

KRONOS/KRONOS X MIDI IMPLEMENTATION

26, March, 2012

Consult your local Korg dealer for more information 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
Bn	kk (kk)	vv (vv)	Note Off (vv)=1-64 (Key Off)	*1 *5 A
9n	kk (kk)	vv (vv)	Note On (vv)=1-127 (Key On)	*1 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/Set List change)	*2 PB
Bn	01 (01)	vv (vv)	Modulation1 (Joystick +Y, VJS/ASW/Pdl)	C
Bn	02 (02)	vv (vv)	Modulation2 (Joystick -Y, VJS/ASW/Pdl)	C
Bn	04 (04)	vv (vv)	Foot Pedal (Pdl = Foot Pedal)	C
Bn	05 (05)	vv (vv)	Portamento Time (Knob/VJS/Pdl = Porta.Time, S Chg)	C
Bn	07 (07)	vv (vv)	Volume (Knob/VJS/Pdl = Volume, S/C Chg)	C
Bn	08 (08)	vv (vv)	Post IFX Panpot (Knob/VJS/Pdl = IFX Pan, S Chg)	*2 C
Bn	0A (10)	vv (vv)	Panpot (Knob/VJS/Pdl = Pan, S Chg)	C
Bn	0B (11)	vv (vv)	Expression (Knob/VJS/Pdl = Expression)	C
Bn	0C (12)	vv (vv)	Effect Control 1 (Knob/VJS/Pdl = FX Control1)	C
Bn	0D (13)	vv (vv)	Effect Control 2 (Knob/VJS/Pdl = FX Control2)	C
Bn	0E (14)	vv (vv)	(KARMA ON/OFF, ASW)	C
Bn	10 (16)	vv (vv)	Multi Purpose Ctrl1 (Ribbon Controller, VJS/ASW/Pdl)	C
Bn	11 (17)	vv (vv)	Multi Purpose Ctrl2 (Knob = Knob Mod5, VJS)	C
Bn	12 (18)	vv (vv)	Multi Purpose Ctrl3 (Value Slider, VJS/ASW/Pdl)	C
Bn	13 (19)	vv (vv)	Multi Purpose Ctrl4 (Knob = Knob Mod6, VJS)	C
Bn	14 (20)	vv (vv)	(Knob = Knob Mod7, VJS)	C
Bn	15 (21)	vv (vv)	(Knob = Knob Mod8, VJS)	C
Bn	16 (22)	vv (vv)	(KARMA Slider1, ASW/Pdl)	*3 C
Bn	17 (23)	vv (vv)	(KARMA Slider2, ASW/Pdl)	*3 C
Bn	18 (24)	vv (vv)	(KARMA Slider3, ASW/Pdl)	*3 C
Bn	19 (25)	vv (vv)	(KARMA Slider4, ASW/Pdl)	*3 C
Bn	1A (26)	vv (vv)	(KARMA Slider5, ASW/Pdl)	*3 C
Bn	1B (27)	vv (vv)	(KARMA Slider6, ASW/Pdl)	*3 C
Bn	1C (28)	vv (vv)	(KARMA Slider7, ASW/Pdl)	*3 C
Bn	1D (29)	vv (vv)	(KARMA Slider8, ASW/Pdl)	*3 C
Bn	1E (30)	vv (vv)	(KARMA SCENE, ASW)	*3 C
Bn	1F (31)	vv (vv)	(KARMA LATCH, ASW)	*3 C
Bn	20 (32)	bb (bb)	Bank Select(LSB) (BANK keys, Prog/Combi/Set List change)	*2 PB
Bn	40 (64)	vv (vv)	Hold1 (Damper)	C
Bn	41 (65)	00/7F (00/127)	Portamento Off/On (SW1/SW2/ASW = Porta.SW, S Chg)	C
Bn	42 (66)	00/7F (00/127)	Sostenuto Off/On (ASW = Sostenuto)	C
Bn	43 (67)	vv (vv)	Soft Pedal (ASW = Soft)	C
Bn	46 (70)	vv (vv)	Sound Controller 1 (Knob/VJS = F/A Sustain)	C
Bn	47 (71)	vv (vv)	Sound Controller 2 (Knob2, Knob/VJS = Resonance, ASW/Pdl)	C
Bn	48 (72)	vv (vv)	Sound Controller 3 (Knob4, Knob/VJS = F/A Release, ASW/Pdl)	C
Bn	49 (73)	vv (vv)	Sound Controller 4 (Knob/VJS = F/A Attack)	C
Bn	4A (74)	vv (vv)	Sound Controller 5 (Knob1, Knob/VJS = Filter Cutoff, ASW/Pdl)	C
Bn	4B (75)	vv (vv)	Sound Controller 6 (Knob/VJS = F/A Decay)	C
Bn	4C (76)	vv (vv)	Sound Controller 7 (Knob/VJS = Pitch LF01 Spd)	C
Bn	4D (77)	vv (vv)	Sound Controller 8 (Knob/VJS = Pitch LF01 Dep)	C
Bn	4E (78)	vv (vv)	Sound Controller 9 (Knob/VJS = Pitch LF01 Dly)	C
Bn	4F (79)	vv (vv)	Sound Controller 10 (Knob3, Knob/VJS = Filter EG Int, ASW/Pdl)	C
Bn	50 (80)	00/7F (00/127)	Multi Purpose Ctrl5 (SW1/Knob/VJS = SW1 Mod.)	C
Bn	51 (81)	00/7F (00/127)	Multi Purpose Ctrl6 (SW2/Knob/VJS = SW2 Mod.)	C
Bn	52 (82)	00/7F (00/127)	Multi Purpose Ctrl7 (ASW/Knob/VJS = Foot SW)	C
Bn	53 (83)	vv (vv)	Multi Purpose Ctrl8 (Knob/VJS = MIDI CC#83)	C
Bn	55 (85)	vv (vv)	(VJS = VJS +X Mod.)	C
Bn	56 (86)	vv (vv)	(VJS = VJS -X Mod.)	C
Bn	57 (87)	vv (vv)	(VJS = VJS +Y Mod.)	C
Bn	58 (88)	vv (vv)	(VJS = VJS -Y Mod.)	C
Bn	5B (91)	vv (vv)	Effect 1 Depth (Knob/VJS/Pdl = MFX Send2, S 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/VJS/Pdl = MFX Send1, S Chg)	C
Bg	5E (94)	00/7F (00/127)	Effect 4 Depth (Master FX1/2 Off/On)	C
Bg	5F (95)	00/7F (00/127)	Effect 5 Depth (Total FX1/2 Off/On)	C
Bn	66 (102)	vv (vv)	(KARMA SW1, ASW)	*3 C
Bn	67 (103)	vv (vv)	(KARMA SW2, ASW)	*3 C
Bn	68 (104)	vv (vv)	(KARMA SW3, ASW)	*3 C
Bn	69 (105)	vv (vv)	(KARMA SW4, ASW)	*3 C
Bn	6A (106)	vv (vv)	(KARMA SW5, ASW)	*3 C
Bn	6B (107)	vv (vv)	(KARMA SW6, ASW)	*3 C
Bn	6C (108)	vv (vv)	(KARMA SW7, ASW)	*3 C
Bn	6D (109)	vv (vv)	(KARMA SW8, ASW)	*3 C
Bn	6E (110)	vv (vv)	(Pad1, ASW)	*3 C
Bn	6F (111)	vv (vv)	(Pad2, ASW)	*3 C
Bn	70 (112)	vv (vv)	(Pad3, ASW)	*3 C
Bn	71 (113)	vv (vv)	(Pad4, ASW)	*3 C

