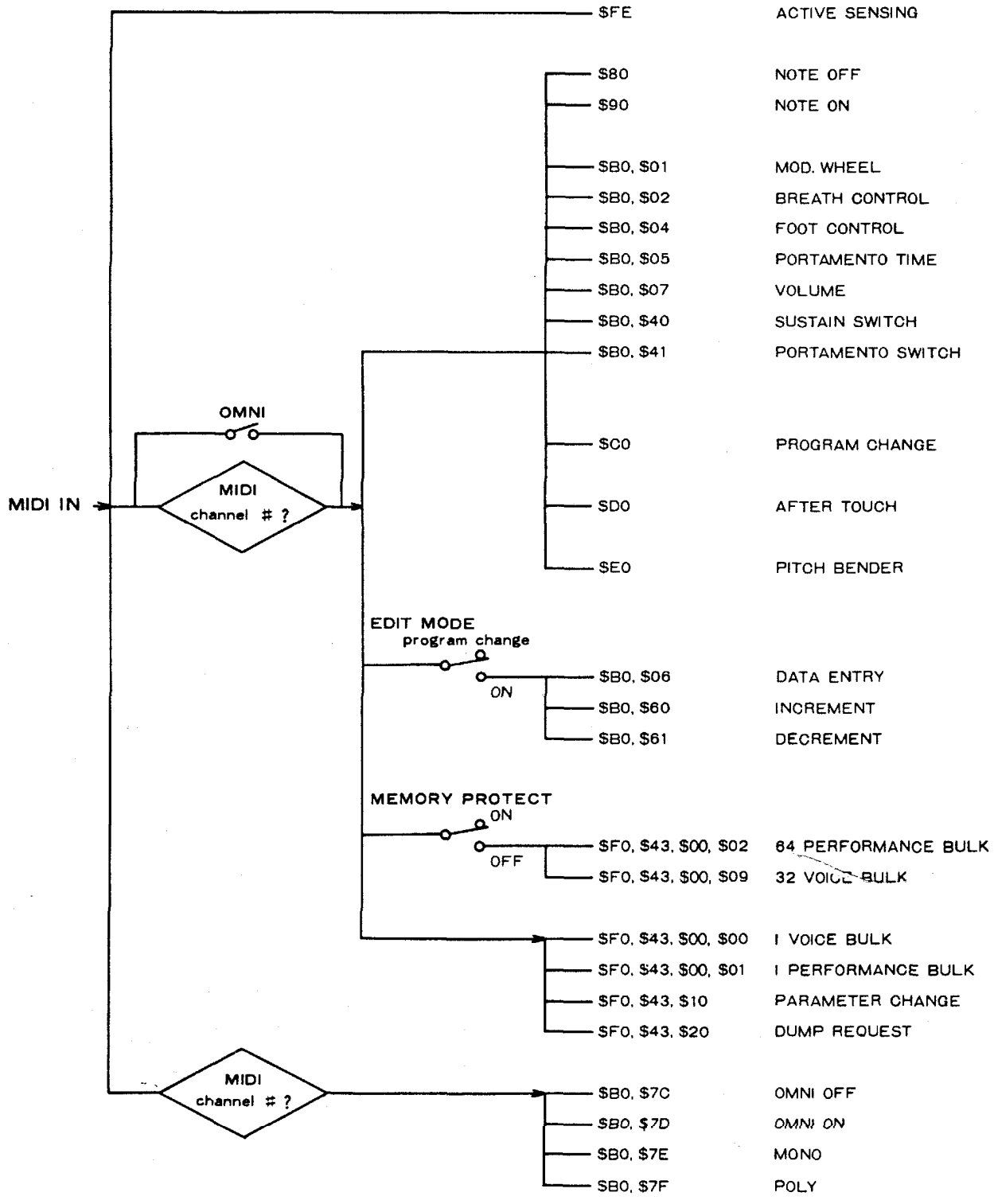
TX816 MIDI DATA FORMAT

1. RECEPTION CONDITIONS

This chart shows all the reception signals that can be received by the TF1. All byte numbers are expressed in hexadecimal form.



2. RECEPTION DATA

NOTE:

The meaning of letters used in byte numbers will only be given once, to save repetition. For example, the letter n in byte number 1000nnnn (Key Off Status) means MIDI channel number and will mean the same when it appears in all other byte numbers.

