TX802 MIDI SYSTEM EXCLUSIVE MESSAGES

1. PARAMETER CHANGE

The TX802 receives seven types of System Exclusive Parameter Change. (These messages are not transmitted.) When a Parameter Change message is received, the LCD will show the current value of the affected parameter. (In the case of 7. Remote Switch, the LCD will show the effect of pressing the specified switch.)

1. VCED (voice edit buffer)
2. ACED (additional voice edit buffer)
3. PCED (performance edit buffer)
4. SYCED (system setup)
5. Micro tuning
6. Fractional scaling
7. Remote switch

Parameter change messages 1-4 and 7 have the following format:

11110000	F0H	
01000011	43H	
0001nnnn	nnnn	= device #
0ggggghh	ggggg	= group number, hh = subgroup number
0ppppppp	ppppppp	= parameter number
0ddddddd	ddddddd	= data
11110111	F7H	

Details of "ggggg/hh/ppppppp/ddddddd" are given in the respective sections.

The format for parameter change message 5 (micro tuning) is given in section 1.5.

The format for parameter change message 6 (fractional scaling) is given in section 1.6.

1.1 VCED Parameter Change

ggggg	= 00000	(0)
hh	= 00	(0)

These messages affect the VCED (voice edit buffer) data one parameter at a time. ppppppp (parameter number) and ddddddd (data) are explained in Table 1.

1.2 ACED Parameter Change

ggggg	= 00110	(6)
hh	= 00	(0)

These messages affect the ACED (additional voice edit buffer) data one parameter at a time. ppppppp (parameter number) and ddddddd (data) are explained in Table 2.

1.3 PCED Parameter Change

ggggg	= 00110	(6)
hh	= 00	(2)

These messages affect the PCED (performance edit buffer) data one parameter at a time. ppppppp (parameter number) and ddddddd (data) are explained in Table 3.

1.4 SYCED Parameter Change

The only system setup data that can be accessed via Parameter Change is the Voice Data Receive Block and Master Tuning.

Voice data receive block

ggggg	= 00110	(6)
hh	= 01	(1)
ppppppp	= 1001101	(77)
ddddddd	= 0 (voice data 1-32) or 1 (voice data 33-64)	

Master tuning

ggggg	= 00001	(1)
hh	= 00	(0)
ppppppp	= 1000000	(64)
ddddddd	= 0 — 127	

1.5 Micro Tuning Parameter Change

11110000	F0H	
01000011	43H	
0001nnnn	nnnn	= device #
0ggggghh	ggggg	= 00110 (6), hh = 00 (0)
0ppppppp	ppppppp	= 1111110 (126)
0kkkkkkk	kkkkkkk	= key number
0hhhhhhh	hhhhhhh	= data (upper)
0lllllll	lllllll	= data (lower)
11110111	F7H	

These messages affect the data in the micro tuning edit buffer one note at a time.

1.6 Fractional Scaling Parameter Change

11110000	F0H	
01000011	43H	
0001nnnn	nnnn	= device #
0ggggghh	ggggg	= 00110 (6), hh = 00 (0)
0ppppppp	ppppppp	= 1111111 (127)
00000ooo	ooo	= operator number
00kkkkkk	kkkkkk	= key group number
0hhhhhhh	hhhhhhh	= data (upper)
0lllllll	lllllll	= data (lower)
11110111	F7H	

These messages affect the data in the fractional scaling edit buffer one operator, one key group at a time.

1.7 Remote Switch Parameter Change

ggggg	= 00110	(6)
hh	= 11	(3)
ddddddd	= don't care	

Remote control is possible for all panel switches, and will have the same effect as actually pressing the switch.
For "ppppppp" (switch number), see Table 4.

2. VOICE DATA BULK DUMP

There are two types of bulk dump for voice data.

1. Voice edit buffer bulk dump
2. Voice memory bulk dump

For details of the format of each bulk dump, see Fig. 1.
When "device # = all", data will be transmitted as if "device # = 1".

2.1 Voice Edit Buffer Bulk Dump

These messages transmit or receive the data in the voice edit buffer.

Transmission is in the following order;

1. Fractional scaling edit buffer bulk data
2. ACED (additional voice edit buffer) bulk data
3. VCED (voice edit buffer) bulk data

Reception is in the order of 1, 2, 3. However, if VCED is received immediately after receiving ACED, the additional voice edit buffer is initialized.

