

1. Receive Data

■ Channel Voice Messages

● Control Change

Status	2nd byte	3rd byte
BnH	ccH	vvH

n = MIDI Channel number : 0H - 0FH (ch.1 - ch.16)

cc = Controller number : 01H - 1FH (1 - 31),
40H - 5FH (64 - 95),

vv = Control value : 00H - 7FH (0 - 127)

* When "MIDI: CC IN" is set to ON, the SDE-3000D receives at the channel of set to "MIDI: RX CH".

● Program Change

Status	2nd byte
CnH	ppH

n = MIDI Channel number : 0H - FH (ch.1 - ch.16)

pp = Program number : 00H - 7FH (prog.1 - prog.128)

* When "MIDI: PC IN" is set to ON, the SDE-3000D receives only the channel number that set "MIDI: RX CH".

* The correspondence between the program number and the memory number follows by "PC MAP".

※ The SDE-3000D ignores BANK SELECT (controller number: 0, 32) messages.

■ System Realtime Messages

● Timing Clock

Status
F8H

* When "MIDI: SYNC" is set to other than INTERNAL, the SDE-3000D receives the timing clock. After receiving the timing clock, the SDE-3000D set the tempo corresponding to timing clock.

* When "MIDI: SYNC" is set to INTERNAL, the SDE-3000D ignores the timing clock.

● Active Sensing

Status
FEH

* After receiving the active sensing, the SDE-3000D will begin monitoring the interval of all further messages. While monitoring, if the interval between messages exceeds 512 ms, the SDE-3000D changes to the internal tempo.

■ System Exclusive Messages

Status	Data byte	Status
F0H	iiH, ddH,, eeH	F7H

F0H: System Exclusive Message status
ii = ID number: an ID number (manufacturer ID) to indicate the manufacturer whose Exclusive message this is. Roland's manufacturer ID is 41H.
ID numbers 7EH is extensions of the MIDI standard; Universal Non-realtime Messages (7EH).
dd, ..., ee = data: 00H~7FH (0~127)
F7H: EOX (End Of Exclusive)

● Universal Non-realtime System Exclusive Messages

Identity Request Message

Status	Data byte	Status
F0H	7EH, dev, 06H, 01H	F7H

Byte	Explanation
F0H:	Exclusive status
7EH:	ID number (Universal Non-realtime Message)
dev:	Device ID (dev:10H - 1FH, 7FH) * 7FH = Broadcast
06H:	Sub ID # 1 (General Information)
01H:	Sub ID # 2 (Identity Request)
F7H:	EOX (End Of Exclusive)

* When this message is received, the SDE-3000D will transmit Identity Reply message.

ORquest Data 1 RQ1 (11H)

This message is used to get the parameters.

Status	Data byte	Status
F0H,	41H, dev, 01H, 05H, 01H, 11H, aaH, bbH, ccH, ddH, ssH, ttH, uuH, vvH, sum,	F7H

Byte	Explanation
F0H:	Exclusive status
41H:	Manufacturer ID (Roland)
dev:	Device ID (dev: 10H - 1FH, 7FH) * 7FH = broadcast
01H:	Model ID # 1 (SDE-3000D)
05H:	Model ID # 2 (SDE-3000D)
01H:	Model ID # 3 (SDE-3000D)
11H:	Command ID (RQ1)
aaH:	Address MSB
bbH:	Address
ccH:	Address
ddH:	Address LSB
ssH:	Size MSB
ttH:	Size
uuH:	Size
vvH:	Size LSB
sum:	Checksum
F7H:	EOX (End Of Exclusive)

* When the value of device ID is same the value of "MIDI:DEVICE ID" or 7FH, the SDE-3000D receives this message.

OData set 1 DT1 (12H)

This message is set the parameters and memorized.

<u>Status</u>	<u>Data byte</u>	<u>Status</u>
F0H,	41H, dev, 01H, 05H, 01H,	F7H
	12H, aaH, bbH, ccH, ddH,	
	eeH, ... hhH, sum,	

<u>Byte</u>	<u>Explanation</u>
F0H:	Exclusive status
41H:	Manufacturer ID (Roland)
dev:	Device ID (dev:10H – 1FH, 7FH) * 7FH = broadcast
01H:	Model ID # 1 (SDE-3000D)
05H:	Model ID # 2 (SDE-3000D)
01H:	Model ID # 3 (SDE-3000D)
12H:	Command ID (DT1)
aaH:	Address MSB
bbH:	Address
ccH:	Address
ddH:	Address LSB
eeH:	Data
:	
ffH:	Data
sum:	Checksum
F7H:	EOX (End Of Exclusive)

2. Transmit data

* When “MIDI: THRU” is set to ON, all received messages except for realtime messages are transmitted.

■Channel Voice Messages

●Control Change

<u>Status</u>	<u>2nd byte</u>	<u>3rd byte</u>
BnH	ccH	vvH

n = MIDI Channel number	: 0H – FH (ch.1 - ch.16)
cc = Controller number	: 01H – 1FH (1 - 31), 21H - 3FH (33 - 63), 40H – 5FH (64 - 95)
vv = Control value	: 00H - 7FH (0 - 127)

* When “MIDI: CC OUT” is set to ON, the SDE-3000D transmits this message with the channel value set to the “MIDI: TX CH”. If “MIDI: TX CH” is set to OFF, the SDE-3000D does not transmit any messages.

●Program Change

<u>Status</u>	<u>2nd byte</u>
CnH	ppH

n = MIDI Channel number	: 0H - FH (ch.1 - ch.16)
pp = Program number	: 00H - 7FH (prog.1 - prog.128)

* When “MIDI: PC OUT” is set to ON, the SDE-3000D transmits this message with the channel value set to the “MIDI: TX CH”. If “MIDI: TX CH” is set to OFF, the SDE-3000D does not transmit any messages.

■System Realtime Messages

●Timing Clock

<u>Status</u>
F8H

* When “MIDI: REALTIME SOURCE” is set to INTERNAL, the SDE-3000D transmits the timing clock of the interval corresponding to “BPM”.

* When “MIDI: REALTIME SOURCE” is set other than INTERNAL, the SDE-3000D transmits the timing clock when receives the timing clock.

●Active Sensing

<u>Status</u>
FEH

* The SDE-3000D transmits active sensing at intervals of approximately 256 ms.

■System Exclusive messages

When the appropriate “Identity Request Message” and “Data Request 1 (RQ1)” message are received, the requested data will be transmitted.

●Universal Non-realtime System Exclusive message

OIDentity Reply message

<u>Status</u>	<u>Data byte</u>	<u>Status</u>
F0H	7EH, dev, 06H, 02H, 41H,	F7
	01H, 05H, 00H, 00H,	
	r1, r2, r3, r4	

<u>Byte</u>	<u>Explanation</u>
F0H:	Exclusive status
7EH:	ID number (Universal non-realtime message)
dev:	Device ID (dev:10H – 1FH)
06H:	Sub ID # 1 (General Information)
02H:	Sub ID # 2 (Identity Reply)
41H:	Manufacturer ID (Roland)
01H 05H:	Device family code (SDE-3000D)
00H 00H:	Device family number code
r1 r2 r3 r4:	Software revision level (00H 00H 00H 00H)
F7H:	EOX (End Of Exclusive)

* When the SDE-3000D received Identity Request message, the SDE-3000D transmits this message.

OData set1 DT1 (12H)

<u>Status</u>	<u>Data byte</u>	<u>Status</u>
F0H,	41H, dev, 01H, 05H, 01H,	F7H
	12H, aaH, bbH, ccH, ddH,	
	eeH, ... ffH, sum,	

<u>Byte</u>	<u>Explanation</u>
F0H:	Exclusive status
41H:	Manufacturer ID (Roland)
dev:	Device ID (dev: 10H – 1FH)
01H:	Model ID # 1 (SDE-3000D)
05H:	Model ID # 2 (SDE-3000D)
01H:	Model ID # 3 (SDE-3000D)
12H:	Command ID (DT1)
aaH:	Address MSB
bbH:	Address
ccH:	Address
ddH:	Address LSB

eeH: Data
:
ffH: Data
sum: Checksum
F7H: EOX (End Of Exclusive)

* When proper message is received, the SDE-3000D transmits the value of the parameters.

3. System Exclusive Address Map

SDE-3000D (Model ID: 01H 05H 01H)

Start Address	Description
00 00 00 00	SYSTEM
10 00 00 00	MIDI PC MAP
20 00 00 00	MEMORY (temporary)
20 10 00 00	MEMORY A.01
20 20 00 00	MEMORY A.02
20 30 00 00	MEMORY A.03
2C 40 00 00	MEMORY C.92

* SYSTEM

Offset Address	Description
00 00 00	SYSTEM
00 10 00	MIDI

* MIDI PC MAP

Offset Address	Description
00 00 00	MIDI PC MAP

* MEMORY

Offset Address	Description
00 00 00	EFFECT
00 10 00	CTL
00 20 00	ASSIGN

* SYSTEM Parameters Offset Address

Offset Address	Description
00 00	0000 00dd Output setting (0 - 2) STEREO, DIR.EFX, DIR.MUTE
00 01	0000 00dd Input level (0 - 2) 4D, -10D, -20D
00 02	0ddd dddd Input volume (1 - 100)
00 03	0000 000d Direct mode (0 - 1) DSP, ANLG
00 04	0ddd dddd Memory extent min (0 - 99) A.1 - C.95
00 05	0ddd dddd Memory extent max (0 - 99) A.1 - C.95
00 06	0000 000d EXP1 Pedal Hold (0 - 1) OFF, ON
00 07	0000 000d EXP2 Pedal Hold (0 - 1) OFF, ON
00 08	0000 000d TAP/CTL1 preference (0 - 1) MEMORY, SYSTEM
00 09	0000 000d CTL2 preference (0 - 1) MEMORY, SYSTEM
00 0A	0000 000d CTL3 preference (0 - 1) MEMORY, SYSTEM
00 0B	0000 000d CTL4 preference (0 - 1) MEMORY, SYSTEM
00 0C	0000 000d CTL5 preference (0 - 1) MEMORY, SYSTEM

