TC Electronic M-One MIDI specification

Document revision history:

V1.00	1999-11-01	First release
V1.01	1999-12-28	Related to M-One ver. 1.10
V1.02	2001-10-10	Related to M-One ver. 1.40
V2.00	2002-07-19	Related to M-One ver. 1.43

General message format:

0xF0	MIDI System Exclusive message start
0x00	3 byte manufacturer ID for TC Electronic
0x20	..
0x1F	..
<Device ID>	System Exclusive device ID (User parameter)
0x44	M-One model ID
<Message type>	M-One message type
<Data>	Data depends on message type
..	..
..	..
0xF7	MIDI System Exclusive message terminator

Preset numbers

Preset numbers are represented in the SysEx messages as 2 bytes (14-bit value). The first byte is the 7 most significant bits and the second byte is the 7 least significant bits.

Preset numbers are mapped accordingly:

0x01 (1) to 0x64 (100)	Factory bank
0x65 (101) to 0xC8 (200)	User bank

Preset number 0 is used to access the edit buffer. When recalling presets with program changes, sending a controller 0 or controller 32 change first can be used to indicate bank number (when sending other than zero selects user-bank as opposed to factory-bank).

Binary data

Messages containing binary data dumps consists of a set of 14-bit values as 2-byte pairs The most significant byte is sent in the first byte and the least significant in the second. The dump is terminated with a 14-bit checksum value which is the negative sum of all bytes in the dump truncated to 14 bits. ie. (-sum(all data bytes)) & 0x3FFF.

Communication precautions

When linking together two M-One devices for transfer of data, make sure that the receiving device is set to receive only SysEx.
During MIDI operation the M-One may present the following messages:

```
"> Preset Received  <"
">  Preset Dumped   <"
">  Checksum Error  <"
">MIDI Error Occured<"
">  Event Unknown   <"
">  Preset Stored   <"
">Kernel Par Changed<"
"> Bulk In Progress <"
```

M-One message types:

SYXTYPE_PRESETREQUEST	0x45
SYXTYPE_PRESETDATA	0x20
SYXTYPE_PARAMREQUEST	0x47

SYXTYPE_PARAMDATA	0x22

Preset Request

0xF0	SysEx
0x00	TC Electronic
0x20	..
0x1F	..
<Device ID>	Device ID
0x44	M-One
0x45	SYXTYPE_PRESETREQUEST
<Preset MSB>	Preset number
<Preset LSB>	..
0xF7	EOX

Preset Data

0xF0	SysEx	
0x00	TC Electronic	
0x20	..	
0x1F	..	
<Device ID>	Device ID	
0x44	M-One	
0x20	SYXTYPE_PRESETDATA	
0x00	..	
<Preset MSB>	Preset number	
<Preset LSB>	..	
<Data>	32 x 14-bit data	
	14-bit	Preset number
	20 x 14-bit	Presetname (characters in LSB)
	2 x 14-bit	Algorithm-numbers (in LSBs)
	14-bit	Routing (in LSB)
	1 x 14-bit	Crossfeed
	7 x 14-bit	Reserved
	2 x 16 x 14-bit data	
	16 x 14-bit data	Effect One
	16 x 14-bit data	Effect Two
	14-bit checksum	
0xF7	EOX	

Param Data Request

0xF0	SysEx
0x00	TC Electronic
0x20	..
0x1F	..
<Device ID>	Device ID
0x44	M-One
0x47	SYXTYPE_PARAMREQUEST
<Engine>	Engine identifier (0/1 for Fx-param or 2 for systemparameter)
<Param ID>	Base parameter identifier
0xF7	EOX

System Data

0xF0	SysEx
0x00	TC Electronic
0x20	..
0x1F	..
<Device ID>	Device ID
0x44	M-One
0x22	SYXTYPE_SYSDATA
<Engine>	Engine identifier (0/1 for Fx-param or 2 for systemparameter)
<Param ID>	Parameter identifier
<Data>	Byte pair yielding signed 14-bit parameter values (MSB first)
0xF7	EOX

See below for a list of parameter identifiers. If a Parameter Data Request message requests a parameter range extending across any undefined parameter identifiers, the corresponding parameter values in the Parameter Data message should be ignored.

