

DSP256 Midi Implementation

DigiTech™ Midi Implementation Manual
June 2, 1991

First Revision

Dod Electronics Corporation
5639 South Riley Lane
Salt Lake City, Utah 84107
Telephone (801) 268-8400
FAX (801) 262-4966

Device type for the DSP256

Device Type = 6 (06h)

DigiTech Procedures recognized by the DSP256

Request Configuration (00h)
 Request One Program (01h)
 Receive Microcode (40h)
 Receive Configuration (41h)
 Receive One Program (42h)

Continuous Controller Calculations

Parameter Value = $(CC_Value * 2 * (PARAM_MAX + 1)) / 256$

CC VALUE The value of the continuous controller. (0-127)

PARAM_MAX The maximum value of the parameter the continuous controller is changing.

Data format for the DSP256 Receive Configuration procedure

Please note that each internal ram byte (d7 - d0) is transmitted as 2 midi bytes. The first midi byte is 0000000xb where x is d7. The second midi byte is 0xxxxxxb where x is d6 - d0. Refer to the Receive Configuration procedure in the General Midi Implementation Manual for required header information.

Ram Byte Number	Quick Definition
1 - 2048	128 Program names
2049 - 4864	128 Program definitions
4865 - 5458	27 Algorithm definitions
5459	Program number
5460	Midi receive channel
5461 - 5553	Global link table of parameters to continuous controllers
5554 - 5681	Translation table of received midi program number to DSP256 program number
5682	Send program change flag
5683	Hand controller flag
5684 - 5700	Foot switch function table
5701 - 5717	Foot switch program table
5718	LCD contrast value

Total Number of Internal Ram Bytes Transmitted 5718

Data format for the DSP256 Receive One Program procedure

Please note that each internal ram byte (d7 - d0) is transmitted as 2 midi bytes. The first midi byte is 0000000xb where x is d7. The second midi byte is 0xxxxxxb where x is d6 - d0. Refer to the Receive One Program procedure in the General Midi Implementation Manual for required header information.

Ram Byte Number	Quick Definition
1 - 22	Program definition
23 - 38	Program name

Total Number of Internal Ram Bytes Transmitted 38

128 Program names

Each program name is 16 bytes long. ($16 * 128 = 2048$ Bytes). The character set for the DSP256 is at the end of this document.

128 Program Definitions

A Program Definition has the following structure:

Program Definition Byte	Definition
1	Algorithm number (0 - 26)
2 - 22	Vary based on the algorithm number.

There are 128 program definitions in the DSP256 ($128 * 22 = 2,816$ bytes)

The next section defines program definition bytes 2-22 for each of the 27 algorithms of the DSP256. The first of each algorithm definition contains the number of the algorithm and it's name. The algorithm number goes in program definition byte 1. The remaining lines of the algorithm definition follow this format:

PDB#	Parameter Name	min - max
PDB#	The Program Definition Byte Number	
min	The minimum value to which this parameter may be set	
max	The maximum value to which this parameter may be set	

All numbers are given in decimal.

A full definition of each parameter may be found at the end of this document.

Algorithm 0
MUTE

2 - 22 Not used, set to 0.

Algorithm 1
Dry

2 - 22 Not used, set to 0.

Algorithm 2
Stereo Chorus

2	Chorus Delay	0-60
3	Chorus LFO Speed	0-65
4	Chorus LFO Depth	0-99
5	Mix:Dry Level	0-10
6	Mix:Chorus R Lvl	0-10
7	Mix:Chorus L Lvl	0-10
8-22	Not used, set to	0

Algorithm 3
Stereo Flange

2	Flange Delay	0-10
3	Flange LFO Speed	0-65
4	Flange LFO Depth	0-99
5	Flange Feedback	0-10
6	Mix:Dry Level	0-10
7	Mix:Flange R Lvl	0-10
8	Mix:Flange L Lvl	0-10
9-22	Not used, set to	0

Algorithm 4
Stereo Delay

2	Delay Time	0-147
3	Delay Feedback	0-11
4	Mix:Dry Level	0-10
5	Mix:Delay R Lvl	0-10
6	Mix:Delay L Lvl	0-10
7-22	Not used, set to	0

