

MIDI Data Format

Many MIDI messages listed in the MIDI Data Format section are expressed in hexadecimal or binary numbers. Hexadecimal numbers may include the letter "H" as a suffix. The letter "n" indicates a certain whole number.

The chart below lists the corresponding decimal number for each hexadecimal number.

Decimal	Hexadecimal	Decimal	Hexadecimal
0	0	64	40
1	1	65	41
2	2	66	42
3	3	67	43
4	4	68	44
5	5	69	45
6	6	70	46
7	7	71	47
8	8	72	48
9	9	73	49
10	0A	74	4A
11	0B	75	4B
12	0C	76	4C
13	0D	77	4D
14	0E	78	4E
15	0F	79	4F
16	10	80	50
17	11	81	51
18	12	82	52
19	13	83	53
20	14	84	54
21	15	85	55
22	16	86	56
23	17	87	57
24	18	88	58
25	19	89	59
26	1A	90	5A
27	1B	91	5B
28	1C	92	5C
29	1D	93	5D
30	1E	94	5E
31	1F	95	5F
32	20	96	60
33	21	97	61
34	22	98	62
35	23	99	63
36	24	100	64
37	25	101	65
38	26	102	66
39	27	103	67
40	28	104	68
41	29	105	69
42	2A	106	6A
43	2B	107	6B
44	2C	108	6C
45	2D	109	6D
46	2E	110	6E
47	2F	111	6F
48	30	112	70
49	31	113	71
50	32	114	72
51	33	115	73
52	34	116	74
53	35	117	75
54	36	118	76
55	37	119	77
56	38	120	78
57	39	121	79
58	3A	122	7A
59	3B	123	7B
60	3C	124	7C
61	3D	125	7D
62	3E	126	7E
63	3F	127	7F

Additional Notes

- For example, 144 – 159(Decimal)/9nH/1001 0000 – 1001 1111(Binary) indicate the note-on messages for the channels 1 through 16 respectively. 176 – 191/BnH/1011 0000 – 1011 1111 indicate the control change messages for the channels 1 through 16 respectively. 192 – 207/CnH/1100 0000 – 1100 1111 indicate the program change messages for the channels 1 through 16 respectively. 240/F0H/1111 0000 is positioned at the beginning of data to indicate a system exclusive message. 247/F7H/1111 0111 is positioned at the end of the system exclusive message.
- aaH (Hexadecimal)/0aaaaaaa (Binary) indicates the data addresses. The data address consists of High, Mid and Low.
- bbH/0bbbbbbb indicates byte counts.
- ccH/0ccccccc indicates check sums.
- ddH/0ddddddd indicates data/value.

The specifications described herein apply to transmission and reception of MIDI data by a MONTAGE M6, MONTAGE M7, and MONTAGE M8x

The specifications described herein comply with the MIDI 1.0 standard.