00 0D	0000 000d	EXP1 preference (0 - 1) MEMORY, SYSTEM
00 0E	0000 000d	EXP2 preference (0 - 1) MEMORY, SYSTEM
00 0F	000d dddd	TAP/CTL1 Function (0 - 18) OFF, BPM.TAP, D1.2.TAP, D1.L.TAP, D1.R.TAP, D2.L.TAP, D2.R.TAP, D1.2.SW, D1.SW, D2.SW, D1.2.HLD, D1.HOLD, D2.HOLD, D1.2.MOM, D1.MOM, D2.MOM, BYPASS, MEM.UP, MEM.DN
00 10	000d dddd	CTL2 Function (0 - 19) OFF, BPM.TAP, D1.2.TAP, D1.L.TAP, D1.R.TAP, D2.L.TAP, D2.R.TAP, D1.2.SW, D1.SW, D2.SW, D1.2.HLD, D1.HOLD, D2.HOLD, D1.2.MOM, D1.MOM, D2.MOM, BYPASS, MEM.UP, MEM.DN, MEM.NUM
00 11	000d dddd	CTL3 Function (0 - 19) OFF, BPM.TAP, D1.2.TAP, D1.L.TAP, D1.R.TAP, D2.L.TAP, D2.R.TAP, D1.2.SW, D1.SW, D2.SW, D1.2.HLD, D1.HOLD, D2.HOLD, D1.2.MOM, D1.MOM, D2.MOM, BYPASS, MEM.UP, MEM.DN, MEM.NUM
00 12	000d dddd	CTL4 Function (0 - 19) OFF, BPM.TAP, D1.2.TAP, D1.L.TAP, D1.R.TAP, D2.L.TAP, D2.R.TAP, D1.2.SW, D1.SW, D2.SW, D1.2.HLD, D1.HOLD, D2.HOLD, D1.2.MOM, D1.MOM, D2.MOM, BYPASS, MEM.UP, MEM.DN, MEM.NUM
00 13	000d dddd	CTL5 Function (0 - 19) OFF, BPM.TAP, D1.2.TAP, D1.L.TAP, D1.R.TAP, D2.L.TAP, D2.R.TAP, D1.2.SW, D1.SW, D2.SW, D1.2.HLD, D1.HOLD, D2.HOLD, D1.2.MOM, D1.MOM, D2.MOM, BYPASS, MEM.UP, MEM.DN, MEM.NUM
00 14	0000 dddd	EXP1 Function (0 - 14) OFF, FV, D1.TIM.L, D1.TIM.R, D2.TIM.L, D2.TIM.R, D1.FBK, D2.FBK, D1.OUT, D2.OUT, D1.M.RAT, D2.M.RAT, D1.M.DPT, D2.M.DPT, DIR.LVL
00 15	0000 dddd	EXP2 Function (0 - 14) OFF, FV, D1.TIM.L, D1.TIM.R, D2.TIM.L, D2.TIM.R, D1.FBK, D2.FBK, D1.OUT, D2.OUT, D1.M.RAT, D2.M.RAT, D1.M.DPT, D2.M.DPT, DIR.LVL
00 16	0000 000d	TAP/CTL1 Mode (0 - 1) TOGGLE, MOMENT
00 17	0000 000d	CTL2 Mode (0 - 1) TOGGLE, MOMENT
00 18	0000 000d	CTL3 Mode (0 - 1) TOGGLE, MOMENT
00 19	0000 000d	CTL4 Mode (0 - 1) TOGGLE, MOMENT
00 1A	0000 000d	CTL5 Mode (0 - 1) TOGGLE, MOMENT

00 1B	0ddd dddd	CTL2 Memory number (0 - 99) A.01 - C.92
00 1C	0ddd dddd	CTL3 Memory number (0 - 99) A.01 - C.92
00 1D	0ddd dddd	CTL4 Memory number (0 - 99) A.01 - C.92
00 1E	0ddd dddd	CTL5 Memory number (0 - 99) A.01 - C.92
00 1F	0ddd dddd	TAP/CTL1 DDL1 Hold Level (0 - 120)
00 20	0ddd dddd	TAP/CTL1 DDL2 Hold Level (0 - 120)
00 21	0ddd dddd	CTL2 DDL1 Hold Level (0 - 120)
00 22	0ddd dddd	CTL2 DDL2 Hold Level (0 - 120)
00 23	0ddd dddd	CTL3 DDL1 Hold Level (0 - 120)
00 24	0ddd dddd	CTL3 DDL2 Hold Level (0 - 120)
00 25	0ddd dddd	CTL4 DDL1 Hold Level (0 - 120)
00 26	0ddd dddd	CTL4 DDL2 Hold Level (0 - 120)
00 27	0ddd dddd	CTL5 DDL1 Hold Level (0 - 120)
00 28	0ddd dddd	CTL5 DDL2 Hold Level (0 - 120)
00 29	0000 0aaa 0000 bbbb 0000 cccc 0000 dddd	EXP1 min * The value depends on the function.
00 2D	0000 0aaa 0000 bbbb 0000 cccc 0000 dddd	EXP1 max * The value depends on the function.
00 31	0000 0aaa 0000 bbbb 0000 cccc 0000 dddd	EXP2 min * The value depends on the function.
00 35	0000 0aaa 0000 bbbb 0000 cccc 0000 dddd	EXP2 max * The value depends on the function.
00 39	0000 000d	GA-FC Function sw (0 - 1) OFF, ON
00 3A	0000 dddd	GA-FC EXP1/VOLUME Function (0 - 14) OFF, FV, D1.TIM.L, D1.TIM.R, D2.TIM.L, D2.TIM.R, D1.FBK, D2.FBK, D1.OUT, D2.OUT, D1.M.RAT, D2.M.RAT, D1.M.DPT, D2.M.DPT, DIR.LVL
00 3B	0000 0aaa 0000 bbbb 0000 cccc 0000 dddd	GA-FC EXP1/VOLUME Target min * The value depends on the function.
00 3F	0000 0aaa 0000 bbbb 0000 cccc 0000 dddd	GA-FC EXP1/VOLUME Target max * The value depends on the function.
00 43	0000 dddd	GA-FC EXP2/FX Function (0 - 14) OFF, FV, D1.TIM.L, D1.TIM.R, D2.TIM.L, D2.TIM.R, D1.FBK, D2.FBK, D1.OUT, D2.OUT, D1.M.RAT, D2.M.RAT, D1.M.DPT, D2.M.DPT,

		DIR.LVL
00 44	0000 0aaa 0000 bbbb 0000 cccc 0000 dddd	GA-FC EXP2/Fx Target min * The value depends on the function.
00 48	0000 0aaa 0000 bbbb 0000 cccc 0000 dddd	GA-FC EXP2/FX Target max * The value depends on the function.
00 4C	000d dddd	GA-FC Volume SW function (0 - 19) OFF, BPM.TAP, D1.2.TAP, D1.L.TAP, D1.R.TAP, D2.L.TAP, D2.R.TAP, D1.2.SW, D1.SW, D2.SW, D1.2.HLD, D1.HOLD, D2.HOLD, D1.2.MOM, D1.MOM, D2.MOM, BYPASS, MEM.UP, MEM.DN, MEM.NUM
00 4D	000d dddd	GA-FC FX SW Function (0 - 19) OFF, BPM.TAP, D1.2.TAP, D1.L.TAP, D1.R.TAP, D2.L.TAP, D2.R.TAP, D1.2.SW, D1.SW, D2.SW, D1.2.HLD, D1.HOLD, D2.HOLD, D1.2.MOM, D1.MOM, D2.MOM, BYPASS, MEM.UP, MEM.DN, MEM.NUM
00 4E	000d dddd	GA-FC CH 1 Function (0 - 19) OFF, BPM.TAP, D1.2.TAP, D1.L.TAP, D1.R.TAP, D2.L.TAP, D2.R.TAP, D1.2.SW, D1.SW, D2.SW, D1.2.HLD, D1.HOLD, D2.HOLD, D1.2.MOM, D1.MOM, D2.MOM, BYPASS, MEM.UP, MEM.DN, MEM.NUM
00 4F	000d dddd	GA-FC CH 2 Function (0 - 19) OFF, BPM.TAP, D1.2.TAP, D1.L.TAP, D1.R.TAP, D2.L.TAP, D2.R.TAP, D1.2.SW, D1.SW, D2.SW, D1.2.HLD, D1.HOLD, D2.HOLD, D1.2.MOM, D1.MOM, D2.MOM, BYPASS, MEM.UP, MEM.DN, MEM.NUM
00 50	000d dddd	GA-FC CH 3 Function (0 - 19) OFF, BPM.TAP, D1.2.TAP, D1.L.TAP, D1.R.TAP, D2.L.TAP, D2.R.TAP, D1.2.SW, D1.SW, D2.SW, D1.2.HLD, D1.HOLD, D2.HOLD, D1.2.MOM, D1.MOM, D2.MOM, BYPASS, MEM.UP, MEM.DN, MEM.NUM
00 51	000d dddd	GA-FC CH 4 Function (0 - 19) OFF, BPM.TAP, D1.2.TAP, D1.L.TAP, D1.R.TAP, D2.L.TAP, D2.R.TAP, D1.2.SW, D1.SW, D2.SW, D1.2.HLD, D1.HOLD, D2.HOLD, D1.2.MOM, D1.MOM, D2.MOM, BYPASS, MEM.UP, MEM.DN, MEM.NUM
00 52	000d dddd	GA-FC PANEL Function (0 - 19) OFF, BPM.TAP, D1.2.TAP, D1.L.TAP, D1.R.TAP, D2.L.TAP, D2.R.TAP, D1.2.SW, D1.SW, D2.SW,

		D1.2.HLD, D1.HOLD, D2.HOLD, D1.2.MOM, D1.MOM, D2.MOM, BYPASS, MEM.UP, MEM.DN, MEM.NUM
00 53	000d dddd	GA-FC EFFECTS Function (0 - 19) OFF, BPM.TAP, D1.2.TAP, D1.L.TAP, D1.R.TAP, D2.L.TAP, D2.R.TAP, D1.2.SW, D1.SW, D2.SW, D1.2.HLD, D1.HOLD, D2.HOLD, D1.2.MOM, D1.MOM, D2.MOM, BYPASS, MEM.UP, MEM.DN, MEM.NUM
00 54	0000 000d	GA-FC Volume Sw Mode (0 - 1) TOGGLE, MOMENT
00 55	0000 000d	GA-FC FX Sw Mode (0 - 1) TOGGLE, MOMENT
00 56	0000 000d	GA-FC CH 1 Mode (0 - 1) TOGGLE, MOMENT
00 57	0000 000d	GA-FC CH 2 Mode (0 - 1) TOGGLE, MOMENT
00 58	0000 000d	GA-FC CH 3 Mode (0 - 1) TOGGLE, MOMENT
00 59	0000 000d	GA-FC CH 4 Mode (0 - 1) TOGGLE, MOMENT
00 5A	0000 000d	GA-FC PANEL SW Mode (0 - 1) TOGGLE, MOMENT
00 5B	0000 000d	GA-FC EFFECTS Sw Mode (0 - 1) TOGGLE, MOMENT
00 5C	0ddd dddd	GA-FC VOLUME Sw Mem# (0 - 99) A.01 - C.92
00 5D	0ddd dddd	GA-FC FX Sw Mem# (0 - 99) A.01 - C.92
00 5E	0ddd dddd	GA-FC CH1 Mem# (0 - 99) A.01 - C.92
00 5F	0ddd dddd	GA-FC CH2 Mem# (0 - 99) A.1 - C.82
00 60	0ddd dddd	GA-FC CH3 Mem# (0 - 99) A.01 - C.92
00 61	0ddd dddd	GA-FC CH4 Mem# (0 - 99) A.01 - C.92
00 62	0ddd dddd	GA-FC PANEL Mem# (0 - 99) A.01 - C.92
00 63	0ddd dddd	GA-FC EFFECTS Mem# (0 - 99) A.01 - C.92
00 64	0ddd dddd	GA-FC VOLUME Sw DDL1 Hold level (0 - 120)
00 65	0ddd dddd	GA-FC VOLUME Sw DDL2 Hold level (0 - 120)
00 66	0ddd dddd	GA-FC FX Sw DDL1 Hold level (0 - 120)
00 67	0ddd dddd	GA-FC FX Sw DDL2 Hold level (0 - 120)
00 68	0ddd dddd	GA-FC CH.1 DDL1 Hold level (0 - 120)
00 69	0ddd dddd	GA-FC CH.1 DDL2 Hold level (0 - 120)
00 6A	0ddd dddd	GA-FC CH.2 DDL1 Hold level (0 - 120)