Algorithm 5
4-Tap Delay

2	Delay Time Tap1	0-222
3	Delay Time Tap2	0-222
4	Delay Time Tap3	0-222
5	Delay Time Tap4	0-222
6	Delay Time Feed	0-222
7	Delay Feedback	0-11
8	Mix:Dry Level	0-10
9	Mix:Tap1 R Level	0-10
10	Mix:Tap1 L Level	0-10
11	Mix:Tap2 R Level	0-10
12	Mix:Tap2 L Level	0-10
13	Mix:Tap3 R Level	0-10
14	Mix:Tap3 L Level	0-10
15	Mix:Tap4 R Level	0-10
16	Mix:Tap4 L Level	0-10
17-22	Not used, set to	0

Algorithm 6
Ultimate Reverb

2	Dry Level	0-10
3	Early Rflct Lvl	0-10
4	Subsequent Level	0-10
5	Norm Reflectivity	0-30
6	Norm Room Volume	0-9
7	Damping Factor	0-9
8	Envelopment	0-9
9	Subsequent Delay	0-70
10	Subsqnt Difusion	0-9
11	Early Delay Time	0-70
12	Early Diffusion	0-9
13-22	Not used, set to	0

Algorithm 7
Gated Reverb

2	Pre-Delay Time	0-80
3	Gate Envelope	0-1
4	Gate Decay Time	0-11
5	Accent Delay	0-10
6	Accent Level	0-10
7	Mix:Dry Level	0-10
8	Mix:Gate R Level	0-10
9	Mix:Gate L Level	0-10
10-22	Not used, set to	0

Algorithm 8
Reverse Reverb

2	Pre-Delay Time	0-80
3	Reverse Time	0-11
4	Accent Delay	0-10
5	Accent Level	0-10
6	Mix:Dry Level	0-10
7	Mix:Revrse R Lvl	0-10
8	Mix:Revrse L Lvl	0-10
9-22	Not used, set to	0

Algorithm 9
Parametric EQ

2	Band 1 Frequency	0-14
3	Band 1 Level	0-12
4	Band 2 Frequency	0-14
5	Band 2 Level	0-12
6	Band 3 Frequency	0-14
7	Band 3 Level	0-12
8	Mix:EQ Level	0-10
9-22	Not used, set to	0

Algorithm 10
Graphic EQ

2	Graphic 63 Hz	0-12
3	Graphic 125 Hz	0-12
4	Graphic 250 Hz	0-12
5	Graphic 500 Hz	0-12
6	Graphic 1.0 KHz	0-12
7	Graphic 2.0 KHz	0-12
8	Graphic 4.0 KHz	0-12
9	Graphic 8.0 KHz	0-12
10	Graphic 16 KHz	0-12
11-22	Not used, set to	0

Algorithm 11
Para+Delay+Mixer

2	Band 1 Frequency	0-14
3	Band 1 Level	0-12
4	Band 2 Frequency	0-14
5	Band 2 Level	0-12
6	Band 3 Frequency	0-14
7	Band 3 Level	0-12
8	Delay EQ Source	0-1
9	Delay In:EQ	0-10
10	Delay Time	0-222
11	Delay Feedback	0-11
12	Mix:Dry Level	0-10
13	Mix:EQ Level	0-10
14	Mix:Delay R Lvl	0-10
15	Mix:Delay L Lvl	0-10
16-22	Not used, set to	0

Algorithm 12
Para+Chorus+Mix

2	Band 1 Frequency	0-14
3	Band 1 Level	0-12
4	Band 2 Frequency	0-14
5	Band 2 Level	0-12
6	Band 3 Frequency	0-14
7	Band 3 Level	0-12
8	Chorus EQ Source	0-1
9	Chorus Delay	0-60
10	Chorus LFO Speed	0-65
11	Chorus LFO Depth	0-99
12	Mix:Dry Level	0-10
13	Mix:EQ Level	0-10
14	Mix:Chorus R Lvl	0-10
15	Mix:Chorus L Lvl	0-10
16-22	Not used, set to	0

Algorithm 13
Chorus+Room+Mix

2	Chorus Delay	0-60
3	Chorus LFO Speed	0-65
4	Chorus LFO Depth	0-99
5	Reverb In:Dry	0-10
6	Reverb Predelay	0-60
7	Reverb Filter	0-2
8	Reverb Decay	0-11 (A)
9	Mix:Dry Level	0-10
10	Mix:Chorus R Lvl	0-10
11	Mix:Chorus L Lvl	0-10
12	Mix:Reverb R Lvl	0-10
13	Mix:Reverb L Lvl	0-10
14-22	Not used, set to	0