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MIDI <+--[SW1]-----NOTE ON/OFF                                9nH
OUT |
| +-----KEY'S AFTER TOUCH                                    AnH
|
| +-----CONTROL CHANGE (All in Seq)
| | MODULATION                                                BnH, 01H
| | PORTAMENTO TIME                                            BnH, 05H
| | CHANNEL VOLUME                                           BnH, 07H
| | PAN                                                       BnH, 0AH
| | SUSTAIN SWITCH                                           BnH, 40H
| | PORTAMENTO SWITCH                                         BnH, 41H
| | FILTER RESONANCE                                          BnH, 47H
| | EG RELEASE TIME                                           BnH, 48H
| | EG ATTACK TIME                                             BnH, 49H
| | FILTER CUTOFF FREQ                                        BnH, 4AH
| | EG DECAY TIME                                              BnH, 4BH
| | EFFECTS 1 DEPTH                                           BnH, 5BH
| | EFFECTS 4 DEPTH                                           BnH, 5EH
| | ASSIGNABLE CONTROLLER                                     BnH, (01H .. 5FH)
|
| +--[SW5]--BANK SELECT MSB                                   BnH, 00H
| | BANK SELECT LSB                                           BnH, 20H
|
| +-----CHANNEL MODE MESSAGE (Seq only)
| | ALL SOUND OFF                                             BnH, 78H
| | RESET ALL CONTROLLERS                                     BnH, 79H
| | LOCAL CONTROL                                             BnH, 7AH
| | ALL NOTE OFF                                              BnH, 7BH
| | OMNI MODE OFF                                             BnH, 7CH
| | OMNI MODE ON                                              BnH, 7DH
| | MONO MODE ON                                              BnH, 7EH
| | POLY MODE ON                                              BnH, 7FH
|
| +--[SW6]--PROGRAM CHANGE                                    CnH
|
| +-----CHANNEL AFTER TOUCH                                  DnH
|
| +-----PITCH BEND CHANGE                                    EnH
|
+--[SW2]-----SYSTEM COMMON MESSAGE
| | SONG POSITION POINTER                                       F2H
|
+--[SW3]-----SYSTEM REALTIME MESSAGE
| | TIMING CLOCK                                               F8H
|
+--[SW2]-----SYSTEM REALTIME MESSAGE
| | START                                                      FAH
| | CONTINUE                                                   FBH
| | STOP                                                        FCH
|
+-----ACTIVE SENSING                                        FEH
|
+--[SW4]-----SYSTEM EXCLUSIVE MESSAGE (All in Seq)
| | +-----<BULK DUMP>
| | | FOH 43H 0nH 7FH 1CH bhH b1H 0DH aaH aaH aaH ddH...ddH cch F7H
| |
| | +-----<PARAMETER CHANGE>
| | | FOH 43H 1nH 7FH 1CH 0DH aaH aaH aaH ddH...ddH F7H
|
+-----SYSTEM EXCLUSIVE MESSAGE
IDENTITY REPLY
FOH 7EH 7FH 06H 02H 43H 00H 41H ddH ddH mmH 00H 00H 7FH F7H

dd: Device family number/code
MONTAGE M6 : 65H 06H
MONTAGE M7 : 66H 06H
MONTAGE M8x: 67H 06H

mm: version
mm = (version no. - 1.0) * 10
e.g.) version 1.0 mm = (1.0 - 1.0)
      * 10 = 0
version 1.5 mm = (1.5 - 1.0) * 10
      = 5

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[SW1]	MIDI Transmit Channel Complies with Transmit Channel when the Part Mode is set to External. Complies with MIDI I/O Channel when the Part Mode is set to Internal and the Keyboard Control Switch is set to On. Complies with Tx/Rx Channel when the Part Mode is set to Internal and the Keyboard Control Switch is set to Off.
[SW2]	SYSTEM Song Play/Stop Transmit Switch
[SW4]	SYSTEM MIDI Clock Out SYSTEM MIDI Device Number When set to "all," transmitted via "1."
[SW5]	SYSTEM Rank Select Switch

(2) RECEIVE FLOW

(3) TRANSMIT/RECEIVE DATA

(3-1) CHANNEL VOICE MESSAGES

(3-1-1) NOTE OFF

STATUS 1000nnnn (8nH) n = 0 - 15 CHANNEL NUMBER
NOTE No. 0kkkkkk k = 0 (C-2) - 127 (G8)
VELOCITY 0vvvvvvv v: ignored
Receive only

(3-1-2) NOTE ON/OFF

STATUS 1001nnnn (9nH) n = 0 - 15 CHANNEL NUMBER
NOTE NUMBER 0kkkkkk k = 0 (C-2) - 127 (G8)

VELOCITY NOTE ON 0vvvvvvv (v 0)

NOTE OFF 0vvvvvvv (v=0)

(3-1-3) CONTROL CHANGE

STATUS 1011nnnn (BnH) n = 0 - 15 CHANNEL NUMBER
CONTROL NUMBER 0ccccccc
CONTROL VALUE 0vvvvvvv