Status [Hex]	Second [H] [D]	Third [H] [D]	Description (Transmitted by)	ENA
Bn	72 (114)	vv (vv)	(Pad5, ASW)	*3 C
Bn	73 (115)	vv (vv)	(Pad6, ASW)	*3 C
Bn	74 (116)	vv (vv)	(Pad7, ASW)	*3 C
Bn	75 (117)	vv (vv)	(Pad8, ASW)	*3 C
Bn	76 (118)	vv (vv)	(Vector Joystick X)	*3 C
Bn	77 (119)	vv (vv)	(Vector Joystick Y)	*3 C
Bn	cc (cc)	vv (vv)	Control (cc)=0-119 (Sequencer data)	Q
Bn	cc (cc)	vv (vv)	Control (cc)=0-119 (Knob = MIDI CC#00-119)	C
Bn	cc (cc)	vv (vv)	Control (cc)=0-119 (Vector CC = MIDI CC#00-119)	C
Bn	cc (cc)	vv (vv)	Control (cc)=0-119 (KARMA RTC = MIDI CC#00-119)	C
Bn	cc (cc)	vv (vv)	Control (cc)=0-119 (Pads = MIDI CC#00-119)	C
Bn	cc (cc)	vv (vv)	Control (cc)=0-119 (External Mode = MIDI CC#00-119)	C
Bn	cc (cc)	vv (vv)	Control (cc)=0-119 (KARMA GE data = MIDI CC#00-119)	C
Bn	cc (cc)	vv (vv)	Control (cc)=0-95 (KARMA CC Offset = MIDI CC#00-95)	*4 C
Cn	pp (pp)	-- --	Program Change (Prog/Combi/Set List change)	*2 P
Dn	vv (vv)	-- --	Channel Pressure (After Touch)	T
En	bb (bb)	bb (bb)	Bender Change (Joy Stick X)	C