Algorithm 14
Delay+Room+Mixer

2	Delay Time	0-147
3	Delay Feedback	0-11
4	Reverb In:Dry	0-10
5	Reverb In:Delay	0-10
6	Reverb Predelay	0-60
7	Reverb Filter	0-2
8	Reverb Decay	0-11 (A)
9	Mix:Dry Level	0-10
10	Mix:Delay R Lvl	0-10
11	Mix:Delay L Lvl	0-10
12	Mix:Reverb R Lvl	0-10
13	Mix:Reverb L Lvl	0-10
14-22	Not used, set to	0

Algorithm 15
Chorus+Hall+Mix

2	Chorus Delay	0-60
3	Chorus LFO Speed	0-65
4	Chorus LFO Depth	0-99
5	Reverb In:Dry	0-10
6	Reverb In:Chorus	0-10
7	Reverb Predelay	0-60
8	Reverb Filter	0-2
9	Reverb Decay	0-21 (B)
10	Mix:Dry Level	0-10
11	Mix:Chorus R Lvl	0-10
12	Mix:Chorus L Lvl	0-10
13	Mix:Reverb R Lvl	0-10
14	Mix:Reverb L Lvl	0-10
15-22	Not used, set to	0

Algorithm 16
Delay+Hall+Mixer

2	Delay Time	0-147
3	Delay Feedback	0-11
4	Reverb In:Dry	0-10
5	Reverb In:Delay	0-10
6	Reverb Predelay	0-60
7	Reverb Filter	0-2
8	Reverb Decay	0-21 (B)
9	Mix:Dry Level	0-10
10	Mix:Delay R Lvl	0-10
11	Mix:Delay L Lvl	0-10
12	Mix:Reverb R Lvl	0-10
13	Mix:Reverb L Lvl	0-10
14-22	Not used, set to	0

Algorithm 17
EQ+Gated+Mixer

2	LPF Cut-Off Freq	0-22
3	Pre-Delay Time	0-80
4	Gate Envelope	0-1
5	Gate Decay Time	0-11
6	Accent Delay	0-10
7	Mix:EQ Right	0-10
8	Mix:EQ Left	0-10
9	Mix:Accent Right	0-10
10	Mix:Accent Left	0-10
11	Mix:Gate Right	0-10
12	Mix:Gate Left	0-10
13-22	Not used, set to	0

Algorithm 18
EQ+Reverse+Mixer

2	LPF Cut-Off Freq	0-22
3	Pre-Delay Time	0-80
4	Reverse Time	0-11
5	Accent Delay	0-10
6	Mix:EQ Right	0-10
7	Mix:EQ Left	0-10
8	Mix:Accent Right	0-10
9	Mix:Accent Left	0-10
10	Mix:Revrse R Lvl	0-10
11	Mix:Revrse L Lvl	0-10
12-22	Not used, set to	0

Algorithm 19
Para+Cho+Dly+Mix

2	Band 1 Frequency	0-14
3	Band 1 Level	0-12
4	Band 2 Frequency	0-14
5	Band 2 Level	0-12
6	Band 3 Frequency	0-14
7	Band 3 Level	0-12
8	Chorus EQ Source	0-1
9	Chorus Delay	0-60
10	Chorus LFO Speed	0-65
11	Chorus LFO Depth	0-99
12	Delay EQ Source	0-1
13	Delay In:EQ	0-10
14	Delay In:Chorus	0-10
15	Delay Time	0-222
16	Delay Feedback	0-11
17	Mix:Dry Level	0-10
18	Mix:EQ Level	0-10
19	Mix:Delay R Lvl	0-10
20	Mix:Delay L Lvl	0-10
21	Mix:Chorus R Lvl	0-10
22	Mix:Chorus L Lvl	0-10