00 6B	0ddd dddd	GA-FC CH.2 DDL2 Hold level (0 - 120)
00 6C	0ddd dddd	GA-FC CH.3 DDL1 Hold level (0 - 120)
00 6D	0ddd dddd	GA-FC CH.3 DDL2 Hold level (0 - 120)
00 6E	0ddd dddd	GA-FC CH.4 DDL1 Hold level (0 - 120)
00 6F	0ddd dddd	GA-FC CH.4 DDL2 Hold level (0 - 120)
00 70	0ddd dddd	GA-FC PANEL DDL1 Hold level (0 - 120)
00 71	0ddd dddd	GA-FC PANEL DDL2 Hold level (0 - 120)
00 72	0ddd dddd	GA-FC EFFECTS DDL1 Hold level (0 - 120)
00 73	0ddd dddd	GA-FC EFFECTS DDL2 Hold level (0 - 120)
00 74	0000 00dd	Display mode (0 - 3) INPUT LEVEL, VALUE, BPM, MEMORY
00 75	0000 000d	Pedal SW mode (0 - 1) MANUAL, MEMORY
00 76	0000 000d	Memory mode (0 - 1) IMMEDIT, WAIT
00 77	0000 000d	Foot Volume Preference (0 - 1) MEMORY, SYSTEM
00 78	0000 000d	Foot Volume SW (0 - 1) OFF, ON
00 79	0ddd dddd	Pedal position (0 - 100)
00 7A	0ddd dddd	Volume min (0 - 100)
00 7B	0ddd dddd	Volume max (0 - 100)
00 7C	0000 00dd	FV curve (0 - 3) SLOW1, SLOW2, NORMAL, FAST

* MIDI Parameters Offset Address

Offset Address	Description	
00 00	000d dddd	MIDI Rx Channel (0 - 16) OFF, CH.1 - CH.16
00 01	000d dddd	MIDI Tx Channel (0 - 17) OFF, CH.1 - CH.16, RX
00 02	0000 000d	MIDI PC in SW (0 - 1) OFF, ON
00 03	0000 000d	MIDI PC out SW (0 - 1) OFF, ON
00 04	0000 000d	MIDI CC in SW (0 - 1) OFF, ON
00 05	0000 000d	MIDI CC out SW (0 - 1) OFF, ON
00 06	00dd dddd	MIDI DDL1 L time cc (0 - 63) OFF, cc01 -cc31, cc64 - cc95

00 07	00dd dddd	MIDI DDL1 R time cc (0 - 63) OFF, cc01 - cc31, cc64 - cc95
00 08	00dd dddd	MIDI DDL2 L time cc (0 - 63) OFF, cc01 - cc31, cc64 - cc95
00 09	00dd dddd	MIDI DDL2 R time cc (0 - 63) OFF, cc01 - cc31, cc64 - cc95
00 0A	00dd dddd	MIDI DDL1 L feedback cc (0 - 63) OFF, cc01 - cc31, cc64 - cc95
00 0B	00dd dddd	MIDI DDL2 L feedback cc (0 - 63) OFF, cc01 - cc31, cc64 - cc95
00 0C	00dd dddd	MIDI DDL1 L output level cc (0 - 63) OFF, cc01 - cc31, cc64 - cc95
00 0D	00dd dddd	MIDI DDL2 L output level cc (0 - 63) OFF, cc01 - cc31, cc64 - cc95
00 0E	00dd dddd	MIDI DDL1 Mod. Rate cc (0 - 63) OFF, cc01 - cc31, cc64 - cc95
00 0F	00dd dddd	MIDI DDL2 Mod. Rate cc (0 - 63) OFF, cc01 - cc31, cc64 - cc95
00 10	00dd dddd	MIDI DDL1 Mod. Depth cc (0 - 63) OFF, cc01 - cc31, cc64 - cc95
00 11	00dd dddd	MIDI DDL2 Mod. Depth cc (0 - 63) OFF, cc01 - cc31, cc64 - cc95
00 12	00dd dddd	MIDI TAP/CTL1 SW cc (0 - 63) OFF, cc01 - cc31, cc64 - cc95
00 13	00dd dddd	MIDI CTL2 SW cc (0 - 63) OFF, cc01 - cc31, cc64 - cc95
00 14	00dd dddd	MIDI CTL3 SW cc (0 - 63) OFF, cc01 - cc31, cc64 - cc95
00 15	00dd dddd	MIDI CTL4 SW cc (0 - 63) OFF, cc01 - cc31, cc64 - cc95
00 16	00dd dddd	MIDI CTL5 SW cc (0 - 63) OFF, cc01 - cc31, cc64 - cc95
00 17	00dd dddd	MIDI EXP1 cc (0 - 63) OFF, cc01 - cc31, cc64 - cc95
00 18	00dd dddd	MIDI EXP2 cc (0 - 63) OFF, cc01 - cc31, cc64 - cc95

00 19	00dd dddd	MIDI bypass SW cc (0 - 63) OFF, cc01 - cc31, cc64 - cc95
00 1A	00dd dddd	MIDI DDL1 on/off cc (0 - 63) OFF, cc01 - cc31, cc64 - cc95
00 1B	00dd dddd	MIDI DDL2 on/off cc (0 - 63) OFF, cc01 - cc31, cc64 - cc95
00 1C	00dd dddd	MIDI DDL1/DDL2 TAP func. cc (0 - 63) OFF, cc01 - cc31, cc64 - cc95
00 1D	00dd dddd	MIDI DDL1 L ch TAP func. cc (0 - 63) OFF, cc01 - cc31, cc64 - cc95
00 1E	00dd dddd	MIDI DDL1 R ch TAP func cc (0 - 63) OFF, cc01 - cc31, cc64 - cc95
00 1F	00dd dddd	MIDI DDL2 L ch TAP func. cc (0 - 63) OFF, cc01 - cc31, cc64 - cc95
00 20	00dd dddd	MIDI DDL2 R ch TAP func. cc (0 - 63) OFF, cc01 - cc31, cc64 - cc95
00 21	00dd dddd	MIDI DDL1 HOLD func. Cc (0 - 63) OFF, cc01 - cc31, cc64 - cc95
00 22	00dd dddd	MIDI DDL2 HOLD func. Cc (0 - 63) OFF, cc01 - cc31, cc64 - cc95
00 23	00dd dddd	MIDI DDL1 MOMENT func. cc (0 - 63) OFF, cc01 - cc31, cc64 - cc95
00 24	00dd dddd	MIDI DDL2 MOMENT func. cc (0 - 63) OFF, cc01 - cc31, cc64 - cc95
00 25	00dd dddd	MIDI SEND/RETURN sw cc (0 - 63) OFF, cc01 - cc31, cc64 - cc95
00 26	00dd dddd	DIRECT INPUT LEVEL cc (0 - 63) OFF, cc01 - cc31, cc64 - cc95
00 27	00dd dddd	FV Pedal Position cc (0 - 63) OFF, cc01 - cc31, cc64 - cc95
00 28	00dd dddd	MIDI DDL1 FILTER Sw cc (0 - 63) OFF, cc01 - cc31, cc64 - cc95

00 29	00dd dddd	MIDI DDL2 FILTER Sw cc (0 - 63) OFF, cc01 - cc31, cc64 - cc95
00 2A	00dd dddd	MIDI DDL1 TIMEx2 Sw cc (0 - 63) OFF, cc01 - cc31, cc64 - cc95
00 2B	00dd dddd	MIDI DDL2 TIMEx2 Sw cc (0 - 63) OFF, cc01 - cc31, cc64 - cc95
00 2C	00dd dddd	MIDI DDL1 Delay Phase Sw cc (0 - 63) OFF, cc01 - cc31, cc64 - cc95
00 2D	00dd dddd	MIDI DDL2 Delay Phase Sw cc (0 - 63) OFF, cc01 - cc31, cc64 - cc95
00 2E	00dd dddd	MIDI DDL1 Mod. Sw cc (0 - 63) OFF, cc01 - cc31, cc64 - cc95
00 2F	00dd dddd	MIDI DDL2 Mod. Sw cc (0 - 63) OFF, cc01 - cc31, cc64 - cc95
00 30	00dd dddd	MIDI DDL1 Feedback Phase Sw cc (0 - 63) OFF, cc01 - cc31, cc64 - cc95
00 31	00dd dddd	MIDI DDL2 Feedback Phase Sw cc (0 - 63) OFF, cc01 - cc31, cc64 - cc95
00 32	0000 00dd	MIDI Sync (0 - 3) INT, USB, MIDI, AUTO
00 33	0000 00dd	MIDI Realtime source (0 - 2) INT, USB, MIDI
00 34	0000 00dd	MIDI Thru (0 - 3) OFF, USB, MID, U.M
00 35	0000 00dd	USB MIDI Thru (0 - 3) OFF, USB, MID, U.M

* PC MAP Parameters Offset Address

Offset Address	Description	
00 00	00dd dddd	PC #1 (0 - 99) A.01 - C.92
00 01	00dd dddd	PC #2 (0 - 99) A.01 - C.92
00 02	00dd dddd	PC #3 (0 - 99) A.01 - C.92
00 03	00dd dddd	PC #4 (0 - 99) A.01 - C.92
00 04	00dd dddd	PC #5 (0 - 99) A.01 - C.92
00 05	00dd dddd	PC #6 (0 - 99) A.01 - C.92

00 06	00dd dddd	PC #7 (0 - 99) A.01 - C.92
00 07	00dd dddd	PC #8 (0 - 99) A.01 - C.92
00 08	00dd dddd	PC #9 (0 - 99) A.01 - C.92
00 09	00dd dddd	PC #10 (0 - 99) A.01 - C.92
00 0A	00dd dddd	PC #11 (0 - 99) A.01 - C.92
00 0B	00dd dddd	PC #12 (0 - 99) A.01 - C.92
00 0C	00dd dddd	PC #13 (0 - 99) A.01 - C.92
00 0D	00dd dddd	PC #14 (0 - 99) A.01 - C.92
00 0E	00dd dddd	PC #15 (0 - 99) A.01 - C.92
00 0F	00dd dddd	PC #16 (0 - 99) A.01 - C.92
00 10	00dd dddd	PC #17 (0 - 99) A.01 - C.92
00 11	00dd dddd	PC #18 (0 - 99) A.01 - C.92
00 12	00dd dddd	PC #19 (0 - 99) A.01 - C.92
00 13	00dd dddd	PC #20 (0 - 99) A.01 - C.92
00 14	00dd dddd	PC #21 (0 - 99) A.01 - C.92
00 15	00dd dddd	PC #22 (0 - 99) A.01 - C.92
00 16	00dd dddd	PC #23 (0 - 99) A.01 - C.92
00 17	00dd dddd	PC #24 (0 - 99) A.01 - C.92
00 18	00dd dddd	PC #25 (0 - 99) A.01 - C.92
00 19	00dd dddd	PC #26 (0 - 99) A.01 - C.92
00 1A	00dd dddd	PC #27 (0 - 99) A.01 - C.92
00 1B	00dd dddd	PC #28 (0 - 99) A.01 - C.92
00 1C	00dd dddd	PC #29 (0 - 99) A.01 - C.92
00 1D	00dd dddd	PC #30 (0 - 99) A.01 - C.92
00 1E	00dd dddd	PC #31 (0 - 99) A.01 - C.92

