Description of MIDI Protocol

for

Summit MPE-200 Processor

for MPE Software version 2.14 or later

11/19/99

prepared for Summit Audio by
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Definitions

The following conventions are used throughout this section:
all MIDI characters are in hexadecimal unless quoted.
all bit references are zero-based (ie. range is bit 0-7)
all control parameter ranges are given in decimal, as (0..64)

<SysEx> = 0xF0 MIDI System Exclusive prefix
<Summit ID> = 0x00 0x01 0x2C (three bytes)
<MPE ID> 0x03 for MPE200
0x02 for MPE200S
0x01 for EQ200
0x00 for EQ200S
<DID> = Device ID – same as MIDI Channel parameter
The protocol supports ID 0..15. A value of 0x40 is a 'wildcard', and is accepted by all MPE devices.

<EOX> = 0xF7 MIDI end-of-exclusive suffix
cmd = command identifier, one or more ASCII characters

cc = MIDI Continuous Controller number

A number in parentheses in a command string indicates the data byte count for the associated part of the command (eg. pd(24) means 24 bytes of pd.)

“Host” refers to a MIDI controller such as a PC-based MIDI sequencer or other control device.

“Master” refers to a MPE200, whose front panel uses MIDI to control one or more slave MPEs
The master is always at MIDI Chan. 0. There should be only one master per system.

PRESET

Sent when a preset is loaded manually by the user.
When received, loads the message contents into the current preset memory of the target device.
Note: preset structure may change in future versions, although the data length will not change.
Manipulation of individual parameters is not recommended – use cc commands instead.

<SysEx><Summit ID><MPE ID><DID> cmd pd(24) <EOX>
cmd='p' = 0x70
pd=preset data: 24 bytes

mic_gain	0..63	1 dB per step
line_gain	0..64	-16 dB to +16 dB 0.5 dB per step
lp_freq	0..36	0, 18, 36 are filter off
hp_freq	0..36	0, 18, 36 are filter off
lf_freq	0..16	
lf_gain	0..64	steps of 0.5 dB 32 is 0 dB
lf_q	0..16	must be same as lf_gain
hf_freq	0..16	
hf_q	0..16	must be same as hf_gain
hf_gain	0..64	steps of 0.5 dB 32 is 0 dB
lmf_freq	0..16	
lmf_gain	0..64	steps of 0.5 dB 32 is 0 dB
lmf_q	0..16	
hmf_freq	0..16	
hmf_q	0..16	
hmf_gain	0..64	steps of 0.5 dB 32 is 0 dB
out_atten1	0..64	log scale, -inf. to 0, 32 is -20 dB
out_atten2		not used

```
switch1
                insert_a  equ     %00000001       ; line input a
                insert_b  equ     %00000010       ; line input b
                hf_a_on equ       %00000100
                lf_a_on  equ      %00001000
                hmf_a_on          equ     %00010000
                lmf_a_on          equ     %00100000
                hf_b_on equ       %01000000
                lf_b_on  equ      %10000000
switch2
                hmf_b_on          equ     %00000001
                lmf_b_on          equ     %00000010
                invert_a equ      %00000100       ; line a phase -
                invert_b equ      %00001000       ; line b phase -
                sys_unmute        equ     %00010000
                m_invert_a        equ     %00100000       ; mic a phase -
                m_invert_b        equ     %01000000       ; mic b phase -
switch3
                hf_a _peak        equ     %00000010
                lf_a_peak         equ     %00100000       ; remaining bits must be 0
switch4                 ; mic pre filter controls
                fil_1a_on         equ     %00000001       ; filter 1 chan a 1=ON
                fil_1a_hp         equ     %00000010       ; filter 1 chan a 1=HP 0=LP
                fil_2a_on         equ     %00000100       ; filter 2 chan a 1=ON
                fil_2a_lp         equ     %00001000       ; filter 2 chan a 1=LP 0=HP
                fil_1b_on         equ     %00010000       ; filter 1 chan b 1=ON
                fil_1b_hp         equ     %00100000       ; filter 1 chan b 1=HP 0=LP
                fil_2b_on         equ     %01000000       ; filter 2 chan b 1=ON
                fil_2b_lp         equ     %10000000       ; filter 1 chan b 1=LP 0=HP
switch5         hf_b _peak        equ     %00000010
                lf_b_peak         equ     %00100000       ; remaining bits must be 0
spare                             not used
```

LOAD PRESET

When received, causes selection and loading of a preset, thus sending a Preset message.
The channel mode of the slave is also set (ie. a or b chan and stereo link)
Sent by a MPE Master, or Host, to a Slave
NOTE: If sent with DID=0x40 (wildcard), no preset data is returned by the slave(s)

<SysEx><Summit ID><MPE ID><DID> cmd pn ms ls <EOX>
cmd='l' = 0x6c
pn=preset number 0..24 Out of range preset numbers will be ignored.
ms=master state
bit 0 = chan a
bit 1 = chan b
bit 2 = stereo link
ls=lock state of pn 1=locked

REQUEST STATUS

When received, causes sending of a Status message.
Sent by MPE Master, or Host, to Slave

<SysEx><Summit ID><MPE ID><DID> cmd <EOX>
cmd='r' = 0x72

STATUS

Sent by a slave in response to a Request Status message from master or host.