Algorithm 20
Para+Fla+Dly+Mix

2	Band 1 Frequency	0-14
3	Band 1 Level	0-12
4	Band 2 Frequency	0-14
5	Band 2 Level	0-12
6	Band 3 Frequency	0-14
7	Band 3 Level	0-12
8	Flange EQ Source	0-1
9	Flange Delay	0-60
10	Flange LFO Speed	0-65
11	Flange LFO Depth	0-99
12	Flange Feedback	0-10
13	Delay EQ Source	0-1
14	Delay In:EQ	0-10
15	Delay In:Flange	0-10
16	Delay Time	0-222
17	Delay Feedback	0-11
18	Mix:EQ Level	0-10
19	Mix:Delay R Lvl	0-10
20	Mix:Delay L Lvl	0-10
21	Mix:Flange R Lvl	0-10
22	Mix:Flange L Lvl	0-10

Algorithm 21
Cho+Dly+Room+Mix

2	Chorus Delay	0-60
3	Chorus LFO Speed	0-65
4	Chorus LFO Depth	0-99
5	Delay In:Dry	0-10
6	Delay In:Chorus	0-10
7	Delay Time	0-147
8	Delay Feedback	0-11
9	Reverb In:Dry	0-10
10	Reverb In:Chorus	0-10
11	Reverb In:Delay	0-10
12	Reverb Predelay	0-60
13	Reverb Filter	0-2
14	Reverb Decay	0-11 (A)
15	Mix:Dry Level	0-10
16	Mix:Chorus R Lvl	0-10
17	Mix:Chorus L Lvl	0-10
18	Mix:Delay R Lvl	0-10
19	Mix:Delay L Lvl	0-10
20	Mix:Reverb R Lvl	0-10
21	Mix:Reverb L Lvl	0-10
22	Not used, set to	0

Algorithm 22
Fla+Dly+Room+Mix

2	Flange Delay	0-10
3	Flange LFO Speed	0-65
4	Flange LFO Depth	0-99
5	Flange Feedback	0-10
6	Delay In:Dry	0-10
7	Delay In:Flange	0-10
8	Delay Time	0-147
9	Delay Feedback	0-11
10	Reverb In:Dry	0-10
11	Reverb In:Flange	0-10
12	Reverb In:Delay	0-10
13	Reverb Predelay	0-60
14	Reverb Filter	0-2
15	Reverb Decay	0-11 (A)
16	Mix:Dry Level	0-10
17	Mix:Flange R Lvl	0-10
18	Mix:Flange L Lvl	0-10
19	Mix:Delay R Lvl	0-10
20	Mix:Delay L Lvl	0-10
21	Mix:Reverb R Lvl	0-10
22	Mix:Reverb L Lvl	0-10

Algorithm 23
Cho+Dly+Hall+Mix

2	Chorus Delay	0-60
3	Chorus LFO Speed	0-65
4	Chorus LFO Depth	0-99
5	Delay In:Dry	0-10
6	Delay In:Chorus	0-10
7	Delay Time	0-147
8	Delay Feedback	0-11
9	Reverb In:Dry	0-10
10	Reverb In:Chorus	0-10
11	Reverb In:Delay	0-10
12	Reverb Predelay	0-60
13	Reverb Filter	0-2
14	Reverb Decay	0-21 (B)
15	Mix:Dry Level	0-10
16	Mix:Chorus R Lvl	0-10
17	Mix:Chorus L Lvl	0-10
18	Mix:Delay R Lvl	0-10
19	Mix:Delay L Lvl	0-10
20	Mix:Reverb R Lvl	0-10
21	Mix:Reverb L Lvl	0-10
22	Not used, set to	0

Algorithm 24
Fla+Dly+Hall+Mix

2	Flange Delay	0-10
3	Flange LFO Speed	0-65
4	Flange LFO Depth	0-99
5	Flange Feedback	0-10
6	Delay In:Dry	0-10
7	Delay In:Flange	0-10
8	Delay Time	0-147
9	Delay Feedback	0-11
10	Reverb In:Dry	0-10
11	Reverb In:Flange	0-10
12	Reverb In:Delay	0-10
13	Reverb Predelay	0-60
14	Reverb Filter	0-2
15	Reverb Decay	0-21 (B)
16	Mix:Dry Level	0-10
17	Mix:Flange R Lvl	0-10
18	Mix:Flange L Lvl	0-10
19	Mix:Delay R Lvl	0-10
20	Mix:Delay L Lvl	0-10
21	Mix:Reverb R Lvl	0-10
22	Mix:Reverb L Lvl	0-10

