MIDI Messages

Table 2 - Expanded Messages List (Status Bytes)
Table 3 - Control Change Messages (Data Bytes)
Table 4 - Universal System Exclusive Messages

Table 1 - Summary of MIDI Messages

The following table lists many of the major MIDI messages in numerical (binary) order. This table is intended as an overview of MIDI, and is by no means complete. Additional messages are listed in the printed documentation available from the MMA.

WARNING! Details about implementing these messages can dramatically impact compatibility with other products. We strongly recommend consulting the official MMA Detailed MIDI Specification for additional information.

Table 1: MIDI 1.0 Specification Message Summary		
Status D7----D0	**Data Byte(s) D7----D0**	**Description**
Channel Voice Messages [nnnn = 0-15 (MIDI Channel Number 1-16)]		
1000nnnn	0kkkkkkk 0vvvvvvv	Note Off event. This message is sent when a note is released (ended). (kkkkkkk) is the key (note) number. (vvvvvvv) is the velocity.
1001nnnn	0kkkkkkk 0vvvvvvv	Note On event. This message is sent when a note is depressed (start). (kkkkkkk) is the key (note) number. (vvvvvvv) is the velocity.
1010nnnn	0kkkkkkk 0vvvvvvv	Polyphonic Key Pressure (Aftertouch). This message is most often sent by pressing down on the key after it "bottoms out". (kkkkkkk) is the key (note) number. (vvvvvvv) is the pressure value.
1011nnnn	0ccccccc 0vvvvvvv	Control Change. This message is sent when a controller value changes. Controllers include devices such as pedals and levers. Controller numbers 120-127 are reserved as "Channel Mode Messages" (below). (ccccccc) is the controller number (0-119). (vvvvvvv) is the controller value (0-127).
1100nnnn	0ppppppp	Program Change. This message sent when the patch number changes. (ppppppp) is the new program number.
1101nnnn	0vvvvvvv	Channel Pressure (After-touch). This message is most often sent by pressing down on the key after it "bottoms out". This message is different from polyphonic after-touch. Use this message to send the single greatest pressure value (of all the current depressed keys). (vvvvvvv) is the pressure value.
1110nnnn	0lllllll 0mmmmmmm	Pitch Bend Change. 0mmmmmmm This message is sent to indicate a change in the pitch bender (wheel or lever, typically). The pitch bender is measured by a fourteen bit value. Center (no pitch change) is 2000H. Sensitivity is a function of the transmitter. (lllllll) are the least significant 7 bits. (mmmmmm) are the most significant 7 bits.
Channel Mode Messages (See also Control Change, above)		
1011nnnn	0ccccccc 0vvvvvvv	Channel Mode Messages. This the same code as the Control Change (above), but implements Mode control and special message by using reserved controller numbers 120-127. The commands are:
		All Sound Off. When All Sound Off is received all oscillators will turn off, and their volume envelopes are set to zero as

		soon as possible. c = 120, v = 0: All Sound Off
		Reset All Controllers. When Reset All Controllers is received, all controller values are reset to their default values. (See specific Recommended Practices for defaults). c = 121, v = x: Value must only be zero unless otherwise allowed in a specific Recommended Practice.
		Local Control. When Local Control is Off, all devices on a given channel will respond only to data received over MIDI. Played data, etc. will be ignored. Local Control On restores the functions of the normal controllers. c = 122, v = 0: Local Control Off c = 122, v = 127: Local Control On
		All Notes Off. When an All Notes Off is received, all oscillators will turn off. c = 123, v = 0: All Notes Off (See text for description of actual mode commands.) c = 124, v = 0: Omni Mode Off c = 125, v = 0: Omni Mode On c = 126, v = M: Mono Mode On (Poly Off) where M is the number of channels (Omni Off) or 0 (Omni On) c = 127, v = 0: Poly Mode On (Mono Off) (Note: These four messages also cause All Notes Off)
System Common Messages		
11110000	0iiiiiii [0iiiiiii 0iiiiiii] 0ddddddd --- --- 0ddddddd 11110111	System Exclusive. This message type allows manufacturers to create their own messages (such as bulk dumps, patch parameters, and other non-spec data) and provides a mechanism for creating additional MIDI Specification messages. The Manufacturer's ID code (assigned by MMA or AMEI) is either 1 byte (0iiiiiii) or 3 bytes (0iiiiiii 0iiiiiii 0iiiiiii). Two of the 1 Byte IDs are reserved for extensions called Universal Exclusive Messages, which are not manufacturer-specific. If a device recognizes the ID code as its own (or as a supported Universal message) it will listen to the rest of the message (0ddddddd). Otherwise, the message will be ignored. (Note: Real-Time messages ONLY may be interleaved with a System Exclusive.)
11110001	0nnnnnnn	MIDI Time Code Quarter Frame. nnn = Message Type nnnn = Values
11110010	0lllllll 0mmmmmmm	Song Position Pointer. This is an internal 14 bit register that holds the number of MIDI beats (1 beat= six MIDI clocks) since the start of the song. l is the LSB, m the MSB.
11110011	0sssssss	Song Select. The Song Select specifies which sequence or song is to be played.
11110100		Undefined. (Reserved)
11110101		Undefined. (Reserved)
11110110		Tune Request. Upon receiving a Tune Request, all analog synthesizers should tune their oscillators.
11110111		End of Exclusive. Used to terminate a System Exclusive dump (see above).
System Real-Time Messages		
11111000		Timing Clock. Sent 24 times per quarter note when synchronization is required (see text).
11111001		Undefined. (Reserved)
11111010		Start. Start the current sequence playing. (This message will be followed with Timing Clocks).
11111011		Continue. Continue at the point the sequence was Stopped.
11111100		Stop. Stop the current sequence.
11111101		Undefined. (Reserved)

