TC Electronic M3000 MIDI specification

Document revision history:
V1.00	1998/12/11	First release
V1.01	1999/08/10	Updated for software version 2.03

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)
0x42	M3000 model ID
<Message type>	M3000 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.

Single bank preset numbers are mapped accordingly:
0x001 (1) to 0x200 (512)	Factory banks
0x201 (513) to 0x300 (768)	User banks
0x301 (769) to 0x400 (1024)	Card banks

Dual bank preset numbers are mapped accordingly:
0x001 (1) to 0x080 (128)	Factory banks
0x081 (129) to 0x100 (256)	User banks
0x101 (257) to 0x180 (384)	Snapshots
0x181 (385) to 0x200 (512)	Card banks

Preset number 0 is used to access the edit buffer. Note that not all numbers in the ranges above maps to existing presets. When recalling presets with program changes, sending a controller 0 change first can be used to indicate bank number (will offset program change numbers with 128 * bank number).

In addition to the preset number the SysEx messages contains a field specifying single/dual bank type. The format for this field is unified across all message types, but the interpretation differs in some cases. In the case of preset data messages, the Single engine 1 or 2 (values 0 or 1) differentiation is relevant only when accessing the edit buffer. On other presets a value of 0 or 1 will simply indicate single type preset. Concerning parameter data messages, which always operate on the edit buffer, the values 0 or 1 will access engine 1 or 2 parameters, and a value of 2 will access a preset system parameter.

Binary data

Messages containing binary data dumps consists of a set of byte-pairs containing a data byte split into two nibbles. The most significant nibble is sent in the first byte and the least significant nibble is sent in the second byte. The dump is terminated with a one byte checksum value which is the negative sum of all bytes in the dump truncated to 7 bits. ie. (-sum(all data bytes)) & 0x7F.

Communication precautions

When linking together two M3000 devices for transfer of data, make sure that the receiving device is set to receive only SysEx. Set all 3 input channels on the receiving device to "Off".

During MIDI operation the M3000 may present the following messages:
"MIDI ERROR", "UNRECOGNIZED SYSEX"
"MIDI ERROR", "CHECKSUM SYSEX"
"MIDI ERROR", "ILLEGAL PRESET"
"MIDI ERROR", "OVERRUN"
"MIDI", "RECEIVING PRESET"
"MIDI", "SENDING PRESETS x%"

M3000 message types:

SYXTYPE_BANKREQUEST	0x40
SYXTYPE_PRESETRECALL	0x44
SYXTYPE_PRESETREQUEST	0x45
SYXTYPE_PRESETDATA	0x20
SYXTYPE_PARAMREQUEST	0x47
SYXTYPE_PARAMDATA	0x22

Bank Request

0xF0	SysEx
0x00	TC Electronic
0x20	..
0x1F	..
<Device ID>	Device ID
0x42	M3000
0x40	SYXTYPE_BANKREQUEST
[0x00	0x01	0x02]	Single bank, Single bank or Dual bank
0xF7	EOX

In response to a Bank Request, Preset Data messages are sent for all stored single or dual user presets.

Preset Recall

0xF0	SysEx
0x00	TC Electronic
0x20	..
0x1F	..
<Device ID>	Device ID
0x42	M3000
0x44	SYXTYPE_PRESETRECALL
[0x00	0x01	0x02]	Single engine1, Single engine2 or Dual
<Preset MSB>	Preset number
<Preset LSB>	..
0xF7	EOX

Preset Request

0xF0	SysEx
0x00	TC Electronic
0x20	..
0x1F	..
<Device ID>	Device ID
0x42	M3000
0x45	SYXTYPE_PRESETREQUEST
[0x00	0x01	0x02]	Single engine1, Single engine2 or Dual
<Preset MSB>	Preset number
<Preset LSB>	..
0xF7	EOX

Preset Data

0xF0	SysEx
0x00	TC Electronic
0x20	..
0x1F	..
<Device ID>	Device ID
0x42	M3000
0x20	SYXTYPE_PRESETDATA
[0x00 | 0x01 | 0x02]	Single engine1, Single engine2 or Dual
<Preset MSB>	Preset number
<Preset LSB>	..
<Data>	Single: 80 bytes data sent as 160 nibbles + 1 checksum
..	Dual: 142 bytes data sent as 284 nibbles + 1 checksum
0xF7	EOX