2-1. Reception Channel and Omni

When the TF1 is in the Play mode, you can use the keys on the front panel to set the MIDI input channel (from 1 to 16) and switch the Omni function on or off. The Omni function permits the TF1 to receive MIDI signals on all of the 16 channels. The MIDI channel and Omni settings are memorized by the TF1, and will not change even if the power is turned off.

2-2 Channel Voice Message

When MIDI channel voice messages are received, either the INDIVIDUAL or the COMMON LED will rapidly turn off then on, depending on whether the signal is input at the COMMON or INDIVIDUAL MIDI IN terminal.

2-2-1. Key Off

Status	1000nnnn n = MIDI channel number
Note Number	0kkkkkkk k = 0 (note C-2) to 127 (note G8)
Key Velocity	0vvvvvvv v:

ignore

2-2-2. Key ON/OFF

Status	1001nnnn Note Number 0kkkkkkk k= 0 (note C-2) to 127 (note G8) Key Velocity 0vvvvvv v= 0 (key off) v= 1 – 127 (key on)

2-2-3. Control Change

Status	1011nnnn Control Number 0ccccccc C= 0 – 127 Control Value 0vvvvvvv v= 0 – 127

(a) Control Numbers For Fixed Input

C = 1	Modulation Wheel	v = 0 – 127
C = 2	Breath Control	v = 0 – 127
C = 3	Foot Control	v = 0 – 127
C = 5	Portamento	v = 0 – 127
C = 7	Volume	v = 0 – 127
C = 64	Sustain Switch	v = 0,127
C = 65	Protamento Switch	v = 0,127

(b) Control Numbers For Front Panel Settings

These control numbers apply to the following sub-modes only; Tune Master Pitch

(Play mode), Select Program Number For Edit, and Attenuate Output Level (Edit mode).

A: Tune Master Pitch
B: Select Program Number for Edit
C: Attenuate Output Level

			A	B	C
c=6	Data Entry	v=0-127	yes	yes	yes
c=96	Increment	v:neglect	yes	yes	no
c=97	Decrement	v:neglect	yes	yes	no

In the Select Program sub-mode you can alter voice or function parameters selected with Parameter Change in system exclusive..

2-2-4. Program Change

Status 1100nnnn
Program Number 0ppppppp
Ignore the first two bits.
Select 1 to 32.

2-2-5. After Touch

Status 1101nnnn Pressure 0vvvvvvv

2-2-6. Pitch Bend

Status 1110nnnn
Value (LSB) 0uuuuuuu
Value (MSB) 0vvvvvvv 8 bits resolution.
recognized.

2-3. Channel Mode Message

Status 1101nnnn
0ccccccc
0vvvvvvv

C = 124 V=0 Omni Mode OFF / ALL NOTES OFF
C = 125 V=0 Omni Mode OFF / ALL NOTES OFF
C = 126 V=1 Mono Mode OFF / ALL NOTES OFF
C = 127 V=0 Play Mode OFF / ALL NOTED OFF

Omni status (ON/OFF) is controlled on the front panel (in the OMNI ON/OFF sub-mode) and has final priority. Changes in mode are accompanied by a compulsory voice dump and cleaning of the Key assigner.

2-4. System Real Time Message

Status 11111110 Active Sensing

When this code is received, sensing begins. If neither status nor data is received over an interval of 300 mS, the TF1 will stop sensing after first dumping all voices and clearing the Key Assigner.

2-5. System Exclusive Message

2-5-1. Bulk Dump

(i) 1 Voice Bulk Data

Status 11110000
I.D. 01000011
Sub-status/Ch. 0000nnnn

Format Number	00000000	
Byte Count	00000001	
Byte Count	00011011	
Data	0ddddddd	
	:	155 bytes of
	:	voice data sent
	:	d=0 to 127
	0ddddddd	
Check Sum	0eeeeeee	
EOX	11110111	

This format is for the input of the data of a single voice. The green Parameter Change LED flashes when data is received. The 155 bytes of voice data go into the Edit *buffer, replacing any existing data there. The check sum (0eeeeeee) is the least* significant 7 bits of the 2's complement sum of 155 data bytes. 0eeeeeee must be determined so that the least significant 7 bits of the sum of the 155 data bytes and check sum equal zero.