*TRANSMITTED CONTROL NUMBER

c = 0	BANK SELECT MSB	; v = 0 - 127	*3
c = 32	BANK SELECT LSB	; v = 0 - 127	*3
c = 1	MODULATION	; v = 0 - 127	
c = 5	PORTAMENTO TIME	; v = 0 - 127	
c = 7	CHANNEL VOLUME	; v = 0 - 127	
c = 10	PAN	; v = 0 - 127	
c = 64	SUSTAIN SWITCH	; v = 0 - 127	*5
c = 65	PORTAMENTO SWITCH	; v = 0: OFF, 127: ON	
c = 71	FILTER RESONANCE	; v = 0: -64 - 64: 0 - 127: +63	
c = 72	EG RELEASE TIME	; v = 0: -64 - 64: 0 - 127: +63	
c = 73	EG ATTACK TIME	; v = 0: -64 - 64: 0 - 127: +63	
c = 74	FILTER CUTOFF FREQ	; v = 0: -64 - 64: 0 - 127: +63	
c = 75	EG DECAY TIME	; v = 0: -64 - 64: 0 - 127: +63	
c = 91	EFFECTS 1 DEPTH	; v = 0 - 127	
c = 94	EFFECTS 4 DEPTH	; v = 0 - 127	
c = 1..95	ASSIGNABLE CONTROLLER	; v = 0 - 127	*4

The Sequencer Part will play back all recorded control change messages.

* RECEIVED CONTROL NUMBER

c = 0	BANK SELECT MSB	; v = 0 - 127	*3
c = 32	BANK SELECT LSB	; v = 0 - 127	*3
c = 1	MODULATION	; v = 0 - 127	
c = 5	PORTAMENTO TIME	; v = 0 - 127	*2
c = 6	DATA ENTRY MSB	; v = 0 - 127	*1
c = 38	DATA ENTRY LSB	; v = 0 - 127	*1
c = 7	CHANNEL VOLUME	; v = 0 - 127	
c = 10	PAN	; v = 0 - 127	
c = 11	EXPRESSION	; v = 0 - 127	
c = 64	SUSTAIN SWITCH	; v = 0 - 127	
c = 65	PORTAMENTO SWITCH	; v = 0 - 63: OFF, 64 - 127: ON	*2
c = 66	SOSTENUTO	; v = 0 - 63: OFF, 64 - 127: ON	
c = 71	HARMONIC CONTENT	; v = 0: -64 - 64: 0 - 127: +63	
c = 72	EG RELEASE TIME	; v = 0: -64 - 64: 0 - 127: +63	*2
c = 73	EG ATTACK TIME	; v = 0: -64 - 64: 0 - 127: +63	
c = 74	BRIGHTNESS	; v = 0: -64 - 64: 0 - 127: +63	
c = 75	EG DECAY TIME	; v = 0: -64 - 64: 0 - 127: +63	
c = 91	EFFECTS 1 DEPTH	; v = 0 - 127	
c = 94	EFFECTS 4 DEPTH	; v = 0 - 127	
c = 96	DATA ENTRY INC	; v = 127	*1
c = 97	DATA ENTRY DEC	; v = 127	*1
c = 1..95	ASSIGNABLE CONTROLLER	; v = 0 - 127	*4

All Control Change events can be recorded to the song/pattern.

*1 Used only when a value is set using RPN.

*2 Invalid with Drum Parts.

*3 Relation between BANK CHANGE and PROGRAM is as follows:

CATEGORY	MSB	LSB	PROGRAM No.
GM Voice	0	0	0..127 (1..128)
GM Drum Voice	127	0	0 (1)
Performance (Single Part) Preset 1	63	0	0..127 (1..128)
:	:	:	:
Preset 40	63	39	0..127 (1..128)
User 1	64	0	0..127 (1..128)
:	:	:	:
User 5	64	4	0..127 (1..128)
Library 1	64	8	0..127 (1..128)
:	:	:	:
Library 80	64	87	0..127 (1..128)
Performance (Multi Part) Preset 1	65	0	0..127 (1..128)
:	:	:	:
Preset 40	65	39	0..127 (1..128)
User 1	66	0	0..127 (1..128)
:	:	:	:
User 5	66	4	0..127 (1..128)
Library 1	66	8	0..127 (1..128)
:	:	:	:
Library 80	66	87	0..127 (1..128)
Live Set Page 1	62	0	0..15 (Receive only)
:	:	:	:
Live Set Page 16	62	15	0..15 (Receive only)

*4 The default CONTROL NUMBERS of ASSIGNABLE CONTROLLER are as follows:

BREATH CONTROLLER	2
FOOT CONTROLLER 1	11
FOOT CONTROLLER 2	Super Knob
ASSIGNABLE KNOB 1	17
ASSIGNABLE KNOB 2	18
ASSIGNABLE KNOB 3	19
ASSIGNABLE KNOB 4	20
ASSIGNABLE KNOB 5	21
ASSIGNABLE KNOB 6	22
ASSIGNABLE KNOB 7	23
ASSIGNABLE KNOB 8	24
RIBBON CONTROLLER	16
ASSIGNABLE FUNCTION 1	86
ASSIGNABLE FUNCTION 2	87
MOTION SEQ TRIGGER	89
FOOT SWITCH	Arp SW

*5 When the sustain pedal is set to something other than "FC3 (Half On)," operating the sustain pedal transmits only values of 0 (off) or 127 (on).

