MIDI-CI Profile for General MIDI 2 Single Channel

GM2 Melody Channel

MIDI Association Document: M2-119-UM

Document Version 1.0.0
Draft Date 2023-11-14

Published 2024-01-24

Developed and Published By
The MIDI Association
and
Association of Musical Electronics Industry (AMEI)

PREFACE

MIDI Association Document M2-119-UM
MIDI-CI Profile for General MIDI 2 Single Channel

This specification defines a MIDI-CI Profile for implementing the functions of a General MIDI 2 Melody Channel on a single MIDI Channel.

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Version History

Table 1 Version History

Publication Date	Version	Changes
2024-01-24	1.0	Initial release

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1 References

1.1 Normative References

[MA01] ***Complete MIDI 1.0 Detailed Specification***, Document Version 96.1, Third Edition, Association of Musical Electronics Industry, http://www.amei.or.jp/, and The MIDI Association, https://www.midi.org/

[MA02] ***M2-100-U MIDI 2.0 Specification Overview***, Version 1.1, Association of Musical Electronics Industry, http://www.amei.or.jp/, and The MIDI Association, https://www.midi.org/

[MA03] ***M2-101-UM MIDI Capability Inquiry (MIDI-CI)***, Version 1.2, Association of Musical Electronics Industry, http://www.amei.or.jp/, and The MIDI Association, https://www.midi.org/

[MA04] ***M2-102-U Common Rules for MIDI-CI Profiles***, Version 1.1, Association of Musical Electronics Industry, http://www.amei.or.jp/, and The MIDI Association, https://www.midi.org/

[MA05] ***M2-103-UM Common Rules for Property Exchange***, Version 1.1, Association of Musical Electronics Industry, http://www.amei.or.jp/, and The MIDI Association, https://www.midi.org/

[MA06] ***M2-104-UM Universal MIDI Packet (UMP) Format and MIDI 2.0 Protocol***, Version 1.1, Association of Musical Electronics Industry, http://www.amei.or.jp/, and The MIDI Association, https://www.midi.org/

[MA07] ***General MIDI 2***, RP-044, Version 1.2a, Association of Musical Electronics Industry, http://www.amei.or.jp/, and The MIDI Association, https://www.midi.org/

[MA08] ***M2-118-UM MIDI-CI Profile for General MIDI (GM2 Function Block)***, Version 1.0, Association of Musical Electronics Industry, http://www.amei.or.jp/, and The MIDI Association, https://www.midi.org/

1.2 Terminology

1.2.1 Definitions

AMEI: Association of Musical Electronics Industry. Authority for MIDI Specifications in Japan.

Controller Message: Any MIDI Message from the following list:

MIDI 1.0 and MIDI 2.0 Protocol:

- Control Change
- Channel Pressure (Aftertouch)
- Poly Pressure (Key Aftertouch)
- Registered Controller (RPN)
- Assignable Controller (NRPN)
- Pitch Bend

MIDI 2.0 Protocol only:

- Per-note Registered Controller (including Relative versions)
- Per Note Assignable Controller (including Relative versions)
- Per Note Pitch Bend

Device: An entity, whether hardware or software, which can send and/or receive MIDI messages.

Function Block: A single logical entity which describes the functional components available on a UMP Endpoint of a Device, A Function Block operates on a set of one or more Groups.

General MIDI 2: A design and set of features for a Device as defined by the General MIDI 2 specification ***[MA07]***.

GM2: General MIDI 2.

GM2 Single Channel Profile: The MIDI-CI Profile for General MIDI 2 Single Channel (this specification).

Group: A field in the UMP Format addressing some UMP Format MIDI messages (and some UMPs comprising any given MIDI message) to one of 16 Groups. See the M2-104-UM Universal MIDI Packet (UMP) Format and MIDI 2.0 Protocol specification ***[MA06]***.

Inquiry: A message sent by an Initiator to begin a Transaction.

MA: MIDI Association. Authority for MIDI specifications worldwide except Japan. See also MMA.

MIDI 1.0 Protocol: Version 1.0 of the MIDI Protocol as originally specified in ***[MA01]*** and extended by MA and AMEI with numerous additional MIDI message definitions and Recommended Practices. The native format for the MIDI 1.0 Protocol is a byte stream, but it has been adapted for many different transports. MIDI 1.0 messages can be carried in UMP packets. The UMP format for the MIDI 1.0 Protocol is defined in the M2-104-UM Universal MIDI Packet (UMP) Format and MIDI 2.0 Protocol specification ***[MA06]***.

MIDI 1.0 Specification: Complete MIDI 1.0 Detailed Specification, Document Version 96.1, Third Edition ***[MA01]***.

