Common Rules for MIDI-CI Profiles

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PREFACE

The MIDI Capability Inquiry (MIDI-CI) specification defines mechanisms and a set of Universal System Exclusive messages used for Profile Configuration. However, it does not define the rules for Profile Specifications or devices that implement Profiles. This document, the Common Rules for Profiles, complements MIDI-CI by defining a set of design rules for all Profile Specifications.

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1. Introduction

1.1 Background

MIDI-CI allows devices to communicate their capabilities to each other. Devices can use that capabilities information to self-configure their MIDI connections and related settings. Profiles are a beneficial component in enabling intelligent auto-configuration.

A Profile is a defined set of rules for how a MIDI receiver device implementing the Profile shall respond to a chosen set of MIDI messages to achieve a particular purpose or to suit a particular application. In addition to defining response to MIDI messages, a Profile may optionally also define other device functionality requirements. This definition also then implies MIDI implementation of a sender or in some cases may require a defined MIDI implementation of a sender.

The most successful MIDI feature similar to a Profile in the first 3 decades of MIDI has been General MIDI. GM allows devices to "know" that a defined set of sounds is available at particular Program Change locations, that the device receives on all 16 MIDI Channels, that a Drum set is on Channel 10, and that there is defined response to a chosen set of MIDI messages.

This kind of knowledge shared between devices allows those devices to configure a more integrated level of control with increased predictability of the results that will come from sending related MIDI messages. MIDI-CI Profiles are also intended to allow more integrated cooperation between devices.

While GM is the best model of a successful profile concept prior to MIDI-CI, it does not take MIDI-CI or 2-way communication into account. There is a "GM On" message but no reply from the receiver. MIDI-CI Profiles take advantage of the 2-way communication. This document defines how specific Profile Specifications should be written and how devices that are compatible with MIDI-CI Profile discovery should use Profiles.

1.2 Related Documents

MIDI Capability Inquiry (MIDI-CI) Messages (RP-035), Version 1.0 [2018]

Complete MIDI 1.0 Detailed Specification, Version 96.1, Edition 3

MIDI 1.0 Specification Addenda

1.3 Terminology

MMA: MIDI Manufacturers Association

AMEI: Association of Musical Electronics Industry

Port: A source of or destination for MIDI data with a set of capabilities serviced by System Messages and up to 16 Channels of capabilities serviced by 16 corresponding sets of Channel Voice Messages.

2. Profile Mechanisms

This section defines device design for using Profiles, implementing MIDI-CI Profile Configuration messages for enabling and disabling Profiles.

2.1 Discovering and Configuring Supported Profiles

MIDI-CI inquiries allow an Initiator to ask for a list of Profiles that a Responder supports. The Initiator may use this information to auto-configure the connection for greater interoperability of specific applications. The Initiator manages the configuration by enabling and disabling particular Profiles on the Responder. When a Responder changes its Profiles in response to an event that is not managed by the Initiator, the Responder informs the Initiator.

For example: a software sound editing application might configure a specific set of on-screen controls to send associated MIDI messages that control parameters of any device that it discovers which conforms to the Drawbar Organ Profile. It would configure a different set of on-screen controls and MIDI messages if it found that the device conforms to an Electric Piano Profile.

2.2 Profile Identifier (ID)

The MMA and AMEI shall maintain the list of Standard Defined Profiles and assign an official Profile ID to each Standard Defined Profile.

Standardized Profiles and Manufacturers' proprietary Profiles are identified in MIDI-CI Profile messages in a set of 5 bytes:

Byte Number	Standard Defined Profiles	Manufacturer Specific Profiles
Profile ID Byte 1	0x7E Standard Defined Profile	Manufacturer SysEx ID 1
Profile ID Byte 2	Profile Number Bank	Manufacturer SysEx ID 2
Profile ID Byte 3	Profile Number	Manufacturer SysEx ID 3
Profile ID Byte 4	Profile Version	Manufacturer-Specific Info 1
Profile ID Byte 5*	Profile Level*	Manufacturer-Specific Info 2

*See Section 3.2 "Profile Support Level and Minimum Requirements" for more details of Profile ID Byte 5, Profile Level.