Parameters

Parameters can be changed by the System Data SysEx message or hard-wired controller change messages (for the algorithm-paramters and a collection of system parameters). Parameters are always set as scaled 7-bit values. The system-parameters controllable via Midi-CC are given below.
The controllers used for algorithm-parameters are as follows (ID's are given below):

Effect one : Ctrl 16 + <ID>
Effect two: Ctrl 48 + <ID>
System: Ctrl 70 + <ID>

Midi-SysEx controlable systemparameters:

System parameter name	ID	Min value	Max value
MIDI_INPUT	0	0	1
MIDI_DIGINLEVEL	1	-100	6
MIDI_OUTLEVEL	2	-100	0
MIDI_MIXLEVEL	3	0	100
MIDI_FXBALANCE	4	0	100
MIDI_OUTRANGE	1	0	3
MIDI_CLOCK	2	0	2
MIDI_INRANGE	3	0	1
MIDI_DITHER	4	0	3
MIDI_INLEVEL	7	-5	7
MIDI_MIDISYNC	10	0	1
MIDI_BYPASS1	11	0	1
MIDI_BYPASS2	12	0	1
MIDI_MIDIPRGBANK	13	0	2
MIDI_MIDICHNL	14	0	17
MIDI_MIDICC	15	0	1
MIDI_MIDISYSEX	16	0	127
MIDI_TAPTIME	17	0	4000
MIDI_TAPFUNC	18	0	2
MIDI_TAPSUB	19	0	15
MIDI_SYSTEMLOCK	20	0	1
MIDI_BYPASSMODE	21	0	2
MIDI_PEDALMODE	22	0	2
MIDI_TAPUNIT	23	0	17
MIDI_CURPRESET	24	1	200
MIDI_ROUTING	25	0	5
MIDI_ROUTINGLOCK	26	0	1
MIDI_ALGO1	27	0	23
MIDI_ALGO2	28	0	23
MIDI_ENG2FEED	30	0	100

Midi-CC controlable systemparameters:

System parameter name	ID	Min value	Max value
MIDI_OUTLEVEL	0	-100	0
MIDI_DIGINLEVEL	1	-100	6
MIDI_INLEVEL	2	-5	7
MIDI_MIXLEVEL	3	0	100
MIDI_FXBALANCE	4	0	100
MIDI_BYPASS1	5	0	1
MIDI_BYPASS2	6	0	1
MIDI_TAPSUB	7	0	15
MIDI_ENG2FEED	8	0	100

Algorithm types:

Hall Reverb	0
Room Reverb	1
Plate 1 Reverb	2
Plate 2 Reverb	3
Spring Reverb	4
Live Reverb	5
Ambient Reverb	6
One-tap Delay	7
Two-tap Delay	8
Classic Chorus	9
4 voice Chorus	10
Classic Flanger	11
4 voice Flanger	12
Detune Pitcher	13
Pitch-shifter	14
Parametric EQ	15
Compressor	16
Limiter	17
Gate	18
Deesser	19
Triangle Tremolo	20
Square Tremolo	21
Vintage Phaser	22
Smooth Phaser	23

The available effect parameter identifiers depends on the selected algorithm.

Engine parameter name	ID	Min value	Max value
Hall Reverb:			
MIDI_DECAY	0	1	240
MIDI_PREDELAY	1	0	100
MIDI_SIZE	2	0	2
MIDI_HIGHCUT	3	112	240
MIDI_HICOLOR	4	-50	50
MIDI_LOCOLOR	5	-50	50
MIDI_REFLECTLEV	6	-100	0
MIDI_REVERBLEV	7	-100	0
MIDI_MODTYPE	8	0	2
MIDI_MODSPEED	9	25	25
MIDI_MODDEPTH	10	-25	25
MIDI_FXLEVEL	11	0	100
Room Reverb:			
MIDI_DECAY	0	1	65
MIDI_PREDELAY	1	0	100
MIDI_SIZE	2	0	2