11111110		Active Sensing. This message is intended to be sent repeatedly to tell the receiver that a connection is alive. Use of this message is optional. When initially received, the receiver will expect to receive another Active Sensing message each 300ms (max), and if it does not then it will assume that the connection has been terminated. At termination, the receiver will turn off all voices and return to normal (non- active sensing) operation.
11111111		Reset. Reset all receivers in the system to power-up status. This should be used sparingly, preferably under manual control. In particular, it should not be sent on power-up.

Table 2 - Expanded Messages List (Status Bytes)

TOP

The following table lists Status Bytes in binary numerical order (adapted from "MIDI by the Numbers" by D. Valenti, Electronic Musician 2/88, and updated 1995 By the MIDI Manufacturers Association.)

WARNING! Details about implementing these messages can dramatically impact compatibility with other products. We strongly recommend consulting the official MMA Detailed MIDI Specification for additional information.

Table 2: Expanded Status Bytes List			
STATUS BYTE		DATA BYTES	
1st Byte Value Binary |Hex| Dec	Function	2nd Byte	3rd Byte
10000000= 80= 128	Chan 1 Note off	Note Number (0-127)	Note Velocity (0-127)
10000001= 81= 129	Chan 2 Note off	Note Number (0-127)	Note Velocity (0-127)
10000010= 82= 130	Chan 3 Note off	Note Number (0-127)	Note Velocity (0-127)
10000011= 83= 131	Chan 4 Note off	Note Number (0-127)	Note Velocity (0-127)
10000100= 84= 132	Chan 5 Note off	Note Number (0-127)	Note Velocity (0-127)
10000101= 85= 133	Chan 6 Note off	Note Number (0-127)	Note Velocity (0-127)
10000110= 86= 134	Chan 7 Note off	Note Number (0-127)	Note Velocity (0-127)
10000111= 87= 135	Chan 8 Note off	Note Number (0-127)	Note Velocity (0-127)
10001000= 88= 136	Chan 9 Note off	Note Number (0-127)	Note Velocity (0-127)
10001001= 89= 137	Chan 10 Note off	Note Number (0-127)	Note Velocity (0-127)
10001010= 8A= 138	Chan 11 Note off	Note Number (0-127)	Note Velocity (0-127)
10001011= 8B= 139	Chan 12 Note off	Note Number (0-127)	Note Velocity (0-127)
10001100= 8C= 140	Chan 13 Note off	Note Number (0-127)	Note Velocity (0-127)
10001101= 8D= 141	Chan 14 Note off	Note Number (0-127)	Note Velocity (0-127)
10001110= 8E= 142	Chan 15 Note off	Note Number (0-127)	Note Velocity (0-127)
10001111= 8F= 143	Chan 16 Note off	Note Number (0-127)	Note Velocity (0-127)
10010000= 90= 144	Chan 1 Note on	Note Number (0-127)	Note Velocity (0-127)
10010001= 91= 145	Chan 2 Note on	Note Number (0-127)	Note Velocity (0-127)
10010010= 92= 146	Chan 3 Note on	Note Number (0-127)	Note Velocity (0-127)
10010011= 93= 147	Chan 4 Note on	Note Number (0-127)	Note Velocity (0-127)
10010100= 94= 148	Chan 5 Note on	Note Number (0-127)	Note Velocity (0-127)
10010101= 95= 149	Chan 6 Note on	Note Number (0-127)	Note Velocity (0-127)