Standardized Profiles defined by AMEI and MMA use a Profile ID as defined in the Common Rules for MIDI Profiles (this specification) and by each Profile Specification. The value of the Profile ID Byte 1 for standardized Profiles is 0x7E (Universal). Values for Bytes 2 and 3 are assigned by MMA and AMEI. Byte 4 is defined by each Profile specification. Byte 5 is defined by the "Profile Level and Minimum Requirements" section of this specification and each Profile specification.

Manufacturers may use MIDI-CI to control Profiles of their own proprietary design by placing their own 3-byte System Exclusive ID in Profile ID Byte 1, Profile ID Byte 2, and Profile ID Byte 3. For System Exclusive ID values that are only 1 byte in length, the System Exclusive ID value is placed in the Profile ID Byte 1 and the remaining 2 ID Bytes are filled with zeroes: ID 00 00. Then each manufacturer defines their own usage of Profile ID Byte 4 and Profile ID Byte 5.

2.3 Devices, Ports, and MIDI Channels

MIDI-CI inquiries allow a device to report Profiles that are supported on a per Port basis and on a per Channel basis. A device may support a Profile for a whole MIDI Port or support a Profile on specific Channels only. A device may support multiple Profiles on a Port or support multiple Profiles on specific Channels only.

MIDI-CI Profile Configuration messages can be addressed on a port-wide or per-Channel basis. Addressing is done using the Device ID of the Universal SysEx. messages:

> 0x7F = Send to/from MIDI Port

> 0x00-0x0F = Send to/from Channels 1-16

2.3.1 Single Channel Profiles

Some Profiles define devices that use only one MIDI Channel for the Profile. Piano is a typical example.

> A MIDI-CI Initiator asks what Profiles are supported using the Device ID address 0x7F. The Responder replies with the Device ID address 0x7F if the Profile is supported on any Channel. If the Profile is only supported on 1 Channel, then the Responder replies with the Device ID address of that MIDI Channel 0x00-0x0F. Initiator sends Profile Enable message or Profile Disable message with the Device ID address of the target MIDI Channel 0x00-0x0F. Responder sends Profile Enabled message or Profile Disabled message with the Device ID address of the MIDI Channel 0x00-0x0F.

2.3.2 Multi-Channel Profiles: All Channels

All Channel Profiles: Some Profiles define devices that use all 16 Channels of a MIDI port/cable. General MIDI is a typical example.

> A MIDI-CI Initiator asks what Profiles are supported using the Device ID address 0x7F. The Responder replies with the Device ID address 0x7F. Initiator sends Profile Enable message or Profile Disable message with the Device ID address 0x7F. Responder sends Profile Enabled message or Profile Disabled message with the Device ID address 0x7F.

2.3.3 Multi-Channel Profiles: 2-15 Channels

Some Profiles define devices that use multiple MIDI Channels for the Profile. Guitar is a typical example that might be defined to use 7 Channels: 6 Member Channels for the 6 strings plus a Master Channel for controlling total output volume. See 2.3.4 "Master Channel and Member Channels"

> A MIDI-CI Initiator asks what Profiles are supported using the Device ID address 0x7F. The Responder replies with the Device ID address 0x7F if the Profile is supported on any set of Channels. If the Profile is only supported on 1 set of Channels, then the Responder replies with the Device ID address of the Master Channel, 0x00-0x0F. Initiator sends Profile Enable

message or Profile Disable message with the Device ID address of the target Master Channel, 0x00-0x0F. Responder sends Profile Enabled message or Profile Disabled message with the Device ID address of the Master Channel, 0x00-0x0F.

2.3.4 Master Channel and Member Channels

Some Profiles may be defined to use more than one Channel but fewer than 16 Channels. All such multichannel Profile Specifications shall define a Master Channel. MIDI-CI Profile Configuration messages are sent on the Master Channel.

All other active Channels in the Profile are considered Member Channels. The Profile Specification shall define how Member Channels used by the Profile are identified in relation to the Master Channel. In some Profile definitions, the Master Channel might be the lowest numbered Channel in a series. In other profiles the Master Channel might be the highest numbered Channel in a series.

In most cases a Master Channel will be independent from the Member Channels. Typical Master Channel and relationship to Member Channels is often as described in this example:

> A hypothetical 5 String Banjo Profile might define that 5 Member Channels in sequence are used for messages related to the 5 strings and that a 6th Channel is the Master Channel. Master volume and tone of the Banjo and other similar messages are typically sent on the Master Channel. Note related control data such as Note On/Off and Pitch Bend are sent on the Member Channels.

