KRONOS 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
8n	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	(SW1/SW2/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 LFO1 Spd)	C
Bn	4D (77)	vv (vv)	Sound Controller 8	(Knob/VJS = Pitch LFO1 Dep)	C
Bn	4E (78)	vv (vv)	Sound Controller 9	(Knob/VJS = Pitch LFO1 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
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))

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
INT-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

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

*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)

DEVICE INQUlRY 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)	

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]	Third [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 Control1)		C
Bn	0D (13)	vv	(vv)	Effect Control 2	(as FX Dmod Src = Fx Control2)		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 Intencity control)		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 = Foot Switch)		C
Bn	53 (83)	vv	(vv)	Multi Purpose Ctrl8	(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	(00/000)	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 FX1,2 Off/On)		C
Bg	5F (95)	00/00	(00/000)	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
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	: 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	: INT-F 000 - 127
	00,06, 00 - 7F	:	: INT-G 000 - 127
	00,08, 00 - 7F	: USER-A 000 - 127	: USER-A 000 - 127
	00,09, 00 - 7F	: USER-B 000 - 127	: USER-B 000 - 127
	00,0A, 00 - 7F	: USER-C 000 - 127	: USER-C 000 - 127
	00,0B, 00 - 7F	: USER-D 000 - 127	: USER-D 000 - 127
	00,0C, 00 - 7F	: USER-E 000 - 127	: USER-E 000 - 127
	00,0D, 00 - 7F	: USER-F 000 - 127	: USER-F 000 - 127
	00,0E, 00 - 7F	: USER-G 000 - 127	: 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 Coase 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 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 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
```