MIDI_HIGHCUT	3	112	240
MIDI_HICOLOR	4	-50	50
MIDI_LOCOLOR	5	-50	50
MIDI_REFLECTLEV	6	-100	0
MIDI_REVERBLEV	7	-100	0
MIDI_MODTYPE	8	0	1
MIDI_MODSPEED	9	-25	25
MIDI_MODDEPTH	10	-25	25
MIDI_FXLEVEL	11	0	100

Plate 1 Reverb:

MIDI_DECAY	0	1	240
MIDI_PREDELAY	1	0	100
MIDI_SIZE	2	0	2
MIDI_HIGHCUT	3	112	240
MIDI_HICOLOR	4	-50	50
MIDI_LOCOLOR	5	-50	50
MIDI_REFLECTLEV	6	-100	0
MIDI_REVERBLEV	7	-100	0
MIDI_MODSPEED	9	25	25
MIDI_MODDEPTH	10	-25	25
MIDI_FXLEVEL	11	0	100

Plate 2 Reverb:

MIDI_DECAY	0	1	240
MIDI_PREDELAY	1	0	100
MIDI_SIZE	2	0	2
MIDI_HIGHCUT	3	112	240
MIDI_HICOLOR	4	-50	50
MIDI_LOCOLOR	5	-50	50
MIDI_REFLECTLEV	6	-100	0
MIDI_REVERBLEV	7	-100	0
MIDI_MODTYPE	8	0	1
MIDI_MODSPEED	9	25	25
MIDI_MODDEPTH	10	-25	25
MIDI_FXLEVEL	11	0	100

Spring Reverb:

MIDI_DECAY	0	1	240
MIDI_PREDELAY	1	0	100
MIDI_HIGHCUT	3	112	240
MIDI_HICOLOR	4	-50	50
MIDI_LOCOLOR	5	-50	50
MIDI_FXLEVEL	11	0	100

Live Reverb:

MIDI_DECAY	0	1	240
MIDI_PREDELAY	1	0	100
MIDI_SIZE	2	0	2
MIDI_HIGHCUT	3	112	240
MIDI_HICOLOR	4	-50	50
MIDI_LOCOLOR	5	-50	50
MIDI_REFLECTLEV	6	-100	0
MIDI_REVERBLEV	7	-100	0
MIDI_MODSPEED	9	25	25
MIDI_MODDEPTH	10	-25	25
MIDI_FXLEVEL	11	0	100

Ambient Reverb:

MIDI_DECAY	0	1	65
MIDI_PREDELAY	1	0	100

MIDI_SIZE	2	0	2
MIDI_HIGHCUT	3	112	240
MIDI_HICOLOR	4	-50	50
MIDI_LOCOLOR	5	-50	50
MIDI_REFLECTLEV	6	-100	0
MIDI_REVERBLEV	7	-100	0
MIDI_MODSPEED	9	25	25
MIDI_MODDEPTH	10	-25	25
MIDI_FXLEVEL	11	0	100

One-tap Delay:

MIDI_DELAYTIME	0	0	4000
MIDI_OFFSET	2	0	200
MIDI_FEEDBACK	3	0	100
MIDI_PAN	7	-50	50
MIDI_HIGHCUT	9	56	240
MIDI_LOWCUT	10	0	216
MIDI_FXLEVEL	11	0	100

Two-tap Delay:

MIDI_DELAYTIME1	0	0	4000
MIDI_DELAYTIME2	1	0	4000
MIDI_OFFSET	2	0	200
MIDI_FEEDBACK1	3	0	100
MIDI_FEEDBACK2	4	0	100
MIDI_LEVEL1	5	-100	0
MIDI_LEVEL2	6	-100	0
MIDI_PAN1	7	-50	50
MIDI_PAN2	8	-50	50
MIDI_HIGHCUT	9	56	240
MIDI_LOWCUT	10	0	216
MIDI_FXLEVEL	11	0	100

Classic Chorus:

MIDI_SPEED	0	0	208
MIDI_DEPTH	1	0	100
MIDI_DELAY	2	0	250
MIDI_FXLEVEL	3	0	100

4 voice Chorus:

MIDI_SPEED	0	0	208
MIDI_DEPTH	1	0	100
MIDI_FXLEVEL	3	0	100

Classic Flanger:

MIDI_SPEED	0	0	208
MIDI_DEPTH	1	0	100
MIDI_FEEDBACK	2	-100	100
MIDI_DELAY	3	0	250
MIDI_FXLEVEL	4	0	100

4 voice Flanger:

MIDI_SPEED	0	0	208
MIDI_DEPTH	1	0	100
MIDI_FEEDBACK	2	-100	100
MIDI_FXLEVEL	4	0	100

Detune Pitcher:

MIDI_PITCH1	0	-50	50
MIDI_PITCH2	1	-50	50
MIDI_LEVEL1	2	-100	0

MIDI_LEVEL2	3	-100	0
MIDI_PAN1	4	-50	50
MIDI_PAN2	5	-50	50
MIDI_DELAY1	6	0	100
MIDI_DELAY2	7	0	100
MIDI_FXLEVEL	8	0	100

Pitch-shifter:

MIDI_PITCH1	0	-1200	1200
MIDI_PITCH2	1	-1200	1200
MIDI_LEVEL1	2	-100	0
MIDI_LEVEL2	3	-100	0
MIDI_PAN1	4	-50	50
MIDI_PAN2	5	-50	50
MIDI_DELAY1	6	0	100
MIDI_DELAY2	7	0	100
MIDI_FXLEVEL	8	0	100

Parametric EQ:

MIDI_LOFREQ	0	0	192
MIDI_LOSLOPE	1	0	3
MIDI_LOGAIN	2	-120	120
MIDI_FREQ1	3	0	240
MIDI_WIDTH1	4	0	16
MIDI_GAIN1	5	-120	120
MIDI_FREQ2	6	0	240
MIDI_WIDTH2	7	0	16
MIDI_GAIN2	8	-120	120
MIDI_FREQ3	9	0	240
MIDI_WIDTH3	10	0	16
MIDI_GAIN3	11	-120	120
MIDI_HIFREQ	12	112	240
MIDI_HIWIDTH	13	0	3
MIDI_HIGAIN	14	-120	120
MIDI_FXLEVEL	15	0	100

Compressor:

MIDI_THRESHOLD	0	-90	0
MIDI_RATIO	1	0	15
MIDI_KNEEMODE	2	0	1
MIDI_RELEASE	3	10	100
MIDI_GAIN	4	-100	30
MIDI_FXLEVEL	5	0	100

Limiter:

MIDI_THRESHOLD	0	-90	0
MIDI_RATIO	1	0	15
MIDI_ATTACK	2	0	15
MIDI_RELEASE	3	11	26
MIDI_GAIN	4	-100	30
MIDI_FXLEVEL	5	0	100

Gate/Expander:

MIDI_THRESHOLD	0	-90	0
MIDI_RATIO	1	0	15
MIDI_ATTACK	2	1	15
MIDI_RELEASE	3	11	26
MIDI_FXLEVEL	5	0	100

Deesser:

MIDI_THRESHOLD	0	-60	0
MIDI_RATIO	1	0	15
MIDI_FREQUENCY	2	136	240

MIDI_ATTACK	3	1	13
MIDI_RELEASE	4	13	26
MIDI_FXLEVEL	5	0	100

Triangle Tremolo:

MIDI_SPEED	0	0	208
MIDI_DEPTH	1	0	100
MIDI_FXLEVEL	2	0	100

Square Tremolo:

MIDI_SPEED	0	0	208
MIDI_DEPTH	1	0	100
MIDI_FXLEVEL	2	0	100

Vintage Phaser:

MIDI_SPEED	0	0	208
MIDI_DEPTH	1	0	100
MIDI_RANGE	2	0	1
MIDI_FEEDBACK	3	-100	100
MIDI_FXLEVEL	4	0	100

Smooth Phaser:

MIDI_SPEED	0	0	208
MIDI_DEPTH	1	0	100
MIDI_RANGE	2	0	1
MIDI_FEEDBACK	3	-100	100
MIDI_FXLEVEL	4	0	100