> The Master Channel may be assigned between Channel 6 and Channel 16. MIDI-CI Profile Configuration messages are sent on the Master Channel (6 to 16) and it is known by the definition in the Profile Specification that the 5 strings are on the 5 Channels sequentially lower than that Master Channel. Default assignment could be Strings 1-5 on Member Channels 1-5 and Master Channel on Channel 6.

In some cases, the Master Channel may also be a Member Channel, only if Master functions do not overlap or conflict with Member Channel functions. The Profile specification shall clearly define which functions on that Channel are Master controls and which are Member controls. For example:

> When the Master Channel is also a Member Channel:

> 1. If the Volume message (CC#7) on the Master Channel affects total output volume of all Member Channels then all the Member Channels shall ignore Volume messages (CC#7) on their own Channels.

> Or

> 2. the Volume messages (CC#7) on Member Channels controls the volume of that one Channel, then the Master Channel shall use Volume message (CC#7) as the volume of that one Channel and not use it for total volume of all Channels.

2.3.5 Device Instrument Definitions with Single Channel Profile and Multi-Channel Profile

Some device types or Profile types are defined for both multiple Channel applications and single Channel applications. Hypothetical Example 1: A classic Drawbar Organ is a 3-manual instrument that would usually use 3 MIDI Channels. But there are many single manual Drawbar organs and many multi-Channel synthesizers which can assign a Drawbar Organ to just 1 Channel. Hypothetical

Example 2: The original General MIDI specification was defined for 16 Channel applications, but MIDI-CI allows a GM profile to be enabled on a single Channel. Multiple Profiles are used to differentiate between related Single Channel Profiles and Multi-Channel Profiles.

Example 1: A Single Manual Drawbar Organ vs. a 3-Manual Drawbar Organ, each having its own Profile ID Number:

> Three Manual Drawbar Organ Profile (3-Channels with Master Channel on Swell/Upper Manual)

> Single Manual Drawbar Organ Profile

Example 2: There could be 3 separate but related Profiles for General MIDI Level 2, each with a unique Profile ID Number:

> General MIDI Level 2 Profile (16 Channels)

> General MIDI Level 2 Single Channel Melodic Profile

> General MIDI Level 2 Single Channel Drums Profile

2.4 Common Profile Messages (MIDI-CI messages)

All Profiles Specification and compatible devices shall support 6 Common Profile Messages that are defined in the MIDI Capabilities Inquiry specification.

Universal System Exclusive Sub ID #1: MIDI-CI	Universal System Exclusive Sub ID #2: MIDI-CI Message Number	Function
0x0D	0x20	Profile Inquiry
0x0D	0x21	Reply to Profile inquiry
0x0D	0x22	Set Profile On
0x0D	0x23	Set Profile Off
0x0D	0x24	Profile Enabled Report
0x0D	0x25	Profile Disabled Report

0x20 Profile Inquiry

A device (Initiator) sends this to request a list of Profiles that are supported by a connected device (Responder). The Initiator may use this information to auto-configure the connection between the devices for increased interoperability. The message may be addressed to an individual Channel to find the capabilities on that Channel or to the whole Port (address 0x7F) to discover capabilities of the whole device. (See Section 2.3 for more information about addressing)

0x21 Reply to Profile inquiry

When a Responder receives the Profile Inquiry message it shall reply with one or more Reply to Profile inquiry messages to report a list of Profiles the Responder supports.

When a Responder receives the Profile Inquiry message on a specific Channel, the Responder sends this Reply to Profile inquiry message addressed with that Channel to report the Profiles supported on the requested Channel. (See Section 2.3) If the Responder does not support any Profiles on that Channel, then it shall reply with no Profiles reported.

When a Responder receives the Profile Inquiry message on the Port address 0x7F, it replies with one or more Reply to Profile inquiry messages. If the Responder only supports Profiles on specific Channels, it sends a reply on those Channels first. Then, as a final reply, the Responder sends a reply message with address 0x7F to report Profile Capabilities that are supported on all 16 Channels or on a Port-wide basis. If the Responder does not support any Profiles for all Channels or does not support any Profiles at all, it should send this reply on the Port address 0x7F with no Profiles reported. (See Section 2.3)

0x22 Set Profile On

An Initiator sends this to enable a Profile on a Responder.