(ii) 1 Performance Bulk Data

Status	11110000	
I.D.	01000011	
Sub-status/Ch.	0000nnnn	
Format Number	00000001	
Byte Count	00000000	
Byte Count	01011110	
Data	0ddddddd	
	:	94 bytes of
	:	function data
	:	sent
	0ddddddd	
Check Sum	0eeeeeee	
EOX	11110111	

This format is for the input of the function data of a single voice. The green Parameter Change LED flashes when data is received. Out of the 94 bytes sent, only the data corresponding to the TF1 goes into the Edit Buffer, altering the function data of any voice currently in the Edit Buffer.

(iii) 64 Performance Bulk Data

Status	11110000	
I.D.	01000011	
Sub-status/Ch.	0000nnnn	
Format Number	00000010	
Byte Count	00100000	
Byte Count	00000000	
Data	0ddddddd	
	:	4096 bytes of
	:	data sent
	0ddddddd	
Check sum	0eeeeeee	
EOX	11110111	

This format is for loading function data in to the TF1 Memory. It can only be input

will light for about 2 seconds. Only the first 32 of the 64 batches of data are loaded in order into the function memories of program destinations 1 thru 32.

(iv) 32 Voice Bulk Data

Status	11110000	
I.D.	01000011	
Sub-status/Ch.	0000nnnn	
Format Number	00001001	
Byte Count	00100000	
Byte Count	00000000	
Data	0ddddddd	
	:	4096 bytes of
	:	data sent
	:	
0ddddddd		
Check Sum	0eeeeeee	
EOX	11110111	

This format is for loading voice data only into the TF1 memory. It can only be input when the Memory Protect is OFF. When data is input, the Memory Protect LED will light for about 2 seconds. The voice data for all 32 programs will be changed.

2-5-2. Parameter Change

Status	11110000	
I.D.	01000011	
Sub-status/Ch.	0001nnnn	
Parameter		
Group Number	0ggggghh	g = 0, 1, 2, 3, 4
Parameter No.	0ppppppp	p = 0 -127
EOX	11110111	

The green Parameter Change Led will flash when data is received, and voice or function data in the Edit Buffer will be changed.

2-5-3. Dump Request

Status	11110000
I.D.	01000011
Sub-status/Ch	0010nnnn
Format Number	0fffffff
	f = 0, 1, 2, 9, 125
EOX	11110111

The corresponding bulk data will be dumped through the MIDI OUT terminal.

3. OUTPUT DATA

Data is only output when a dump request signal is received from an external source or by direct panel switching. *Since the only output is the COMMON MIDI OUT* terminal, you must select the OUTPUT SLOT number corresponding to the number of the module from which you are outputting data. Data is always sent via MIDI channel 1 and consists of voice and function data in System Exclusive.

3-1. Output Conditions

(a) Output for Dump Request

The following five kinds of data dump can be done, according to the selected format

number ().

f = 0 1 Voice Bulk Data
Outputs voice data in the Edit Buffer f = 1 1 Performance Bulk Data
Outputs function data in the Edit Buffer f = 2 64 Performance Bulk Data
Outputs all function data from programs 1 thru 32 in order. f = 9 32 Voice Bulk data
Outputs all voice data from programs 1 thru 32

(Formatting for the above is the same as for input). f = 125 Condition Acknowledge

Status	11110000	
I.D.	01000011	
Sub-status/Ch.	00000000	
Format Number	01111101	
Byte Count	00000000	
Byte Count	00010000	
Data	0ddddddd	
	:	16 byte of
	:	data sent
	:	
	0ddddddd	
Check Sum	0eeeeeee	
EOX	11110111	

(b) Output in the select program sub-mode

When you select a program using the front panel keys, the corresponding voice and function data will be output in the following order:

1. 1 Performance Bulk Data 2. 1 Voice Bulk Data

(c) Output in the Dump sub-mode

Data is output in the following order when you press the "YES" key (SW1):

1. 32 Voice Bulk Data 2. 64 Performance Bulk Data

4. SYSTEM EXCLUSIVE DATA FORMAT

4-1. DX7 Voice Parameter Change (g=0)