Parameter Data Request

0xF0	SysEx
0x00	TC Electronic
0x20	..
0x1F	..
<Device ID>	Device ID
0x42	M3000
0x47	SYXTYPE_PARAMREQUEST
[0x00 | 0x01 | 0x02]	Engine1, Engine2 or System
<Param ID>	Base parameter identifier
<Count>	Number of desired consecutive parameters
0xF7	EOX

Parameter Data

0xF0	SysEx
0x00	TC Electronic
0x20	..
0x1F	..
<Device ID>	Device ID
0x42	M3000
0x22	SYXTYPE_PARAMDATA
[0x00 | 0x01 | 0x02]	Engine1, Engine2 or System
<Param ID>	Base parameter identifier
<Data>	Byte pairs yielding signed 14-bit parameter values (MSB first)
..	..
0xF7	EOX

Parameter Data messages always operate on the edit buffer preset. 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 Parameter Data SysEx message or hard-wired controller change messages. Using a controller to adjust a parameter will scale the controller change value of 0-127 to the valid range of the parameter. The SysEx message will set the parameters with absolute 14-bit values.

System parameter name	ID	Ctrl.	Min value	Max value
MIDI_INPUT	0	10	0	4
MIDI_OUTPUT	1	11	0	1
MIDI_STMODE	2	12	0	2
MIDI_CLOCK	3	13	0	3
MIDI_KILLDRY	4	14	0	1
MIDI_DITHER	5	15	0	5
MIDI_INP_ADAT_L	6	16	0	7
MIDI_INP_ADAT_R	7	17	0	7
MIDI_OUT_OPT	8	18	0	2
MIDI_OUT_ADAT_L	9	19	0	7
MIDI_OUT_ADAT_R	10	20	0	7
MIDI_DIGI_RATE	11	21	0	1
MIDI_ALIN	12	22	-16	16
MIDI_ARIN	13	23	-16	16
MIDI_ALOUT	14	24	-16	16
MIDI_AROUT	15	25	-16	16
MIDI_DOUT	16	26	-16	6
MIDI_BYPASS1	17	27	0	1
MIDI_BYPASS2	18	28	0	1
MIDI_DYNMORPH	19	29	0	2
MIDI_DYNSPEED	20	30	0	2
MIDI_DYNTHRS	21	31	-40	-6
MIDI_GLIDETIME	22	32	0	10
MIDI_TAPTIME	23	33	600	6000
MIDI_TAPENG	24	34	0	2
MIDI_TAPSUB	25	35	0	9
MIDI_PROINPUT	26	36	0	1
MIDI_PROOUTPUT	27	37	0	1
MIDI_ROUTING	34	44	0	5
MIDI_PRESETNUM1	35	N/A		
MIDI_PRESETNUM2	36	N/A		
MIDI_PRESETNUM12	37	N/A		
MIDI_ALGO1	38	N/A		
MIDI_ALGO2	39	N/A		

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The available engine parameter identifiers depends on the selected algorithm.

Engine parameter name	ID	Ctrl.	Min value	Max value
Phaser:				
MIDI_MIX	0	10	0	100
MIDI_OUTLEV	1	11	-100	0
MIDI_SPEED	2	12	5	1920
MIDI_DEPTH	3	13	0	100
MIDI_ORDER	4	14	0	2
MIDI_FBACK	5	15	-100	100
MIDI_RANGE	6	16	0	1
Compressor:				
MIDI_OUTLEV	1	11	-100	0
MIDI_THRS	2	12	-60	0
MIDI_RATIO	3	13	0	15
MIDI_ATTACK	4	14	1	15
MIDI_RELEASE	5	15	11	26
MIDI_GAIN	6	16	-100	12
Limiter:				
MIDI_OUTLEV	1	11	-100	0
MIDI_THRS	2	12	-33	0
MIDI_ATTACK	3	13	0	15
MIDI_RELEASE	4	14	11	26
MIDI_GAIN	5	15	-100	12
Tremolo:				
MIDI_MIX	0	10	0	100
MIDI_OUTLEV	1	11	-100	0
MIDI_SPEED	2	12	5	1920
MIDI_DEPTH	3	13	0	100
MIDI_CURVE	4	14	0	2
MIDI_WIDTH	5	15	1	99
MIDI_PHASE	6	16	0	2

Gate:

MIDI_OUTLEV	1	11	-100	0
MIDI_THRS	2	12	-100	0
MIDI_ATTACK	3	13	1	15
MIDI_RELEASE	4	14	11	26
MIDI_RATIO	5	15	0	15

Deesser:

MIDI_OUTLEV	1	11	-100	0
MIDI_THRS	2	12	-50	0
MIDI_RATIO	3	13	0	15
MIDI_ATTACK	4	14	0	13
MIDI_RELEASE	5	15	13	26
MIDI_FREQ	6	16	136	240
MIDI_MODE	7	17	0	1
MIDI_CURVE	8	18	0	6
MIDI_MONITOR	9	19	0	1

Pitcher:

MIDI_MIX	0	10	0	100
MIDI_OUTLEV	1	11	-100	0
MIDI_VOICE	2	12	0	5
MIDI_PITCH1	3	13	-1200	1200
MIDI_LEVEL	4	14	-100	0
MIDI_PAN	5	15	-50	50
MIDI_DELAY	6	16	0	100

Parametric EQ:

MIDI_OUTLEV	1	11	-100	0
MIDI_LFREQ	2	12	0	192
MIDI_LWIDTH	3	13	0	1
MIDI_LGAIN	4	14	-120	120
MIDI_1FREQ	5	15	0	240
MIDI_1WIDTH	6	16	2	4
MIDI_1GAIN	7	17	-120	120
MIDI_2FREQ	8	18	0	240
MIDI_2WIDTH	9	19	2	4
MIDI_2GAIN	10	20	-120	120
MIDI_3FREQ	11	21	0	240
MIDI_3WIDTH	12	22	2	4
MIDI_3GAIN	13	23	-120	120
MIDI_HFREQ	14	24	112	240
MIDI_HWIDTH	15	25	0	1
MIDI_HGAIN	16	26	-120	120

Chorus:

MIDI_MIX	0	10	0	100
MIDI_OUTLEV	1	11	-100	0
MIDI_SPEED	2	12	5	1920
MIDI_DEPTH	3	13	0	100
MIDI_DELAY	4	14	1	450
MIDI_GOLDEN	5	15	0	1
MIDI_REVPHASE	6	16	0	1
MIDI_CURVE	7	17	1	2
MIDI_PHASE	8	18	0	2

Flanger:

MIDI_MIX	0	10	0	100
MIDI_OUTLEV	1	11	-100	0
MIDI_SPEED	2	12	5	1920
MIDI_DEPTH	3	13	0	100
MIDI_DELAY	4	14	1	450
MIDI_GOLDEN	5	15	0	1
MIDI_REVPHASE	6	16	0	1
MIDI_CURVE	7	17	1	2
MIDI_PHASE	8	18	0	2
MIDI_FEEDBACK	9	19	-100	100
MIDI_XFEEDBACK	10	20	-100	100

Delay:

MIDI_MIX	0	10	0	100
MIDI_OUTLEV	1	11	-100	0
MIDI_DELAY	2	12	0	1350
MIDI_FEEDBACK	3	13	0	100
MIDI_HICUT	4	14	7	30
MIDI_HIDAMP	5	15	-100	0
MIDI_FBHICUT	6	16	7	30
MIDI_FBLOCUT	7	17	0	26

Core Reverb:

MIDI_MIX	0	10	0	100
MIDI_OUTLEV	1	11	-100	0
MIDI_DECAY	2	12	1	200
MIDI_XLO	3	13	1	200
MIDI_XHI	4	14	1	200
MIDI_DIFF1	5	15	0	1
MIDI_DIFF2	6	16	0	1
MIDI_SHAPE	7	17	0	5
MIDI_SIZE	8	18	0	20
MIDI_PREDLY	9	19	1	1000
MIDI_HICUT	10	20	17	30
MIDI_HIATT	11	21	-100	0
MIDI_LMXOVR	12	22	0	17
MIDI_MHXOVR	13	23	14	30
MIDI_INILEV	14	24	-100	0
MIDI_REVLEV	15	25	-100	0
MIDI_REVPAN	16	26	0	100
MIDI_REVFEED	17	27	1	1000

Reverb 3:

MIDI_MIX	0	10	0	100
MIDI_OUTLEV	1	11	-100	0
MIDI_DECAY	2	12	3	300
MIDI_PREDLY	3	13	1	200
MIDI_ROLLOFF	4	14	14	30
MIDI_HIDAMP	5	15	-100	0
MIDI_POS	6	16	0	15
MIDI_LODECAY	7	17	1	250
MIDI_LMDECAY	8	18	1	250
MIDI_HIDECAY	9	19	1	250
MIDI_DIFFUSE	10	20	1	99
MIDI_DIFTYPE	11	21	0	4
MIDI_LOCROSS	12	22	0	23
MIDI_LMCROSS	13	23	10	25
MIDI_MHCROSS	14	24	20	30
MIDI_MODFREQ	15	25	1	200
MIDI_MODDEPTH	16	26	0	100

VSS-3 Reverb, VSS-3 Reverb (Expert):

MIDI_MIX	0	10	0	100
MIDI_OUTLEV	1	11	-100	0
MIDI_DECAY	2	12	1	2000
MIDI_PREDLY_TAIL	3	13	0	200
MIDI_LOFREQ	4	14	0	80
MIDI_LODAMP	5	15	-36	0
MIDI_HICUT	6	16	0	240
MIDI_HISOFT	7	17	-50	50
MIDI_LODECAY	8	18	10	250
MIDI_LMDECAY	9	19	10	250
MIDI_HMDECAY	10	20	10	250
MIDI_HIDECAY	11	21	10	250
MIDI_LOCROSS	12	22	0	112
MIDI_MICROSS	13	23	80	160
MIDI_HICROSS	14	24	136	240
MIDI_OUTALLPASS	15	25	-50	50
MIDI_TYPE_SM	17	27	0	5
MIDI_AMOUNT_SM	18	28	-50	50
MIDI_RATE_SM	19	29	-100	100
MIDI_DEPTH_SM	20	30	0	100
MIDI_TYPE_DM	21	31	0	6
MIDI_RATE_DM	22	32	-100	100
MIDI_DEPTH_DM	23	33	0	200
MIDI_COLOR_INIT	24	34	-40	40
MIDI_INITLEV	25	35	-125	0
MIDI_REVLEV	26	36	-125	0
MIDI_INITBAL	27	37	-127	127
MIDI_REVBAL	28	38	-127	127
MIDI_INITTYPE	29	39	29	40
MIDI_PREDLY_INIT	30	40	0	200
MIDI_ROOMTYPE	31	41	0	4
MIDI_APTYPE	33	43	0	13
MIDI_EARLYSIZE	34	44	0	2
MIDI_LOCOLOR	35	45	-10	10
MIDI_HICOLOR	36	46	-10	10

VSS Gated Reverb, VSS Gated Reverb (Expert):

MIDI_MIX	0	10	0	100
MIDI_OUTLEV	1	11	-100	0
MIDI_DECAY	2	12	1	2000
MIDI_PREDLY_TAIL	3	13	0	200
MIDI_LOFREQ	4	14	0	80
MIDI_LODAMP	5	15	-36	0
MIDI_HICUT	6	16	136	240
MIDI_HISOFT	7	17	-50	50
MIDI_LODECAY	8	18	10	250
MIDI_LMDECAY	9	19	10	250
MIDI_HMDECAY	10	20	10	250
MIDI_HIDECAY	11	21	10	250
MIDI_LOCROSS	12	22	0	112
MIDI_MICROSS	13	23	80	160
MIDI_HICROSS	14	24	136	240
MIDI_OUTALLPASS	15	25	-50	50
MIDI_TAUUP	17	27	1	100
MIDI_TAUDOWN	18	28	1	100
MIDI_HOLDTIME	19	29	1	100
MIDI_ONESHOT	20	30	0	1
MIDI_TYPE_DM	21	31	0	6
MIDI_RATE_DM	22	32	-100	100
MIDI_DEPTH_DM	23	33	0	200
MIDI_COLOR_INIT	24	34	-40	40
MIDI_INITLEV	25	35	-125	0
MIDI_REVLEV	26	36	-125	0
MIDI_INITBAL	27	37	-127	127
MIDI_REVBAL	28	38	-127	127
MIDI_INITTYPE	29	39	30	43
MIDI_PREDLY_INIT	30	40	0	200
MIDI_ROOMTYPE	31	41	0	3
MIDI_APTYPE	33	43	0	13
MIDI_PERCENTT	34	44	10	100
MIDI_TRIGLEVEL	36	46	-85	0
MIDI_MAXATT	37	47	12	125
MIDI_GATETYPE	39	49	0	2
MIDI_LOCOLOR	40	50	-10	10
MIDI_HICOLOR	41	51	-10	10

