
SYSTEM EXCLUSIVE DATA FORMAT

Reading this section will not necessarily help you use the TX81Z. This data is provided to comply with the MIDI Specification, and will be helpful to those who write computer programs to process TX81Z data. The TX81Z has three types of System Exclusive message; Parameter Change messages, Bulk Data messages and Dump Request messages.

PARAMETER CHANGE MESSAGES

These messages change the value of a parameter in TX81Z memory. There are 8 subgroups of Parameter Changes; VCED, ACED, PCED, Remote Switch, Micro Tuning, Program Change, Effect data and System data.

VCED, ACED, PCED and Remote Switch parameter change messages have the following format.

```

11110000  F0h  Exclusive
01000011  43h  I.D. number (Yamaha)
0001nnnn  1nh  Basic receive channel
Oggggghh  ggggg = Group number, hh = Subgroup number
Oppppppp  ppppppp = Parameter number
Oddddddd  ddddddd = Data
11110111  F7h  End Of Exclusive
  
```

*VCED (Voice parameters compatible with DX21/27/100)

ggggg = 00100 (4), hh = 10 (2)

See p.71 for parameter numbers and data.

*ACED (Additional voice parameters for TX81Z)

ggggg = 00100 (4), hh = 11 (3)

See p.73 for parameter numbers and data.

*PCED (Performance parameters)

ggggg = 00100 (4), hh = 11 (3)

See p.74 for parameter numbers and data.

*Remote Switch (The same effect as pressing a switch on the TX81Z front panel, ie. "remote control".)

ggggg = 00100 (4), hh = 11 (3), ddddddd = 0 (off), 7F (on)

See p.75 for switch numbers.

System Parameter Change (basic receive channel settings, etc.) and Effect Parameter Change (data for delay, pan and chord) messages have the following format.

```

11110000  F0h  Exclusive
01000011  43h  I.D. number (Yamaha)
0001nnnn  1nh  Basic receive channel
Oggggghh  ggggg = 00100 (4), hh = 00 (0)
Oppppppp  ppppppp = 1111011 (123) = System Parameter
                    1111100 (124) = Effect Parameter
Okkkkkkk  kkkkkkk = Parameter number
  
```

1

1

100



Journal of Management Education

1000

10.1111/j.1365-3113.2011.04591.x

Journal of Management Education 36(7) 809-824

$$d\mathbf{F}_1/dt = -\mathbf{F}_1/\tau_1, \quad d\mathbf{F}_2/dt = -\mathbf{F}_2/\tau_2, \quad d\mathbf{F}_3/dt = -\mathbf{F}_3/\tau_3, \quad d\mathbf{F}_4/dt = -\mathbf{F}_4/\tau_4,$$

***32 Voice (VMEM)**

This message includes both ACED and VCED parameters for 32 voices.

$f = 4$, data size = $128 \times 32 = 4096$ (1000h), total size = $4096 + 8 = 4104$

F0. 43. 0n. 04. 10. 00. (VMEM data). checksum. F7

***1 Performance (PCED)**

The contents of the performance edit buffer.

$f = 126$ (7Eh) "LM .. 8976PE", data size = 120 (0078h), total size = $120 + 8 = 128$

F0. 43. 0n. 7E. 00. 78. "LM .. 8976PE". (data). checksum. F7

***32 Performance (PMEM)**

Data for 24 internal performance memories + 8 initial performances.

$f = 126$ "LM .. 8976PM", data size = $10 + (76 \times 32) = 2442$ (098Ah)

total size = $2442 + 8 = 2450$

F0. 43. 0n. 7E. 13. 0A. "LM .. 8976PM", (data). checksum. F7

***System (SYS)**

TX81Z system data (basic receive channel, etc.)

$f = 126$ "LM .. 8976S0", data size = $10 + 27 = 37$, total size = $37 + 8 = 45$

F0. 43. 0n. 7E. 00. 25. "LM .. 8976S0", (data). checksum. F7

***Program Change Table (SYS)**

Selected memory numbers I1-PF24 for each incoming program change.

