch	
= E : Pitch Bend	

* NOTE ON/OFF

xxxx gggg	gggg gggg	xvvv vvvv	xkkk kkkk	tttt tttt	tttt 1001
Length		Velocity	Key No.	Tick	

ggg : Note length (From Note On to Note Off)

```
          = 000~~BFFH
        ( = 0C0H : Quarter note )
        ( = FFFH : Tie to next measure)

      vv = 01~~7fH

      ttt : Location of Note On ( in the measure )
          = 000~~BFFH
        ( = 0C0H : Quarter note )
        ( = FFFH : Tie from last measure )
```

* PITCH BEND

uppp pppp	xbbb bbbb	xPPP PPPP	xBBB BBBB	tttt tttt	tttt 1110
Last Val(H) *1	Last Val(L)	Value(H)	Value(L)	Tick *2	

* AFTER TOUCH

xxxx xxxx	xxxx xxxu	xvvv vvvv	xVVV VVVV	tttt tttt	tttt 1101
	Last Value *1	Value		Tick *2	

* PROGRAM CHANGE

bbbb bbbb	unnn nnnn	BBBB BBBB	xNNN NNNN	tttt tttt	tttt 1100
Last Bank	Last Prog. No. *1	Bank	Prog. No.	Tick *2	

* CONTROL CHANGE

xxxx xxxu	xvvv vvvv	xVVV VVVV	xnnn nnnn	tttt tttt	tttt 1011
	Last Value *1	Value	Control No.	Tick *2	

* POLY KEY PRESSURE

xxxx xxxx	xxxx xxxx	xvvv vvvv	xkkk kkkk	tttt tttt	tttt 1010
		Value	Key No.	Tick *2	

* PATTERN (Insterad of BAR)

xxxx xxxx	xxxx xxxx	xMMM MMMM	nnnn nnnn	xxmm mmmm	mmmm 0010
	Pat Measure	Pat No.	Measure No. *3		

```
      M : Measure No. in the Pattern ( 00~~63H : 00~~99 )
      n = Pattern No. ( 00~~63 : U00~~U99
                        64~~F9 : P000~~P149 )
```

* TEMPO CHANGE

xxxx xxxu	vvvv vvvv	VVVV VVVV	0110 1011	tttt tttt	tttt 1011
	Last Tempo *1	Tempo	(Fixed)	Tick *2	

```
      vv,VV = 28H~~F0H ( 40~~240BPM )
```

* BAR

xxxx xxxx	xxbb bbbb	ssss ssss	ssss ssss	xxmm mmmm	mmmm 0001
	Meter	Size		Measure No. *3	

```
      bb = 10~~1F : 1/4~~16/4
           20~~2F : 1/8~~16/8
           30~~3F : 1/16~~16/16
      ss : Event Number in the measure
```

* TRACK/PATTERN END

xxxx xxxx	xxxx xxxx	xxxx xxxx	xxxx xxxx	xxmm mmmm	mmmm 0011

```
   Measure No.
        *3
```

```
*1 : u = 0 : Use [ Last value } for last value
     u = 1 : Last value is unfixed
       Last value is used when Rewind & Location is decreased.

*2 : ttt : Location of Event ( in the measure )
         = 000~~BFFH
       ( = 0C0H : Quarter note )

*3 : mmm : Measure No. in the Track ( 000~~3E7H = 000~~999 )
```