Algorithm 25
EQ+Chor+4Tap+Mix

2	LPF Cut-Off Freq	0-22
3	Chorus Dly Time	0-60
4	Chorus LFO Speed	0-65
5	Chorus LFO Depth	0-99
6	Delay In:EQ	0-10
7	Delay In:Chorus	0-10
8	Delay Time Tap1	0-222
9	Delay Time Tap2	0-222
10	Delay Time Tap3	0-222
11	Delay Time Tap4	0-222
12	Delay Time Feed	0-222
13	Delay Feedback	0-11
14	Mix:EQ Level	0-10
15	Mix:Chorus Level	0-10
16	Mix:Tap1 R Level	0-10
17	Mix:Tap1 L Level	0-10
18	Mix:Tap2 Level	0-10
19	Mix:Tap3 Level	0-10
20	Mix:Tap4 R Level	0-10
21	Mix:Tap4 L Level	0-10
22	Not used, set to	0

Algorithm 26
EQ+Flan+4Tap+Mix

2	LPF Cut-Off Freq	0-22
3	Flange Dly Time	0-10
4	Flange LFO Speed	0-65
5	Flange LFO Depth	0-99
6	Flange Feedback	0-10
7	Delay In:EQ	0-10
8	Delay In:Flange	0-10
9	Delay Time Tap1	0-222
10	Delay Time Tap2	0-222
11	Delay Time Tap3	0-222
12	Delay Time Tap4	0-222
13	Delay Time Feed	0-222
14	Delay Feedback	0-11
15	Mix:EQ Level	0-10
16	Mix:Flange Level	0-10
17	Mix:Tap1 R Level	0-10
18	Mix:Tap1 L Level	0-10
19	Mix:Tap2 Level	0-10
20	Mix:Tap3 Level	0-10
21	Mix:Tap4 R Level	0-10
22	Mix:Tap4 L Level	0-10

27 Algorithm definitions

Each of the 27 algorithm definitions holds a 22 byte program definition (27 * 22 = 594 bytes). The 1st entry is the latest parameter settings for algorithm 0, the 2nd entry is the latest parameter settings for algorithm 1, etc. See Program Definitions for the structure of each of the 27 algorithms. The DSP256 uses this table while changing a program's algorithm.

Program number (0-255)

Program number + 1 is the program that is running in the DSP256.

Midi receive channel (0 - 17)

0 Receive MIDI Disabled
1-16 Receive MIDI on Channel 1-16
17 Receive MIDI on All Channels

Global link table of parameters to continuous controllers (P2CC)

All parameters in the DSP256 are assigned a parameter number. This number is used as an offset into the P2CC table. The value of an entry in the P2CC may be 0 through 129. 0 - 127 correspond to continuous controllers 0 - 127. 128 is Channel Pressure and 129 is NotLinked. The following table lists the DSP256 parameter number assignments and shows the correspondence between a byte in the P2CC and a DSP256 parameter.

1	Not Used	32	Mix:Tap3 L Level
2	Flange Delay	33	Mix:Tap4 R Level
3	Flange LFO Speed	34	Mix:Tap4 L Level
4	Flange LFO Depth	35	Reverb In:Dry
5	Flange Feedback	36	Reverb In:Chorus
6	Flange EQ Source	37	Reverb In:Delay
7	Mix:Flange R Lvl	38	Reverb Filter
8	Mix:Flange L Lvl	39	Pre-Delay Time
9	Chorus Delay	40	Reverb Decay
10	Chorus LFO Speed	41	Mix:Reverb R Lvl
11	Chorus LFO Depth	42	Mix:Reverb L Lvl
12	Chorus EQ Source	43	Early Rflct Lvl
13	Mix:Chorus R Lvl	44	Subsequent Level
14	Mix:Chorus L Lvl	45	Norm Reflctivity
15	Mix:Dry Level	46	Norm Room Volume
16	Delay Time	47	Damping Factor
17	Delay Feedback	48	Envelopment
18	Delay In:Dry	49	Subsequent Delay
19	Delay In:Flange	50	Subsqnt Difusion
20	Delay In:EQ	51	Early Delay Time
21	Delay EQ Source	52	Early Diffusion
22	Mix:Delay R Lvl	53	Gate Envelope
23	Mix:Delay L Lvl	54	Mix:Accent Right
24	Not Used	55	Mix:Accent Left
25	Delay Time Tap2	56	Band 1 Frequency
26	Delay Time Tap3	57	Band 1 Level
27	Delay Time Tap4	58	Band 2 Frequency
28	Delay Time Feed	59	Band 2 Level
29	Mix:Tap2 R Level	60	Band 3 Frequency
30	Mix:Tap2 L Level	61	Band 3 Level
31	Mix:Tap3 R Level	62	LPF Cut-Off Freq