$f = 126$ "LM .. 8976S1", data size = $10 + 128 \times 2 = 266$ (010Ah), total size = $266 + 8 = 274$

F0. 43. 0n. 7E. 02. 0A. "LM .. 8976S1", (data). checksum. F7

***Effect Data (SYS)**

Data for the three effects (delay, pan, chord)

$f = 126$ "LM .. 8976S2", data size = $10 + 55 = 65$ (0041h), total size = $65 + 8 = 73$

F0. 43. 0n. 7E. 00. 41. "LM .. 8976S2", (data) checksum. F7

***Micro Tune Octave**

Contents of the user octave micro tune memory.

$f = 126$ "LM .. MCRTE0", data size = $24 + 10 = 34$ (0022h), total size = $34 + 8 = 42$

F0. 43. 0n. 7E. 00. 22. "LM .. MCRTE0", (data). checksum. F7

***Micro Tune Full Kbd**

Contents of the user full keyboard micro tune memory.

$f = 126$ "LM .. MCRTE1", data size = $256 + 10 = 266$ (010Ah), total size = 274

F0. 43. 0n. 7E. 00. 22. "LM .. MCRTE1", (data). checksum. F7

**DUMP REQUEST
MESSAGES**

When the TX81Z receives one of these messages with a channel number "n" that matches its Basic Receive channel, it will transmit the requested data as described above in Bulk Data.

VCED	F0. 43. 2n. 03. F7
VMEM	F0. 43. 2n. 04. F7
ACED + VCED	F0. 43. 2n. 7E. "LM .. 8976AE". F7
PCED	F0. 43. 2n. 7E. "LM .. 8976PE". F7
PMEM	F0. 43. 2n. 7E. "LM .. 8976PM". F7
System Setup	F0. 43. 2n. 7E. "LM .. 8976Sx". F7 (X = 0, 1, 2)
Micro Tune	F0. 43. 2n. 7E. "LM .. MCRTE _x ". F7 (X = 0, 1)

Voice Edit Parameters (VCED)

Parameter number	Parameter	LCD	Data
0	Attack Rate	AR	0-31
1	Decay 1 Rate	D1R	0-31
2	Decay 2 Rate	D2R	0-31
3	Release Rate	RR	1-15
4	Decay 1 Level	D1L	0-15
5	Level Scaling	LS	0-99
6	Rate Scaling	RS	0-3 OP. 4
7	EG Bias Sensitivity	EBS	0-7
8	Amplitude Modulation Enable	AME	0-1
9	Key Velocity Sensitivity	KVS	0-7
10	Operator Output Level	OUT	0-99
11	Frequency	CRS	0-63
12	Detune	DET	0-6 (Center = 3)
13 			OP. 3
26 			OP. 2
39 			OP. 1
52	Algorithm	ALG	0-7
53	Feedback	Feedback	0-7
54	LFO Speed	Speed	0-99
55	LFO Delay	Delay	0-99
56	Pitch Modulation Depth	P Mod Depth	0-99
57	Amplitude Modulation Depth	A Mod Depth	0-99
58	LFO Sync	Sync	0-1
59	LFO Wave	Wave	0-3
60	Pitch Modulation Sensitivity	P Mod Sens	0-7
61	Amplitude Modulation Sensitivity	AMS	0-3
62	Transpose	Middle C =	0-48 (Center = 24)
63	Poly/Mono	Poly Mode	0-1
64	Pitch Bend Range	P Bend Range	0-12
65	Portamento Mode	Full Time Porta	0-1
66	Portamento Time	Porta Time	0-99
67	Foot Control Volume	FC Volume	0-99
68	Sustain	—	0-1
69	Portamento	—	0-1
70	Chorus	—	0-1 (Set 0)
71	Modulation Wheel Pitch	MW Pitch	0-99
72	Modulation Wheel Amplitude	MW Amplitude	0-99
73	Breath Control Pitch	BC Pitch	0-99
74	Breath Control Amplitude	BC Amplitude	0-99

Parameter number	Parameter	LCD	Data
75	Breath Control Pitch Bias	BC Pitch Bias	0-99 (Center = 50)
76	Breath Control EG Bias	BC EG Bias	0-99
77	Voice name char 1	—	32-127
78	Voice name char 2	—	32-127
79	Voice name char 3	—	32-127
80	Voice name char 4	—	32-127
81	Voice name char 5	—	32-127
82	Voice name char 6	—	32-127
83	Voice name char 7	—	32-127
84	Voice name char 8	—	32-127
85	Voice name char 9	—	32-127
86	Voice name char 10	—	32-127
(Parameters 87-92 not used in the TX81Z.)			
93	Operator 4-1 On/Off (bits 0-3)	—	0-15 (OP. on = 1)