PORTAMENTO TIME sets the time it takes for the pitch to reach the next note played when PORTAMENTO SWITCH is set to on.
PAN position relatively changes according to the preset value for each Part. EFFECTS 1 DEPTH controls Reverb Send Level.
EFFECTS 4 DEPTH controls Variation Send Level.
HARMONIC CONTENT adjusts the Resonance preset for each Part.
Setting a value adds to or subtracts from the center value, 64, since it is an offset parameter. The larger the value more resonant sound will be produced.
The effective range may be narrower than the range you can designate depending on the selected Part. The parameters, EG ATTACK TIME, EG DECAY TIME, EG SUSTAIN LEVEL, EG RELEASE TIME adjust the envelopes preset for each Part.
Setting these values add to or subtract from the center value, 64, since these are offset parameters. BRIGHTNESS adjusts the Cutoff Frequency preset for each Part.
Setting a value adds to or subtracts from the center value, 64, since it is an offset parameter. The smaller the value the Cutoff Frequency will be lowered.
The effective range may be narrower than the range you can designate depending on the selected voice. Bank Select will be actually executed when the Program Change message is received.
Bank Select and Program Change numbers that are not supported by Yamaha will be ignored.

(3-1-4) PROGRAM CHANGE

STATUS	1100nnnn (CnH)	n = 0 - 15 CHANNEL NUMBER
PROGRAM NUMBER	0ppppppp	p = 0 - 127

(3-1-5) CHANNEL AFTER TOUCH

STATUS	1101nnnn (DnH)	n = 0 - 15 CHANNEL NUMBER
VALUE	0vvvvvvv	v = 0 - 127 AFTER TOUCH VALUE

(3-1-6) PITCH BEND CHANGE

STATUS	1110nnnn (EnH)	n = 0 - 15 CHANNEL NUMBER
LSB	0vvvvvvv	PITCH BEND CHANGE LSB
MSB	0vvvvvvv	PITCH BEND CHANGE MSB

Transmitted with a resolution of 10 bits.

(3-2) CHANNEL MODE MESSAGES

STATUS 1011nnnn (BnH) n = 0 - 15 CHANNEL NUMBER
CONTROL NUMBER 0ccccccc c = CONTROL NUMBER
CONTROL VALUE 0vvvvvvv v = DATA VALUE

(3-2-1) ALL SOUND OFF (CONTROL NUMBER = 78H, DATA VALUE = 0)

All the sounds currently played including the Channel Messages such as Note-On and Hold-On in a certain channel are muted when receiving this message.

(3-2-2) RESET ALL CONTROLLERS (CONTROL NUMBER = 79H, DATA VALUE = 0)

Resets the values set for the following controllers.

PITCH BEND CHANGE	0 (center)
CHANNEL AFTER TOUCH	0 (minimum)
MODULATION	0 (minimum)
EXPRESSION	127 (maximum)
BREATH CONTROLLER	127 (maximum)
FOOT CONTROLLER 1	127 (maximum)
FOOT CONTROLLER 2	127 (maximum)
FOOT SWITCH	0 (off)
RIBBON CONTROLLER	0 (center)
ASSIGNABLE FUNCTION 1	0 (off)
ASSIGNABLE FUNCTION 2	0 (off)
SUSTAIN SWITCH	0 (off)
SOSTENUTO SWITCH	0 (off)
MOTION SEQ LANE 1	0 (minimum when Polarity is set to Unipolar and center when Polarity is set to Bipolar)
MOTION SEQ LANE 2	0 (minimum when Polarity is set to Unipolar and center when Polarity is set to Bipolar)
MOTION SEQ LANE 3	0 (minimum when Polarity is set to Unipolar and center when Polarity is set to Bipolar)
MOTION SEQ LANE 4	0 (minimum when Polarity is set to Unipolar and center when Polarity is set to Bipolar)
RPN	Not assigned: No change