10010110= 96= 150	Chan 7 Note on	Note Number (0-127)	Note Velocity (0-127)
10010111= 97= 151	Chan 8 Note on	Note Number (0-127)	Note Velocity (0-127)
10011000= 98= 152	Chan 9 Note on	Note Number (0-127)	Note Velocity (0-127)
10011001= 99= 153	Chan 10 Note on	Note Number (0-127)	Note Velocity (0-127)
10011010= 9A= 154	Chan 11 Note on	Note Number (0-127)	Note Velocity (0-127)
10011011= 9B= 155	Chan 12 Note on	Note Number (0-127)	Note Velocity (0-127)
10011100= 9C= 156	Chan 13 Note on	Note Number (0-127)	Note Velocity (0-127)
10011101= 9D= 157	Chan 14 Note on	Note Number (0-127)	Note Velocity (0-127)
10011110= 9E= 158	Chan 15 Note on	Note Number (0-127)	Note Velocity (0-127)
10011111= 9F= 159	Chan 16 Note on	Note Number (0-127)	Note Velocity (0-127)
10100000= A0= 160	Chan 1 Polyphonic Aftertouch	Note Number (0-127)	Pressure (0-127)
10100001= A1= 161	Chan 2 Polyphonic Aftertouch	Note Number (0-127	Pressure (0-127)
10100010= A2= 162	Chan 3 Polyphonic Aftertouch	Note Number (0-127	Pressure (0-127)
10100011= A3= 163	Chan 4 Polyphonic Aftertouch	Note Number (0-127	Pressure (0-127)
10100100= A4= 164	Chan 5 Polyphonic Aftertouch	Note Number (0-127	Pressure (0-127)
10100101= A5= 165	Chan 6 Polyphonic Aftertouch	Note Number (0-127	Pressure (0-127)
10100110= A6= 166	Chan 7 Polyphonic Aftertouch	Note Number (0-127	Pressure (0-127)
10100111= A7= 167	Chan 8 Polyphonic Aftertouch	Note Number (0-127	Pressure (0-127)
10101000= A8= 168	Chan 9 Polyphonic Aftertouch	Note Number (0-127	Pressure (0-127)
10101001= A9= 169	Chan 10 Polyphonic Aftertouch	Note Number (0-127	Pressure (0-127)
10101010= AA= 170	Chan 11 Polyphonic Aftertouch	Note Number (0-127	Pressure (0-127)
10101011= AB= 171	Chan 12 Polyphonic Aftertouch	Note Number (0-127	Pressure (0-127)
10101100= AC= 172	Chan 13 Polyphonic Aftertouch	Note Number (0-127	Pressure (0-127)
10101101= AD= 173	Chan 14 Polyphonic Aftertouch	Note Number (0-127	Pressure (0-127)
10101110= AE= 174	Chan 15 Polyphonic Aftertouch	Note Number (0-127	Pressure (0-127)
10101111= AF= 175	Chan 16 Polyphonic Aftertouch	Note Number (0-127	Pressure (0-127)
10110000= B0= 176	Chan 1 Control/Mode Change	see Table 3	see Table 3
10110001= B1= 177	Chan 2 Control/Mode Change	see Table 3	see Table 3
10110010= B2= 178	Chan 3 Control/Mode Change	see Table 3	see Table 3
10110011= B3= 179	Chan 4 Control/Mode Change	see Table 3	see Table 3
10110100= B4= 180	Chan 5 Control/Mode Change	see Table 3	see Table 3
10110101= B5= 181	Chan 6 Control/Mode Change	see Table 3	see Table 3
10110110= B6= 182	Chan 7 Control/Mode Change	see Table 3	see Table 3
10110111= B7= 183	Chan 8 Control/Mode Change	see Table 3	see Table 3
10111000= B8= 184	Chan 9 Control/Mode Change	see Table 3	see Table 3
10111001= B9= 185	Chan 10 Control/Mode Change	see Table 3	see Table 3
10111010= BA= 186	Chan 11 Control/Mode Change	see Table 3	see Table 3
10111011= BB= 187	Chan 12 Control/Mode Change	see Table 3	see Table 3
10111100= BC= 188	Chan 13 Control/Mode Change	see Table 3	see Table 3
10111101= BD= 189	Chan 14 Control/Mode Change	see Table 3	see Table 3
10111110= BE= 190	Chan 15 Control/Mode Change	see Table 3	see Table 3
10111111= BF= 191	Chan 16 Control/Mode Change	see Table 3	see Table 3

