

MIDI

Documentation

for

Vocalizer[®] 1000
(Software Versions E and F)

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1 Hardware

The Vocalizer®1000 MIDI (musical instrument digital interface) hardware consists of one MIDI Output (Out) and one MIDI Input (In) port, located on the right side panel of the Vocalizer®1000 console. The MIDI In port conforms to the standard MIDI specification in all areas except that it does not utilize an optical isolator and is not configured as a current loop input. This should not cause problems unless (a) the Vocalizer is being connected to a device which also does not conform (there are reports of at least one Apple Macintosh interface that does not work correctly with the Vocalizer), or (b) a ground loop condition occurs.

2 Hooking Up and Activating MIDI

To control another synthesizer or MIDI apparatus from the Vocalizer, connect the MIDI Out of the Vocalizer to the MIDI In of the external MIDI device. Remember to turn the Vocalizer's MIDI Out on by pressing the **Option** key (on the right side panel of the Vocalizer console) followed by the **Voice Guide** key (on the lower left front panel of the Vocalizer console). When properly executed, the message on the LCD will read "MIDI Output On". MIDI Out will remain in the "on" mode until you press **Option** followed by **Voice Guide** again (it will remain in that mode even after the Vocalizer is turned off). JamLink™ and MIDI are mutually exclusive; therefore, when you turn MIDI Output on, you are also turning off JamLink. To turn on JamLink, simply turn off MIDI Input.

To control the Vocalizer from a synthesizer, connect the MIDI Out of the external device to the MIDI In of the Vocalizer. Remember to turn the MIDI In on by pressing **Option** followed by **Melody Guide**.

3 MIDI Modes

The Vocalizer operates in *Multi-mode*. What this means is that the Vocalizer will respond to all 16 MIDI channels, and each channel can have its own voice (instrument) assignment. This mode allows the user to take advantage of the multi-timbral capabilities of the Vocalizer. The Vocalizer is effectively 16 synthesizers which share voices as a resource. 10 voices are shared among the different channels. It is equivalent to having 16 synthesizers that all operate on Omni Off/ Poly mode. This is very useful when used in conjunction with a sequencer, as the Vocalizer can play all the drums and rhythm parts as well. There is no way to turn off a particular MIDI channel on the Vocalizer; therefore, it will not work properly on a shared MIDI In bus.

Refer to the MIDI Implementation Chart on the following page.

Vocalizer®1000
MIDI Implementation Chart

Version E/F

Function		Transmitted	Recognized	Remarks
Basic Channel	Default Changed	1 - 16 * (cannot change)	1 - 16 * (cannot change)	
Mode	Default Messages Altered	Multi Not Supported *****	Multi Not Supported Not Supported	
Note Number	True voice	1 - 127 *****	1 - 127 *****	
Velocity	Note On Note Off	Not Supported Not Supported	Not Supported Not Supported	
After Touch	Key's Channel	Not Supported Not Supported	Not Supported Not Supported	
Pitch Bend		Standard Pitch Bend	Standard Pitch Bend	
Control Change		07 Volume control ***** ***** ***** *****	07 Volume control 10 Pan control 13 Voice Guide Scale 45 Voice Guide Key 64 Hold pedal	
Program Change	True Number	0 - 127 *****	0 - 127 *****	
System Exclusive		No	Yes	
System Common	Song Position Song Select Tune Request	Not Supported Not Supported Not Supported	Not Supported Not Supported Not Supported	
System Real Time	Clock Commands	Not Supported Not Supported	Not Supported Not Supported	
Aux Messages	Local On/Off All Notes Off Active Sensing System Reset	Not Supported Not Supported Not Supported Not Supported	Not Supported Yes Not Supported Not Supported	

4 Controllers

The Vocalizer®1000 supports the following controllers:

<u>Controller Number</u>	<u>Description</u>
07	Volume Control
10	Pan Control
13	Voice Guide Scale
45	Voice Guide Key
64	Hold Pedal

4.1 Volume Control

Sets the volume of each of the individual channels.

4.2 Pan Control

Sets the position of the sound in the stereo image. Lower values are to the left and higher values are to the right. There are actually only 16 positions so that values 0 to 7 are all the same position. To minimize Intermodulation Distortion, only one channel should be assigned to a stereo position.