Voice Edit Additional Parameters (ACED)

Parameter number	Parameter	LCD	Data
0	Fixed Frequency	FIX	0-1
1	Fixed Frequency Range	Fix Range	0-7 0(250Hz)- 7(32kHz)
2	Frequency Range Fine	FIN (RATIO)	0-15 OP. 4
3	Operator Waveform	OSW	0-7
4	EG Shift	SHFT	0-3 0(96dB), 1(48dB) 2(24dB), 3(12dB)
5			OP. 3
10			OP. 2
15			OP. 1
20	Reverb Rate	Reverb Rate	0-7 0(off), 7(fast)
21	Foot Controller Pitch	FC Pitch	0-99
22	Foot Controller Amplitude	FC Amplitude	0-99

Performance Edit Parameters (PCED)

Parameter number	Parameter	LCD	Data
0	Maximum Notes	MAX NOTES	0-8 INST 1
1	Voice Number MSB	—	0-1
2	Voice Number	I01-D32	0-127 } 0-159
3	Receive Channel	RECEIVE CH	0-16 omni = 16
4	Low Note Limit	LIMIT/L	0-127 0(C-2)-127(G8)
5	High Note Limit	LIMIT/H	0-127 0(C-2)-127(G8)
6	Instrument Detune	INST DETUNE	0-14 center = 7
7	Note Shift	NOTE SHIFT	0-48 center = 24
8	Volume	VOL	0-99
9	Output Assign	OUT ASSIGN	0-3 0(off), 1(I), 2(II), 3(I II)
10	LFO Select	LFO SELECT	0-3 0(off), 1(inst1), 2(inst2), 3(vib)
11	Micro Tune Enable	off/on	0-1
12 			INST 2
24 			INST 3
36 ~			INST 4
48 			INST 5
60 			INST 6
72 			INST 7
84 			INST 8
96	Micro Tune Table	MICTUN	0-12
97	Assign Mode	Assign Mode	0-1 0(norm), 1(altr)
98	Effect Select	Effect Sel	0-3
99	Key (for Micro Tune)	—	0-11 (C-B)
100	Performance Name Character 1	—	32-127 (ASCII)
101	Performance Name Character 2	—	32-127 (ASCII)
—			
109	Performance Name Character 10	—	32-127 (ASCII)

Remote Switch Parameters

Parameter number	Parameter	Data
64	POWER ON (reset)	0 (switch off), 127 (switch on)
65	STORE	
66	UTILITY	
67	EDIT	
68	PLAY	
69	PARAMETER -1	
70	PARAMETER +1	
71	DATA ENTRY -1	
72	DATA ENTRY +1	
73	MASTER VOLUME -1	
74	MASTER VOLUME +1	
75	CURSOR	

Voice Bulk Data Format (VMEM)