63	Mix:EQ Level
64	Graphic 63 Hz
65	Graphic 125 Hz
66	Graphic 250 Hz
67	Graphic 500 Hz
68	Graphic 1.0 KHz
69	Graphic 2.0 KHz
70	Graphic 4.0 KHz
71	Graphic 8.0 KHz
72	Graphic 16 Khz
73	Accent Delay
74	Mix:Flange Level
75	Mix:Chorus Level
76	Dry Level
77	Delay In:Chorus
78	Delay Time Tap1
79	Reverb In:Flange
80	Gate Decay Time
81	Accent Level
82	Mix:Gate R Level
83	Mix:Gate L Level
84	Reverse Time
85	Mix:Revrse R Lvl
86	Mix:Revrse L Lvl
87	Mix:Tap2 Level
88	Mix:Tap3 Level
89	Mix:Tap1 R Level
90	Mix:Tap1 L Level
91	Not Used
92	Bypass
93	Repeat Hold

Translation table of received midi program number to DSP256 program number (MIDI_TO_PROGRAM)

This 128 byte table is used to translate received midi program numbers to DSP256 program numbers. The received midi program number is used as an index into the MIDI_TO_PROGRAM table. The byte at that index is the program number to change to. Bytes in this table have the value of 0-255.

PROGRAM_NUMBER = MIDI_TO_PROGRAM[received midi program number]

Send program change flag (0-1)

When set to 1, a program change from the hand controller is transmitted on the receive midi channel. When set to 0, no program changes are generated from the DSP256.

Hand controller flag (0-1)

Set to 1 if the hand controller is to be used. Set to 0 if the foot switch is to be used.

Foot switch function table

17 byte table for unique foot switch combinations. The value of a byte in this table has the following definition:

0 No Function

- 1 Program Up
- 2 Program Down
- 3 Parameter Up
- 4 Parameter Down
- 5 Parameter Right
- 6 Parameter Left
- 7 Compare
- 8 Store
- 9 Name
- 10 Utility
- 11 Bypass
- 12 Repeat Hold
- 13 Select Program, use corresponding byte in the foot switch program table.

Foot switch program table

17 Byte table that contains the program number to be selected when a foot switch is configured to Select Program.

LCD contrast value

0 (00h)	LCD Contrast 1
16 (10h)	LCD Contrast 2
32 (20h)	LCD Contrast 3
48 (30h)	LCD Contrast 4
64 (40h)	LCD Contrast 5
80 (50h)	LCD Contrast 6
96 (60h)	LCD Contrast 7
112 (70h)	LCD Contrast 8
128 (80h)	LCD Contrast 9
144 (90h)	LCD Contrast 10

DSP256 Parameters

The DSP256 parameters are listed in alphabetical order. The display value of the parameter is given if the display value is different then the parameter value.

Accent Delay (0-10)

0	-50 ms
1	-40 ms
2	-30 ms
3	-20 ms
4	-10 ms
5	0 ms
6	+10 ms
7	+20 ms
8	+30 ms
9	+40 ms
10	+50 ms

Accent Level (0-10)**Band 1 Frequency (0-14)**

0	0.10 kHz
1	0.14 kHz
2	0.20 kHz
3	0.28 kHz
4	0.40 kHz
5	0.56 kHz
6	0.80 kHz
7	1.13 kHz
8	1.60 kHz
9	2.26 kHz
10	3.20 kHz
11	4.53 kHz
12	6.40 kHz
13	9.05 kHz
14	12.0 kHz

Band 2 Frequency (0-14)

See Band 1 Frequency

Band 3 Frequency (0-14)

See Band 1 Frequency

Band 1 Level (0-12)

0	-12 dB
1	-10 dB
2	- 8 dB
3	- 6 dB
4	- 4 dB
5	- 2 dB
6	0 dB
7	+ 2 dB
8	+ 4 dB
9	+ 6 dB
10	+ 8 dB
11	+10 dB
12	+12 dB

Band 2 Level (0-12)

See Band 1 Level

Band 3 Level (0-12)

See Band 1 Level

Chorus Delay (0-60)

0	0 Millisecs.
.	.
60	60 Millisecs.