0x23 Set Profile Off

An Initiator sends this to disable a Profile on a Responder.

0x24 Profile Enabled Report

A device sends this message if it has enabled a Profile.

This is an acknowledgement upon receipt of a Set Profile On message.

This is an informative message if an event local to the device enables a Profile.

> Example: A change of patch might trigger a change of Profile.

0x25 Profile Disabled Report

A device sends this message if it has disabled a Profile.

This is an acknowledgement upon receipt of a Set Profile Off message.

This is an informative message if an event local to the device disables a Profile.

> Example: A change of patch might trigger a change of Profile.

See the MIDI-CI Specification (CA-035) for more details of MIDI-CI Profile messages.

2.5 Enabling Profiles

A device shall enable any Profile it supports after it receives the associated Set Profile On Message. After the device has enabled the Profile, it shall reply with a Profile Enabled message.

If any action local to a device enables a particular Profile, the device shall send the associated Profile Enabled message.

If a device receives a Program Change message that causes a specific Profile to be enabled, the device shall send the associated Profile Enabled message.

Reply When Responder Cannot Enable or Does Not Support a Profile:

- If a device receives a Set Profile On message for a Profile that it supports but the device is unable to enable that Profile, then the device shall reply with a Profile Disabled Report.

- If a device receives a Set Profile On message for a Profile that it does not support, then it should reply with a MIDI-CI NAK Message.

2.6 Disabling Profiles

A device should disable a Profile after it receives the associated Set Profile Off Message from an Initiator. After the device has disabled the Profile, it shall reply with a Profile Disabled message. However, if a device is not able to disable a particular Profile then it shall reply with a Profile Enabled message.

If any action local to a device disables an enabled Profile, the device shall send the associated Profile Disabled message.

If a device receives a Program Change message that causes a specific Profile to be disabled, the device shall send the associated Profile Disabled message.

Reply When Device Cannot Disable or Does Not Support a Profile:

- If a device receives a Set Profile Off message for a Profile that it supports but the device is unable to disable that Profile, then the device shall reply with a Profile Enabled Report.

- If a device receives a Set Profile Off message for a Profile that it does not support, then it should reply with a MIDI-CI NAK Message.

2.7 Mutually Exclusive Profiles

Some combination of Profiles can be enabled simultaneously on one MIDI Channel. But in some cases, a device might not be able to support particular combinations of simultaneous Profiles. A device is able to report that it cannot support the simultaneous combination of 2 requested Profiles.

- Example 1: For many devices it would be reasonably possible to allow Electric Piano Profile and Guitar Effects Profile to exist simultaneously on the same MIDI Channel, perhaps for a sound of an Electric Piano going through Phaser + Overdrive.

- Example 2: For many devices it would not be feasible to allow Electric Piano Profile and Drawbar Organ Profile to exist simultaneously on the same MIDI Channel. Many devices may not be able to do both at the same time. On the other hand, some devices may allow this combination, perhaps if the Notes played on that Channel trigger a layered sound of Electric Piano + Drawbar Organ.

If a device has a Profile (Profile A) enabled and it receives a Profile On message for another Profile (Profile B) that cannot be simultaneously supported with Profile A, the device should switch to the new Profile and send 2 replies to the Profile On message:

1. Profile Disabled Report for Profile A
2. Profile Enabled Report for Profile B

3. Rules for Profile Definitions

3.1 Profile Specifications

Each Standard Defined Profile is defined in a separate Defined Profile specification document for that Profile. Each Profile specification defines the factors that allow a high level of interoperability between devices that share support for that Profile.

A Profile Specification defines the Receiver device implementation of specific MIDI messages including but not limited to:

- Response to Note On/Off messages
- Response to messages that influence note tuning
- Response to controller messages
- Response to specific Registered Parameter Number messages
- Response to Bank Select and Program Change messages
- Response to System messages
- Any applicable Universal System Exclusive messages
- Any Profile-specific System Exclusive messages

A Profile Specification may also define other Receiver implementation requirements including but not limited to:

- Device functional blocks and topology
- Minimum Polyphony required
- Number of MIDI Channels and/or Ports supported
- Message response times or other performance standards
- Other Non-MIDI data types supported (example: audio samples)
- Specific sounds or programs

3.1.1 Control Change, RPN and NRPN

Control Change messages should not gain new definitions within a Profile but should be reserved for legacy applications.