Doesn't reset the following data:

PROGRAM CHANGE, BANK SELECT MSB/LSB, VOLUME, PAN, HARMONIC CONTENT, SUSTAIN LEVEL, RELEASE TIME, ATTACK TIME, DECAY TIME, BRIGHTNESS, EFFECT1 DEPTH, EFFECT4 DEPTH, PORTAMENTO SWITCH, PITCH BEND SENSITIVITY, FINE TUNING, COARSE TUNING, ASSIGNABLE KNOB 1-8

(3-2-3) ALL NOTE OFF (CONTROL NUMBER = 7BH, DATA VALUE = 0)

All the notes currently set to on in certain channel(s) are muted when receiving this message. However, if Sustain or Sostenuto is on, notes will continue sounding until these are turned off.

(3-4) SYSTEM REAL TIME MESSAGES

(3-4-1) ACTIVE SENSING

STATUS 11111110 (FEH)

Transmitted at every 200 msec.

Once this code is received, the instrument starts sensing.

When neither status messages nor data are received for more than approximately 350 ms, the MIDI receive buffer will be cleared, and the sounds currently being played are forcibly turned off.

(3-5) SYSTEM EXCLUSIVE MESSAGE

(3-5-1) UNIVERSAL NON REALTIME MESSAGE

(3-5-1-1) GENERAL MIDI MODE ON

F0H 7EH 7FH 09H 01H F7H

The internal tone generator block will receive this message except when the Compare function is activated.

(3-5-1-2) IDENTITY REQUEST (Receive only)

F0H 7EH 0nH 06H 01H F7H ("n" = Device No. However, this instrument receives under "omni.")

(3-5-1-3) IDENTITY REPLY (Transmit only)

F0H 7EH 7FH 06H 02H 43H ddH ddH mmH 00H 00H 7FH F7H

dd: Device family number/code

MONTAGE M6 : 65H 06H

MONTAGE M7 : 66H 06H

MONTAGE M8x: 67H 06H

mm: version

mm = (version no. - 1.0) * 10

e.g.) version 1.0 mm = (1.0 - 1.0) * 10 = 0

version 1.5 mm = (1.5 - 1.0) * 10 = 5

(3-5-2) UNIVERSAL REALTIME MESSAGE

(3-5-2-1) MIDI MASTER VOLUME

F0H 7FH 7FH 04H 01H 11H mmH F7H

Sets the MASTER VOLUME value.

The value "mm" is used to set the master volume (the value "11" should be ignored).

(3-5-3) PARAMETER CHANGE

(3-5-3-1) NATIVE PARAMETER CHANGE, MODE CHANGE

11110000 F0 Exclusive Status

01000011 43 YAMAHA ID

0001nnnn 1n Device Number

01111111 7F Group ID High

00011100 1C Group ID Low

00001101 0D Model ID

0aaaaaaaa aaaaaaa Address 1st

0aaaaaaaa aaaaaaa Address 2nd

0aaaaaaaa aaaaaaa Address 3rd

0aaaaaaaa aaaaaaa Address 4th

0ddddddd ddddddd Data

| |

11110111 F7 End of Exclusive

For parameters with data size of 2 or more, the appropriate number of data bytes will be transmitted. See the following MIDI Data Table for Address.

(3-5-4) BULK DUMP

11110000 F0 Exclusive Status

01000011 43 YAMAHA ID

0000nnnn 0n Device Number

01111111 7F Group ID High

00011100 1C Group ID Low

0bbbbbbb bbbbbbb Byte Count

0bbbbbbb bbbbbbb Byte Count

00001101 0D Model ID

0aaaaaaaa aaaaaaa Address 1st

0aaaaaaaa aaaaaaa Address 2nd

0aaaaaaaa aaaaaaa Address 3rd

0aaaaaaaa aaaaaaa Address 4th

0ddddddd ddddddd Data

| |

0ccccccc ccccccc Check-sum

11110111 F7 End of Exclusive

See the following MIDI Data Table for Address and Byte Count.

Checksum is the value that results in a value of 0 for the lower 7 bits when the Byte Count, Start Address, Data and Checksum itself are added.