Chorus Dly Time (0-60)

0	0 Millisecs.
.	.
60	60 Millisecs.

Chorus EQ Source (0-1)

0	Pre-EQ
1	Post-EQ

Chorus LFO Speed (0-65)**Chorus LFO Depth (0-99)****Damping Factor (0-9)**

0	1
.	.
9	10

Delay EQ Source (0-1)

0	Pre-EQ
1	Post-EQ

Delay Feedback (0-11)

0	0 %
1	10 %
2	20 %
3	30 %
4	40 %
5	50 %
6	60 %
7	70 %
8	80 %
9	90 %
10	99 %

11 Repeat Hold

Delay In:Chorus (0-10)**Delay In:Dry (0-10)****Delay In:EQ (0-10)****Delay In:Flange (0-10)****Delay Time (0-222)**

0	0.000 Seconds
1	0.001 Seconds
.	.
39	0.039 Seconds
40	0.040 Seconds
41	0.045 Seconds
.	.
111	0.395 Seconds
112	0.400 Seconds
113	0.410 Seconds
.	.
146	0.740 Seconds
147	0.750 Seconds

.

221 1.490 Seconds

222 1.500 Seconds

Delay Time Feed (0-222)

See Delay Time

Delay Time Tap1 (0-222)

See Delay Time

Delay Time Tap2 (0-222)		Gate Envelope (0-1)	
See Delay Time		0 Flat	
Delay Time Tap3 (0-222)		1 Decaying	
See Delay Time		Graphic 63 Hz (0-12)	
Delay Time Tap4 (0-222)		see Band 1 Level	
See Delay Time		Graphic 125 Hz (0-12)	
Dry Level (0-10)		See Band 1 Level	
Early Delay Time (0-70)		Graphic 250 Hz (0-12)	
0 0 Millisecs.		See Band 1 Level	
.		Graphic 500 Hz (0-12)	
70 70 Millisecs.		See Band 1 Level	
Early Diffusion (0-9)		Graphic 1.0 KHz (0-12)	
0 1		See Band 1 Level	
.		Graphic 2.0 KHz (0-12)	
9 10		See Band 1 Level	
Early Rflct Lvl (0-10)		Graphic 4.0 KHz (0-12)	
Envelopement (0-9)		See Band 1 Level	
0 1		Graphic 8.0 Khz (0-12)	
.		See Band 1 Level	
9 10		Graphic 16 Khz (0-12)	
Flange Delay (0-60)		See Band 1 Level	
0 0 Millisecs.		LPF Cut-Off Freq (0-22)	
.		0 100 Hz	
60 60 Millisecs.		1 480 Hz	
Flange Dly Time (0-10)		2 570 Hz	
0 0 Millisecs.		3 670 Hz	
.		4 800 Hz	
10 10 Millisecs.		5 950 Hz	
Flange EQ Source (0-1)		6 1.1 kHz	
0 Pre-Eq		7 1.3 kHz	
1 Post-Eq		8 1.6 kHz	
Flange Feedback (0-10)		9 1.9 kHz	
0 0 %		10 2.2 kHz	
1 10 %		11 2.6 kHz	
2 20 %		12 3.2 kHz	
3 30 %		13 3.8 kHz	
4 40 %		14 4.5 kHz	
5 50 %		15 5.3 kHz	
6 60 %		16 6.4 kHz	
7 70 %		17 7.6 kHz	
8 80 %		18 9.0 kHz	
9 90 %		19 10 kHz	
10 99 %		20 12 kHz	
Flange LFO Speed (0-65)		21 15 kHz	
Flange LFO Depth (0-99)		22 18 kHz	
Gate Decay Time (0-11)		Mix:Accent Left (0-10)	
0 50 ms		Mix:Accent Right (0-10)	
1 100 ms		Mix:Chorus L Lvl (0-10)	
2 150 ms		Mix:Chorus Level (0-10)	
3 200 ms		Mix:Chorus R Lvl (0-10)	
4 250 ms		Mix:Delay L Lvl (0-10)	
5 300 ms		Mix:Delay R Lvl (0-10)	
6 350 ms		Mix:Dry Level (0-10)	
7 400 ms		Mix:EQ Left (0-10)	
8 450 ms		Mix:EQ Level (0-10)	
9 500 ms		Mix:EQ Right (0-10)	
10 550 ms		Mix:Flange L Lvl (0-10)	
11 600 ms		Mix:Flange Level (0-10)	
		Mix:Flange R Lvl (0-10)	
		Mix Gate Left (0-10)	