As a general rule (but not a hard requirement) new Profiles should define RPN messages to control parameters that have not previously been defined.

Manufacturer-Specific Profiles should use NRPN messages to control any function that does not have a Control Change or RPN defined for that function.

3.2 Profile Support Level and Minimum Requirements

A Profile may define several levels of compatibility or compliance.

Profile specifications shall clearly define the set of properties or features that are the minimum requirements for a device to claim that it supports that Profile.

Profile specifications may also define extended properties or features that are optional, available for common use but not absolutely required for a device to claim that it conforms to that Profile.

Profile Specifications define which properties or features belong to defined levels of support that are indicated by "Profile ID Byte 5, Profile Level" in the 6 Common Profile Messages of MIDI-CI. See the following table.

Profile ID Byte 5 Profile Level	Profile Support Level
0x00	Partial
0x01	Minimum Required
0x02-7E	Minimum Required plus optional, Extended Feature Sets as defined by the Profile specification.
0x7F	Highest Possible

Partial

Reported by a Receiver that it generally supports the Profile but lacks some part(s) of the defined Minimum Required. The manufacturer believes the device offers valuable features of the Profile or that primary application of the Profile functionality is delivered even if Profile compliance is not 100%.

If a Receiver reports that it has Partial Support Level, then after Enabling the Profile, the Sender should send messages to the Receiver as though the Receiver meets the Minimum Required. Sender or Receiver may choose to display a notice to the user that complete Profile function might not be achieved.

Minimum

Reported by a Receiver that fully implements all of the Profile features that are defined as the Minimum Required.

Extended Feature Sets

Profile specification may define specific extended feature sets in other Profile Levels of support. The Profile Support Level of each extended feature of the Profile should be clearly defined. Profile designers should give careful consideration whether implementation with some extended features

should be defined as an Extended Feature Set or whether there is sufficient functionality to warrant a separate Profile specification. If there are credible use cases for the Extended Features without using the Base Level features, then a separate Profile specification is probably warranted.

<u>Highest Possible</u>

A Sender uses the value 0x7F for the Profile Level Support field when sending a Set Profile On message. When a Receiver receives a Set Profile On message with Highest Possible Level value set, the Receiver should enable all features of the Profile that it supports.

3.3 Property Exchange

A Profile specification may define a set of Properties that a Sender can use in a MIDI-CI Property Exchange Inquiry to discover the details of a Receiver's Profile implementation. This might typically include discovery of any optional, extended features that a Receiver supports.

3.4 Commonality of Profile Properties/Parameters

As much as practicably possible, Profile definitions should use the same message to control any function that is already defined elsewhere.

> For Example: GM2 already defines Reverb Level on CC#91. In most cases it is beneficial for another Profile that contains controls for reverb to use that same controller for its reverb level.

However, this is just a guideline for commonality across Profiles. It may not be reasonable or feasible to observe this guideline in all parameters of all Profile definitions.

3.4.1 Control Change (CC) Messages

MIDI 1.0 has defined default assignment of Control Change messages to specific parameters. Profiles shall observe those legacy assignments. A list of Control Change messages that Profiles should use if they have the associated parameter is attached as Appendix A. At the time of enabling a Profile, the device shall reset these Control Change destination assignments. A Profile might also define that certain parameters should or shall be reset to their default values.

Refer to the latest MIDI specifications for any further updates to the list of Control Change Messages.

3.4.2 Registered Parameter Number (RPN) Messages

For new control parameters that are not already assigned by MIDI 1.0 to specific Control Change messages, Profiles should assign the parameter to a Registered Parameter Number (RPN). Profiles may also assign an RPN for parameters normally addressable by a Control Change where increased functionality of the message is required (for example, for increased resolution or for relative control).

Assigning a function to an RPN requires approval of the MMA and AMEI.