11000000= C0= 192	Chan 1 Program Change	Program # (0-127)	none
11000001= C1= 193	Chan 2 Program Change	Program # (0-127)	none
11000010= C2= 194	Chan 3 Program Change	Program # (0-127)	none
11000011= C3= 195	Chan 4 Program Change	Program # (0-127)	none
11000100= C4= 196	Chan 5 Program Change	Program # (0-127)	none
11000101= C5= 197	Chan 6 Program Change	Program # (0-127)	none
11000110= C6= 198	Chan 7 Program Change	Program # (0-127)	none
11000111= C7= 199	Chan 8 Program Change	Program # (0-127)	none
11001000= C8= 200	Chan 9 Program Change	Program # (0-127)	none
11001001= C9= 201	Chan 10 Program Change	Program # (0-127)	none
11001010= CA= 202	Chan 11 Program Change	Program # (0-127)	none
11001011= CB= 203	Chan 12 Program Change	Program # (0-127)	none
11001100= CC= 204	Chan 13 Program Change	Program # (0-127)	none
11001101= CD= 205	Chan 14 Program Change	Program # (0-127)	none
11001110= CE= 206	Chan 15 Program Change	Program # (0-127)	none
11001111= CF= 207	Chan 16 Program Change	Program # (0-127)	none
11010000= D0= 208	Chan 1 Channel Aftertouch	Pressure (0-127)	none
11010001= D1= 209	Chan 2 Channel Aftertouch	Pressure (0-127)	none
11010010= D2= 210	Chan 3 Channel Aftertouch	Pressure (0-127)	none
11010011= D3= 211	Chan 4 Channel Aftertouch	Pressure (0-127)	none
11010100= D4= 212	Chan 5 Channel Aftertouch	Pressure (0-127)	none
11010101= D5= 213	Chan 6 Channel Aftertouch	Pressure (0-127)	none
11010110= D6= 214	Chan 7 Channel Aftertouch	Pressure (0-127)	none
11010111= D7= 215	Chan 8 Channel Aftertouch	Pressure (0-127)	none
11011000= D8= 216	Chan 9 Channel Aftertouch	Pressure (0-127)	none
11011001= D9= 217	Chan 10 Channel Aftertouch	Pressure (0-127)	none
11011010= DA= 218	Chan 11 Channel Aftertouch	Pressure (0-127)	none
11011011= DB= 219	Chan 12 Channel Aftertouch	Pressure (0-127)	none
11011100= DC= 220	Chan 13 Channel Aftertouch	Pressure (0-127)	none
11011101= DD= 221	Chan 14 Channel Aftertouch	Pressure (0-127)	none
11011110= DE= 222	Chan 15 Channel Aftertouch	Pressure (0-127)	none
11011111= DF= 223	Chan 16 Channel Aftertouch	Pressure (0-127)	none
11100000= E0= 224	Chan 1 Pitch Bend Change	Pitch Bender LSB (0-127)	Pitch Bender MSB (0-127)
11100001= E1= 225	Chan 2 Pitch Bend Change	Pitch Bender LSB (0-127)	Pitch Bender MSB (0-127)
11100010= E2= 226	Chan 3 Pitch Bend Change	Pitch Bender LSB (0-127)	Pitch Bender MSB (0-127)
11100011= E3= 227	Chan 4 Pitch Bend Change	Pitch Bender LSB (0-127)	Pitch Bender MSB (0-127)
11100100= E4= 228	Chan 5 Pitch Bend Change	Pitch Bender LSB (0-127)	Pitch Bender MSB (0-127)
11100101= E5= 229	Chan 6 Pitch Bend Change	Pitch Bender LSB (0-127)	Pitch Bender MSB (0-127)
11100110= E6= 230	Chan 7 Pitch Bend Change	Pitch Bender LSB (0-127)	Pitch Bender MSB (0-127)
11100111= E7= 231	Chan 8 Pitch Bend Change	Pitch Bender LSB (0-127)	Pitch Bender MSB (0-127)
11101000= E8= 232	Chan 9 Pitch Bend Change	Pitch Bender LSB (0-127)	Pitch Bender MSB (0-127)
11101001= E9= 233	Chan 10 Pitch Bend Change	Pitch Bender LSB (0-127)	Pitch Bender MSB (0-127)

11101010= EA= 234	Chan 11 Pitch Bend Change	Pitch Bender LSB (0-127)	Pitch Bender MSB (0-127)
11101011= EB= 235	Chan 12 Pitch Bend Change	Pitch Bender LSB (0-127)	Pitch Bender MSB (0-127)
11101100= EC= 236	Chan 13 Pitch Bend Change	Pitch Bender LSB (0-127)	Pitch Bender MSB (0-127)
11101101= ED= 237	Chan 14 Pitch Bend Change	Pitch Bender LSB (0-127)	Pitch Bender MSB (0-127)
11101110= EE= 238	Chan 15 Pitch Bend Change	Pitch Bender LSB (0-127)	Pitch Bender MSB (0-127)
11101111= EF= 239	Chan 16 Pitch Bend Change	Pitch Bender LSB (0-127)	Pitch Bender MSB (0-127)
11110000= F0= 240	System Exclusive	**	**
11110001= F1= 241	MIDI Time Code Qtr. Frame	-see spec-	-see spec-
11110010= F2= 242	Song Position Pointer	LSB	MSB
11110011= F3= 243	Song Select (Song #)	(0-127)	none
11110100= F4= 244	Undefined (Reserved)	---	---
11110101= F5= 245	Undefined (Reserved)	---	---
11110110= F6= 246	Tune request	none	none
11110111= F7= 247	End of SysEx (EOX)	none	none
11111000= F8= 248	Timing clock	none	none
11111001= F9= 249	Undefined (Reserved)	---	---
11111010= FA= 250	Start	none	none
11111011= FB= 251	Continue	none	none
11111100= FC= 252	Stop	none	none
11111101= FD= 253	Undefined (Reserved)	---	---
11111110= FE= 254	Active Sensing	none	none
11111111= FF= 255	System Reset	none	none
** Note: System Exclusive (data dump) 2nd byte= Vendor ID (or Universal Exclusive) followed by more data bytes and ending with EOX.			