2.2 Voice Memory Bulk Dump

These messages transmit or receive voice data, either 1-32 or 33-64.

Transmission is in the following order;

1. Voice data receive block parameter change
2. Fractional scaling cartridge bulk data
3. AMEM (additional voice memory) bulk data
4. VMEM (voice memory) bulk data

However, "2" is transmitted only when a cartridge is inserted.

Reception is in the order of 1, 2, 3, 4. However, if VMEM is received immediately after receiving AMEM, the additional voice memory is initialized.

3. PERFORMANCE DATA BULK DUMP

There are two types of bulk dump for performance data.

1. Performance edit buffer bulk dump
2. Performance memory bulk dump

3.1 Performance Edit Buffer Bulk Dump

These messages transmit or receive the data in the performance edit buffer. For details of the format, see Fig. 1.

3.2 Performance Memory Bulk Dump

These messages transmit or receive the 64 performances in memory. For details of the format, see Fig. 1.

4. SYSTEM SETUP DATA BULK DUMP

These messages transmit or receive system setup data; i.e. settings made in System Setup Mode except for Micro Tuning data. For details of the format, see Fig. 1.

5. MICRO TUNING DATA BULK DATA

There are three types of bulk dump for micro tuning data. For details of the format, see Fig. 1

1. Micro tuning edit buffer bulk dump
   Transmits or receives the micro tuning data in the edit buffer.

2. Micro tuning with memory # bulk dump
   Transmits or receives the micro tuning data 1-2 in internal micro tuning memory together with the memory number.

3. Micro tuning cartridge bulk dump
   Transmits or receives the data for 63 micro tunings in a cartridge.

6. FRACTIONAL SCALING DATA BULK DUMP

There are two types of bulk dump for fractional scaling data. For details of the format, see Fig. 1

1. Fractional scaling edit buffer bulk dump
   Transmits or receives the fractional scaling data in the edit buffer.

2. Fractional scaling cartridge bulk dump
   Transmits or receives the data for 64 fractional scalings in a cartridge.

7. DUMP REQUEST

The following data dumps can be requested.

VCED	F0H, 43H, 2nH, 00H, F7H
VMEM	F0H, 43H, 2nH, 09H, F7H
ACED	F0H, 43H, 2nH, 05H, F7H
AMEM	F0H, 43H, 2nH, 06H, F7H
PCED	F0H, 43H, 2nH, 7EH, LM--8952PE, F7H
PMEM	F0H, 43H, 2nH, 7EH, LM--8952PM, F7H
System setup	F0H, 43H, 2nH, 7EH, LM--8952S-, F7H
Micro tuning edit buffer	F0H, 43H, 2nH, 7EH, LM--MCRYE-, F7H
Micro tuning internal memory	F0H, 43H, 2nH, 7EH, LM--MCRYMx, F7H
Micro tuning cartridge data	F0H, 43H, 2nH, 7EH, LM--MCRYC-, F7H
Fractional scaling edit buffer	F0H, 43H, 2nH, 7EH, LM--FKSYE-, F7H
Fractional scaling cartridge data	F0H, 43H, 2nH, 7EH, LM--FKSYC-, F7H

Figure 1 - Details of Bulk Data

NOTE: The contents of VCED, VMEM, ACED, AMEM, Micro Tuning Edit Buffer, Micro Tuning Internal Memory, Micro Tuning Cartridge Data, Fractional Scaling Edit Buffer and Fractional Scaling Cartridge Data are the same format as the DX7II.

VCED (voice edit buffer)
F0H, 43H, 0nH, 00H, 01H, 1BH, ⟨VCED data⟩, sum, F7H
Data size = 155 (009BH)
Data format = 7-bit binary
Total bulk size = 155 + 8 = 163

VMEM (voice memory)
F0H, 43H, 0nH, 09H, 20H, 00H, ⟨VMEM data⟩, sum, F7H
Data size = 128 x 32 = 4,096 (1000H)
Data format = 7-bit binary
Total bulk size = 4,096 + 8 = 4,104

ACED (additional voice edit buffer)
F0H, 43H, 0nH, 05H, 00H, 31H, ⟨ACED data⟩, sum, F7H
Data size = 49 (0031H)
Data format = 7-bit binary
Total bulk size = 49 + 8 = 57