address	b7	b6	b5	b4	b3	b2	b1	b0	data	comment
0	0	0	0	_____	_____	AR	_____	_____	0-31	
1	0	0	0	_____	_____	D1R	_____	_____	0-31	
2	0	0	0	_____	_____	D2R	_____	_____	0-31	
3	0	0	0	0	_____	RR	_____	_____	0-15	
4	0	0	0	0	_____	D1L	_____	_____	0-15	OP.4
5	0	_____	_____	_____	LS	_____	_____	_____	0-99	
6	0	AME	_____	EBS	_____	_____	KVS	_____	0-1, 0-7, 0-7	
7	0	_____	_____	_____	OUT	_____	_____	_____	0-99	
8	0	0	_____	_____	F	_____	_____	_____	0-63	
9	0	0	0	RS	_____	_____	DBT	_____	0-3, 0-6	
10 ~ ~										OP.2
20 ~ ~										OP.3
30 ~ ~										OP.1
40	0	SY	_____	FBL	_____	_____	ALG	_____	0-1, 0-7, 0-7	
41	0	_____	_____	_____	LFS	_____	_____	_____	0-99	
42	0	_____	_____	_____	LFD	_____	_____	_____	0-99	
43	0	_____	_____	_____	PMD	_____	_____	_____	0-99	
44	0	_____	_____	_____	AMD	_____	_____	_____	0-99	
45	0	_____	PMS	_____	AMS	_____	LFW	_____	0-7, 0-3, 0-3	
46	0	0	_____	_____	TRPS	_____	_____	_____	0-48	
47	0	0	0	0	_____	PBR	_____	_____	0-12	
48	0	0	0	CH	MO	SU	PO	PM	0-1, 0-1, 0-1, 0-1, 0-1	
49	0	_____	_____	_____	PORT	_____	_____	_____	0-99	
50	0	_____	_____	_____	FC VOL	_____	_____	_____	0-99	
51	0	_____	_____	_____	MW PITCH	_____	_____	_____	0-99	
52	0	_____	_____	_____	MW AMPLI	_____	_____	_____	0-99	
53	0	_____	_____	_____	BC PITCH	_____	_____	_____	0-99	
54	0	_____	_____	_____	BC AMPLI	_____	_____	_____	0-99	
55	0	_____	_____	_____	BC P BIAS	_____	_____	_____	0-99	
56	0	_____	_____	_____	BC E BIAS	_____	_____	_____	0-99	
57	0	_____	_____	_____	VOICE NAME 1	_____	_____	_____	32-127 (ASCII)	
58	0	_____	_____	_____	VOICE NAME 2	_____	_____	_____		
59	0	_____	_____	_____	VOICE NAME 3	_____	_____	_____		
60	0	_____	_____	_____	VOICE NAME 4	_____	_____	_____		
61	0	_____	_____	_____	VOICE NAME 5	_____	_____	_____		
62	0	_____	_____	_____	VOICE NAME 6	_____	_____	_____		
63	0	_____	_____	_____	VOICE NAME 7	_____	_____	_____		
64	0	_____	_____	_____	VOICE NAME 8	_____	_____	_____		
65	0	_____	_____	_____	VOICE NAME 9	_____	_____	_____		
66	0	_____	_____	_____	VOICE NAME 10	_____	_____	_____	32-127 (ASCII)	
67	0	_____	_____	_____	PR1	_____	_____	_____	0-99 PEG (DX21 only)	
68	0	_____	_____	_____	PR2	_____	_____	_____	0-99 Set 99	
69	0	_____	_____	_____	PR3	_____	_____	_____	0-99	
70	0	_____	_____	_____	PL1	_____	_____	_____	0-99 Set 50	
71	0	_____	_____	_____	PL2	_____	_____	_____	0-99	
72	0	_____	_____	_____	PL3	_____	_____	_____	0-99	

Additional Voice Bulk Data Format

address	b7	b6	b5	b4	b3	b2	b1	b0	data	comment
0 . .	same as OPM VMEM									
67 .	PEG PR1 (not used) Set 99									
72 .	PEG PL3 Set 50									
73 74	0 0	0 —	EGSFT — OPW —	FIX — FINE —	— —	FIXRG — —	— —	— —		OP. 4
75 .										OP. 2
77 .										OP. 3
79 .										OP. 1
81	0	0	0	0	0	—	REV	—		
82 83	0 0	— —	— —	— —	FC PITCH FC AMPLI	— —	— —	— —		

Effect Bulk Data Format

address	b7	b6	b5	b4	b3	b2	b1	b0	data	comment
0	0	—	—	—	EF1T	—	—	—	0-127	effect 1 time 0.01s ~ 1.28s
1	0	0	—	—	EF1P	—	—	—	0-48	effect 1 pitch center = 24
2	0	0	0	0	0	—	EF1F	—	0-7	effect 1 feedback
3	0	—	—	—	EF1L	—	—	—	0-99	effect 1 level
4	0	0	0	0	0	0	0	EF2D	0-1	effect 2 direction 0 (I → II), 1 (II → I)
5	0	0	0	0	0	0	EF2S	—	0-3	effect 2 select 0 (LFO), 1 (velocity) 2 (note)
6	0	—	—	—	EF2R	—	—	—	0-99	effect 2 range
7	0	0	—	—	CHORD	—	—	—	0-49	effect 3 chord note center = 25, not used = 49
8 9 10										KEY C3
11 12 13 14										KEY C3#
. .										
51 52 53 54										KEY B3