00 1F	0ddd dddd	PC #32 (0 - 99) A.01 - C.92
00 20	0ddd dddd	PC #33 (0 - 99) A.01 - C.92
00 21	0ddd dddd	PC #34 (0 - 99) A.01 - C.92
00 22	0ddd dddd	PC #35 (0 - 99) A.01 - C.92
00 23	0ddd dddd	PC #36 (0 - 99) A.01 - C.92
00 24	0ddd dddd	PC #37 (0 - 99) A.01 - C.92
00 25	0ddd dddd	PC #38 (0 - 99) A.01 - C.92
00 26	0ddd dddd	PC #39 (0 - 99) A.01 - C.92
00 27	0ddd dddd	PC #40 (0 - 99) A.01 - C.92
00 28	0ddd dddd	PC #41 (0 - 99) A.01 - C.92
00 29	0ddd dddd	PC #42 (0 - 99) A.01 - C.92
00 2A	0ddd dddd	PC #43 (0 - 99) A.01 - C.92
00 2B	0ddd dddd	PC #44 (0 - 99) A.01 - C.92
00 2C	0ddd dddd	PC #45 (0 - 99) A.01 - C.92
00 2D	0ddd dddd	PC #46 (0 - 99) A.01 - C.92
00 2E	0ddd dddd	PC #47 (0 - 99) A.01 - C.92
00 2F	0ddd dddd	PC #48 (0 - 99) A.01 - C.92
00 30	0ddd dddd	PC #49 (0 - 99) A.01 - C.92
00 31	0ddd dddd	PC #50 (0 - 99) A.01 - C.92
00 32	0ddd dddd	PC #51 (0 - 99) A.01 - C.92
00 33	0ddd dddd	PC #52 (0 - 99) A.01 - C.92
00 34	0ddd dddd	PC #53 (0 - 99) A.01 - C.92
00 35	0ddd dddd	PC #54 (0 - 99) A.01 - C.92
00 36	0ddd dddd	PC #55 (0 - 99) A.01 - C.92
00 37	0ddd dddd	PC #56 (0 - 99) A.01 - C.92
00 38	0ddd dddd	PC #57 (0 - 99) A.01 - C.92

00 39	0ddd dddd	PC #58 (0 - 99) A.01 - C.92
00 3A	0ddd dddd	PC #59 (0 - 99) A.01 - C.92
00 3B	0ddd dddd	PC #60 (0 - 99) A.01 - C.92
00 3C	0ddd dddd	PC #61 (0 - 99) A.01 - C.92
00 3D	0ddd dddd	PC #62 (0 - 99) A.01 - C.92
00 3E	0ddd dddd	PC #63 (0 - 99) A.01 - C.92
00 3F	0ddd dddd	PC #64 (0 - 99) A.01 - C.92
00 40	0ddd dddd	PC #65 (0 - 99) A.01 - C.92
00 41	0ddd dddd	PC #66 (0 - 99) A.01 - C.92
00 42	0ddd dddd	PC #67 (0 - 99) A.01 - C.92
00 43	0ddd dddd	PC #68 (0 - 99) A.01 - C.92
00 44	0ddd dddd	PC #69 (0 - 99) A.01 - C.92
00 45	0ddd dddd	PC #70 (0 - 99) A.01 - C.92
00 46	0ddd dddd	PC #71 (0 - 99) A.01 - C.92
00 47	0ddd dddd	PC #72 (0 - 99) A.01 - C.92
00 48	0ddd dddd	PC #73 (0 - 99) A.01 - C.92
00 49	0ddd dddd	PC #74 (0 - 99) A.01 - C.92
00 4A	0ddd dddd	PC #75 (0 - 99) A.01 - C.92
00 4B	0ddd dddd	PC #76 (0 - 99) A.01 - C.92
00 4C	0ddd dddd	PC #77 (0 - 99) A.01 - C.92
00 4D	0ddd dddd	PC #78 (0 - 99) A.01 - C.92
00 4E	0ddd dddd	PC #79 (0 - 99) A.01 - C.92
00 4F	0ddd dddd	PC #80 (0 - 99) A.01 - C.92
00 50	0ddd dddd	PC #81 (0 - 99) A.01 - C.92
00 51	0ddd dddd	PC #82 (0 - 99) A.01 - C.92

00 52	0ddd dddd	PC #83 (0 - 99) A.01 - C.92
00 53	0ddd dddd	PC #84 (0 - 99) A.01 - C.92
00 54	0ddd dddd	PC #85 (0 - 99) A.01 - C.92
00 55	0ddd dddd	PC #86 (0 - 99) A.01 - C.92
00 56	0ddd dddd	PC #87 (0 - 99) A.01 - C.92
00 57	0ddd dddd	PC #88 (0 - 99) A.01 - C.92
00 58	0ddd dddd	PC #89 (0 - 99) A.01 - C.92
00 59	0ddd dddd	PC #90 (0 - 99) A.01 - C.92
00 5A	0ddd dddd	PC #91 (0 - 99) A.01 - C.92
00 5B	0ddd dddd	PC #92 (0 - 99) A.01 - C.92
00 5C	0ddd dddd	PC #93 (0 - 99) A.01 - C.92
00 5D	0ddd dddd	PC #94 (0 - 99) A.01 - C.92
00 5E	0ddd dddd	PC #95 (0 - 99) A.01 - C.92
00 5F	0ddd dddd	PC #96 (0 - 99) A.01 - C.92
00 60	0ddd dddd	PC #97 (0 - 99) A.01 - C.92
00 61	0ddd dddd	PC #98 (0 - 99) A.01 - C.92
00 62	0ddd dddd	PC #99 (0 - 99) A.01 - C.92
00 63	0ddd dddd	PC #100 (0 - 99) A.01 - C.92
00 64	0ddd dddd	PC #101 (0 - 99) A.01 - C.92
00 65	0ddd dddd	PC #102 (0 - 99) A.01 - C.92
00 66	0ddd dddd	PC #103 (0 - 99) A.01 - C.92
00 67	0ddd dddd	PC #104 (0 - 99) A.01 - C.92
00 68	0ddd dddd	PC #105 (0 - 99) A.01 - C.92
00 69	0ddd dddd	PC #106 (0 - 99) A.01 - C.92
00 6A	0ddd dddd	PC #107 (0 - 99) A.01 - C.92

00 6B	0ddd dddd	PC #108 (0 - 99) A.01 - C.92
00 6C	0ddd dddd	PC #109 (0 - 99) A.01 - C.92
00 6D	0ddd dddd	PC #110 (0 - 99) A.01 - C.92
00 6E	0ddd dddd	PC #111 (0 - 99) A.01 - C.92
00 6F	0ddd dddd	PC #112 (0 - 99) A.01 - C.92
00 70	0ddd dddd	PC #113 (0 - 99) A.01 - C.92
00 71	0ddd dddd	PC #114 (0 - 99) A.01 - C.92
00 72	0ddd dddd	PC #115 (0 - 99) A.01 - C.92
00 73	0ddd dddd	PC #116 (0 - 99) A.01 - C.92
00 74	0ddd dddd	PC #117 (0 - 99) A.01 - C.92
00 75	0ddd dddd	PC #118 (0 - 99) A.01 - C.92
00 76	0ddd dddd	PC #119 (0 - 99) A.01 - C.92
00 77	0ddd dddd	PC #120 (0 - 99) A.01 - C.92
00 78	0ddd dddd	PC #121 (0 - 99) A.01 - C.92
00 79	0ddd dddd	PC #122 (0 - 99) A.01 - C.92
00 7A	0ddd dddd	PC #123 (0 - 99) A.01 - C.92
00 7B	0ddd dddd	PC #124 (0 - 99) A.01 - C.92
00 7C	0ddd dddd	PC #125 (0 - 99) A.01 - C.92
00 7D	0ddd dddd	PC #126 (0 - 99) A.01 - C.92
00 7E	0ddd dddd	PC #127 (0 - 99) A.01 - C.92
00 7F	0ddd dddd	PC #128 (0 - 99) A.01 - C.92

* MEMORY EFFECT Parameters Offset Address

Offset Address	Description	
00 00	0000 00dd	Structure (0 - 2) SERI, PARA1, PARA2
00 01	0000 aaaa 0000 bbbb	BPM (40 - 250)
00 03	0000 00dd	DDL1/DDL2 Mod. Link (0 - 2) NOR, INV, OFF

00 04	0000 000d	DDL1 SW (0 - 1) OFF, ON
00 05	0000 000d	DDL1 TYPE (0 - 1) STEREO, PAN
00 06	0000 00dd	DDL1 TIME LINK Sw (0 - 2) OFF, ON, OST
00 07	0000 0aaa 0000 bbbb 0000 cccc 0000 dddd	DDL1 Time L (0 - 15000):TIME x2=OFF (0 - 30000):TIME X2=ON *The value is multiplied by 10. (30001 - 30013) 16 th , 8 th triplet, dotted 16 th , 8 th , quarter triplet, dotted 8 th , quarter, half triplet, dotted quarter, half, whole triplet, dotted half, whole
00 0B	0000 0aaa 0000 bbbb 0000 cccc 0000 dddd	DDL1 Time R * Same as DDL1 Time L
00 0F	0ddd dddd	DDL1 feedback (0 - 99)
00 10	0ddd dddd	DDL1 Rate (0 - 112) 0 - 99 : value 100 - 112 : whole, dotted half, whole triplet, half, dotted quarter, half triplet, quarter, dotted 8 th , quarter triplet, 8 th , dotted 16 th , 8 th triplet, 16 th
00 11	0ddd dddd	DDL1 Depth (0 - 99)
00 12	0000 000d	DDL1 LFO type (0 - 1) TRI, SIN
00 13	0000 000d	DDL1 MOD LFO Phase (0 - 1) NOR, INV
00 14	000d dddd	DDL1 Feedback eq low cut Frequency (0 - 17) FLAT, 20, 25, 31.5, 40, 50, 63, 80, 100, 125, 160, 200, 250, 315, 400, 500, 630, 800
00 15	0000 dddd	DDL1 Feedback eq high cut Frequency (0 - 14) 630, 800, 1000, 1.25K, 1.6K, 2K, 2.5K, 3.15K, 4K, 5K, 6.3K, 8K, 10K, 12.5K, FLAT
00 16	000d dddd	DDL1 Feedback eq high cut Gain (0 - 24) -24 - 0
00 17	0000 000d	DDL1 Time x2 Sw (0 - 1) OFF, ON
00 18	0000 000d	DDL1 Filter Sw (0 - 1) OFF, ON
00 19	0000 000d	DDL1 Delay Phase Sw (0 - 1) OFF, ON