MIDI 2.0: The MIDI environment that encompasses all of MIDI 1.0, MIDI-CI, Universal MIDI Packet (UMP), MIDI 2.0 Protocol, MIDI 2.0 messages, and other extensions to MIDI as described in AMEI and MA specifications. See the MIDI 2.0 Specification Overview ***[MA02]***.

MIDI 2.0 Protocol: Version 2.0 of the MIDI Protocol. The native format for MIDI 2.0 Protocol messages is UMP as defined in M2-104-UM Universal MIDI Packet (UMP) Format and MIDI 2.0 Protocol specification ***[MA06]***.

MIDI-CI: MIDI Capability Inquiry ***[MA03]***, a specification published by The MIDI Association and AMEI.

MIDI Manufacturers Association: A California nonprofit 501(c)6 trade organization, and the legal entity name of the MIDI Association.

MMA: See MIDI Manufacturers Association.

Profile: An MA/AMEI specification that includes a set of MIDI messages and defined responses to those messages. A Profile is controlled by MIDI-CI Profile Negotiation Transactions. A Profile may have a defined minimum set of mandatory messages and features, along with some optional or recommended messages and features. See the MIDI-CI specification ***[MA03]*** and the Common Rules for MIDI-CI Profiles ***[MA04]***.

Protocol: There are two defined MIDI Protocols: the MIDI 1.0 Protocol and the MIDI 2.0 Protocol, each with a data structure that defines the semantics for MIDI messages. See the M2-104-UM Universal MIDI Packet (UMP) Format and MIDI 2.0 Protocol specification ***[MA06]***.

Receiver: A MIDI Device which has a MIDI Transport connected to its MIDI In.

RPN: Registered Parameter Number, a type of controller message defined in the MIDI 1.0 Protocol. RPNs have equivalent messages in the MIDI 2.0 Protocol, called Registered Controllers (see ***[MA06]***).

Sender: A MIDI Device which transmits MIDI messages to a MIDI Transport which is connected to its MIDI Out or to its MIDI Thru port.

UMP: Universal MIDI Packet.

UMP Endpoint: A MIDI Endpoint which uses the UMP Format.

UMP Format: Data format for fields and messages in the Universal MIDI Packet.

Universal MIDI Packet (UMP): The Universal MIDI Packet is a data container which defines the data format for all MIDI 1.0 Protocol messages and all MIDI 2.0 Protocol messages. UMP is intended to be universally applicable, i.e., technically suitable for use in any transport where MA/AMEI elects to officially support UMP. For detailed definition see M2-104-UM Universal MIDI Packet (UMP) Format and MIDI 2.0 Protocol specification ***[MA06]***.

1.2.2 Reserved Words and Specification Conformance

In this document, the following words are used solely to distinguish what is required to conform to this specification, what is recommended but not required for conformance, and what is permitted but not required for conformance:

Table 2 Words Relating to Specification Conformance

Word	Reserved For	Relation to Specification Conformance
shall	Statements of requirement	**Mandatory** A conformant implementation conforms to all 'shall' statements.
should	Statements of recommendation	**Recommended but not mandatory** An implementation that does not conform to some or all 'should' statements is still conformant, providing all 'shall' statements are conformed to.
may	Statements of permission	**Optional** An implementation that does not conform to some or all 'may' statements is still conformant, providing that all 'shall' statements are conformed to.

By contrast, in this document, the following words are never used for specification conformance statements; they are used solely for descriptive and explanatory purposes:

Table 3 Words Not Relating to Specification Conformance

Word	Reserved For	Relation to Specification Conformance
must	Statements of unavoidability	Describes an action to be taken that, while not required (or at least not directly required) by this specification, is unavoidable. Not used for statements of conformance requirement (see 'shall' above).
will	Statements of fact	Describes a condition that as a question of fact is necessarily going to be true, or an action that as a question of fact is necessarily going to occur, but not as a requirement (or at least not as a direct requirement) of this specification. Not used for statements of conformance requirements (see 'shall' above).
can	Statements of capability	Describes a condition or action that a system element is capable of possessing or taking. Not used for statements of conformance permission (see 'may' above).
might	Statements of possibility	Describes a condition or action that a system element is capable of electing to possess or take. Not used for statements of conformance permission (see 'may' above).

2 Introduction

2.1 Executive Summary

General MIDI System Level 1 and General MIDI 2 specifications were written many years before the concept of MIDI Profiles enabled by MIDI-CI. The original specifications require support on all 16 MIDI channels. This document defines how to use MIDI-CI Profile Configuration Messages to implement the functions of a General MIDI 2 Melody Channel on a single channel.