Performance Bulk Data Format (PMEM)

address	b7	b6	b5	b4	b3	b2	b1	b0	data	comment
0	0	OUT ASGN	MSB	_____	NUM of NOTE	—				INST1
1	0	_____	_____	_____	VOICE NO	_____				
2	0	LFOS	_____	_____	RCV CII	_____				
3	0	_____	_____	_____	LIMIT/L	_____				
4	0	_____	_____	_____	LIMIT/H	_____				
5	0	0	0	0	_____	DETUNE	_____		0 ~ 14 (7 center)	
6	0	MTE	_____	_____	NOTE SHIFT	_____				
7	0	_____	_____	_____	VOLUME	_____				
8										INST2
16										INST3
24										INST4
32										INST5
40										INST6
48										INST7
56										INST8
64	0	0	0	0	_____	MTBL	_____			
65	0	_____	KEY	_____	_____	EFSEL	— ASMODE			
66	0	_____	_____	_____	_____	PFM NAME 1	_____			
67	0	_____	_____	_____	_____	PFM NAME 2	_____			
.										
.										
75	0	_____	_____	_____	_____	PEM NAME 10	_____			

Micro Tune Octave Bulk Data Format

address	b7	b6	b5	b4	b3	b2	b1	b0	data	comment
0	0	_____			MS BYTE of MCT _____				13-108	
	0	_____			LS BYTE of MCT _____				0-63	C
1										C#
2										
.										
11										B

Micro Tune Full Bulk Data Format

address	b7	b6	b5	b4	b3	b2	b1	b0	data	comment
0	0	_____			MS BYTE of MCT _____				13-108	
	0	_____			LS BYTE of MCT _____				0-63	C-2 (0)
1										C#-2 (1)
2										
.										
127										G8 (127)

Program Change Table Bulk Data Format

address	b7	b6	b5	b4	b3	b2	b1	b0	data	comment
0	0	0	0	0	0	0	0	MSB	0-1	MSB of number
	0	_____			NUMBER (without MSB) _____				0-127	PGM1
1										PGM2
.										
127										PGM127
(Note)										
	NUMBER									
	0-31	:								I1-I32
	32-63	:								A1-A32
	64-95	:								B1-B32
	96-127	:								C1-C32
	128-159	:								D1-D32
	160-183	:								PFM1-PFM24

System Setup Bulk Data Format (SYS)

address	b7	b6	b5	b4	b3	b2	b1	b0	data	comment
0	0								0-172	master tune center = 64
1	0	0	0						0-16	basic rcv ch 16:omni
2	0	0	0	0					0-15	trans ch
3	0	0	0	0	0	0	0	PCINF	0-2	p. cng sw
4	0	0	0						0-17	cont.cng sw 1:norm
										2-17 (G1 ~ G16)
5	0	0	0						0-17	p. bend sw 1:norm
										2-17 (G1 ~ G16)
6	0	0	0	0	0	0	0	NOTESW	0-2	note on/off 0:all, 1:odd, 2:even
7	0	0	0	0	0	0	0	SYSAVL	0-1	exclusive on/off
8	0	0	0	0	0	0	0	MLOCK	0-1	mem.protect
9	0	0	0	0	0	0	0	CMBIN	0-1	combine
10	0	0	0	0	0	0	0	AT	0-1	after touch
11	0								32-127	ID (ascii)
12	0									
13	0									
.										
.										
.										
26	0									

SPECIFICATIONS

Switches POWER, STORE/EG COPY, UTILITY, EDIT/COMPARE,
PLAY/PERFORM, PARAMETER UP, PARAMETER DOWN, DEC,
INC, CURSOR LEFT, CURSOR RIGHT, CURSOR

Display 16 character x 2 row backlit LCD

Terminals CASSETTE, MIDI THRU, MIDI OUT, MIDI IN, OUTPUT I/II,
PHONES

Power Requirements

(US and Canadian model) AC 110-120V, 50/60Hz

(General model) AC 220-240V, 50/60Hz

Power Consumption 8W

Dimensions 480 x 282 x 45.2 mm (WxDxH) (18-15/16" x 11-1/8" x 1-3/4")

Weight 3.4 kg (7 lbs. 8 oz.)