Pdl : Assignable Pedal
 ASW : Assignable Switch
 Knob : Realtime Knob5,6,7,8
 VJS : Vector Joystick CC Control

S Chg : Transmitted when change a Song No.(Seq. mode). (Status = EXT,EX2,BTH)
 C/S Chg : Transmitted when change a Combination or Song No.(Seq. mode). (Status = EXT,EX2 or BTH)

n : MIDI Channel No. (0 - 15)Usually Global Channel.
 When in Combination/Sequencer/Spng Play mode, each timbre's/track's channel.(Status = EXT,EX2 or BTH)
 g : Always Global Channel No. (0 - 15)
 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 Sequencer is playing(transmit), recording(receive)

*1 : kk = 24 - 108 : KRONOS 61Keys (61Keys + Transpose)
 = 16 - 112 : KRONOS 73Keys (73keys + Transpose)
 = 09 - 120 : KRONOS 88Keys (88keys + Transpose)
 = 00 - 127 : Sequencer and KARMA Module

*2 : Program Combination MIDI Out[Hex] (Bank Map is KORG) (Bank Map is GM(2))
 Bank INT-A 000 - 127 : Bank INT-A 000 - 127 : mm,bb,pp = 00,00, 00 - 7F = 3F,00, 00 - 7F
 USER-B 000 - 127 : INT-B 000 - 127 : 00,01, 00 - 7F = 3F,01, 00 - 7F
 INT-C 000 - 127 : INT-C 000 - 127 : 00,02, 00 - 7F = 3F,02, 00 - 7F
 INT-D 000 - 127 : INT-D 000 - 127 : 00,03, 00 - 7F = 3F,03, 00 - 7F
 INT-E 000 - 127 : INT-E 000 - 127 : 00,04, 00 - 7F = 3F,04, 00 - 7F
 INT-F 000 - 127 : INT-F 000 - 127 : 00,05, 00 - 7F = 3F,05, 00 - 7F
 : INT-G 000 - 127 : 00,06, 00 - 7F = 3F,06, 00 - 7F
 GM 001 - 128 : 79,00, 00 - 7F = 79,00, 00 - 7F
 g(1)-(9) 001 - 128 : 79,01-09, 00 - 7F = 79,01-09, 00 - 7F
 g(d) 001 - 128 : 78,00, 00 - 7F = 78,00, 00 - 7F
 USER-A 000 - 127 : USER-A 000 - 127 : 00,08, 00 - 7F = 3F,08, 00 - 7F
 USER-B 000 - 127 : USER-B 000 - 127 : 00,09, 00 - 7F = 3F,09, 00 - 7F
 USER-C 000 - 127 : USER-C 000 - 127 : 00,0A, 00 - 7F = 3F,0A, 00 - 7F
 USER-D 000 - 127 : USER-D 000 - 127 : 00,0B, 00 - 7F = 3F,0B, 00 - 7F
 USER-E 000 - 127 : USER-E 000 - 127 : 00,0C, 00 - 7F = 3F,0C, 00 - 7F
 USER-F 000 - 127 : USER-F 000 - 127 : 00,0D, 00 - 7F = 3F,0D, 00 - 7F
 USER-G 000 - 127 : USER-G 000 - 127 : 00,0E, 00 - 7F = 3F,0E, 00 - 7F
 USER-AA 000 - 127 : 00,0F, 00 - 7F = 3F,0F, 00 - 7F
 USER-BB 000 - 127 : 00,10, 00 - 7F = 3F,10, 00 - 7F
 USER-CC 000 - 127 : 00,11, 00 - 7F = 3F,11, 00 - 7F
 USER-DD 000 - 127 : 00,12, 00 - 7F = 3F,12, 00 - 7F
 USER-EE 000 - 127 : 00,13, 00 - 7F = 3F,13, 00 - 7F
 USER-FF 000 - 127 : 00,14, 00 - 7F = 3F,14, 00 - 7F
 USER-GG 000 - 127 : 00,15, 00 - 7F = 3F,15, 00 - 7F