00 1A	0000 000d	DDL1 Modulation Sw (0 - 1) OFF, ON
00 1B	0000 000d	DDL1 Feedback phase Sw (0 - 1) OFF, ON
00 1C	0000 00dd	DDL1 Feedback EQ type (0 - 2) OFF, ORG, USR
00 1D	0000 000d	DDL2 SW (0 - 1) OFF, ON
00 1E	0000 000d	DDL2 TYPE (0 - 1) STEREO, PAN
00 1F	0000 00dd	DDL1 TIME LINK Sw (0 - 2) OFF, ON, OST
00 20	0000 0aaa 0000 bbbb 0000 cccc 0000 dddd	DDL2 Time L (0 - 15000):TIME x2=OFF (0 - 30000):TIME X2=ON *The value is multiplied by 10. (30001 - 30013) 16 th , 8 th triplet, dotted 16 th , 8 th , quarter triplet, dotted 8 th , quarter, half triplet, dotted quarter, half, whole triplet, dotted half, whole
00 24	0000 0aaa 0000 bbbb 0000 cccc 0000 dddd	DDL2 Time R * Same as DDL2 Time L.
00 28	0ddd dddd	DDL2 feedback (0 - 99)
00 29	0ddd dddd	DDL2 Rate (0 - 112) * Same as DDL1 Rate
00 2A	0ddd dddd	DDL2 Depth (0 - 99)
00 2B	0000 000d	DDL2 LFO type (0 - 1) TRI, SIN
00 2C	0000 000d	DDL2 MOD LFO Phase (0 - 1) NOR, INV
00 2D	000d dddd	DDL2 Feedback eq low cut Frequency (0 - 17) FLAT, 20, 25, 31.5, 40, 50, 63, 80, 100, 125, 160, 200, 250, 315, 400, 500, 630, 800
00 2E	0000 dddd	DDL2 Feedback eq high cut Frequency (0 - 14) 630, 800, 1000, 1.25K, 1.6K, 2K, 2.5K, 3.15K, 4K, 5K, 6.3K, 8K, 10K, 12.5K, FLAT
00 2F	000d dddd	DDL2 Feedback eq high cut Gain (0 - 24) -24 - 0
00 30	0000 000d	DDL2 Time x2 Sw (0 - 1) OFF, ON
00 31	0000 000d	DDL2 Filter Sw (0 - 1) OFF, ON
00 32	0000 000d	DDL2 Filter Sw (0 - 1) OFF, ON

00 33	0000 000d	DDL2 Filter Sw (0 - 1) OFF, ON
00 34	0000 000d	DDL2 Filter Sw (0 - 1) OFF, ON
00 35	0000 00dd	DDL2 Filter Type (0 - 2) OFF, ORG, USR
00 36	0ddd dddd	DDL1 Output Level (0 - 99)
00 37	0ddd dddd	DDL2 Output Level (0 - 99)
00 38	0ddd dddd	Direct Level (0 - 100)
00 39	0000 000d	TEMPO hold SW (0 - 1) OFF, ON
00 3A	000d dddd	Output gain (0 - 24) -12 - 12
00 3B	0000 000d	DDL1 Carryover Sw (0 - 1) OFF, ON
00 3C	0000 000d	DDL2 Carryover Sw (0 - 1) OFF, ON
00 3D	0000 000d	Foot Volume SW (0 - 1) OFF, ON
00 3E	0ddd dddd	Pedal position (0 - 100)
00 3F	0ddd dddd	FV min (0 - 100)
00 40	0ddd dddd	FV max (0 - 100)
00 41	0000 00dd	FV curve (0 - 3) SLOW1, SLOW2, NORMAL, FAST
00 42	0000 aaaa 0000 bbbb	DDL1 Time Offset (0 - 200) offset:99 -99 - 99
00 44	0000 aaaa 0000 bbbb	DDL2 Time Offset (0 - 200) offset:99 -99 - 99

* MEMORY CTL parameters Offset Address

Offset Address	Description	
00 00	000d dddd	TAP/CTL1 Function (0 - 18) OFF, BPM.TAP, D1.2.TAP, D1.L.TAP, D1.R.TAP, D2.L.TAP, D2.R.TAP, D1.2.SW, D1.SW, D2.SW, D1.2.HLD, D1.HOLD, D2.HOLD, D1.2.MOM, D1.MOM, D2.MOM, BYPASS, MEM.UP, MEM.DN
00 01	000d dddd	CTL2 Function (0 - 19) OFF, BPM.TAP, D1.2.TAP, D1.L.TAP, D1.R.TAP, D2.L.TAP, D2.R.TAP, D1.2.SW, D1.SW, D2.SW, D1.2.HLD, D1.HOLD, D2.HOLD, D1.2.MOM, D1.MOM, D2.MOM, BYPASS, MEM.UP, MEM.DN, MEM.NUM

00 02	000d dddd	CTL3 Function (0 - 19) OFF, BPM.TAP, D1.2.TAP, D1.L.TAP, D1.R.TAP, D2.L.TAP, D2.R.TAP, D1.2.SW, D1.SW, D2.SW, D1.2.HLD, D1.HOLD, D2.HOLD, D1.2.MOM, D1.MOM, D2.MOM, BYPASS, MEM.UP, MEM.DN, MEM.NUM
00 03	000d dddd	CTL4 Function (0 - 19) OFF, BPM.TAP, D1.2.TAP, D1.L.TAP, D1.R.TAP, D2.L.TAP, D2.R.TAP, D1.2.SW, D1.SW, D2.SW, D1.2.HLD, D1.HOLD, D2.HOLD, D1.2.MOM, D1.MOM, D2.MOM, BYPASS, MEM.UP, MEM.DN, MEM.NUM
00 04	000d dddd	CTL5 Function (0 - 19) OFF, BPM.TAP, D1.2.TAP, D1.L.TAP, D1.R.TAP, D2.L.TAP, D2.R.TAP, D1.2.SW, D1.SW, D2.SW, D1.2.HLD, D1.HOLD, D2.HOLD, D1.2.MOM, D1.MOM, D2.MOM, BYPASS, MEM.UP, MEM.DN, MEM.NUM
00 05	0000 dddd	EXP1 Function (0 - 14) OFF, FV, D1.TIM.L, D1.TIM.R, D2.TIM.L, D2.TIM.R, D1.FBK, D2.FBK, D1.OUT, D2.OUT, D1.M.RAT, D2.M.RAT, D1.M.DPT, D2.M.DPT, DIR.LVL
00 06	0000 dddd	EXP2 Function (0 - 14) OFF, FV, D1.TIM.L, D1.TIM.R, D2.TIM.L, D2.TIM.R, D1.FBK, D2.FBK, D1.OUT, D2.OUT, D1.M.RAT, D2.M.RAT, D1.M.DPT, D2.M.DPT, DIR.LVL
00 07	0000 000d	TAP/CTL1 Mode (0 - 1) TOGGLE, MOMENT
00 08	0000 000d	CTL2 Mode (0 - 1) TOGGLE, MOMENT
00 09	0000 000d	CTL3 Mode (0 - 1) TOGGLE, MOMENT
00 0A	0000 000d	CTL4 Mode (0 - 1) TOGGLE, MOMENT
00 0B	0000 000d	CTL5 Mode (0 - 1) TOGGLE, MOMENT
00 0C	0ddd dddd	CTL2 Memory number (0 - 99) A.01 - C.92
00 0D	0ddd dddd	CTL3 Memory number (0 - 99) A.01 - C.92
00 0E	0ddd dddd	CTL4 Memory number (0 - 99) A.01 - C.92
00 0F	0ddd dddd	CTL5 Memory number (0 - 99) A.01 - C.92
00 10	0ddd dddd	TAP/CTL1 DDL1 Hold Level (0 - 120)
00 11	0ddd dddd	TAP/CTL1 DDL2 Hold Level (0 - 120)

00 12	0ddd dddd	CTL2 DDL1 Hold Level (0 - 120)
00 13	0ddd dddd	CTL2 DDL2 Hold Level (0 - 120)
00 14	0ddd dddd	CTL3 DDL1 Hold Level (0 - 120)
00 15	0ddd dddd	CTL3 DDL2 Hold Level (0 - 120)
00 16	0ddd dddd	CTL4 DDL1 Hold Level (0 - 120)
00 17	0ddd dddd	CTL4 DDL2 Hold Level (0 - 120)
00 18	0ddd dddd	CTL5 DDL1 Hold Level (0 - 120)
00 19	0ddd dddd	CTL5 DDL2 Hold Level (0 - 120)
00 1A	0000 0aaa 0000 bbbb 0000 cccc 0000 dddd	EXP1 Target min *The value depends on the function.
00 1E	0000 0aaa 0000 bbbb 0000 cccc 0000 dddd	EXP1 Target max *The value depends on the function.
00 22	0000 0aaa 0000 bbbb 0000 cccc 0000 dddd	EXP2 Target min *The value depends on the function.
00 26	0000 0aaa 0000 bbbb 0000 cccc 0000 dddd	EXP2 Target max *The value depends on the function.

* MEMORY ASSIGN parameters Offset Address

Offset Address	Description	
00 00	0000 000d	ASSIGN 1 SW (0 - 1) OFF, ON
00 01	0ddd dddd	ASSIGN 1 Source (0 - 79) CTL1, CTL2, CTL3, CTL4, CTL5, EXP1, EXP2, GAFC.1, GAFC.2, GAFC.3, GAFC.4, GAFC.P, GAFC.E, GAFC.E1, GAFC.E2, GAFC.S1, GAFC.S2, cc01 - cc31, cc64 - cc95
00 02	0000 000d	ASSIGN1 Mode (0 - 1) TOGGLE, MOMENT
00 03	000d dddd	ASSIGN1 Target (0 - 20) D1.SW, D1.TIM.L, D1.TIM.R, D1.FBK, D1.OUT, D1.RATE, D1.DEPT, D1.MOD, D1.FB.PH, D2.SW, D2.TIM.L, D2.TIM.R, D2.FBK, D2.OUT, D2.RATE, D2.DEPT, D2.MOD, D2.FB.PH, DIR.LEV, F.VOL.SW, PDL.POS
00 04	0000 0aaa 0000 bbbb 0000 cccc 0000 dddd	ASSIGN1 Target minimum *The value depends on the target.
00 08	0000 0aaa 0000 bbbb 0000 cccc 0000 dddd	ASSIGN1 Target maximum *The value depends on the target.
00 0C	0ddd dddd	ASSIGN1 Act. Lo (0 - 126)
00 0D	0ddd dddd	ASSIGN1 Act. Hi (1 - 127)
00 0E	0000 000d	ASSIGN2 SW (0 - 1) OFF, ON

00 0F	0ddd dddd	ASSIGN2 Source (0 - 79) * Same as ASSIGN1
00 10	0000 000d	ASSIGN2 Mode (0 - 1) TOGGLE, MOMENT
00 11	000d dddd	ASSIGN2 Target (0 - 20) * Same as ASSIGN1
00 12	0000 0aaa 0000 bbbb 0000 cccc 0000 dddd	ASSIGN2 Target minimum * Same as ASSIGN1
00 16	0000 0aaa 0000 bbbb 0000 cccc 0000 dddd	ASSIGN2 Target maximum * Same as ASSIGN1
00 1A	0ddd dddd	ASSIGN2 Act. Lo (0 - 126)
00 1B	0ddd dddd	ASSIGN2 Act. Hi (1 - 127)
00 1C	0000 000d	ASSIGN3 SW (0 - 1) OFF, ON
00 1D	0ddd dddd	ASSIGN3 Source (0 - 79) * Same as ASSIGN1
00 1E	0000 000d	ASSIGN3 Mode (0 - 1) TOGGLE, MOMENT
00 1F	000d dddd	ASSIGN3 Target (0 - 20) * Same as ASSIGN1
00 20	0000 0aaa 0000 bbbb 0000 cccc 0000 dddd	ASSIGN3 Target minimum * Same as ASSIGN1
00 24	0000 0aaa 0000 bbbb 0000 cccc 0000 dddd	ASSIGN3 Target maximum * Same as ASSIGN1
00 28	0ddd dddd	ASSIGN3 Act. Lo (0 - 126)
00 29	0ddd dddd	ASSIGN3 Act. Hi (1 - 127)
00 2A	0000 000d	ASSIGN4 SW (0 - 1) OFF, ON
00 2B	0ddd dddd	ASSIGN4 Source (0 - 79) * Same as ASSIGN1
00 2C	0000 000d	ASSIGN4 Mode (0 - 1) TOGGLE, MOMENT
00 2D	000d dddd	ASSIGN4 Target (0 - 20) * Same as ASSIGN1
00 2E	0000 0aaa 0000 bbbb 0000 cccc 0000 dddd	ASSIGN4 Target minimum * Same as ASSIGN1
00 32	0000 0aaa 0000 bbbb 0000 cccc 0000 dddd	ASSIGN4 Target maximum * Same as ASSIGN1
00 36	0ddd dddd	ASSIGN4 Act. Lo (0 - 126)
00 37	0ddd dddd	ASSIGN4 Act. Hi (1 - 127)
00 38	0000 000d	ASSIGN5 SW (0 - 1) OFF, ON
00 39	0ddd dddd	ASSIGN5 Source (0 - 79) * Same as ASSIGN1
00 3A	0000 000d	ASSIGN5 Mode (0 - 1) TOGGLE, MOMENT
00 3B	000d dddd	ASSIGN5 Target (0 - 20) * Same as ASSIGN1
00 3C	0000 0aaa 0000 bbbb 0000 cccc 0000 dddd	ASSIGN5 minimum * Same as ASSIGN1