4.3 Voice Guide Scale

The Vocalizer®1000 can be assigned Voice Guides through MIDI, separately controlling the scale type and key of the Voice Guide setting. The "Voice Guide Scale" controller selects the Voice Guide scale to be used. The scales supported are:

<u>Controller Value</u>	<u>Scale Type</u>
0	Ionian
1	Ionian (no 4th)
2	Dorian
3	Lydian
4	Mixolydian
5	Aeolian
6	Pentatonic Major
7	Pentatonic Minor
8	Harmonic Minor
9	Blues
10	Blues + Major 3rd and Major 6th
11	Diminished
12	Whole Tone

4.4 Voice Guide Key

Sets the key of the Voice Guide scale. This is normally paired with a Voice Guide Scale control value. The keys are as follows, "0 = C, 1 = C#, 2 = E, ..., 11 = B".

5 Program Assignments

The Vocalizer®1000 actually has 74 instrument sounds stored internally, of which only 28 are accessible from the console's front panel. The others are available to the MIDI user and the SmartSong composer. SmartSong cartridges can access any of the 74 instruments for background parts. The program assignment numbers for all internal instruments are listed on the following page.

Program Number

Description

Accessible by Front Panel

0	Piano
1	Electric Guitar
2	Flute
3	Saxophone
4	Violin
5	Bells
6	Spirit
7	Electric Piano
8	Fuzz Guitar
9	Whistle
10	Trumpet
11	Cello
12	Marimba
13	Warp
14	Piano Strings
15	Electric Bass
16	Clarinet
17	Trombone
18	Acoustic Bass
19	Steel Drums
20	Fusion
21	Organ
22	Slap Bass
23	Harmonica
24	Synth Brass
25	Synth Strings
26	Synth Drums
27	Sara

Accessible by MIDI

28	Tuner (sine wave)
29	Kick Drum
30	Snare Drum
31	Fat Snare Drum
32	Power Toms
33	Toms
34	Closed Hi Hat
35	Cymbal
36	Ride Cymbal
37	Conga Drum
38	Rim Shot
39	Shaker
40	Cowbell
41	Woodblock
42	Log Drum
43	Simmons Drums
44	Metal Worker

<u>Program Number</u>	<u>Description</u>
45	Digital Piano
46	New Age Synth
47	Marcato String Ensemble
48	Stevie Synth Bass
49	Sax Section
50	Horn Section
51	Full Synth
52	Fretless Bass
53	Legend Synth
54	Brass Section
55	Analog Synth I
56	Analog Synth II
57	Voices
58	Chimes
59	Oboe
60	Fusion Keyboard
61	Jewel
62	Rowdy Bass Moog
63	Sailing Synth
64	"Hammond B3" sound
65	Synth Pad
66	Rowdy GX-1
67	Ruddey Synth
68	Synth Bass
69	Bell/Symphony
70	Bone Section
71	Rhodes Piano
72	French Horns
73	Rap Drum

6 Program Notes

Unlike most drum machines, the Vocalizer drums are actually synthesizer patches. As such, they respond to all notes. Some drum patches will sound good on only a few notes, while others sound reasonably good along multiple octaves. Recommended notes for selected drum patches are as follows:

<u>Program</u>	<u>Notes</u>
Kick Drum	C3
Snare Drum	E5
Hi Hat	A5
Toms	F4 - D5

7 Some Helpful Hints

If you have a Vocalizer which has Trumpet as its default instrument (i.e., that is the instrument assigned just after turning the Vocalizer on), you cannot change the MIDI instrument from the front panel. You can only change the instruments via the MIDI

Program Change message (which most synthesizers send when you press a patch select key). If you have a Vocalizer with Saxophone as its default instrument, you can change the instrument from MIDI channel 1 from the front panel.

The Vocalizer sends out SmartSong notes on several MIDI channels. If you have a synthesizer, you can have the synthesizer play some or all of the notes of the SmartSong when the Vocalizer is playing.

The Vocalizer also sends out volume control (controller 7) and Program Change messages when the Instrument Volume and instrument keys are pressed. If your synthesizer responds to these messages you can control it from the Vocalizer.

If the Vocalizer is not responding to notes or is not sending notes, make sure you have enabled the corresponding MIDI function using the Option and Voice Guide (MIDI Output) or Melody Guide (MIDI Input) keys.