: Set List
 000-127 000 - 127(Slot) : mm,bb,pp = 00,00-7F, 00 - 7F = 00,00-7F, 00 - 7F

*3 : When CC# by "CC Default" is assigned to the KARMA Controllers, Vector Joystick X, Y and Pads in Global Mode.

Reset Controller MIDI Assign = CC Default

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KARMA ON/OFF      :CC#14
KARMA Slider1    :CC#22
KARMA Slider2    :CC#23
KARMA Slider3    :CC#24
KARMA Slider4    :CC#25
KARMA Slider5    :CC#26
KARMA Slider6    :CC#27
KARMA Slider7    :CC#28      KARMA Slider8      :CC#29
KARMA SCENE      :CC#30
KARMA LATCH      :CC#31
KARMA SW1        :CC#102
KARMA SW2        :CC#103
KARMA SW3        :CC#104
KARMA SW4        :CC#105
KARMA SW5        :CC#106
KARMA SW6        :CC#107
KARMA SW7        :CC#108
KARMA SW8        :CC#109
Pad1             :CC#110
Pad2             :CC#111
Pad3             :CC#112
Pad4             :CC#113
Pad5             :CC#114
Pad6             :CC#115
Pad7             :CC#116
Pad8             :CC#117
Vector Joystick X :CC#118
Vector Joystick Y :CC#119

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*4 : Transmitted when turn KARMA On.
 Transmitted when change a GE. (KARMA ON/OFF = On)
 Transmitted when change a Program, Combination or Song No. (Seq. mode) (KARMA ON/OFF = On)

*5 : (vv) = 64 is always transmitted at Sequencer playback.

1-2 SYSTEM COMMON MESSAGES

[H] :Hex, [D] :Decimal

Status [Hex]	Second [H] [D]	Third [H] [D]	Description (Transmitted when)
F2	ss (ss)	tt (tt)	Song Position Pointer ss : Least significant [LSB] *6 tt : Most significant [MSB] *6
F3	ss (ss)		Song Select (Song is selected) ss : Song(0-127)

Transmits Song Position Pointer message when in Sequencer mode. (Internal Clock)
 Transmits Song Select message when in Sequencer mode. (Internal Clock)

*6 : For example, if time signature is 4/4 or 8/8, tt,ss = 00,10 means one measure.

1-3 SYSTEM REALTIME MESSAGES

Status[Hex]	Description (Transmitted when ...)
F8	Timing Clock (Always in Prog/Combi/Seq mode) *7
FA	Start (START in Seq mode) *7
	(Trigger KARMA in Prog/Combi mode) *7, *8
FB	Continue (Continue START in Seq mode) *7
FC	Stop (STOP in Seq mode) *7
	(Trigger KARMA in Prog/Combi mode) *7, *8
FE	Active Sensing (Always)

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

*8 Transmits these messages when Enable Start/Stop Out in Prog/Combi in Global mode is Enabled.