Sub-group Number h	Parameter Number p	Parameter	Data	Notes
0	0	OP6 EG RATE 1	0 ~ 99	
	1	OP6 EG RATE 2	0 ~ 99	
	2	OP6 EG RATE 3	0 ~ 99	
	3	OP6 EG RATE 4	0 ~ 99	
	4	OP6 EG LEVEL 1	0 ~ 99	
	5	OP6 EG LEVEL 2	0 ~ 99	
	6	OP6 EG LEVEL 3	0 ~ 99	
	7	OP6 EG LEVEL 4	0 ~ 99	
	8	OP6 KEYBOARD LEVEL SCALING BREAK POINT	0 ~ 99	* 1
	9	OP6 KEYBOARD LEVEL SCALING LEFT DEPTH	0 ~ 99	
	10	OP6 KEYBOARD LEVEL SCALING RIGHT DEPTH	0 ~ 99	
	11	OP6 KEYBOARD LEVEL SCALING LEFT CURVE	0 ~ 3	* 2
	12	OP6 KEYBOARD LEVEL SCALING RIGHT CURVE	0 ~ 3	* 2
	13	OP6 KEYBOARD RATE SCALING	0 ~ 7	
	14	OP6 AMPLITUDE MODULATION SENSITIVITY	0 ~ 3	
	15	OP6 KEY VELOCITY SENSITIVITY	0 ~ 7	
	16	OP6 OPERATOR OUTPUT LEVEL	0 ~ 99	
	17	OP6 OSCILLATOR MODE	0 ~ 1	* 3
	18	OP6 OSCILLATOR FREQUENCY COARSE	0 ~ 31	* 4
	19	OP6 OSCILLATOR FREQUENCY FINE	0 ~ 99	* 4
	20	OP6 OSCILLATOR DETUNE	0 ~ 14	* 5
	21 ~ 41	OP5		
	42 ~ 62	OP4		
	63 ~ 83	OP3		
	84 ~ 104	OP2		
	105 ~ 125	OP1		
	126	PITCH EG RATE 1	0 ~ 99	
	127	PITCH EG RATE 2	0 ~ 99	
1	0 (128)	PITCH EG RATE 3	0 ~ 99	
	1 (129)	PITCH EG RATE 4	0 ~ 99	
	2 (130)	PITCH EG LEVEL 1	0 ~ 99	
	3 (131)	PITCH EG LEVEL 2	0 ~ 99	
	4 (132)	PITCH EG LEVEL 3	0 ~ 99	
	5 (133)	PITCH EG LEVEL 4	0 ~ 99	
	6 (134)	ALGORITHM SELECT	0 ~ 31	
	7 (135)	FEEDBACK	0 ~ 7	
	8 (136)	OSCILLATOR KEY SYNC	0 ~ 1	
	9 (137)	LFO SPEED	0 ~ 99	
	10 (138)	LFO DELAY	0 ~ 99	
	11 (139)	LFO PITCH MODULATION DEPTH	0 ~ 99	
	12 (140)	LFO AMPLITUDE MODULATION DEPTH	0 ~ 99	
	13 (141)	LFO KEY SYNC	0 ~ 1	
	14 (142)	LFO WAVE	0 ~ 5	* 6
	15 (143)	LFO PITCH MODULATION SENSITIVITY	0 ~ 7	
	16 (144)	TRANSPOSE	0 ~ 48	Concert pitch at 24
	17 (145)	VOICE NAME 1	ASCII	
	↓ ↓	↓ ↓	↓	
	26 (154)	VOICE NAME 10	ASCII	
1	27 (155)	OPERATOR ON/OFF	xeeeeee	* 7
	28 (156)	OPERATOR SELECT	0 ~ 5	* 8

※1 BREAK POINT

BREAK POINT	0	1	2	3	4	5	15	27	39	51	63	75	87	99
MIDI NOTE #	21	22	23	24	25	26	36	48	60	72	84	96	108	120
NOTE	A_{-1}	$A\#_{-1}$	B_{-1}	C_0	$C\#_0$	D_0	C_1	C_2	C_3	C_4	C_5	C_6	C_7	C_8