AMEM (additional voice memory)
F0H, 43H, 0nH, 06H, 08H, 60H, ⟨AMEM data⟩, sum, F7H
Data size = 35 x 32 = 1,120 (460H)
Data format = 7-bit binary
Total bulk size = 1,120 + 8 = 1,128

PCED (performance edit buffer)
F0H, 43H, 0nH, 7EH, 01H, 68H, LM--8952PE, ⟨PCED data⟩, sum, F7H
Data size = 116 x 2 + 10 = 242 (00F2H)
Data format = ASCII hexadecimal
Total bulk size = 258 + 8 = 266
Data as shown in Table 3 PCED format is split into upper and lower 4 bits, and converted into ASCII codes 0-F.

PMEM (performance memory)
F0H, 43H, 0nH, 7EH,
01H, 28H, LM--8952PM, ⟨PMEM data 1⟩, sum,
01H, 28H, LM--8952PM, ⟨PMEM data 2⟩, sum,
....., ..., ..., ..., ...,
01H, 28H, LM--8952PM, ⟨PMEM data 64⟩, sum, F7H
Block division = 64
Data size = 10 + 84 x 2 = 178 (00B2H)/block
Data format = ASCII hexadecimal
Total bulk size = 4 + (178 + 3) x 64 + 1 = 11, 589
Data as shown in Table 5 PMEM format is split into upper and lower 4 bits, and converted into ASCII codes 0-F.

Figure 1 - Details of Bulk Dump Format (Continued)

System setup
F0H, 43H, 0nH, 7EH, 02H, 11H, LM--8952S-, ⟨system data⟩, sum, F7H
Data size = 10 + 263 = 273 (0111H)
Data format = 7-bit binary
Total data size = 273 + 8 = 281
The data format is explained in Table 3. However, PROTCT and MCTMEM are not transmitted.

Micro tuning edit buffer
F0H, 43H, 0nH, 7EH, 02H, 0AH, LM--MCRYE-, ⟨MCR edit buf⟩, sum, F7H
Data size = 256 + 10 = 266 (010AH)
Data format = 7-bit binary
Total bulk size = 266 + 8 = 274

Micro tuning internal memory
F0H, 43H, 0nH, 7EH, 02H, 0AH, LM--MCRYMx, ⟨MCR INT1 data⟩, sum, F7H
F0H, 43H, 0nH, 7EH, 02H, 0AH, LM--MCRYMx, ⟨MCR INT2 data⟩, sum, F7H
Data size = 256 + 10 = 266 (010AH)
Data format = 7-bit binary
Total bulk size = 266 + 8 = 274

Micro tuning cartridge data
F0H, 43H, 0nH, 7EH,
02H, 0AH, LM--MCRYC-, ⟨MCR CRT1 data⟩, sum,
02H, 0AH, LM--MCRYC-, ⟨MCR CRT2 data⟩, sum,
....., ..., ..., ..., ...,
02H, 0AH, LM--MCRYC-, ⟨MCR CRT63 data⟩, sum, F7H

Fractional scaling edit buffer
F0H, 43H, 0nH, 7EH, 03H, 76H, LM--FKSYE-, ⟨FKS eidt buf⟩, sum, F7H
Data size = 264 x 2 + 10 = 502 (01F6H)
Data format = ASCII hexadecimal
Total bulk size = 502 + 8 = 510

Fractional scaling cartridge data
F0H, 43H, 0nH, 7EH,
02H, 76H, LM--FKSYC-, ⟨FSK CRT1/32 data⟩, sum,
02H, 76H, LM--FKSYC-, ⟨FKS CRT2/33 data⟩, sum,
....., ..., ..., ..., ...,
02H, 76H, LM--FKSYC-, ⟨FKS CRT32/64 data⟩, sum, F7H