1-4 SYSTEM EXCLUSIVE

1-4-1 UNIVERSAL SYSTEM EXCLUSIVE MESSAGE (NON REALTIME)

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DEVICE INQUIRY REPLY ( Transmits when received a INQUIRY MESSAGE REQUEST )
[ F0,7E,0g,06,02,42,68,00,mm,00,vv,ww,xx,00,F7 ]
3rd byte  g : Global Channel
6th byte  42 : KORG ID
7th byte  68 : KRONOS series ID
9th byte  mm : KRONOS 61Keys member code mm = 05
           KRONOS 73Keys member code mm = 0E
           KRONOS 88Keys member code mm = 17
10th byte vv : System Version 1st ( 1 - )
11th byte ww : System Version 2nd ( 0 - )
12th byte xx : System Version 3rd ( 0 - )
           (i.e. Version 1.0.2: vv=01, ww=00, xx=02 )

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1-4-2 UNIVERSAL SYSTEM EXCLUSIVE MESSAGES (REALTIME)

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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

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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)	vv (vv)	Note Off (vv) = 0-127	*5 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/Set List change)	*1 P
Bn	01 (01)	vv (vv)	Modulation1 (as Joy Stick +Y)	C
Bn	02 (02)	vv (vv)	Modulation2 (as Joy Stick -Y)	C
Bn	04 (04)	vv (vv)	Foot Pedal (as AMS & FX Dmod Src = Foot 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 = Fx Controll1)	C
Bn	0D (13)	vv (vv)	Effect Control 2 (as FX Dmod Src = Fx Controll2)	C
Bn	0E (14)	vv (vv)	(as KARMA ON/OFF)	*4 C
Bn	10 (16)	vv (vv)	Multi Purpose Ctrl1 (as Ribbon Controller)	C
Bn	11 (17)	vv (vv)	Multi Purpose Ctrl2 (as AMS & FX Dmod Src = Knob Mod5)	C
Bn	12 (18)	vv (vv)	Multi Purpose Ctrl3 (as Value Slider)	C
Bn	13 (19)	vv (vv)	Multi Purpose Ctrl4 (as AMS & FX Dmod Src = Knob Mod6)	C
Bn	14 (20)	vv (vv)	(as AMS & FX Dmod Src = Knob Mod7)	C
Bn	15 (21)	vv (vv)	(as AMS & FX Dmod Src = Knob Mod8)	C
Bn	16 (22)	vv (vv)	(as KARMA Slider1)	*4 C
Bn	17 (23)	vv (vv)	(as KARMA Slider2)	*4 C
Bn	18 (24)	vv (vv)	(as KARMA Slider3)	*4 C
Bn	19 (25)	vv (vv)	(as KARMA Slider4)	*4 C
Bn	1A (26)	vv (vv)	(as KARMA Slider5)	*4 C
Bn	1B (27)	vv (vv)	(as KARMA Slider6)	*4 C
Bn	1C (28)	vv (vv)	(as KARMA Slider7)	*4 C
Bn	1D (29)	vv (vv)	(as KARMA Slider8)	*4 C
Bn	1E (30)	vv (vv)	(as KARMA SCENE1...8 Control)	*4 C
Bn	1F (31)	vv (vv)	(as KARMA LATCH)	*4 C
Bn	20 (32)	bb (bb)	Bank Select (LSB) (for Prog/Combi/Set List change)	*1 P
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 control)	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 Filter 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 Intensity control)	C
Bn	50 (80)	vv (vv)	Multi Purpose Ctrl15 (as AMS & FX Dmod Src = SW 1)	C
Bn	51 (81)	vv (vv)	Multi Purpose Ctrl16 (as AMS & FX Dmod Src = SW 2)	C
Bn	52 (82)	vv (vv)	Multi Purpose Ctrl17 (as AMS & FX Dmod Src = Foot Switch)	C
Bn	53 (83)	vv (vv)	Multi Purpose Ctrl18 (as AMS & FX Dmod Src = CC#83)	C
Bn	55 (85)	vv (vv)	(as AMS & FX Dmod Src = Vector Mod +X)	C
Bn	56 (86)	vv (vv)	(as AMS & FX Dmod Src = Vector Mod -X)	C
Bn	57 (87)	vv (vv)	(as AMS & FX Dmod Src = Vector Mod +Y)	C
Bn	58 (88)	vv (vv)	(as AMS & FX Dmod Src = Vector Mod -Y)	C
Bn	5B (91)	vv (vv)	Effect 1 Depth (for Send 2 Level control)	C
Bg	5C (92)	00/00 (00/0000)	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 (00/0000)	Effect 4 Depth (for Master FX1,2 Off/On)	C
Bg	5F (95)	00/00 (00/0000)	Effect 5 Depth (for Total FX1,2 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	64 (100)	0r (0r)	RPN Param No. (LSB) (for RPN select)	*3 C
Bn	65 (101)	00 (00)	RPN Param No. (MSB) (for RPN select)	*3 C
Bn	66 (102)	3F/40 (63/64)	(as KARMA SW1)	*4 C
Bn	67 (103)	3F/40 (63/64)	(as KARMA SW2)	*4 C
Bn	68 (104)	3F/40 (63/64)	(as KARMA SW3)	*4 C
Bn	69 (105)	3F/40 (63/64)	(as KARMA SW4)	*4 C