<SysEx><Summit ID><MPE ID><DID> cmd vvv ms cp ma mb ea eb <EOX>
cmd = 's' = 0x73

vvv software version number 3 bytes of decimal (ie. 1.38 is sent as 0x01, 0x03, 0x08)
ms=master state
bit 0 = chan a selected
bit 1 = chan b selected
bit 2 = stereo link enabled
bit 3 = master eq bypass chan a 1=bypassed
bit 4 = master eq bypass chan b 1=bypassed
cp current preset for chan a or b (determined by ms) 1 byte (0..24)
ma meter level mic chan a 2 bytes nibblized , ms nibble first (0..255)
mb meter level mic chan b 2 bytes nibblized , ms nibble first (0..255)
ea meter level eq chan a 2 bytes nibblized , ms nibble first (0..255)
eb meter level eq chan b 2 bytes nibblized , ms nibble first (0..255)

Continuous Controller Messages

The following messages are sent and received by all MPE front panel controllers:
Default mappings of cc numbers to MPE parameters are shown.
A future software release may enable download of other configurations by a SysEx command.
All cc numbers and ranges below are shown in HEXADECIMAL, for programming convenience.

<Bn> cc cv

Bn B0 hex OR'd with MIDI id 0..0F
cc controller number (default)
cv controller values range 0..7F unless otherwise noted
eq bypass controls are: 0..3F=OFF 40..7F=ON

NOTE: MPE firmware supports 'running status' mode for cc messages, per the MMA MIDI 1.0 spec. After the first of an uninterrupted series of cc messages, the message type byte (Bn) may be omitted for the rest of the series. This protocol can be received by MPE, but is not sent.

0	not used
1	mic gain chan a
2	line gain trim chan a
3	filter 2 freq chan a (0..47) 0,23,47 are OFF
4	filter 1 freq chan a (0..47) 0,23,47 are OFF
5	lf freq chan a
6	lf gain chan a
7	lf peak/shelf chan a
8	hf freq chan a
9	hf peak/shelf chan a
0A	hf gain chan a
0B	lmf freq chan a
0C	lmf gain chan a
0D	lmf q chan a
0E	hmf freq chan a
0F	hmf q chan a
10	hmf gain chan a
11	fader chan a
12	lf bypass chan a
13	lmf bypass chan a
14	hmf bypass chan a
15	hf bypass chan a
16	master eq bypass chan a
17-20	not used
21	mic gain chan b
22	line gain trim chan b
23	filter 2 freq chan b (0..47) 0,23,47 (hex) are OFF
24	filter 1 freq chan b (0..47) 0,23,47 (hex) are OFF
25	lf freq chan b
26	lf gain chan b
27	lf peak/shelf chan b
28	hf freq chan b
29	hf peak/shelf chan b
2A	hf gain chan b
2B	lmf freq chan b
2C	lmf gain chan b
2D	lmf q chan b
2E	hmf freq chan b
2F	hmf q chan b
30	hmf gain chan b
31	fader chan b
32	lf bypass chan b
33	lmf bypass chan b
34	hmf bypass chan b
35	hf bypass chan b
36	master eq bypass chan b

REQUEST CC VALUE
<SysEx><Summit ID><MPE ID><DID> cmd cn <EOX>
cmd = 'c' = 0x63
cn = cc number

RETURN CC VALUE
Sent in response to Request CC Value
<SysEx><Summit ID><MPE ID><DID> cmd cn cv <EOX>
cmd = 'C' = 0x43
cn = cc number
cv = cc value for cn

REQUEST ALL CC VALUES
<SysEx><Summit ID><MPE ID><DID> cmd <EOX>
cmd = 'a' = 0x61

RETURN ALL CC VALUES
Sent in response to Request All CC Values
<SysEx><Summit ID><MPE ID><DID> cmd cv(64) <EOX>
cmd = 'A' = 0x41
cv(64) = data for each cc 0..0x3F inclusive, send in ascending CC order.
See page 5 for list of CC numbers. Unused cc's return value 0.
When this message is received by an MPE-200, the new cc values, except for Master Bypass, become the current settings, and are stored in the respective presets of the A and B channels (if unlocked).

SET LOCK
<SysEx><Summit ID><MPE ID><DID> cmd lsA lsB <EOX>
cmd = 'o' = 0x6f
lsA = lock state of chan A 0=unlocked 1=locked
lsA = lock state of chan B 0=unlocked 1=locked

MUTE
<SysEx><Summit ID><MPE ID><DID> cmd cb <EOX>
cmd = 'm' = 0x6d
cb = channel bits
00 = both chans muted
01 = chan A on
10 = chan B on
11 = both chans on

SLEEP
<SysEx><Summit ID><MPE ID><DID> cmd <EOX>
cmd = 'z' = 0x7a

This command uses 'tell me three times' redundancy, to provide immunity to potential noise-induced false messages. The sleep command must be received three successive times within 0.5 sec in order to be recognized. To ensure success, the command should be sent 7 times with 10 msec interval.
A wildcard DID of 0x40 may be used by a master to power down all slaves.

WAKEUP

<SysEx><Summit ID><MPE ID><DID> cmd <EOX>
cmd = 'w' = 0x77

This command uses 'tell me three times' redundancy, to provide immunity to potential noise-induced false messages. The wakeup command must be received three successive times within 0.5 sec in order to be recognized. To ensure success, the command should be sent 7 times with 10 msec interval.
A wildcard DID of 0x40 may be used by a master to power down all slaves.

NOTES