00 40	0000 0aaa 0000 bbbb 0000 cccc 0000 dddd	ASSIGN5 maximum * Same as ASSIGN1
00 46	0000 000d	ASSIGN6 SW (0 - 1) OFF, ON
00 47	0ddd dddd	ASSIGN6 Source (0 - 79) * Same as ASSIGN1
00 48	0000 000d	ASSIGN6 Mode (0 - 1) TOGGLE, MOMENT
00 49	000d dddd	ASSIGN6 Target (0 - 20) * Same as ASSIGN1
00 4A	0000 0aaa 0000 bbbb 0000 cccc 0000 dddd	ASSIGN6 Target minimum * Same as ASSIGN1
00 4E	0000 0aaa 0000 bbbb 0000 cccc 0000 dddd	ASSIGN6 Target maximum * Same as ASSIGN1
00 52	0ddd dddd	ASSIGN6 Act. Lo (0 - 126)
00 53	0ddd dddd	ASSIGN6 Act. Hi (1 - 127)
00 54	0000 000d	ASSIGN7 SW (0 - 1) OFF, ON
00 55	0ddd dddd	ASSIGN7 Source (0 - 79) * Same as ASSIGN1
00 56	0000 000d	ASSIGN7 Mode (0 - 1) TOGGLE, MOMENT
00 57	000d dddd	ASSIGN7 Target (0 - 20) * Same as ASSIGN1
00 58	0000 0aaa 0000 bbbb 0000 cccc 0000 dddd	ASSIGN7 minimum * Same as ASSIGN1
00 5C	0000 0aaa 0000 bbbb 0000 cccc 0000 dddd	ASSIGN7 maximum * Same as ASSIGN1
00 60	0ddd dddd	ASSIGN7 Act. Lo (0 - 126)
00 61	0ddd dddd	ASSIGN7 Act. Hi (1 - 127)
00 62	0000 000d	ASSIGN8 SW (0 - 1) OFF, ON
00 63	0ddd dddd	ASSIGN8 Source (0 - 79) * Same as ASSIGN1
00 64	0000 000d	ASSIGN8 Mode (0 - 1) TOGGLE, MOMENT
00 65	000d dddd	ASSIGN8 Target (0 - 20) * Same as ASSIGN1
00 66	0000 0aaa 0000 bbbb 0000 cccc 0000 dddd	ASSIGN8 Target minimum * Same as ASSIGN1
00 6A	0000 0aaa 0000 bbbb 0000 cccc 0000 dddd	ASSIGN8 Target maximum * Same as ASSIGN1
00 6E	0ddd dddd	ASSIGN8 Act. Lo (0 - 126)
00 6F	0ddd dddd	ASSIGN8 Act. Hi (1 - 127)

00 44	0ddd dddd	ASSIGN5 Act. Lo (0 - 126)
00 45	0ddd dddd	ASSIGN5 Act. Hi (1 - 127)

Table of Correspondence between
Delay time and MIDI CC value

TIME X2 = OFF

Time (ms)	CC value	
	MSB	LSB
0.0	00H	00H
0.1	01H	00H
0.2	01H	01H
0.2	01H	01H
0.3	01H	03H
0.4	01H	04H
0.5	01H	05H
0.6	01H	06H
0.7	01H	08H
0.8	01H	09H
0.9	01H	0AH
1.0	01H	0CH
1.1	01H	0DH
1.2	01H	0EH
1.3	01H	10H
1.4	01H	11H
1.5	01H	12H
1.6	01H	13H
1.7	01H	15H
1.8	01H	16H
1.9	01H	17H
2.0	01H	19H
2.1	01H	1AH
2.2	01H	1BH
2.3	01H	1DH
2.4	01H	1EH
2.5	01H	1FH
2.6	01H	20H
2.7	01H	22H
2.8	01H	23H
2.9	01H	24H
3.0	01H	26H
3.1	01H	27H
3.2	01H	28H
3.3	01H	29H
3.4	01H	2BH
3.5	01H	2CH
3.6	01H	2DH
3.7	01H	2FH

3.8	01H	30H
3.9	01H	31H
4.0	01H	33H
4.1	01H	34H
4.2	01H	35H
4.3	01H	36H
4.4	01H	38H
4.5	01H	39H
4.6	01H	3AH
4.7	01H	3CH
4.8	01H	3DH
4.9	01H	3EH
5.0	01H	40H
5.1	01H	41H
5.2	01H	42H
5.3	01H	43H
5.4	01H	45H
5.5	01H	46H
5.6	01H	47H
5.7	01H	49H
5.8	01H	4AH
5.9	01H	4BH
6.0	01H	4CH
6.1	01H	4EH
6.2	01H	4FH
6.3	01H	50H
6.4	01H	52H
6.5	01H	53H
6.6	01H	54H
6.7	01H	56H
6.8	01H	57H
6.9	01H	58H
7.0	01H	59H
7.1	01H	5BH
7.2	01H	5CH
7.3	01H	5DH
7.4	01H	5FH
7.5	01H	60H
7.6	01H	61H
7.7	01H	62H
7.8	01H	64H
7.9	01H	65H
8.0	01H	66H

8.1	01H	68H
8.2	01H	69H
8.3	01H	6AH
8.4	01H	6CH
8.5	01H	6DH
8.6	01H	6EH
8.7	01H	6FH
8.8	01H	71H
8.9	01H	72H
9.0	01H	73H
9.1	01H	75H
9.2	01H	76H
9.3	01H	77H
9.4	01H	79H
9.5	01H	7AH
9.6	01H	7BH
9.7	01H	7CH
9.8	01H	7EH
9.9	01H	7FH
10	02H	00H
11	02H	0BH
12	02H	15H
13	02H	20H
14	02H	2BH
15	00H	00H
16	02H	40H
17	02H	4BH
18	02H	55H
19	02H	60H
20	02H	6BH
21	02H	75H
22	03H	00H
23	03H	0BH
24	03H	15H
25	00H	00H
26	03H	2BH
27	03H	35H
28	03H	40H
29	03H	4BH
30	03H	55H
31	03H	60H
32	03H	6BH
33	03H	75H

34	04H	00H
35	04H	0BH
36	04H	15H
37	04H	20H
38	04H	2BH
39	04H	35H
40	04H	40H
41	04H	4BH
42	04H	55H
43	04H	60H
44	04H	6BH
45	04H	75H
46	05H	00H
47	05H	0BH
48	05H	15H
49	05H	20H
50	05H	2BH
51	05H	35H
52	05H	40H
53	05H	4BH
54	05H	55H
55	05H	60H
56	05H	6BH
57	05H	75H
58	06H	00H
59	06H	0BH
60	06H	15H
61	06H	20H
62	06H	2BH
63	06H	35H
64	06H	40H
65	06H	4BH
66	06H	55H
67	06H	60H
68	06H	6BH
69	06H	75H
70	07H	00H
71	07H	0BH
72	07H	15H
73	07H	20H
74	07H	2BH
75	07H	35H
76	07H	40H

77	07H	4BH
78	07H	55H
79	07H	60H
80	07H	6AH
81	07H	75H
82	08H	00H
83	08H	0AH
84	08H	15H
85	08H	20H
86	08H	2AH
87	08H	35H
88	08H	40H
89	08H	4AH
90	08H	55H
91	08H	60H
92	08H	6AH
93	08H	75H
94	09H	00H
95	09H	0AH
96	09H	15H
97	09H	20H
98	09H	2AH
99	09H	35H
100	09H	40H
101	09H	4AH
102	09H	55H
103	09H	60H
104	09H	6AH
105	09H	75H
106	0AH	00H
107	0AH	0AH
108	0AH	15H
109	0AH	20H
110	0AH	2AH
111	0AH	35H
112	0AH	40H
113	0AH	4AH
114	0AH	55H
115	0AH	60H
116	0AH	6AH
117	0AH	75H
118	0BH	00H
119	0BH	0AH

120	0BH	15H
121	0BH	20H
122	0BH	2AH
123	0BH	35H
124	0BH	40H
125	0BH	4AH
126	0BH	55H
127	0BH	60H
128	0BH	6AH
129	0BH	75H
130	0CH	00H
131	0CH	0AH
132	0CH	15H
133	0CH	20H
134	0CH	2AH
135	0CH	35H
136	0CH	40H
137	0CH	4AH
138	0CH	55H
139	0CH	60H
140	0CH	6AH
141	0CH	75H
142	0DH	00H
143	0DH	0AH
144	0DH	15H
145	0DH	20H
146	0DH	2AH
147	0DH	35H
148	0DH	40H
149	0DH	4AH
150	0DH	55H
151	0DH	60H
152	0DH	6AH
153	0DH	75H
154	0EH	00H
155	0EH	0AH
156	0EH	15H
157	0EH	20H
158	0EH	2AH
159	0EH	35H
160	0EH	40H
161	0EH	4AH
162	0EH	55H

163	0EH	60H
164	0EH	6AH
165	0EH	75H
166	0FH	00H
167	0FH	0AH
168	0FH	15H
169	0FH	20H
170	0FH	2AH
171	0FH	35H
172	0FH	40H
173	0FH	4AH
174	0FH	55H
175	0FH	60H
176	0FH	6AH
177	0FH	75H
178	10H	00H
179	10H	0AH
180	10H	15H
181	10H	20H
182	10H	2AH
183	10H	35H
184	10H	40H
185	10H	4AH
186	10H	55H
187	10H	60H
188	10H	6AH
189	10H	75H
190	11H	00H
191	11H	0AH
192	11H	15H
193	11H	20H
194	11H	2AH
195	11H	35H
196	11H	40H
197	11H	4AH
198	11H	55H
199	11H	60H
200	11H	6AH
201	11H	75H
202	12H	00H
203	12H	0AH
204	12H	15H
205	12H	20H
206	12H	2AH
207	12H	35H
208	12H	40H
209	12H	4AH
210	12H	55H
211	12H	60H
212	12H	6AH
213	12H	75H
214	12H	7FH
215	13H	0AH
216	13H	15H
217	13H	1FH
218	13H	2AH
219	13H	35H
220	13H	3FH
221	13H	4AH
222	13H	55H
223	13H	5FH
224	13H	6AH
225	13H	75H
226	13H	7FH
227	14H	0AH
228	14H	15H
229	14H	1FH
230	14H	2AH
231	14H	35H
232	14H	3FH
233	14H	4AH
234	14H	55H
235	14H	5FH
236	14H	6AH
237	14H	75H
238	14H	7FH
239	15H	0AH
240	15H	15H
241	15H	1FH
242	15H	2AH
243	15H	35H
244	15H	3FH
245	15H	4AH
246	15H	55H
247	15H	5FH
248	15H	6AH
249	15H	75H
250	15H	7FH
251	16H	0AH
252	16H	15H
253	16H	1FH
254	16H	2AH
255	16H	35H
256	16H	3FH
257	16H	4AH
258	16H	55H
259	16H	5FH
260	16H	6AH
261	16H	75H
262	16H	7FH
263	17H	0AH
264	17H	15H
265	17H	1FH
266	17H	2AH
267	17H	35H
268	17H	3FH
269	17H	4AH
270	17H	55H
271	17H	5FH
272	17H	6AH
273	17H	75H
274	17H	7FH
275	18H	0AH
276	18H	15H
277	18H	1FH
278	18H	2AH
279	18H	35H
280	18H	3FH
281	18H	4AH
282	18H	55H
283	18H	5FH
284	18H	6AH
285	18H	75H
286	18H	7FH
287	19H	0AH
288	19H	15H
289	19H	1FH
290	19H	2AH
291	19H	35H