Status [Hex]	Second [H] [D]	Third [H] [D]	Description (Use)	ENA
Bn	6A (106)	3F/40 (63/64)	(as KARMA SW5)	*4 C
Bn	6B (107)	3F/40 (63/64)	(as KARMA SW6)	*4 C
Bn	6C (108)	3F/40 (63/64)	(as KARMA SW7)	*4 C
Bn	6D (109)	3F/40 (63/64)	(as KARMA SW8)	*4 C
Bn	6E (110)	vv (vv)	(as Pad1 (vv) = 1-127 Velocity)	*4 C
Bn	6F (111)	vv (vv)	(as Pad2 (vv) = 1-127 Velocity)	*4 C
Bn	70 (112)	vv (vv)	(as Pad3 (vv) = 1-127 Velocity)	*4 C
Bn	71 (113)	vv (vv)	(as Pad4 (vv) = 1-127 Velocity)	*4 C
Bn	72 (114)	vv (vv)	(as Pad5 (vv) = 1-127 Velocity)	*4 C
Bn	73 (115)	vv (vv)	(as Pad6 (vv) = 1-127 Velocity)	*4 C
Bn	74 (116)	vv (vv)	(as Pad7 (vv) = 1-127 Velocity)	*4 C
Bn	75 (117)	vv (vv)	(as Pad8 (vv) = 1-127 Velocity)	*4 C
Bn	76 (118)	vv (vv)	(as Vector Joystick X)	*4 C
Bn	77 (119)	vv (vv)	(as Vector Joystick Y)	*4 C
Bn	cc (cc)	vv (vv)	Control data (for Seq. recording (cc) = 0-119)	C,Q
Bn	78 (120)	00 (00)	All Sound Off	C
Bn	79 (121)	00 (00)	Reset All Controllers	C
Bn	7A (122)	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 (16)	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/Set List 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/Sequencer mode, each timbre's/track's channel.(Status is INT or BTH)
For KARMA Module input in Combination/Sequencer mode, Input Channel of each KARMA Module