※2 KEYBOARD LEVEL SCALING CURVE

	0	1	2	3
CURVE	−LIN	−EXP	+EXP	+LIN

※3 OSCILLATOR MODE

"0"……frequency ratio

"1"……fixed frequency

※4 FREQUENCY COARSE/FINE

i) For Frequency Ratio

When FINE=0

COARSE	0	1	2	3	10	30	31
FREQUENCY RATIO	0.5	1	2	3	10	30	31

When Coarse=1

FINE	0	1	2	3	10	50	99
FREQUENCY RATIO	1.00	1.01	1.02	1.03	1.10	1.50	1.99

ii) For Fixed Frequency

When FINE=0

COARSE	0	1	2	3	4	5	6	7		31
FREQUENCY(Hz)	1	10	100	1000	1	10	100	1000		1000

When COARSE=0

FINE	0	1	2	3	4	5	10	20	50	99
FREQUENCY(Hz)	1.000	1.023	1.047	1.072	1.096	1.122	1.259	1.585	3.162	9.772

※5 DETUNE

	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14
DETUNE	−7	−6	−5	−4	−3	−2	−1	0	1	2	3	4	5	6	7

※6 LFO WAVE

	0	1	2	3	4	5
WAVE	TRIANGLE	SAW DOWN	SAW UP	SQUARE	SINE	SAMPLE/HOLD

※7 OPERATOR ON OFF

Bit	b_5	b_4	b_3	b_2	b_1	b_0
OP	OP1	OP2	OP3	OP4	OP5	OP6

Bit Map

"0"…OFF "1"…ON

※8 OPERATOR SELECT

	0	1	2	3	4	5
OPERATOR	OP6	OP5	OP4	OP3	OP2	OP1

4-2. DX Performance Parameter Change (g=1) (h=0)

Parameter Number p	Parameter	Data	Notes
0			
1	SOURCE SELECT	1 ~ 16	※3
2	POLY/MONO	0 ~ 1	
3	PITCH BEND RANGE	0 ~ 12	
4	PITCH BEND STEP	0 ~ 12	
5	PORTAMENTO TIME	0 ~ 99	
6	PORTAMENTO/GLISSANDO	0 ~ 1	
7	PORTAMENTO MODE	0 ~ 1	※1
8			
9	MODULATION WHEEL SENSITIVITY	0 ~ 15	
10	MODULATION WHEEL ASSIGN	0 ~ 7	※2
11	FOOT CONTROLLER SENSITIVITY	0 ~ 15	
12	FOOT CONTROLLER ASSIGN	0 ~ 7	※2
13	AFTER TOUCH SENSITIVITY	0 ~ 15	
14	AFTER TOUCH ASSIGN	0 ~ 7	※2
15	BREATH CONTROLLER SENSITIVITY	0 ~ 15	
16	BREATH CONTROLLER ASSIGN	0 ~ 7	※2
17			
18			
19			
20			
21			
22			
23			
24			
25			
26	AUDIO OUTPUT LEVEL ATTENUATOR	0 ~ 7	
27			
28			
29			
30			
31			
32			
33			
34			
↓			
63			
64	MASTER TUNING	0 ~ 127	Concert Pitch at 64

※1 PORTAMENTO MODE

- "0"…sustain-key pitch retain
- "1"…sustain-key pitch follow

※2 EFFECT ASSIGN

Bit	b_2	b_1	b_0
ASSIGN	EG BIAS	AMPLITUDE	PITCH

※3 SOURCE SELECT

Selects MIDI receive channel 1 to 16

4-3. Function Parameter Change (g=2) (h=0)

Parameter Number p	Parameter	Data	Notes
64	POLY/MONO	0 ~ 1	
65	PITCH BEND RANGE	0 ~ 12	
66	PITCH BEND STEP	0 ~ 12	
67	PORTAMENTO MODE	0 ~ 1	
68	PORTAMENTO/GLISSANDO	0 ~ 1	
69	PORTAMENTO TIME	0 ~ 99	
70	MODULATION WHEEL SENSITIVITY	0 ~ 99	※1
71	MODULATION WHEEL ASSIGN	0 ~ 7	
72	FOOT CONTROLLER SENSITIVITY	0 ~ 99	※1
73	FOOT CONTROLLER ASSIGN	0 ~ 7	
74	BREATH CONTROLLER SENSITIVITY	0 ~ 99	※1
75	BREATH CONTROLLER ASSIGN	0 ~ 7	
76	AFTER TOUCH SENSITIVITY	0 ~ 99	※1
77	AFTER TOUCH ASSIGN	0 ~ 7	