Mix Gate Right (0-10)
 Mix:Gate L Level (0-10)
 Mix:Gate R Level (0-10)
 Mix:Reverb L Lvl (0-10)
 Mix:Reverb R Lvl (0-10)
 Mix:Revrse L Lvl (0-10)
 Mix:Revrse R Lvl (0-10)
 Mix:Tap1 L Level (0-10)
 Mix:Tap1 R Level (0-10)
 Mix:Tap2 L Level (0-10)
 Mix:Tap2 Level (0-10)
 Mix:Tap2 R Level (0-10)
 Mix:Tap3 L Level (0-10)
 Mix:Tap3 Level (0-10)
 Mix:Tap3 R Level (0-10)
 Mix:Tap4 L Level (0-10)
 Mix:Tap4 R Level (0-10)
 Norm Reflectivity (0-10)
 0 1.0 Seconds
 1 1.2 Seconds
 2 1.4 Seconds
 3 1.6 Seconds
 4 1.9 Seconds
 5 2.2 Seconds
 6 2.5 Seconds
 7 2.9 Seconds
 8 3.4 Seconds
 9 4.0 Seconds
 10 4.6 Seconds
 11 5.4 Seconds
 12 6.3 Seconds
 13 7.4 Seconds
 14 8.6 Seconds
 15 10 Seconds
 16 12 Seconds
 17 14 Seconds
 18 16 Seconds
 19 19 Seconds
 20 22 Seconds
 21 25 Seconds
 22 29 Seconds
 23 34 Seconds
 24 40 Seconds
 25 46 Seconds
 26 54 Seconds
 27 63 Seconds
 28 74 Seconds
 29 86 Seconds
 30 99 Seconds
 Norm Room Volume (0-9)
 0 0.1
 . .
 9 1.0
 Pre-Delay Time (0-80)
 0 0 Millisecs.
 . .
 80 80 Millisecs.
 Reverb Decay (A) (0-11)
 0 100 Millisec.
 . .

11 1200 Millisec.
 Reverb Decay (B) (0-19)
 0 1.00 Seconds
 1 1.15 Seconds
 2 1.33 Seconds
 3 1.53 Seconds
 4 1.77 Seconds
 5 2.00 Seconds
 6 2.35 Seconds
 7 2.71 Seconds
 8 3.13 Seconds
 9 3.61 Seconds
 10 4.16 Seconds
 11 4.80 Seconds
 12 5.54 Seconds
 13 6.39 Seconds
 14 7.37 Seconds
 15 8.50 Seconds
 16 9.80 Seconds
 17 11.30 Seconds
 18 13.00 Seconds
 19 15.00 Seconds
 20 17.30 Seconds
 21 20.00 Seconds
 Reverb Filter (0-2)
 0 Bright
 1 Soft
 2 Warm
 Reverb In:Chorus (0-10)
 Reverb In:Delay (0-10)
 Reverb In:Dry (0-10)
 Reverb In:Flange (0-10)
 Reverb Predelay (0-60)
 0 0 Millisecs.
 . .
 60 60 Millisecs.
 Reverse Time (0-11)
 0 50 ms
 1 100 ms
 2 150 ms
 3 200 ms
 4 250 ms
 5 300 ms
 6 350 ms
 7 400 ms
 8 450 ms
 9 500 ms
 10 550 ms
 11 600 ms
 Subsequent Delay (0-70)
 0 0 Millisecs.
 . .
 70 70 Millisecs.
 Subsqnt Difusion (0-9)
 0 1
 . .
 9 10
 Subsequent Level (0-10)

CHARACTER SET

00h
01h Scan line 6
02h Scan line 5
03h
04h Scan line 3
05h Scan line 2
06h Scan line 7
07h Scan line 0

20h - 7DH Ascii codes
7Eh
7Fh
A0h - FFh Katakana & misc characters

The full character set of the DigiTech display may be found in the Hitachi Liquid Crystal Display Modules (1987) data book page 37.