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 :
00,02,	00 - 7F :	INT-C 000 - 127 :
00,03,	00 - 7F :	INT-D 000 - 127 :
00,04,	00 - 7F :	INT-E 000 - 127 :
00,05,	00 - 7F :	INT-F 000 - 127 :
00,06,	00 - 7F :	INT-G 000 - 127 :
00,08,	00 - 7F :	USER-A 000 - 127 :
00,09,	00 - 7F :	USER-B 000 - 127 :
00,0A,	00 - 7F :	USER-C 000 - 127 :
00,0B,	00 - 7F :	USER-D 000 - 127 :
00,0C,	00 - 7F :	USER-E 000 - 127 :
00,0D,	00 - 7F :	USER-F 000 - 127 :
00,0E,	00 - 7F :	USER-G 000 - 127 :
00,0F,	00 - 7F :	USER-AA 000 - 127 :
00,10,	00 - 7F :	USER-BB 000 - 127 :
00,11,	00 - 7F :	USER-CC 000 - 127 :
00,12,	00 - 7F :	USER-DD 000 - 127 :
00,13,	00 - 7F :	USER-EE 000 - 127 :
00,14,	00 - 7F :	USER-FF 000 - 127 :
00,15,	00 - 7F :	USER-GG 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

MIDI In [Hex] Set List
mm,bb,pp = 00,00-7F, 00 - 7F : 000-127 000 - 127(Slot)

: 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	: INT-F 000 - 127
3F,06, 00 - 7F	:	: INT-G 000 - 127
3F,08, 00 - 7F	: USER-A 000 - 127	: USER-A 000 - 127
3F,09, 00 - 7F	: USER-B 000 - 127	: USER-B 000 - 127
3F,0A, 00 - 7F	: USER-C 000 - 127	: USER-C 000 - 127
3F,0B, 00 - 7F	: USER-D 000 - 127	: USER-D 000 - 127
3F,0C, 00 - 7F	: USER-E 000 - 127	: USER-E 000 - 127
3F,0D, 00 - 7F	: USER-F 000 - 127	: USER-F 000 - 127
3F,0E, 00 - 7F	: USER-G 000 - 127	: USER-G 000 - 127
3F,0F, 00 - 7F	: USER-AA 000 - 127	:
3F,10, 00 - 7F	: USER-BB 000 - 127	:
3F,11, 00 - 7F	: USER-CC 000 - 127	:
3F,12, 00 - 7F	: USER-DD 000 - 127	:
3F,13, 00 - 7F	: USER-EE 000 - 127	:
3F,14, 00 - 7F	: USER-FF 000 - 127	:
3F,15, 00 - 7F	: USER-GG 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	

MIDI In [Hex] Set List
 mm,bb,pp = 00,00-7F, 00 - 7F : 000-127 000 - 127(Slot)

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

*3 : r = 0 : Pitch Bend Sensitivity (Bend Range)
 = 1 : Fine Tune (Detune)
 = 2 : Coarse Tune (Transpose)

For drum program, both of Fine Tune and Coarse Tune affect to Detune.
 Data Entry LSB value has no effect for Pitch Bend Sensitivity and Coarse Tune.

*4 : When CC# by "CC Default" is assigned to the KARMA Controllers, Vector Joystick X, Y and Pads in Global Mode.

n : When in Program/Combination mode, Global channel.
 When in Sequencer mode, current selected track's channel.

*5 : Note Off Velocity values (vv) = 0 - 127 are not recorded in Sequencer.

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 (Location) *7 ss : Least significant [LSB] tt : Most significant [MSB]
F3	ss (ss)		Song Select (Song select) *6 ss : Song(0-127) No.

Receive when in Sequencer mode.

2-3 SYSTEM REALTIME MESSAGES

Status[Hex]	Description (Use for....)
F8	Timing Clock (Tempo, AMS & FX Dmod Src) *6
FA	Start (Seq Start & KARMA Control) *7
FB	Continue (Seq Continue start & KARMA Control) *7
FC	Stop (Seq Stop & KARMA Control) *7
FE	Active Sensing (MIDI Connect check)

*6 Receive when MIDI Clock in Global mode is External MIDI.

*6 Receive when MIDI Clock in Global mode is External MIDI

and Receive Ext. Realtime Commands in Global mode is checked.

2-4 SYSTEM EXCLUSIVE

2-4-1 UNIVERSAL SYSTEM EXCLUSIVE MESSAGE (NON REALTIME)

DEVICE INQURLY (When received this message, transmits INQURLY 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 Sequencer 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