※1 EFFECT SENSITIVITY

Data received over a range of 0-99 is in the memory on a scale of 0-15

4-4. DX9 Function Parameter Change (g=3) (h=0)

Parameter Number p	Parameter	Data	Notes
64			
65	MASTER TUNE	0 ~ 127	
66	POLY/MONO	0 ~ 1	
67	PITCH BEND RANGE	0 ~ 12	
68	PORTAMENTO MODE	0 ~ 1	
69	PORTAMENTO TIME	0 ~ 99	
70	MODULATION WHEEL SENSITIVITY	0 ~ 99	※1
71	MODULATION WHEEL ASSIGN : PITCH	0 ~ 1	
72	MODULATION WHEEL ASSIGN : AMPLITUDE	0 ~ 1	
73	MODULATION WHEEL ASSIGN : EG BIAS	0 ~ 1	
74	BREATH CONTROLLER SENSITIVITY	0 ~ 99	※1
75	BREATH CONTROLLER ASSIGN : PITCH	0 ~ 1	
76	BREATH CONTROLLER ASSIGN : AMPLITUDE	0 ~ 1	
77	BREATH CONTROLLER ASSIGN : EG BIAS	0 ~ 1	

4-5. TX Function Parameter Change (g=4) (h=1)

Parameter Number p	Parameter		Data	Notes
0				
1				
2				
3				
4				
5	NOTE LIMIT LOW		0 ~ 127	
6	NOTE LIMIT HIGH		0 ~ 127	
7	TF1 MEMORY PROTECT OFF/ON		0, 127	
8	TF1 TEST PROGRAM ENTRY	FOR	127	
9	TF1 MIDI IN INDIVIDUAL	FACTORY TEST	127	
			127	

4-6. 1 Voice Bulk Data

155 bytes of data. The arrangement of this data is the same as in diagram 4-1, parameters 0 thru 154.

4-7. 1 Performance Bulk Data (f=1)

Parameter Number p	Parameter	Data	Notes
0			
1			
2	VOICE A POLY/MONO	0 ~ 1	
3	VOICE A PITCH BEND RANGE	0 ~ 12	
4	VOICE A PITCH BEND STEP	0 ~ 12	
5	VOICE A PORTAMENTO TIME	0 ~ 99	
6	VOICE A PORTAMENTO/GLISSANDO	0 ~ 1	
7	VOICE A PORTAMENTO MODE	0 ~ 1	
8			
9	VOICE A MODULATION WHEEL SENSITIVITY	0 ~ 15	
10	VOICE A MODULATION WHEEL ASSIGN	0 ~ 7	
11	VOICE A FOOT CONTROLLER SENSITIVITY	0 ~ 15	
12	VOICE A FOOT CONTROLLER ASSIGN	0 ~ 7	
13	VOICE A AFTER TOUCH SENSITIVITY	0 ~ 15	
14	VOICE A AFTER TOUCH ASSIGN	0 ~ 7	
15	VOICE A BREATH CONTROLLER SENSITIVITY	0 ~ 15	
16	VOICE A BREATH CONTROLLER ASSIGN	0 ~ 7	
17			
18			
19			
20			
21			
22			
23			
24			
25			
26	VOICE A AUDIO OUTPUT LEVEL ATTENUATOR	0 ~ 7	
27			
28			
29			
30			
↓	VOICE B		
59			
60			
61	VOICE MEMORY SELECT FLAG	0 ~ 1	
62			
63			
64	PERFORMANCE NAME 1	ASCII	
65	PERFORMANCE NAME 2	ASCII	
↓	↓	ASCII	
92	PERFORMANCE NAME 29	ASCII	
93	PERFORMANCE NAME 30	ASCII	

4-8. 64 Performance Bulk Data (f=2)

Data are listed in order for the 64 performances in units of 64 bytes (64 per performance). The TF1 uses the first 32 performances.