See the following MIDI Data Table for Address.

(3-5-5) DUMP REQUEST

11110000	F0	Exclusive Status
01000011	43	YAMAHA ID
0010nnnn	2n	Device Number
01111111	7F	Group ID High
00011100	1C	Group ID Low
00001101	0D	Model ID
0aaaaaaa	aaaaa	Address 1st
0aaaaaaa	aaaaa	Address 2nd
0aaaaaaa	aaaaa	Address 3rd
0aaaaaaa	aaaaa	Address 4th
11110111	F7	End of Exclusive

See the following MIDI Data Table for Address.

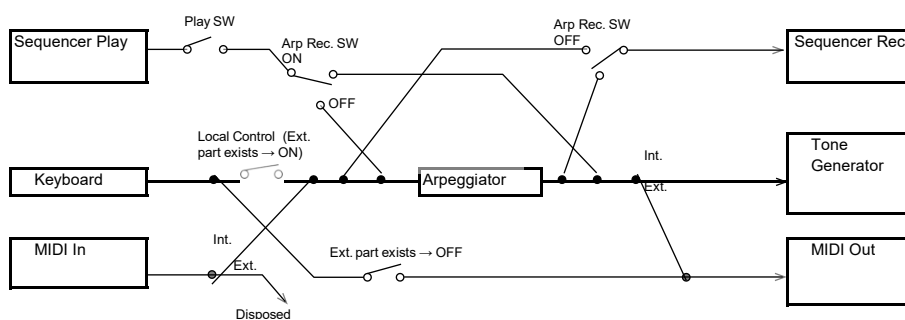
(3-5-6) PARAMETER REQUEST

11110000	F0	Exclusive Status
01000011	43	YAMAHA ID
0011nnnn	3n	Device Number
01111111	7F	Group ID High
00011100	1C	Group ID Low
00001101	0D	Model ID
0aaaaaaa	aaaaaaa	Address 1st
0aaaaaaa	aaaaaaa	Address 2nd
0aaaaaaa	aaaaaaa	Address 3rd
0aaaaaaa	aaaaaaa	Address 4th
11110111	F7	End of Exclusive

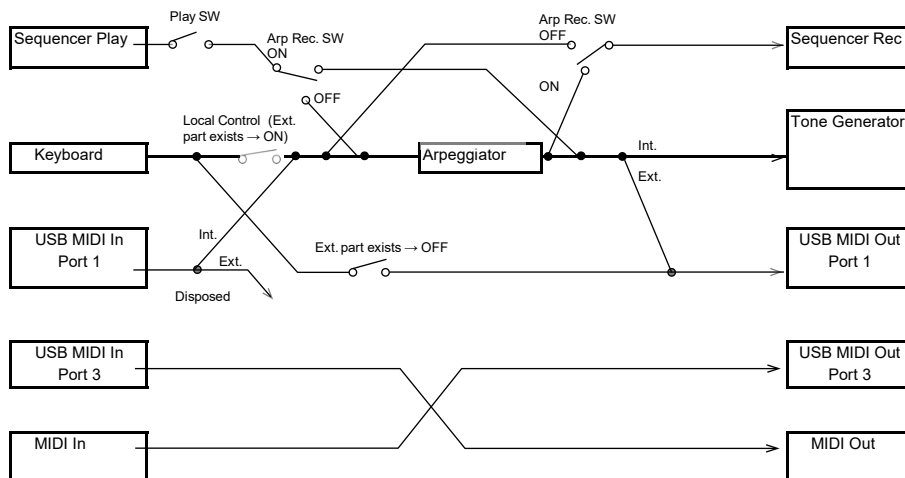
See the following MIDI Data Table for Address.

(4) SYSTEM OVERVIEW (Keyboard, Sequencer and Tone Generator)

MIDI IN/OUT = MIDI



MIDI IN/OUT = USB



Although three types of note on / note off data, received via MIDI, played by the internal sequencer and played on the keyboard will be distinguished, the other controllers (channel messages) equally affect the entire notes.

ALL SOUND OFF clears all the sounds in the specific channel(s) played by both the keyboard and the data via MIDI.

ALL NOTES OFF received via MIDI clears the sounds in the specific channel(s) played via MIDI.