Table 3 - Control Change Messages (Data Bytes)

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The following table lists all currently defined Control Change messages and Channel Mode messages, in control number order. (Adapted from "MIDI by the Numbers" by D. Valenti-Electronic Musician 2/88, updated by the MIDI Manufacturers Association.)

Registered Parameter Numbers (RPNs) are an extension to the Control Change message for setting additional parameters. Appended at the bottom is a table of all currently defined RPNs.

WARNING! Details about implementing these messages can dramatically impact compatibility with other products. We strongly recommend consulting the official MMA Detailed MIDI Specification for additional information.

Table 3: Control Changes and Mode Changes (Status Bytes 176-191)					
Control Number (2nd Byte Value)			**Control Function**	**3rd Byte Value**	
Decimal	**Binary**	**Hex**		**Value**	**Used As**
0	00000000	00	Bank Select	0-127	MSB
1	00000001	01	Modulation Wheel or Lever	0-127	MSB
2	00000010	02	Breath Controller	0-127	MSB

3	00000011	03	Undefined	0-127	MSB
4	00000100	04	Foot Controller	0-127	MSB
5	00000101	05	Portamento Time	0-127	MSB
6	00000110	06	Data Entry MSB	0-127	MSB
7	00000111	07	Channel Volume (formerly Main Volume)	0-127	MSB
8	00001000	08	Balance	0-127	MSB
9	00001001	09	Undefined	0-127	MSB
10	00001010	0A	Pan	0-127	MSB
11	00001011	0B	Expression Controller	0-127	MSB
12	00001100	0C	Effect Control 1	0-127	MSB
13	00001101	0D	Effect Control 2	0-127	MSB
14	00001110	0E	Undefined	0-127	MSB
15	00001111	0F	Undefined	0-127	MSB
16	00010000	10	General Purpose Controller 1	0-127	MSB
17	00010001	11	General Purpose Controller 2	0-127	MSB
18	00010010	12	General Purpose Controller 3	0-127	MSB
19	00010011	13	General Purpose Controller 4	0-127	MSB
20	00010100	14	Undefined	0-127	MSB
21	00010101	15	Undefined	0-127	MSB
22	00010110	16	Undefined	0-127	MSB
23	00010111	17	Undefined	0-127	MSB
24	00011000	18	Undefined	0-127	MSB
25	00011001	19	Undefined	0-127	MSB
26	00011010	1A	Undefined	0-127	MSB
27	00011011	1B	Undefined	0-127	MSB
28	00011100	1C	Undefined	0-127	MSB
29	00011101	1D	Undefined	0-127	MSB
30	00011110	1E	Undefined	0-127	MSB
31	00011111	1F	Undefined	0-127	MSB
32	00100000	20	LSB for Control 0 (Bank Select)	0-127	LSB
33	00100001	21	LSB for Control 1 (Modulation Wheel or Lever)	0-127	LSB
34	00100010	22	LSB for Control 2 (Breath Controller)	0-127	LSB
35	00100011	23	LSB for Control 3 (Undefined)	0-127	LSB
36	00100100	24	LSB for Control 4 (Foot Controller)	0-127	LSB
37	00100101	25	LSB for Control 5 (Portamento Time)	0-127	LSB
38	00100110	26	LSB for Control 6 (Data Entry)	0-127	LSB
39	00100111	27	LSB for Control 7 (Channel Volume, formerly Main Volume)	0-127	LSB
40	00101000	28	LSB for Control 8 (Balance)	0-127	LSB
41	00101001	29	LSB for Control 9 (Undefined)	0-127	LSB
42	00101010	2A	LSB for Control 10 (Pan)	0-127	LSB
43	00101011	2B	LSB for Control 11 (Expression Controller)	0-127	LSB
44	00101100	2C	LSB for Control 12 (Effect control 1)	0-127	LSB