292	19H	3FH
293	19H	4AH
294	19H	55H
295	19H	5FH
296	19H	6AH
297	19H	75H
298	19H	7FH
299	1AH	0AH
300	1AH	15H
301	1AH	1FH
302	1AH	2AH
303	1AH	35H
304	1AH	3FH
305	1AH	4AH
306	1AH	55H
307	1AH	5FH
308	1AH	6AH
309	1AH	75H
310	1AH	7FH
311	1BH	0AH
312	1BH	15H
313	1BH	1FH
314	1BH	2AH
315	1BH	35H
316	1BH	3FH
317	1BH	4AH
318	1BH	55H
319	1BH	5FH
320	1BH	6AH
321	1BH	75H
322	1BH	7FH
323	1CH	0AH
324	1CH	15H
325	1CH	1FH
326	1CH	2AH
327	1CH	35H
328	1CH	3FH
329	1CH	4AH
330	1CH	55H
331	1CH	5FH
332	1CH	6AH
333	1CH	75H
334	1CH	7FH
335	1DH	0AH
336	1DH	15H
337	1DH	1FH
338	1DH	2AH
339	1DH	35H
340	1DH	3FH
341	1DH	4AH
342	1DH	55H
343	1DH	5FH
344	1DH	6AH
345	1DH	75H
346	1DH	7FH
347	1EH	0AH
348	1EH	15H
349	1EH	1FH
350	1EH	2AH
351	1EH	34H
352	1EH	3FH
353	1EH	4AH
354	1EH	54H
355	1EH	5FH
356	1EH	6AH
357	1EH	74H
358	1EH	7FH
359	1FH	0AH
360	1FH	14H
361	1FH	1FH
362	1FH	2AH
363	1FH	34H
364	1FH	3FH
365	1FH	4AH
366	1FH	54H
367	1FH	5FH
368	1FH	6AH
369	1FH	74H
370	1FH	7FH
371	20H	0AH
372	20H	14H
373	20H	1FH
374	20H	2AH
375	20H	34H
376	20H	3FH
377	20H	4AH
378	20H	54H
379	20H	5FH
380	20H	6AH
381	20H	74H
382	20H	7FH
383	21H	0AH
384	21H	14H
385	21H	1FH
386	21H	2AH
387	21H	34H
388	21H	3FH
389	21H	4AH
390	21H	54H
391	21H	5FH
392	21H	6AH
393	21H	74H
394	21H	7FH
395	22H	0AH
396	22H	14H
397	22H	1FH
398	22H	2AH
399	22H	34H
400	22H	3FH
401	22H	4AH
402	22H	54H
403	22H	5FH
404	22H	6AH
405	22H	74H
406	22H	7FH
407	23H	0AH
408	23H	14H
409	23H	1FH
410	23H	2AH
411	23H	34H
412	23H	3FH
413	23H	4AH
414	23H	54H
415	23H	5FH
416	23H	6AH
417	23H	74H
418	23H	7FH
419	24H	0AH
420	24H	14H

421	24H	1FH
422	24H	2AH
423	24H	34H
424	24H	3FH
425	24H	4AH
426	24H	54H
427	24H	5FH
428	24H	6AH
429	24H	74H
430	24H	7FH
431	25H	0AH
432	25H	14H
433	25H	1FH
434	25H	2AH
435	25H	34H
436	25H	3FH
437	25H	4AH
438	25H	54H
439	25H	5FH
440	25H	6AH
441	25H	74H
442	25H	7FH
443	26H	0AH
444	26H	14H
445	26H	1FH
446	26H	2AH
447	26H	34H
448	26H	3FH
449	26H	4AH
450	26H	54H
451	26H	5FH
452	26H	6AH
453	26H	74H
454	26H	7FH
455	27H	0AH
456	27H	14H
457	27H	1FH
458	27H	2AH
459	27H	34H
460	27H	3FH
461	27H	4AH
462	27H	54H
463	27H	5FH

464	27H	6AH
465	27H	74H
466	27H	7FH
467	28H	0AH
468	28H	14H
469	28H	1FH
470	28H	2AH
471	28H	34H
472	28H	3FH
473	28H	4AH
474	28H	54H
475	28H	5FH
476	28H	6AH
477	28H	74H
478	28H	7FH
479	29H	0AH
480	29H	14H
481	29H	1FH
482	29H	2AH
483	29H	34H
484	29H	3FH
485	29H	49H
486	29H	54H
487	29H	5FH
488	29H	69H
489	29H	74H
490	29H	7FH
491	2AH	09H
492	2AH	14H
493	2AH	1FH
494	2AH	29H
495	2AH	34H
496	2AH	3FH
497	2AH	49H
498	2AH	54H
499	2AH	5FH
500	2AH	69H
501	2AH	74H
502	2AH	7FH
503	2BH	09H
504	2BH	14H
505	2BH	1FH
506	2BH	29H

507	2BH	34H
508	2BH	3FH
509	2BH	49H
510	2BH	54H
511	2BH	5FH
512	2BH	69H
513	2BH	74H
514	2BH	7FH
515	2CH	09H
516	2CH	14H
517	2CH	1FH
518	2CH	29H
519	2CH	34H
520	2CH	3FH
521	2CH	49H
522	2CH	54H
523	2CH	5FH
524	2CH	69H
525	2CH	74H
526	2CH	7FH
527	2DH	09H
528	2DH	14H
529	2DH	1FH
530	2DH	29H
531	2DH	34H
532	2DH	3FH
533	2DH	49H
534	2DH	54H
535	2DH	5FH
536	2DH	69H
537	2DH	74H
538	2DH	7FH
539	2EH	09H
540	2EH	14H
541	2EH	1FH
542	2EH	29H
543	2EH	34H
544	2EH	3FH
545	2EH	49H
546	2EH	54H
547	2EH	5FH
548	2EH	69H
549	2EH	74H

550	2EH	7FH
551	2FH	09H
552	2FH	14H
553	2FH	1FH
554	2FH	29H
555	2FH	34H
556	2FH	3FH
557	2FH	49H
558	2FH	54H
559	2FH	5FH
560	2FH	69H
561	2FH	74H
562	2FH	7FH
563	30H	09H
564	30H	14H
565	30H	1FH
566	30H	29H
567	30H	34H
568	30H	3FH
569	30H	49H
570	30H	54H
571	30H	5FH
572	30H	69H
573	30H	74H
574	30H	7FH
575	31H	09H
576	31H	14H
577	31H	1FH
578	31H	29H
579	31H	34H
580	31H	3FH
581	31H	49H
582	31H	54H
583	31H	5FH
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585	31H	74H
586	31H	7FH
587	32H	09H
588	32H	14H
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591	32H	34H
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593	32H	49H
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595	32H	5FH
596	32H	69H
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598	32H	7FH
599	33H	09H
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607	33H	5FH
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611	34H	09H
612	34H	14H
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627	35H	34H
628	35H	3EH
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631	35H	5EH
632	35H	69H
633	35H	74H
634	35H	7EH
635	36H	09H

636	36H	14H
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638	36H	29H
639	36H	34H
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642	36H	54H
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644	36H	69H
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646	36H	7EH
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661	38H	1EH
662	38H	29H
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668	38H	69H
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673	39H	1EH
674	39H	29H
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704	3BH	69H
705	3BH	74H
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713	3CH	49H
714	3CH	54H
715	3CH	5EH
716	3CH	69H
717	3CH	74H
718	3CH	7EH
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720	3DH	14H
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726	3DH	54H
727	3DH	5EH
728	3DH	69H
729	3DH	74H
730	3DH	7EH
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732	3EH	14H
733	3EH	1EH
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735	3EH	34H
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738	3EH	54H
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740	3EH	69H
741	3EH	74H
742	3EH	7EH
743	3FH	09H
744	3FH	14H
745	3FH	1EH
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748	3FH	3EH
749	3FH	49H
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751	3FH	5EH
752	3FH	69H
753	3FH	74H
754	3FH	7EH
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757	40H	1EH
758	40H	29H
759	40H	33H
760	40H	3EH
761	40H	49H
762	40H	53H
763	40H	5EH
764	40H	69H

765	40H	73H
766	40H	7EH
767	41H	09H
768	41H	13H
769	41H	1EH
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771	41H	33H
772	41H	3EH
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774	41H	53H
775	41H	5EH
776	41H	69H
777	41H	73H
778	41H	7EH
779	42H	09H
780	42H	13H
781	42H	1EH
782	42H	29H
783	42H	33H
784	42H	3EH
785	42H	49H
786	42H	53H
787	42H	5EH
788	42H	69H
789	42H	73H
790	42H	7EH
791	43H	09H
792	43H	13H
793	43H	1EH
794	43H	29H
795	43H	33H
796	43H	3EH
797	43H	49H
798	43H	53H
799	43H	5EH
800	43H	69H
801	43H	73H
802	43H	7EH
803	44H	09H
804	44H	13H
805	44H	1EH
806	44H	29H
807	44H	33H

808	44H	3EH
809	44H	49H
810	44H	53H
811	44H	5EH
812	44H	69H
813	44H	73H
814	44H	7EH
815	45H	09H
816	45H	13H
817	45H	1EH
818	45H	29H
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820	45H	3EH
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822	45H	53H
823	45H	5EH
824	45H	69H
825	45H	73H
826	45H	7EH
827	46H	09H
828	46H	13H
829	46H	1EH
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832	46H	3EH
833	46H	49H
834	46H	53H
835	46H	5EH
836	46H	69H
837	46H	73H
838	46H	7EH
839	47H	09H
840	47H	13H
841	47H	1EH
842	47H	29H
843	47H	33H
844	47H	3EH
845	47H	49H
846	47H	53H
847	47H	5EH
848	47H	69H
849	47H	73H
850	47H	7EH

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853	48H	1EH
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855	48H	33H
856	48H	3EH
857	48H	49H
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859	48H	5EH
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862	48H	7EH
863	49H	09H
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883	4AH	5EH
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894	4BH	53H
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907	4CH	5EH
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909	4CH	73H
910	4CH	7EH
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912	4DH	13H
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919	4DH	5EH
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931	4EH	5EH
932	4EH	68H
933	4EH	73H
934	4EH	7EH
935	4FH	08H
936	4FH	13H