Address	6	5	4	3	2	1	0	Parameter	Data	Parameter	Data
0	F/M							VOICE A POLY/MONO	0 ~ 1		
1	PBS(LO)			PBR				VOICE A P. BEND STEP	0 ~ 12	PITCH BEND RANGE	0 ~ 12
2	PTIM							VOICE A PORTA. TIME	0 ~ 99		
3						M	GL	VOICE A PORTA. MODE	0 ~ 1	PORTAMENTO/GLISSANDO	0 ~ 1
4	MWA			MWS				VOICE A MOD. WHEEL ASN.	0 ~ 7	MOD. WHEEL SENS.	0 ~ 15
5	FCA			FCS				VOICE A FOOT CONT. ASN.	0 ~ 7	FOOT CONT. SENS.	0 ~ 15
6	ATA			ATS				VOICE A AFTER TOUCH ASN.	0 ~ 7	AFTER TOUCH SENS.	0 ~ 15
7	BCA			BCS				VOICE A BREATH CON ASN.	0 ~ 7	BREATH CON. SENS.	0 ~ 15
8											
9											
10											
11											
12											
13											
14					ATN			VOICE A ATTENUATION	0 ~ 7		
15	PBS (HI)							VOICE A PITCH B. STEP	(MSB)		
16											
↓	VOICE B										
31											
32					VMS	KMOD		VOICE MEMORY SELECT	0 ~ 1	KEY ASSIGN MODE	0 ~ 2
33											
34	PNAM 1							PERFORMANCE NAME 1	ASCII		
↓	↓							↓ ↓	ASCII		
63	PNAM 30							PERFORMANCE NAME30	ASCII		
	6	5	4	3	2	1	0				

With the Key Assign in Single mode(KMOD=0) Voice B are loaded with VMS.

MWA

Bit 0 = Pitch

Bit 1 = Ampl

Bit 2 = Eg Bias

4-9. 32 Boice Bulk Data (f=9)

Data are listed in order for the 32 programs in units of 128 bytes.

Address	6 5 4 3 2 1 0	Parameter	Data	Parameter	Data
0	R 1	OP6 EG RATE1	0 ~ 99		
1	R 2	OP6 EG RATE2	0 ~ 99		
2	R 3	OP6 EG RATE3	0 ~ 99		
3	R 4	OP6 EG RATE4	0 ~ 99		
4	L 1	OP6 EG LEVEL 1	0 ~ 99		
5	L 2	OP6 EG LEVEL 2	0 ~ 99		
6	L 3	OP6 EG LEVEL 3	0 ~ 99		
7	L 4	OP6 EG LEVEL 4	0 ~ 99		
8	B P	SCALING BREAK P.	0 ~ 99		
9	L D	SCALING LEFT DEPTH	0 ~ 99		
10	R D	SCALING RIGHT DEPTH	0 ~ 99		
11	RC | LC	SCALING RIGHT CURVE	0 ~ 3	LEFT CURVE	0 ~ 3
12	PD | RS	OSCILLATOR DETUNE	0 ~ 14	RATE SCALING	0 ~ 7
13	KVS | AMS	KEY VELOCITY SENS.	0 ~ 7	AMPLITUDE MOD. SENS.	0 ~ 3
14	O L	OUTPUT LEVEL	0 ~ 99		
15	F C | M	FREQUENCY COARSE	0 ~ 31	OSCILLATOR MODE	0 ~ 1
16	F F	FREQUENCY FINE	0 ~ 99		
17 ~ 33	O P 5				
34 ~ 50	O P 4				
51 ~ 67	O P 3				
68 ~ 84	O P 2				
85 ~ 101	O P 1				
102	P R 1	PITCH EG RATE 1	0 ~ 99		
103	P R 2	PITCH EG RATE 2	0 ~ 99		
104	P R 3	PITCH EG RATE 3	0 ~ 99		
105	P R 4	PITCH EG RATE 4	0 ~ 99		
106	P L 1	PITCH EG LEVEL 1	0 ~ 99		
107	P L 2	PITCH EG LEVEL 2	0 ~ 99		
108	P L 3	PITCH EG LEVEL 3	0 ~ 99		
109	P L 4	PITCH EG LEVEL 4	0 ~ 99		
110	ALS	ALGORITHM SELECT	0 ~ 31		
111	OKS | FB	OSCILLATOR KEY SYNC	0 ~ 1	FEEDBACK	0 ~ 7
112	L F S	LFO SPEED	0 ~ 99		
113	L F D	LFO DELAY	0 ~ 99		
114	L P M D	LFO PITCH MOD DEPTH	0 ~ 99		
115	L A M D	LFO AMP MOD DEPTH	0 ~ 99		
116	LPMS | LFW | LFKS	LFO PITCH MOD SENS.	0 ~ 7	WAVE KEY SYNC	0 ~ 5 0 ~ 1
117	T R N P	TRANSPOSE	0 ~ 48		
118	V N A M 1	VOICE NAME 1	ASCII		
119	V N A M 2	VOICE NAME 2	ASCII		
120	V N A M 3	VOICE NAME 3	ASCII		
121	V N A M 4	VOICE NAME 4	ASCII		
122	V N A M 5	VOICE NAME 5	ASCII		
123	V N A M 6	VOICE NAME 6	ASCII		
124	V N A M 7	VOICE NAME 7	ASCII		
125	V N A M 8	VOICE NAME 8	ASCII		
126	V N A M 9	VOICE NAME 9	ASCII		
127	V N A M 10	VOICE NAME 10	ASCII		
	6 5 4 3 2 1 0				