45	00101101	2D	LSB for Control 13 (Effect control 2)	0-127	LSB
46	00101110	2E	LSB for Control 14 (Undefined)	0-127	LSB
47	00101111	2F	LSB for Control 15 (Undefined)	0-127	LSB
48	00110000	30	LSB for Control 16 (General Purpose Controller 1)	0-127	LSB
49	00110001	31	LSB for Control 17 (General Purpose Controller 2)	0-127	LSB
50	00110010	32	LSB for Control 18 (General Purpose Controller 3)	0-127	LSB
51	00110011	33	LSB for Control 19 (General Purpose Controller 4)	0-127	LSB
52	00110100	34	LSB for Control 20 (Undefined)	0-127	LSB
53	00110101	35	LSB for Control 21 (Undefined)	0-127	LSB
54	00110110	36	LSB for Control 22 (Undefined)	0-127	LSB
55	00110111	37	LSB for Control 23 (Undefined)	0-127	LSB
56	00111000	38	LSB for Control 24 (Undefined)	0-127	LSB
57	00111001	39	LSB for Control 25 (Undefined)	0-127	LSB
58	00111010	3A	LSB for Control 26 (Undefined)	0-127	LSB
59	00111011	3B	LSB for Control 27 (Undefined)	0-127	LSB
60	00111100	3C	LSB for Control 28 (Undefined)	0-127	LSB
61	00111101	3D	LSB for Control 29 (Undefined)	0-127	LSB
62	00111110	3E	LSB for Control 30 (Undefined)	0-127	LSB
63	00111111	3F	LSB for Control 31 (Undefined)	0-127	LSB
64	01000000	40	Damper Pedal on/off (Sustain)	≤63 off, ≥64 on	---
65	01000001	41	Portamento On/Off	≤63 off, ≥64 on	---
66	01000010	42	Sostenuto On/Off	≤63 off, ≥64 on	---
67	01000011	43	Soft Pedal On/Off	≤63 off, ≥64 on	---
68	01000100	44	Legato Footswitch	≤63 Normal, ≥64 Legato	---
69	01000101	45	Hold 2	≤63 off, ≥64 on	---
70	01000110	46	Sound Controller 1 (default: Sound Variation)	0-127	LSB
71	01000111	47	Sound Controller 2 (default: Timbre/Harmonic Intens.)	0-127	LSB
72	01001000	48	Sound Controller 3 (default: Release Time)	0-127	LSB
73	01001001	49	Sound Controller 4 (default: Attack Time)	0-127	LSB
74	01001010	4A	Sound Controller 5 (default: Brightness)	0-127	LSB
75	01001011	4B	Sound Controller 6 (default: Decay Time - see MMA RP-021)	0-127	LSB
76	01001100	4C	Sound Controller 7 (default: Vibrato Rate - see MMA RP-021)	0-127	LSB
77	01001101	4D	Sound Controller 8 (default: Vibrato Depth - see MMA RP-021)	0-127	LSB
78	01001110	4E	Sound Controller 9 (default: Vibrato Delay - see MMA RP-021)	0-127	LSB
79	01001111	4F	Sound Controller 10 (default undefined - see MMA RP-021)	0-127	LSB
80	01010000	50	General Purpose Controller 5	0-127	LSB
81	01010001	51	General Purpose Controller 6	0-127	LSB
82	01010010	52	General Purpose Controller 7	0-127	LSB
83	01010011	53	General Purpose Controller 8	0-127	LSB

