MIDI Control Change Messages

All MIDI status byte and data byte values are in hexadecimal

MIDI Control Change Messages

Status Byte	Data Bytes		Message		Description	
B*n*	*cc*	*nn*	Controller Change		Sent when a change is made in a footswitch, expression pedal, slider, or other controller.	
		n	0-F	MIDI Channel (note 1)	0 = Ch 1	
		cc	00-77	Controller Number		
			00-1F		Continuous Controllers, MSB	
			20-3F		Continuous Controllers, LSB corresponding to controllers 00-31 (note 2)	
			40-5F		Single-byte controllers	
			60-65		Increment/Decrement and Parameter numbers	
			66-77		Undefined Single-byte controllers	
		nn	00-7F	Controller Value (note 3)	Continuous Controllers 00=min, 40=center, 7F=max	
					Switched Controllers 00-3F=off, 40-7F=on	

Controller (cc)	Function	Description
00	Bank Select, MSB	The Bank Select message allows the user to switch between different 'banks' of programs (instrument sets), thereby expanding the range of the Program Change message.
20	Bank Select, LSB	The messages Bank Select MSB, Bank Select LSB, Program Change must be sent as a sequence, with minimal delay between them. The Bank Select should not come into effect until the subsequent Program Change message is received.
01	Modulation Wheel or Lever	
02	Breath Controller	
04	Foot Controller	
05	Portamento time	
06	Data Entry, MSB	

07	Channel Volume	
08	Balance	
0A	Pan	
0B	Expression Controller	
0C	Effect Control 1	
0D	Effect Control 2	
10-13	General Purpose Controllers 1-4	
20-3F	LSB for controllers 00-1F	
40	Damper Pedal (sustain)	
41	Portamento On/Off	
42	Sostenuto	
43	Soft pedal	
44	Legato footswitch	Puts the receiver into a monophonic mode, where if a note-on message is received before the previous note's note-off message, the pitch is shifted without restarting the envelope.
45	Hold 2	

46-4F	Sound Controllers 1-10	Controller	default function
		1	Sound Variation
		2	Timbre/Harmonic Intensity
		3	Release Time *nn*: 00=shortest, 40=unchanged, 7F=longest,
		4	Attack Time *nn*: 00=shortest, 40=unchanged, 7F=longest,
		5	Brightness
		6-10	No default

50-53	General Purpose Controllers 5-8	
54	Portamento control	*nn* = note from which to start glide of next note. Affects only the next Note-On message on the same MIDI channel as this message. This makes the next note glide from the value specified in this message, *nn* to the value of the Note-On message.

5B-5F	Effects 1-5 Depth	Effect	default function
		1	External Effects Depth

		2	Tremelo Depth
		3	Chorus Depth
		4	Celeste (Detune) Depth
		5	Phaser Depth
60	Data Increment		
61	Data Decrement		
62	Non-registered Parameter number, LSB	Non-registered parameters may be used as needed by manufacturers. They should be described in the owner's manual The parameter value is specified by a subsequent Data entry, Data Increment or Data Decrement message.	
63	Non-registered Parameter number, MSB		
64	Registered Parameter number, LSB	00 00 Pitch Bend sensitivity 00 01 Fine Tuning 00 02 Corse Tuning 00 03 Tuning Program Select 00 04 Tuning Bank Select	The parameter value is specified by a subsequent Data entry, Data Increment or Data Decrement message.
65	Registered Parameter number, MSB		
03 09 0E 0F 14-1F 55-5A 66-77	Undefined		

Footnotes

Note 1
>   If a MIDI device in Channel Mode 4 (Omni off, Mono), it is possible to control all channels simultaneously, by sending the control message on the MIDI Channel:
>
>
> n = (basic channel) - 1
>
>   This is known as a Global Control meesage. If the Basic Channel is 0, the Global Channel is n=F (MIDI Channel 16)

Note 2
>   The LSB is optional, and need not be sent if fine control is not required. If not sent, the LSB is assumed to be zero.
>
>   Furthermore, once both MSB and LSB control messages have been sent, fine adjustments can be made by sending subsequent LSB control messages only. It is not necessary to re-send the MSB if it is unchanged.

Note 3
>   Switched controller transmitters should generate 00=off, and 7F=on.

Switched control receivers must respond to the value range `00-3F`=off, and `40-7F`=on, since the transmitter may be a continuous controller.

⬅ midi_channel_voice.html ⬆ Contents ➡ midi_channel_mode.html

MIDI Controller Numbers

The table below presents a summary of the MIDI Standard Controller codes in decimal and hexadecimal (h) form.

Decimal	Hex	Controller Name
0	00h	Bank Select (Controller # 32 more commonly used)
1	01h	Modulation Wheel
2	02h	Breath Contoller
3	03h	Undefined
4	04h	Foot Controller
5	05h	Portamento Time
6	06h	Data Entry MSB
7	07h	Main Volume
8	08h	Balance
9	09h	Undefined
10	0Ah	Pan
11	0Bh	0Ch
12	0Ch	Effect Control 1
13	0Dh	Effect Control 2
14-15	0E-0Fh	Undefined
16-19	10-13h	General Purpose Controllers (Nos. 1-4)
20-31	14-1Fh	Undefined
32-63	20-3Fh	LSB for Controllers 0-31 (rarely implemented)
64	40h	Damper Pedal (Sustain) [Data Byte of 0-63=0ff, 64-127=On]
65	41h	Portamento
66	42h	Sostenuto
67	43h	Soft Pedal
68	44h	Legato Footswitch
69	45h	Hold 2
70	46h	Sound Controller 1 (default: Sound Variation)
71	47h	Sound Controller 2 (default: Timbre/Harmonic Content)
72	48h	Sound Controller 3 (default: Release Time)
73	49h	Sound Controller 4 (default: Attack Time)
74	4Ah	Sound Controller 5 (default: Brightness)
75-79	4B-4Fh	Sound Controller 6-10 (no defaults)
80-83	50-53h	General Purpose Controllers (Nos. 5-8)
84	54h	Portamento Control
85-90	55-5Ah	Undefined

91	5Bh	Effects 1 Depth (previously External Effects Depth)
92	5Ch	Effects 2 Depth (previously Tremolo Depth)
93	5Dh	Effects 3 Depth (previously Chorus Depth)
94	5Eh	Effects 4 Depth (previously Detune Depth)
95	5Fh	Effects 5 Depth (previously Phaser Depth)
96	60h	Data Increment
97	61h	Data Decrement
98	62h	Non-Registered Parameter Number LSB
99	63h	Non-Registered Parameter Number LSB
100	64h	Registered Parameter Number LSB
101	65h	Registered Parameter Number MSB
102-120	66-78h	Undefined
Channel Mode Messages		
121	79h	Reset All Controllers
122	7Ah	Local Control
123	7Bh	All Notes Off
124	7Ch	Omni Off
125	7Dh	Omni On
126	7Eh	Mono On (Poly Off)
127	7Fh	Poly On (Mono Off)