Table 1 - VCED Parameter Change

g	h	p	Parameter	Description	Data Value
0	0	0	R1	EG rate 1	0 — 99
		1	R2	EG rate 2	0 — 99
		2	R3	EG rate 3	0 — 99
		3	R4	EG rate 4	0 — 99
		4	L1	EG level 1	0 — 99
		5	L2	EG level 2	0 — 99
		6	L3	EG level 3	0 — 99
		7	L4	EG level 4	0 — 99
		8	BP	Break point	0 — 99
		9	LD	Left depth	0 — 99
		10	RD	Right depth	0 — 99
		11	LC	Left curve	0 — 3
		12	RC	Right curve	0 — 3
		13	RS	Rate scaling	0 — 7
		14	AMS	Modulation sensitivity	0 — 3
		15	TS	Touch sensitivity	0 — 7
		16	TL	Level	0 — 99
		17	PM	Oscillator mode	0 — 1
		18	PC	Oscillator coarse	0 — 31
		19	PF	Oscillator fine	0 — 99
		20	PD	Detune	0 — 14
		126	PR1	PEG rate 1	0 — 99
		127	PR2	PEG rate 2	0 — 99
0	1	0	PR3	PEG rate 3	0 — 99
		1	PR4	PEG rate 4	0 — 99
		2	PL1	PEG level 1	0 — 99
		3	PL2	PEG level 2	0 — 99
		4	PL3	PEG level 3	0 — 99
		5	PL4	PEG level 4	0 — 99
		6	ALS	Algorithm selector	0 — 31
		7	FBL	Feedback level	0 — 7
		8	OPI	Oscillator phase initialize	0 — 1
		9	LFS	LFO speed	0 — 99
		10	LFD	LFO delay time	0 — 99
		11	LPMD	LFO pitch modulation depth	0 — 99
		12	LAMD	LFO amplitude modulation depth	0 — 99
		13	LFKS	LFO key sync	0 — 1
		14	LFW	LFO wave	0 — 5
		15	LPMS	LFO pitch modulation sensitivity	0 — 7
		16	TRNP	Transpose	0 — 48
		17	VNAM1	Voice name	ASCII
		18	VNAM2	Voice name	ASCII
		19	VNAM3	Voice name	ASCII
		. .	.....	.....	.....
		26	VNAM10	Voice name	ASCII
		27	OPE	Operator enable (bit 5: OP1, --, bit 0: OP6)	
		28	OPSEL	Operator select (0: OP6, --, 5: OP1)	

Table 2 - ACED Parameter Change

g	h	p	Parameter	Description	Data Value
6	0	0	SCM	OP6 scaling mode	0 — 1
		1	SCM	OP5 scaling mode	0 — 1
		2	SCM	OP4 scaling mode	0 — 1
		3	SCM	OP3 scaling mode	0 — 1
		4	SCM	OP2 scaling mode	0 — 1
		5	SCM	OP1 scaling mode	0 — 1
		6	AMSN	OP6 amplitude modulation sensitivity	0 — 7
		7	AMSN	*OP5 amplitude modulation sensitivity*	0 — 7
		8	AMSN	OP4 amplitude modulation sensitivity	0 — 7
		9	AMSN	OP3 amplitude modulation sensitivity	0 — 7
		10	AMSN	OP2 amplitude modulation sensitivity	0 — 7
		11	AMSN	OP1 amplitude modulation sensitivity	0 — 7
		12	PEGR	Pitch EG range	0 — 3
		13	LTRG	LFO key trigger mode	0 — 1
		14	VPSW	Velocity pitch sensitivity	0 — 1
		15	PMOD	Mono/poly	0 — 3
		16	PBR	Pitch bend range	0 — 12
		17	PBS	Pitch bend step	0 — 12
		—	—	—	
		19	RNDP	Random pitch depth	0 — 7
		20	PORM	Portamento mode	0 — 1
		21	PONT	Portamento step	0 — 12
		22	POS	Portamento time	0 — 99
		23	MWPM	Mod. wheel - Pitch modulation	0 — 99
		24	MWAM	Mod. wheel - Amplitude modulation	0 — 99
		25	MWEB	Mod. wheel - EG bias	0 — 99
		26	FCPM	Foot controller - Pitch modulation	0 — 99
		27	FCAM	Foot controller - Amplitude modulation	0 — 99
		28	FCEB	Foot controller - EG bias	0 — 99
		29	FCVL	Foot controller - Volume	0 — 99
		30	BCPM	Breath controller - Pitch modulation	0 — 99
		31	BCAM	Breath controller - Amplitude modulation	0 — 99
		32	BCEB	Breath controller - EG bias	0 — 99
		33	BCPB	Breath controller - Pitch bias	0 — 100
		34	ATPM	After touch - Pitch modulation	0 — 99
		35	ATAM	After touch - Amplitude modulation	0 — 99
		36	ATEB	After touch - EG bias	0 — 99
		37	ATPB	After touch - Pitch bias	0 — 100
		38	PEGS	Pitch EG rate scaling	0 — 7