84	01010100	54	Portamento Control	0-127	LSB
85	01010101	55	Undefined	---	---
86	01010110	56	Undefined	---	---
87	01010111	57	Undefined	---	---
88	01011000	58	High Resolution Velocity Prefix	0-127	LSB
89	01011001	59	Undefined	---	---
90	01011010	5A	Undefined	---	---
91	01011011	5B	Effects 1 Depth (default: Reverb Send Level - see MMA RP-023) (formerly External Effects Depth)	0-127	---
92	01011100	5C	Effects 2 Depth (formerly Tremolo Depth)	0-127	---
93	01011101	5D	Effects 3 Depth (default: Chorus Send Level - see MMA RP-023) (formerly Chorus Depth)	0-127	---
94	01011110	5E	Effects 4 Depth (formerly Celeste [Detune] Depth)	0-127	---
95	01011111	5F	Effects 5 Depth (formerly Phaser Depth)	0-127	---
96	01100000	60	Data Increment (Data Entry +1) (see MMA RP-018)	N/A	---
97	01100001	61	Data Decrement (Data Entry -1) (see MMA RP-018)	N/A	---
98	01100010	62	Non-Registered Parameter Number (NRPN) - LSB	0-127	LSB
99	01100011	63	Non-Registered Parameter Number (NRPN) - MSB	0-127	MSB
100	01100100	64	Registered Parameter Number (RPN) - LSB*	0-127	LSB
101	01100101	65	Registered Parameter Number (RPN) - MSB*	0-127	MSB
102	01100110	66	Undefined	---	---
103	01100111	67	Undefined	---	---
104	01101000	68	Undefined	---	---
105	01101001	69	Undefined	---	---
106	01101010	6A	Undefined	---	---
107	01101011	6B	Undefined	---	---
108	01101100	6C	Undefined	---	---
109	01101101	6D	Undefined	---	---
110	01101110	6E	Undefined	---	---
111	01101111	6F	Undefined	---	---
112	01110000	70	Undefined	---	---
113	01110001	71	Undefined	---	---
114	01110010	72	Undefined	---	---
115	01110011	73	Undefined	---	---
116	01110100	74	Undefined	---	---
117	01110101	75	Undefined	---	---
118	01110110	76	Undefined	---	---
119	01110111	77	Undefined	---	---
Note:	Controller numbers 120-127 are reserved for Channel Mode Messages, which rather than controlling sound parameters, affect the channel's operating mode. (See also Table 1.)				
120	01111000	78	[Channel Mode Message] All Sound Off	0	---
121	01111001	79	[Channel Mode Message] Reset All Controllers	0	---

			(See MMA RP-015)		
122	01111010	7A	[Channel Mode Message] Local Control On/Off	0 off, 127 on	---
123	01111011	7B	[Channel Mode Message] All Notes Off	0	---
124	01111100	7C	[Channel Mode Message] Omni Mode Off (+ all notes off)	0	---
125	01111101	7D	[Channel Mode Message] Omni Mode On (+ all notes off)	0	---
126	01111110	7E	[Channel Mode Message] Mono Mode On (+ poly off, + all notes off)	Note: This equals the number of channels, or zero if the number of channels equals the number of voices in the receiver.	---
127	01111111	7F	[Channel Mode Message] Poly Mode On (+ mono off, +all notes off)	0	---

Table 3a: Registered Parameter Numbers

To set or change the value of a Registered Parameter:

1. Send two Control Change messages using Control Numbers 101 (65H) and 100 (64H) to select the desired Registered Parameter Number, as per the following table.

2. To set the selected Registered Parameter to a specific value, send a Control Change messages to the Data Entry MSB controller (Control Number 6). If the selected Registered Parameter requires the LSB to be set, send another Control Change message to the Data Entry LSB controller (Control Number 38).

3. To make a relative adjustment to the selected Registered Parameter's current value, use the Data Increment or Data Decrement controllers (Control Numbers 96 and 97).

Parameter Number		**Parameter Function**	**Data Entry Value**
MSB: Control 101 (65H) Value	**LSB: Control 100 (64H) Value**		
00H	00H	Pitch Bend Sensitivity	MSB = +/- semitones LSB =+/--cents
	01H	Channel Fine Tuning (formerly Fine Tuning - see MMA RP-022)	Resolution 100/8192 cents 00H 00H = -100 cents 40H 00H = A440 7FH 7FH = +100 cents
	02H	Channel Coarse Tuning (formerly Coarse Tuning - see MMA RP-022)	Only MSB used Resolution 100 cents 00H = -6400 cents 40H = A440 7FH = +6300 cents
	03H	Tuning Program Change	Tuning Program Number
	04H	Tuning Bank Select	Tuning Bank Number
	05H	Modulation Depth Range (see MMA General MIDI Level 2 Specification)	For GM2, defined in GM2 Specification. For other systems, defined by manufacturer
...	...	All RESERVED for future MMA Definition	...
3DH (61)	Three Dimensional Sound Controllers		
	00H	AZIMUTH ANGLE	See RP-049
	01H	ELEVATION ANGLE	See RP-049
	02H	GAIN	See RP-049
	03H	DISTANCE RATIO	See RP-049
	04H	MAXIMUM DISTANCE	See RP-049
	05H	GAIN AT MAXIMUM DISTANCE	See RP-049
	06H	REFERENCE DISTANCE RATIO	See RP-049
	07H	PAN SPREAD ANGLE	See RP-049

	08H	ROLL ANGLE	See RP-049
...	...	All RESERVED for future MMA Definition	...
7FH	7FH	Null Function Number for RPN/NRPN	Setting RPN to 7FH,7FH will disable the data entry, data increment, and data decrement controllers until a new RPN or NRPN is selected.

Table 4 - Universal System Exclusive Messages

TOP

The following table lists all currently defined Universal System Exclusive Messages.

Universal System Exclusive Messages are defined as Real Time or Non-Real Time, and are used for extensions to MIDI that are NOT intended to be manufacturer exclusive (despite the name).