937	4FH	1EH
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940	4FH	3EH
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943	4FH	5EH
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954	50H	53H
955	50H	5EH
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957	50H	73H
958	50H	7EH
959	51H	08H
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967	51H	5EH
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970	51H	7EH
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972	52H	13H
973	52H	1EH
974	52H	28H
975	52H	33H
976	52H	3EH
977	52H	48H
978	52H	53H
979	52H	5EH

980	52H	68H
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982	52H	7EH
983	53H	08H
984	53H	13H
985	53H	1EH
986	53H	28H
987	53H	33H
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1014	55H	53H
1015	55H	5EH
1016	55H	68H
1017	55H	73H
1018	55H	7EH
1019	56H	08H
1020	56H	13H
1021	56H	1EH
1022	56H	28H

1023	56H	33H
1024	56H	3EH
1025	56H	48H
1026	56H	53H
1027	56H	5DH
1028	56H	68H
1029	56H	73H
1030	56H	7DH
1031	57H	08H
1032	57H	13H
1033	57H	1DH
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1035	57H	33H
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1037	57H	48H
1038	57H	53H
1039	57H	5DH
1040	57H	68H
1041	57H	73H
1042	57H	7DH
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1044	58H	13H
1045	58H	1DH
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1050	58H	53H
1051	58H	5DH
1052	58H	68H
1053	58H	73H
1054	58H	7DH
1055	59H	08H
1056	59H	13H
1057	59H	1DH
1058	59H	28H
1059	59H	33H
1060	59H	3DH
1061	59H	48H
1062	59H	53H
1063	59H	5DH
1064	59H	68H
1065	59H	73H

1066	59H	7DH
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1068	5AH	13H
1069	5AH	1DH
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1071	5AH	33H
1072	5AH	3DH
1073	5AH	48H
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1075	5AH	5DH
1076	5AH	68H
1077	5AH	73H
1078	5AH	7DH
1079	5BH	08H
1080	5BH	13H
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1083	5BH	33H
1084	5BH	3DH
1085	5BH	48H
1086	5BH	53H
1087	5BH	5DH
1088	5BH	68H
1089	5BH	73H
1090	5BH	7DH
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1102	5CH	7DH
1103	5DH	08H
1104	5DH	13H
1105	5DH	1DH
1106	5DH	28H
1107	5DH	33H
1108	5DH	3DH

1109	5DH	48H
1110	5DH	53H
1111	5DH	5DH
1112	5DH	68H
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1114	5DH	7DH
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1116	5EH	13H
1117	5EH	1DH
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1119	5EH	33H
1120	5EH	3DH
1121	5EH	48H
1122	5EH	53H
1123	5EH	5DH
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1126	5EH	7DH
1127	5FH	08H
1128	5FH	13H
1129	5FH	1DH
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1131	5FH	33H
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1135	5FH	5DH
1136	5FH	68H
1137	5FH	73H
1138	5FH	7DH
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1144	60H	3DH
1145	60H	48H
1146	60H	53H
1147	60H	5DH
1148	60H	68H
1149	60H	73H
1150	60H	7DH
1151	61H	08H

1152	61H	13H
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1154	61H	28H
1155	61H	33H
1156	61H	3DH
1157	61H	48H
1158	61H	53H
1159	61H	5DH
1160	61H	68H
1161	61H	72H
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1174	62H	7DH
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1186	63H	7DH
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1188	64H	12H
1189	64H	1DH
1190	64H	28H
1191	64H	32H
1192	64H	3DH
1193	64H	48H
1194	64H	52H

1195	64H	5DH
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1197	64H	72H
1198	64H	7DH
1199	65H	08H
1200	65H	12H
1201	65H	1DH
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1206	65H	52H
1207	65H	5DH
1208	65H	68H
1209	65H	72H
1210	65H	7DH
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1213	66H	1DH
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1219	66H	5DH
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1225	67H	1DH
1226	67H	28H
1227	67H	32H
1228	67H	3DH
1229	67H	48H
1230	67H	52H
1231	67H	5DH
1232	67H	68H
1233	67H	72H
1234	67H	7DH
1235	68H	08H
1236	68H	12H
1237	68H	1DH

1238	68H	28H
1239	68H	32H
1240	68H	3DH
1241	68H	48H
1242	68H	52H
1243	68H	5DH
1244	68H	68H
1245	68H	72H
1246	68H	7DH
1247	69H	08H
1248	69H	12H
1249	69H	1DH
1250	69H	28H
1251	69H	32H
1252	69H	3DH
1253	69H	48H
1254	69H	52H
1255	69H	5DH
1256	69H	68H
1257	69H	72H
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1263	6AH	32H
1264	6AH	3DH
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1266	6AH	52H
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1273	6BH	1DH
1274	6BH	28H
1275	6BH	32H
1276	6BH	3DH
1277	6BH	48H
1278	6BH	52H
1279	6BH	5DH
1280	6BH	68H

1281	6BH	72H
1282	6BH	7DH
1283	6CH	08H
1284	6CH	12H
1285	6CH	1DH
1286	6CH	28H
1287	6CH	32H
1288	6CH	3DH
1289	6CH	48H
1290	6CH	52H
1291	6CH	5DH
1292	6CH	68H
1293	6CH	72H
1294	6CH	7DH
1295	6DH	08H
1296	6DH	12H
1297	6DH	1DH
1298	6DH	27H
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1300	6DH	3DH
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1302	6DH	52H
1303	6DH	5DH
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1305	6DH	72H
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1307	6EH	07H
1308	6EH	12H
1309	6EH	1DH
1310	6EH	27H
1311	6EH	32H
1312	6EH	3DH
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1314	6EH	52H
1315	6EH	5DH
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1317	6EH	72H
1318	6EH	7DH
1319	6FH	07H
1320	6FH	12H
1321	6FH	1DH
1322	6FH	27H
1323	6FH	32H

1324	6FH	3DH
1325	6FH	47H
1326	6FH	52H
1327	6FH	5DH
1328	6FH	67H
1329	6FH	72H
1330	6FH	7DH
1331	70H	07H
1332	70H	12H
1333	70H	1DH
1334	70H	27H
1335	70H	32H
1336	70H	3DH
1337	70H	47H
1338	70H	52H
1339	70H	5DH
1340	70H	67H
1341	70H	72H
1342	70H	7DH
1343	71H	07H
1344	71H	12H
1345	71H	1DH
1346	71H	27H
1347	71H	32H
1348	71H	3DH
1349	71H	47H
1350	71H	52H
1351	71H	5DH
1352	71H	67H
1353	71H	72H
1354	71H	7DH
1355	72H	07H
1356	72H	12H
1357	72H	1DH
1358	72H	27H
1359	72H	32H
1360	72H	3DH
1361	72H	47H
1362	72H	52H
1363	72H	5DH
1364	72H	67H
1365	72H	72H
1366	72H	7DH

1367	73H	07H
1368	73H	12H
1369	73H	1DH
1370	73H	27H
1371	73H	32H
1372	73H	3DH
1373	73H	47H
1374	73H	52H
1375	73H	5DH
1376	73H	67H
1377	73H	72H
1378	73H	7DH
1379	74H	07H
1380	74H	12H
1381	74H	1DH
1382	74H	27H
1383	74H	32H
1384	74H	3DH
1385	74H	47H
1386	74H	52H
1387	74H	5DH
1388	74H	67H
1389	74H	72H
1390	74H	7DH
1391	75H	07H
1392	75H	12H
1393	75H	1DH
1394	75H	27H
1395	75H	32H
1396	75H	3DH
1397	75H	47H
1398	75H	52H
1399	75H	5DH
1400	75H	67H
1401	75H	72H
1402	75H	7DH
1403	76H	07H
1404	76H	12H
1405	76H	1DH
1406	76H	27H
1407	76H	32H
1408	76H	3DH
1409	76H	47H

1410	76H	52H
1411	76H	5DH
1412	76H	67H
1413	76H	72H
1414	76H	7DH
1415	77H	07H
1416	77H	12H
1417	77H	1DH
1418	77H	27H
1419	77H	32H
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1422	77H	52H
1423	77H	5DH
1424	77H	67H
1425	77H	72H
1426	77H	7DH
1427	78H	07H
1428	78H	12H
1429	78H	1DH
1430	78H	27H
1431	78H	32H
1432	78H	3CH
1433	78H	47H
1434	78H	52H
1435	78H	5CH
1436	78H	67H
1437	78H	72H
1438	78H	7CH
1439	79H	07H
1440	79H	12H
1441	79H	1CH
1442	79H	27H
1443	79H	32H
1444	79H	3CH
1445	79H	47H
1446	79H	52H
1447	79H	5CH
1448	79H	67H
1449	79H	72H
1450	79H	7CH
1451	7AH	07H
1452	7AH	12H

1453	7AH	1CH
1454	7AH	27H
1455	7AH	32H
1456	7AH	3CH
1457	7AH	47H
1458	7AH	52H
1459	7AH	5CH
1460	7AH	67H
1461	7AH	72H
1462	7AH	7CH
1463	7BH	07H
1464	7BH	12H
1465	7BH	1CH
1466	7BH	27H
1467	7BH	32H
1468	7BH	3CH

1469	7BH	47H
1470	7BH	52H
1471	7BH	5CH
1472	7BH	67H
1473	7BH	72H
1474	7BH	7CH
1475	7CH	07H
1476	7CH	12H
1477	7CH	1CH
1478	7CH	27H
1479	7CH	32H
1480	7CH	3CH
1481	7CH	47H
1482	7CH	52H
1483	7CH	5CH
1484	7CH	67H

1485	7CH	72H
1486	7CH	7CH
1487	7DH	07H
1488	7DH	12H
1489	7DH	1CH
1490	7DH	27H
1491	7DH	32H
1492	7DH	3CH
1493	7DH	47H
1494	7DH	52H
1495	7DH	5CH
1496	7DH	67H
1497	7DH	72H
1498	7DH	7CH
1499	7EH	07H
1500	7EH	12H

MIDI Implementation Chart

Function...		Transmitted	Recognized	Remarks
Basic Channel	Default	1 - 16	1 - 16	Memorized (Non-volatile)
	Changed	1 - 16, OFF	1 - 16, OFF	
Mode	Default	Mode 3	Mode 3	
	Messages	X	X	
	Altered	*****	X	
Note Number	True voice	X *****	X	
Velocity	Note ON	X	X	
	Note OFF	X	X	
After Touch	Key's	X	X	
	Ch's	X	X	
Pitch Bend		X	X	
Control Change	0, 32	X	X	bank select
	1 - 31	o *1	o *1	*3
	33 - 63	o *1	o *1	*3 *4
	64 - 95	o *1	o *1	*3
Program Change	True Number	o *1 *****	o *1 0 - 127	
System Exclusive		o	o	
System Common	Song Position	X	X	
	Song Select	X	X	
	Tune Request	X	X	
System Real Time	Clock	o	o *2	
	Commands	X	X	
Aux Messages	All Sounds OFF	X	X	
	Reset All Controllers	X	X	
	Local ON/OFF	X	X	
	All Notes OFF	X	X	
	Active Sensing	o	o	
	Reset	X	X	
Notes		*1 Switchable to o or x. *2 Recognized when SYNC is set to other than INTERNAL. *3 cc# is depends on the parameters. *4 If the range is exceed 127 and the CC# is 1 - 31(MSB), these(LSB) are used.		

Mode 1 : Omni On, Poly
Mode 3 : Omni Off, Poly

Mode 2 : Omni On, Mono
Mode 4 : Omni Off, Mono

o : Yes
X : No