8 System Exclusive Messages

8.1 System Exclusive Header

The Vocalizer[®]1000 uses the follow system exclusive headers:

<u>Byte</u>	<u>Description</u>
F0h	System Exclusive
00h	Manufacturer's ID
00h	"
25h	"
01h	Product ID (Vocalizer [®] 1000)
cc	Command
[d0]	Data Bytes
[d1]	"
[d2]	"
.	
.	
.	
[dn]	Last Data Byte
F7h	End of System Exclusive

8.2 Patch Download Messages

Patch Download messages allow a new instrument patch to be downloaded into the Vocalizer memory. Memory is allocated for the patch and the patch data is placed into it. The MIDI channel contained in the patch message will then use the downloaded patch. If the patch is downloaded to MIDI channel 1 (channel byte = 0), the lead voice will also play the new patch. Only one patch can be active at a time. If a new patch is downloaded, it will replace the existing one. If the new patch is downloaded to a different MIDI channel, both the new channel and the old one will play the new patch, until one or the other receives a program change. This is also true of the lead voice. The following is the format of the Patch Download Message:

F0 00 00 25 01	System Exclusive Header
01	Patch Download Command
00	MIDI Channel
0a	Upper Nibble Data Byte 0
0b	Lower Nibble Data Byte 0
0c	Upper Nibble Data Byte 1
0d	Lower Nibble Data Byte 1
.	.
.	.
0y	Upper Nibble Data Byte 67
0z	Lower Nibble Data Byte 67
F7	End of System Exclusive

8.21 Patch Data

<u>Byte Offset</u>	<u>Description</u>
0	Mode Parameters
3	Oscillator 1
12	Oscillator 2
21	Oscillator 3
30	Envelope 1
40	Envelope 2
50	Envelope 3
60	LFO 1
64	LFO 2

8.22 Mode Parameters

<u>Byte(s)</u>	<u>Bit(s)</u>	<u>Description</u>	<u>Value Range</u>
0		Final Envelope Depth	0 to 63
1	0 - 3	Amplitude Modulator Source	0 to 4
	4	Oscillator Sync	0 to 1
	5	Oscillator Phasing	0 to 1
	6	Full Cycle Envelope	0 to 1
2		Amplitude Modulator Depth	-63 to 63

8.23 Oscillator Parameters

<u>Byte(s)</u>	<u>Bit(s)</u>	<u>Description</u>	<u>Value Range</u>
0		Oscillator Waveform Number	0 to 255
1 - 2		Oscillator Frequency Offset	-12280 to 12280
3	0 - 3	Amplitude Modulator Source	0 to 4
4		Amplitude Modulator Depth	-63 to 63
5	0 - 3	Frequency Modulator 1 Source	0 to 4
	4 - 7	Frequency Modulator 2 Source	0 to 4
6	0 - 6	Frequency Modulator 1 Depth	-63 to 63

7	7	FM 2 Depth 4x Multiplier	
	0 - 6	Frequency Modulator 2 Depth	-63 to 63
	7	FM Depth 4x Multiplier	
8		Oscillator Balance Control	0 to 63

8.24 Envelope Parameters

<u>Byte(s)</u>	<u>Bit(s)</u>	<u>Description</u>	<u>Value Range</u>
0		Envelope Time 1	0 to 63
1		Envelope Time 2	0 to 63
2		Envelope Time 3	0 to 63
3		Envelope Time 4	0 to 63
4		Envelope Level 1	-63 to 63
5		Envelope Level 2	-63 to 63
6		Envelope Level 3	-63 to 63
7		Keyboard Decay Scaling	0 to 63
8		Reserved	0
9		Reserved	0

8.25 LFO Parameters

<u>Byte(s)</u>	<u>Bit(s)</u>	<u>Description</u>	<u>Value Range</u>
0		LFO Frequency	0 to 63
1	0 - 5	LFO Level 1	0 to 63
	6 - 7	LFO Waveform (Upper Bits)*	0 to 7
2	0 - 5	LFO Level 2	0 to 63
	6 - 7	LFO Waveform (Lower Bits)*	0 to 7
3		LFO Delay Time	0 to 63

* upper and lower bits are combined for range of 0 to 7

8.3 Keypress Message

This message allows control of the Vocalizer from a sequencer or other external device. The Vocalizer will execute key sequences exactly as if the key on the keyboard had been pressed. The message can contain any number of keystrokes terminated by an End of System Exclusive byte. The format for the message is as follows:

```

F0 00 00 25 01   System Exclusive Header
02               Keypress Command
kk               Key Number
ll               [Next key number]
.
.
.
zz               [Last key number]
F7               End of System Exclusive

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