Many of these messages are defined in Specifications whose printed documentation is available from the MMA. Others are defined in Recommended Practice documentation that may be found on this web site.

WARNING! Details about implementing these messages can dramatically impact compatibility with other products. We strongly recommend consulting the appropriate MMA Specification or Recommended Practice for additional information.

Table 4: Defined Universal System Exclusive Messages			
Non-Real Time (7EH)			
SUB-ID #1	**SUB-ID #2**	**DESCRIPTION**	
00		Unused	
01		Sample Dump Header	
02		Sample Data Packet	
03		Sample Dump Request	
04	nn	MIDI Time Code	
	00		Special
	01		Punch In Points
	02		Punch Out Points
	03		Delete Punch In Point
	04		Delete Punch Out Point
	05		Event Start Point
	06		Event Stop Point
	07		Event Start Points with additional info.
	08		Event Stop Points with additional info.
	09		Delete Event Start Point
	0A		Delete Event Stop Point
	0B		Cue Points
	0C		Cue Points with additional info.

	0D		Delete Cue Point
	0E		Event Name in additional info.
05	nn	Sample Dump Extensions	
	01		Loop Points Transmission
	02		Loop Points Request
	03		Sample Name Transmission
	04		Sample Name Request
	05		Extended Dump Header
	06		Extended Loop Points Transmission
	07		Extended Loop Points Request
06	nn	General Information	
	01		Identity Request
	02		Identity Reply
07	nn	File Dump	
	01		Header
	02		Data Packet
	03		Request
08	nn	MIDI Tuning Standard (Non-Real Time)	
	00		Bulk Dump Request
	01		Bulk Dump Reply
	03		Tuning Dump Request
	04		Key-Based Tuning Dump
	05		Scale/Octave Tuning Dump, 1 byte format
	06		Scale/Octave Tuning Dump, 2 byte format
	07		Single Note Tuning Change with Bank Select
	08		Scale/Octave Tuning, 1 byte format
	09		Scale/Octave Tuning, 2 byte format
09	nn	General MIDI	
	01		General MIDI 1 System On
	02		General MIDI System Off
	03		General MIDI 2 System On
0A	nn	Downloadable Sounds	
	01		Turn DLS On
	02		Turn DLS Off
	03		Turn DLS Voice Allocation Off
	04		Turn DLS Voice Allocation On
0B	nn	File Reference Message	
	00		reserved (do not use)
	01		Open File
	02		Select or Reselect Contents
	03		Open File and Select Contents
	04		Close File

	05-7F		reserved (do not use)
0C	nn	MIDI Visual Control	
	00-7F		MVC Commands *(See MVC Documentation)*
7B	--	End of File	
7C	--	Wait	
7D	--	Cancel	
7E	--	NAK	
7F	--	ACK	

Real Time (7FH)			
SUB-ID #1	**SUB-ID #2**	**DESCRIPTION**	
00	--	Unused	
01	nn	MIDI Time Code	
	01		Full Message
	02		User Bits
02	nn	MIDI Show Control	
	00		MSC Extensions
	01-7F		MSC Commands *(see MSC Documentation)*
03	nn	Notation Information	
	01		Bar Number
	02		Time Signature (Immediate)
	42		Time Signature (Delayed)
04	nn	Device Control	
	01		Master Volume
	02		Master Balance
	03		Master Fine Tuning
	04		Master Course Tuning
	05		Global Parameter Control
05	nn	Real Time MTC Cueing	
	00		Special
	01		Punch In Points
	02		Punch Out Points
	03		(Reserved)
	04		(Reserved)
	05		Event Start points
	06		Event Stop points
	07		Event Start points with additional info.
	08		Event Stop points with additional info.
	09		(Reserved)
	0A		(Reserved)

	0B		Cue points
	0C		Cue points with additional info.
	0D		(Reserved)
	0E		Event Name in additional info.
06	nn	MIDI Machine Control Commands	
	00-7F		MMC Commands *(See MMC Documentation)*
07	nn	MIDI Machine Control Responses	
	00-7F		MMC Responses *(See MMC Documentation)*
08	nn	MIDI Tuning Standard (Real Time)	
	02		Single Note Tuning Change
	07		Single Note Tuning Change with Bank Select
	08		Scale/Octave Tuning, 1 byte format
	09		Scale/Octave Tuning, 2 byte format
09	nn	Controller Destination Setting *(See GM2 Documentation)*	
	01		Channel Pressure (Aftertouch)
	02		Polyphonic Key Pressure (Aftertouch)
	03		Controller (Control Change)
0A	01	Key-based Instrument Control	
0B	01	Scalable Polyphony MIDI MIP Message	
0C	00	Mobile Phone Control Message	