3.4.3 Manufacturer Specific Profiles

Manufacturer Specific Profiles that define unique parameters that are not addressed by defined Control Change or Registered Parameter Number messages may be controlled by Non-Registered Parameter Number (NRPN) messages without specific approval.

3.5 Mode Messages

MIDI Mode Messages (CC#120-127) have special functionality. All Profiles shall define the response to Reset All Controllers (CC#121). A Profile for any device that uses Note-On/Off messages shall define the response to all of these, even if the response is the default MIDI 1.0 meaning. Some might be defined as ignored. Some Mode change messages might trigger All Notes Off while ignoring the rest of the default mechanisms (See General MIDI Level 2 as an example).

> All Sound Off (CC#120)
>
> Reset All Controllers (CC#121)
>
> Local On/Off (CC#122)
>
> All Notes Off (CC#123)
>
> Omni Mode Off (CC#124)
>
> Omni Mode On (CC#125)
>
> Mono Mode On (CC#126)
>
> Poly Mode On (CC#127)

3.6 Profile Categories

There are several common categories of Profiles. The category of a Profile is used to help organize or group similar Profiles into related sets. In particular, this is used to assign RPN numbers to parameters defined by each Profile.

Profiles are organized into 3 categories:
- Feature Profiles or Ancillary Profiles (General MIDI, Show Control, MIDI Visual Control, Note Tuning, MPE, Sample Dump, Mixed Data Types)
- Instrument Profiles (Orchestral Strings, Piano, Organ, Drums)
- Effects Devices (Reverb, Delay, Chorus, Overdrive, Rotary, etc.)

3.6.1 Feature Profiles

Some Feature Profiles define features and MIDI implementation requirements that apply across a wide range of musical instrument types. Examples might include Tuning Tables, Real Time Direct Pitch Control, Per Note Expression (like MPE), Layer/Zone Key Configuration, etc.

Some Feature Profiles define features and MIDI implementation requirements that apply to devices that record, edit, or modify MIDI data such as Arpeggiators, Sequencers or Rhythm/Music Style engines.

Some Feature Profiles define features and MIDI implementation requirements for devices that are not a musical instrument or an audio effects processor. Examples might include Lighting Control, Drone Flight Control, Video Effects Control, Mixer Control and Automation, DAW Software Control, etc.

3.6.2 Instrument Profiles

Instrument Profiles define features and MIDI implementation requirements for various musical instrument types or devices that use Note On/Off messages to represent musical notes. Typical

Instrument Profiles might include Piano, Organ, Orchestral Strings, Guitar, Brass Instruments, Drums, Subtractive Synthesizer, FM Synthesizer, etc.

3.6.3 Effect Profiles

Effect Profiles define features and MIDI implementation requirements for various audio processor types. Typical Effect Profiles might include Reverb, Chorus, Compressor, Overdrive, Rotary, Delay, Audio Mixer, etc.

3.7 Protocol Differences

Profiles can be supported by devices using the MIDI 1.0 protocol, the MIDI 2.0 protocol, and/or other protocols supported by MIDI-CI Protocol Negotiation. Some Profiles might be written for only one protocol. Profile specifications shall state which MIDI protocols are supported.

In the case of Profiles supporting multiple protocols, it is not mandated that performance must be equal for all protocols. New protocols may have some messages and features that do not have equivalent messages and features in MIDI 1.0. If Profile performance is not equal on all supported MIDI protocols, the Profile specification should clearly delineate the differences.

In some cases, a Profile might define a different mechanism in each protocol and define a unique translation of those mechanisms between different protocols when the mechanisms are not accomplished by equivalent messages. Standard Translator devices may not be able to perform that unique translation. But specialized translators might be available to support the unique features of such Profiles.

Notwithstanding the differences explained above, Profiles shall support the default assignment of Control Change messages as defined in Section 3.4.1. whether using MIDI 1.0 protocol or other protocols supported by MIDI-CI Protocol Negotiation.

Appendix A: Defined Control Change Messages Common to All Profiles

A list of Control Change messages that Profiles should use if they define the associated parameter. Profiles are not required to support all these messages. See Sections 3.1.1 and 3.4.1 for more information.