VSS Film/Post Reverb, VSS Film/Post Reverb (Expert):

MIDI_MIX	0	10	0	100
MIDI_OUTLEV	1	11	-100	0
MIDI_DECAY	2	12	1	2000
MIDI_PREDLY_TAIL	3	13	0	200
MIDI_LOFREQ	4	14	0	80
MIDI_LODAMP	5	15	-36	0
MIDI_HICUT	6	16	0	240
MIDI_HISOFT	7	17	-50	50
MIDI_LODECAY	8	18	1	250
MIDI_LMDECAY	9	19	1	250
MIDI_HMDECAY	10	20	1	250
MIDI_HIDECAY	11	21	1	250
MIDI_LOCROSS	12	22	0	112
MIDI_MICROSS	13	23	80	160
MIDI_HICROSS	14	24	112	240
MIDI_OUTALLPASS	15	25	-50	50
MIDI_TYPE_SM	17	27	0	5
MIDI_AMOUNT_SM	18	28	-50	50
MIDI_RATE_SM	19	29	-100	100
MIDI_DEPTH_SM	20	30	0	100
MIDI_TYPE_DM	21	31	0	6
MIDI_RATE_DM	22	32	-100	100
MIDI_DEPTH_DM	23	33	0	200
MIDI_COLOR_INIT	24	34	-40	40
MIDI_INITLEV	25	35	-125	0
MIDI_REVLEV	26	36	-125	0
MIDI_INITBAL	27	37	-127	127
MIDI_REVBAL	28	38	-127	127
MIDI_INITTYPE	29	39	30	53
MIDI_PREDLY_INIT	30	40	0	100
MIDI_ROOMTYPE	31	41	0	5
MIDI_APTYPE	33	43	0	13
MIDI_EARLYSIZE	34	44	0	2
MIDI_LOCOLOR	35	45	-10	10
MIDI_HICOLOR	36	46	-10	10
MIDI_EARLYPOS	37	47	0	1
MIDI_ROOMWIDTH	38	48	0	3

VSS Surround Reverb, VSS Surround Reverb (Expert):

MIDI_MIX	0	10	0	100
MIDI_OUTLEV	1	11	-100	0
MIDI_LOFREQ	4	14	0	80
MIDI_LODAMP	5	15	-36	0
MIDI_HICUT	6	16	0	240
MIDI_HISOFT	7	17	-50	50
MIDI_LODECAY	8	18	1	250
MIDI_LMDECAY	9	19	1	250
MIDI_HMDECAY	10	20	1	250
MIDI_HIDECAY	11	21	1	250
MIDI_LOCROSS	12	22	0	112
MIDI_MICROSS	13	23	80	160
MIDI_HICROSS	14	24	112	240
MIDI_OUTALLPASS	15	25	-50	50
MIDI_TYPE_SM	17	27	0	5
MIDI_AMOUNT_SM	18	28	-50	50
MIDI_RATE_SM	19	29	-100	100
MIDI_DEPTH_SM	20	30	0	100
MIDI_TYPE_DM	21	31	0	6
MIDI_RATE_DM	22	32	-100	100
MIDI_DEPTH_DM	23	33	0	200
MIDI_COLOR_INIT	24	34	-40	40
MIDI_INITLEV	25	35	-125	0
MIDI_REVLEV	26	36	-125	0
MIDI_INITBAL	27	37	-127	127
MIDI_REVBAL	28	38	-127	127
MIDI_INITTYPE	29	39	30	53
MIDI_PREDLY_INIT	30	40	0	100
MIDI_ROOMTYPE	31	41	0	4
MIDI_APTYPE	33	43	0	13
MIDI_EARLYSIZE	34	44	0	2
MIDI_LOCOLOR	35	45	-10	10
MIDI_HICOLOR	36	46	-10	10
MIDI_DECAYM	37	47	1	2000
MIDI_DECAYS	38	48	1	2000
MIDI_PREDLY_TAILM	39	49	0	200
MIDI_PREDLY_TAILS	40	50	0	200
MIDI_EARLYPOS	41	51	0	1
MIDI_ROOMWIDTH	42	52	1	3