[FM tone generator]
Model TF1 MIDI Implementation Chart

Date : 6/16, 1983
Version : 1.0

Function		Transmitted	Recognized	Remarks
Basic	Default	1	1-16 *	* memorized
Channel	Changed	x	1-16 *	
Mode	Default	3	1, 2, 3, 4 *	not altered
	Messages	x	POLY, MONO(M=1)	
			OMNIon, OMNIoff	
Note	True	x	0-127	
Number :	voice	**********	0-127	
Velocity	Note ON	x	o	
	Note OFF	x	x	
After	Key's	x	x	
Touch	Ch's	x	o	
Pitch Bender		x	o	
	1	x	o	Modulation wheel
	2	x	o	Breath control
	4	x	o	Foot controller
Control	5	x	o	Portamento time
	6	x	o	Data entry knob
	7	x	o	Volume
Change				
	64	x	o	Sustain foot sw
	65	x	o	Portamento f sw
	96	x	o	Data entry +1
	97	x	o	Data entry -1
Prog		x	o 0-127	
Change :	True #	**********	0-31	
System Exclusive		o	o	Voice parameters
System	: Song Pos	x	x	
	: Song Sel	x	x	
Common	: Tune	x	x	
System	: Clock	x	x	
Real Time	:Commands	x	x	
Aux	: Local ON/OFF	x	x	
	:All Notes OFF	x	x	
Messages	: Active Sense	x	o	
	: Reset	x	x	

Notes

Mode 1: OMNI ON, POLY Mode 2: OMNI ON, MONO o: Yes
Mode 3: OMNI OFF, POLY Mode 4: OMNI OFF, MONO x: No

4-10. Condition Acknowledge (f=125)

Address	Parameter	Data	Notes
0	CLASSIFICATION ASCII 'L'	$4C	
1	CLASSIFICATION ASCII 'M'	$4D	
2	CLASSIFICATION ASCII '␣'	$20	
3	CLASSIFICATION ASCII '␣'	$20	
4	MODEL NAME ASCII '8'	$38	
5	MODEL NAME ASCII '9'	$39	
6	MODEL NAME ASCII '5'	$35	
7	MODEL NAME ASCII '0'	$30	
8	MODEL NAME ASCII '␣'	$20	
9	MODEL NAME ASCII '␣'	$20	
10	SOFTWARE VERSION #	V	
11	SOFTWARE REVISION #	R	
12	CONDITION DATA 1 ※1		
13	CONDITION DATA 2 RECEIVE CH	0 ~ 15	
14	CONDITION DATA 3 BATTERY VOLT		1 unit=
15	CONDITION DATA 4	0	0.1 volts

※1: Bit Arrangement

bit	Parameter	Data	Notes
b0	PERFORMANCE ECHO BACK MODE	0	
b1	COMPUTER COMMUNICATION MODE	1	
b2	VOLUME CONTROL BY DATA ENTRY LEVER	0	
b3	CONTROL CHANGE RECEIVE	1	
b4	OMNI MODE	0 / 1	
b5	MEMORY PROTECT	0 / 1	
b6	DATA ENTRY RECEIVE	0 / 1	※2

※2: "1" for Program Change sub-mode only; "0" at all other times.