MIDI MANUFACTURERS ASSOCIATION AMEI Association of Musical Electronics Industry

MMA Technical Standards Board/ AMEI MIDI Committee

Confirmation of Approval of New MIDI Message

Date of issue: 3/02/99 Originated by: MMA
Reference TSBB Item #: 151 Volume #: 22 (revised)
Title: Master Fine/Coarse Tuning
CA#: 25
Related item(s): Universal Real Time SysEx, Device Control, General MIDI Level 2

Abstract:

These two new Universal Real Time SysEx messages are additional Device Control messages which control the overall tuning of a device. The "Master Fine Tuning" and "Master Coarse Tuning" messages are intended to produce the same effect as the pitch shift control on a tape recorder.

Background:

In recent years, Karaoke using General MIDI playback systems has become very popular. Transpose or key shift is a basic function for Karaoke, and thus it is important for MIDI Karaoke to be able to tune all MIDI channels simultaneously. It is also sometimes necessary to vary the overall pitch from 440Hz (MIDI standard pitch) for Orchestra music or Piano music, because often the original instruments are tuned to 442Hz, 443Hz or 445Hz etc. At present there is no common message to set overall tuning; instead it must be set using Channel Fine Tuning and Channel Coarse Tuning for each individual MIDI channel, or through the use of proprietary System Exclusive (SysEx) messages with each manufacturer.

Details:

These messages offer a standard way to control the overall tuning of a MIDI device. They necessitate renaming the current "Master Tuning" Registered Parameter Numbers (RPNs) referenced on page 18 of the MIDI 1.0 Detailed Specification v 4.2 to "Channel Fine Tuning" and "Channel CoarseTuning". (See Channel Fine/CoarseTuning R/P)

[DEVICE CONTROL]

MASTER FINE TUNING

```
F0 7F <device ID> 04 03 lsb msb F7

    F0 7F               Universal Real Time SysEx header
    <device ID>         ID of target device (7F=all devices)
    04                  sub-ID#1 = "Device Control"
    03                  sub ID#2 = "Master Fine Tuning"
    lsb msb             fine tuning value (LSB first)
    F7                  EOX
```

```
fine tuning value       Displacement in cents from A440

  LSB     MSB
  00      00      100/8192*(-8192)
  00      40      100/8192*0
  7F      7F      100/8192*(+8191)
```

The total displacement in cents from A440 for each MIDI channel is summation of the displacement of this Master Fine Tuning and the displacement of Fine Tuning using RPN.

MASTER COARSE TUNING

```
F0 7F <device ID> 04 04 00 msb F7

    F0 7F               Universal Real Time SysEx header
    <device ID>         ID of target device (7F=all devices)
    04                  sub-ID#1 = “Device Control”
    04                  sub-ID#2 = “Master Coarse Tuning”
    00 msb              coarse tuning value(LSB first)
    F7                  EOX
```

Note that the LSB is always 0.

```
coarse tuning value   Displacement in cents from A440

  LSB     MSB
  00      00      100 cents *(-64)
  00      40      100 cents *0
  00      7F      100 cents *(+63)
```

Displacement in cents from A440 of total coarse tuning for each MIDI channel is summation of the displacement of this Master Coarse Tuning and the displacement of Channel Coarse Tuning.

The relationship of Master Fine Tuning / Coarse Tuning (= Device Control) ,and Channel Fine Tuning / Coarse Tuning (= RPN, which is a Channel message) is same as the relationship of Master Volume/Balance (= Device Control) and Volume/Balance (= Control change, which is a Channel Message).

For devices which support Key-based Instruments (where each key has a different instrument sound from the others, such as with drum kits in General MIDI Level 1 and DLS Level 1) it is important that this message NOT result in MIDI note-shifting; otherwise a different drum sound would be selected. It is up to the manufacturer to determine the appropriate means for tuning each instrument according to the current mode or configuration of the device, unless following a defined recommended practice.