Control Changes and Mode Changes			
Control Change Number			**Control Function**
Decimal	**Binary**	**Hex**	
0	00000000	00	Bank Select
1	00000001	01	Modulation Wheel or Lever
2	00000010	02	Breath Controller
4	00000100	04	Foot Controller
5	00000101	05	Portamento Time
6	00000110	06	Data Entry MSB
7	00000111	07	Channel Volume (formerly Main Volume)
8	00001000	08	Balance
10	00001010	0A	Pan
11	00001011	0B	Expression Controller
12	00001100	0C	Effect Control 1
13	00001101	0D	Effect Control 2
32-63	00100000	20	LSB for CC # 0-31
64	01000000	40	Damper Pedal on/off (Sustain)
65	01000001	41	Portamento On/Off
66	01000010	42	Sostenuto On/Off
67	01000011	43	Soft Pedal On/Off

68	01000100	44	Legato Footswitch
69	01000101	45	Hold 2
70	01000110	46	Sound Controller 1 (default: Sound Variation)
71	01000111	47	Sound Controller 2 (default: Timbre/Harmonic Intens.)
72	01001000	48	Sound Controller 3 (default: Release Time)
73	01001001	49	Sound Controller 4 (default: Attack Time)
74	01001010	4A	Sound Controller 5 (default: Brightness)
75	01001011	4B	Sound Controller 6 (default: Decay Time - see MMA RP-021)
76	01001100	4C	Sound Controller 7 (default: Vibrato Rate - see MMA RP-021)
77	01001101	4D	Sound Controller 8 (default: Vibrato Depth - see MMA RP-021)
78	01001110	4E	Sound Controller 9 (default: Vibrato Delay - see MMA RP-021)
79	01001111	4F	Sound Controller 10 (default undefined - see MMA RP-021)
84	01010100	54	Portamento Control
88	01011000	58	High Resolution Velocity Prefix
91	01011011	5B	Effects 1 Depth (default: Reverb Send Level - see MMA RP-023) (formerly External Effects Depth)
92	01011100	5C	Effects 2 Depth (formerly Tremolo Depth)
93	01011101	5D	Effects 3 Depth (default: Chorus Send Level - see MMA RP-023) (formerly Chorus Depth)
94	01011110	5E	Effects 4 Depth (formerly Celeste [Detune] Depth)
95	01011111	5F	Effects 5 Depth (formerly Phaser Depth)
96	01100000	60	Data Increment (Data Entry +1) (see MMA RP-018)
97	01100001	61	Data Decrement (Data Entry -1) (see MMA RP-018)
98	01100010	62	Non-Registered Parameter Number (NRPN) - LSB
99	01100011	63	Non-Registered Parameter Number (NRPN) - MSB
100	01100100	64	Registered Parameter Number (RPN) - LSB*
101	01100101	65	Registered Parameter Number (RPN) - MSB*

Controller numbers 120-127 are reserved for Channel Mode Messages, which rather than controlling sound parameters, affect the Channel's operating mode.

Control Change Number			Control Function
Decimal	Binary	Hex	
120	01111000	78	[Channel Mode Message] All Sound Off
121	01111001	79	[Channel Mode Message] Reset All Controllers (See MMA RP-015)
122	01111010	7A	[Channel Mode Message] Local Control On/Off
123	01111011	7B	[Channel Mode Message] All Notes Off
124	01111100	7C	[Channel Mode Message] Omni Mode Off (+ all notes off)
125	01111101	7D	[Channel Mode Message] Omni Mode On (+ all notes off)
126	01111110	7E	[Channel Mode Message] Mono Mode On (+ poly off, + all notes off)
127	01111111	7F	[Channel Mode Message] Poly Mode On (+ mono off, +all notes off)

Appendix B: Profile Specification Template

MIDI Manufacturers Association and the Association of Musical Electronics Industry have developed a Profile Specification Authoring Template which is available as a separate Word document.

The template outlines most of the topics that most Profiles need to define, including:

- General Device Requirements
- Use of MIDI-CI
- Profile ID values
- Profile Support Levels and Minimum Requirements
- Response to Channel messages
- Response to System messages
- Profile specific Universal System Exclusive messages
- Profile Logo

Profiles are encouraged to use the format of the template, but adherence is not mandated. Some Profiles might need all of the sections found in the Template. Some Profiles might need additional sections. Each Profile specification should be written for function and clarity as priorities over template-implied commonality with other Profiles.