Table 3 - PCED Parameter Change

g	h	p	Parameter	Description	Data Value
6	2	0 — 7	VCHOFS	Voice channel offset	0 — 7
		8 — 15	RXCH	MIDI receive ch. (16: OMNI on)	0 — 16
		16 — 23	VNUM	Voice number (2 bytes, 0 — 63: Internal, 64 — 127: Cartridge, 128 — 191: Preset A, 192 — 255: Preset B)	
		24 — 31	DETUNE	Detune (7: Center)	0 — 14
		32 — 39	OUTVOL	Output volume	0 — 99
		40 — 47	OUTCH	Output assign (0: off, 1: I, 2: II, 3: I + II)	0 — 3
		48 — 55	NLMTL	Note limit low (C-2 — G8)	0 — 127
		56 — 63	NLMTH	Note limit high (C-2 — G8)	0 — 127
		64 — 71	NSHFT	Note shift (24: Center, +/−2 octaves)	0 — 48
		72 — 79	FDAMP	EG forced damp (0: off, 1: on)	0 — 1
		80 — 87	KASG	Key assign group	0 — 1
		88 — 95	MTTNUM	Micro tuning table # (2 bytes)	0 — 254
		96 — 115	PNAM	Performance name	ASCII

Table 4 - Remote Switch Parameter Change

g	h	p	Parameter	Description	Data Value
6	3	64		Power on	
		65		0	
		66		1	
		. .		.	
		74		9	
		75		Cursor left	
		76		Cursor right	
		77		Enter	
		78		−1	
		79		+1	
		80		—	
		81		Performance select	
		82		Voice select	
		83		System setup	
		84		Utility	
		85		Performance edit	
		86		Voice edit (I)	
		87		Voice edit (II)	
		88		Store	
		89		Tone generator on/off — 1	
		. .		.....	
		96		Tone generator on/off — 8	

Table 5 - PMEM Data Format

No.	Parameter		Bit 7	6	5	4	3	2	1	0
0 — 7	VCHOFS/RXCH	(TG1-8)	VCHOFS				RXCH			
8 — 15	VNUM	(TG1-8)	VNUM							
16 — 23	MTTNUM	(TG1-8)	MTTNUM							
24 — 31	OUTVOL	(TG1-8)	—	OUTVOL						
32 — 39	DETUNE/KASG/OUTCH	(TG1-8)	—	DETUNE			KASG		OUTCH	
40 — 47	NLMTL	(TG108)	—	NLMTL						
48 — 55	NLMTH	(TG1-8)	—	NLMTH						
56 — 63	FDAMP/NSHFT	(TH1-8)	—	FDMP			NSHFT			
64 — 83	PNAM	(20 chara.)	PNAM (ASCII)							

Table 6 - SYCED Data Format

No.	Parameter	Description	Data Value
0	PROTCT	Internal memory protect	0 — 1
1	PRXCH	MIDI receive channel for performance select	0 — 17
2	DEVNO	System exclusive device #	0 — 15
3	VBLOK	Voice bulk receive block	0 — 1
4	PGMSW	Program change receive switch	0 — 17
5	AFTSW	After touch receive switch	0 — 17
6	PBSW	Pitch bend receive switch	0 — 17
7	NOTESW	Note on/off receive switch	0 — 2
8	PRTSW	Program change assign table enable switch	0 — 1
9	BNK802	Bank select for TX802 format	0 — 15
10	BNKFRAC	Bank select for fractional scaling	0 — 15
11	BNKMCT	Bank select for micro tuning	0 — 15
12	MTUNING	Master tuning	0 — 127
13	CONTSW	Control change receive switch	0 — 17
14 — 135	CTABLE	Control # assign table	*
136 — 263	PTABLE	Program # table for perf. select	0 — 127
264 — 775	MCTMEM	Micro tuning internal user's memory	**

NOTE: * 0, 1, 2, 4, 5, 7, 64, 65 (0: off, Others : standard control #)

** 0 — 10,794 x 4 (0 — 43,176), 2 bytes for 1 key

The lowest 2 bits are always zero.