This specification only defines a MIDI-CI Profile for a single Melody Channel. A separate specification, the MIDI-CI Profile for General MIDI 2, defines a Profile which implements the full set of 16 Channels or on multiple Groups of a Function Block.

2.2 Background

The General MIDI 2 specification ***[MA07]*** defines the fundamental device design and minimum requirements of a GM2 compatible Device using all 16 MIDI Channels of a MIDI 1.0 connection. GM2 defines two MIDI Channel types: Melody Channels and Rhythm Channels.

This MIDI-CI Profile specification defines how a Device uses all the functions of GM2 Melody Channel on a per Channel basis. Devices do not need to implement GM2 on 16 Channels to take advantage of GM2 features for a single Channel.

> *For example, a Device might have GM2 capabilities but does not want to dedicate 16 Channels to GM2. A synthesizer might provide most Channels for users' own sounds while using GM2 sounds and functionality on several other Channels.*

This Profile specification relies on mechanisms defined by the MIDI-CI (Capabilities Inquiry) specification. 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 between 2 devices.

Profiles define specific implementations of a set of MIDI messages chosen to suit a particular instrument, device type, or to accomplish a particular task. Two devices that conform to the same Profile will have generally have greater interoperability between them than devices using MIDI without Profiles. Profiles increase interoperability and ease of use while lowering the need for manual configuration of devices by users.

Further information required for implementing this device Profile is found in the Common Rules for MIDI-CI Profiles specification.

3 Device Requirements

The requirements for a Melody Channel are defined by the General MIDI 2 specification. This MIDI-CI Profile specification makes no changes to those requirements other than adding implementation of MIDI-CI Profile Configuration messages and enabling support on a single Channel only.

All Devices which support this MIDI-CI Profile for General MIDI 2 Single Channel shall comply with all of the required features of a Melody Channel as defined as "required" in the General MIDI 2 (GM2) specification ***[MA07]***. These include but are not limited to:

- Bank and Program Change access to the GM2 Sound Set (does not include GM2 Percussion Sound Sets)
- Response to Channel Tuning
- Response to certain Mode messages
- Response to Notes
- Response to certain Controller Messages

3.1 Profile Requirements and Melody Channel Requirements

The requirements for a Melody Channel are defined by the General MIDI 2 specification. This MIDI-CI Profile specification makes no changes to those requirements other than adding implementation of MIDI-CI Profile Configuration messages and enabling support on a single Channel.

All Devices which support this MIDI-CI Profile for General MIDI 2 Single Channel shall comply with all of the features of a Melody Channel which are defined as "required" in the General MIDI 2 (GM2) specification ***[MA07]***. These include but are not limited to:

- Bank and Program Change access to the GM2 Sound Set (does not include GM2 Percussion Sound Sets)
- Response to Channel Tuning
- Response to certain Mode messages
- Response to Notes
- Response to certain Controller Messages

3.1.1 Rhythm Channels Not Supported

The General MIDI 2 specification [MA07] defines how a single Channel may be changed between a Melody Channel and Rhythm Channel by sending Bank Select and Program Change messages. This defined mechanism to switch to a Rhythm Channel is optional in GM2.

The MIDI-CI Profile for General MIDI 2 Single Channel only requires implementation of the functions necessary to implement a Melody Channel without requiring the optional mechanism to switch to a Rhythm Channel. Support for the Rhythm Channel functions and sounds in the GM2 Percussion Sound Set in Bank MSB 0x78 is outside the scope of this Profile.

3.2 Profile Id

MIDI-CI Profile Configuration Messages identify and control each Profile uniquely by the use of several fields in the Profile Configuration message. The Profile Identifiers for this MIDI-CI Profile for General MIDI 2 Single Channel are as follows:

Table 4 GM2 Single Channel Profile Id

5 bytes	Profile ID	
	Byte 1	0x7E (Standard Defined Profile)
	Byte 2	0x20 (GM2 Single Channel Profile Bank)
	Byte 3	0x02 (GM2 Single Channel Profile Number)

		Byte 4	0x01 (GM2 Single Channel Profile Version)
		Byte 5	0x01 (GM2 Single Channel Profile Level)

3.3 MIDI Protocols and Data Formats

The MIDI-CI Profile for General MIDI 2 Single Channel may be implemented using messages in the following protocols and data formats:

- MIDI 1.0 Protocol in MIDI 1.0 data format
- MIDI 1.0 Protocol in Universal MIDI Packet data format
- MIDI 2.0 Protocol in Universal MIDI Packet data format

The choice of Protocol which will be used by Sender and Receiver is not defined by this specification. See the Universal MIDI Packet (UMP) Format and MIDI 2.0 Protocol specification ***[MA06]***.

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