



LEADING THE WORLD IN SOUND INNOVATION

SoundscapeTM

16-Bit ENSONIQ Wavetable Sound Board

Hardware User's Manual



Contents

INTRODUCTION

What is Soundscape?	5
Soundscape Features	6
Synthesizer	6
Digital Audio	6
MIDI	6
CD-ROM Controller	6
Mixer	7
Included Software	7
Soundscape Technology	7
About This Manual	8

INSTALLING SOUNDSCAPE

What You Need	9
What You Should Have	9
Preparing Your Computer	10
Configuring Your Soundscape Card Prior to Installation	12
Jumper Locations and Functions	13
Internal CD-ROM Connectors	16
External Audio Connectors	17
Placing the Card in Your Computer	18
Software Installation	21
Tips for Successful Installation	21
Software Installation Procedure	22
Standard Modifications to Start-up Files	23
AUTOEXEC.BAT	23
SYSTEM.INI	23
MIDIMAP.CFG	24
CD-ROM Modifications	24
CONFIG.SYS	24
AUTOEXEC.BAT	25

CONFIGURING SOUNDSCAPE

Configuring Your Soundscape Card Under DOS	27
DOS Operating Modes	27
Choosing the Best Sound Option	28
Using SSInit	29

SSInit Hardware Configuration Interface	29
Quick Setup Screen	30
Using Advanced Settings.....	31
Hardware Settings Screen.....	31
Base Values	32
Sound Blaster	33
Mixer Settings Screen	34
Synthesizer Configuration.....	36
Configuring Your Soundscape Card Under Windows	38
Primary Wave Record/Playback Setup.....	39
MIDI Synth and Secondary Wave Playback Setup	40

USING SOUNDSCAPE

Using Soundscape under DOS.....	43
Using Soundscape with Games	43
Using Batch Files with Games.....	44
Using Soundscape with the DOS Command Line Players	45
Using Soundscape with Windows	46
Multimedia Applications.....	46
MIDI Devices under Windows	46
Using the External MIDI Connector.....	47
Using the MIDI Mapper with Soundscape	47
Setups.....	47
Routing MIDI Data to Soundscape's External MIDI Out Port	50
Patch Maps.....	51
Key Maps.....	53

MORE ABOUT MIDI

What is MIDI?.....	55
General MIDI.....	56
MT-32 Sound Set	59

TROUBLESHOOTING

Problems When Using Two Sound Cards.....	61
Configuration Problems.....	61
Audio Problems	62
Problems Internal to Soundscape	63
Problems with Games	63
Problems under Windows.....	64
Problems with MIDI under Windows	65

TECHNICAL SPECIFICATIONS

Specifications	67
Synthesizer	67
FM Synthesis.....	67
Audio Inputs.....	67
Output.....	68

Digital	68
Audio Mixing	69
Host Interface	69
Connector Pinout	70

GLOSSARY

INTRODUCTION

Congratulations on your purchase of Soundscape! Soundscape provides the very latest in sound card technology, offering unparalleled sonic quality far exceeding that of previous sound cards, along with powerful facilities for the recording, playback, and synthesis of sound. Soundscape comes bundled with a selection of software programs designed to help you get the most out of its extensive capabilities. With Soundscape, you can add stunning sound to games, multimedia presentations, musical compositions, or any other applications that use sound.

What is Soundscape?

Soundscape is an expansion card which adds extensive sound recording and playback capabilities to your PC, as well as providing an interface for many popular CD-ROM drives. Its embedded microprocessor utilizes custom synthesis technology developed by ENSONIQ, one of the leading manufacturers of professional synthesizers and samplers.

When used with Windows applications, Soundscape meets or exceeds all MPC (Multimedia PC) Level-2 requirements. When used with DOS applications, Soundscape offers three operational modes to provide the maximum level of compatibility with games and other software products currently on the market. One of the following three Soundscape modes will be simultaneously used with a digital audio game or multimedia software set-up (such as PCM, Adlib, or Sound Blaster):

- ❑ General MIDI mode - In this mode, Soundscape provides an MPU-401 compatible General MIDI synthesizer (*For more information about MIDI and General MIDI, see Appendix A*).
- ❑ MT-32 mode - In this mode, Soundscape offers emulation of the popular Roland MT-32 synthesizer.

- FM mode - In this mode, Soundscape emulates the FM synthesis process to support software that can only be run with an FM board.
- Soundscape is not compatible with games that require ADPCM.

Soundscape Features

Here's a brief overview of the many features provided by Soundscape:

Synthesizer

- Provides up to 32 voices of wavetable synthesis
- On-board sound ROMs contain 2 megabytes of sound samples
- Includes General MIDI and Roland MT-32 sound sets as well as AdLib / Sound Blaster FM synthesizer emulation

Digital Audio

- Allows the recording of CD-quality stereo sound (up to 16 bits, 44.1 kHz sampling rate) from Mic/Line and CD/Aux inputs as well as from the internal synthesizer.
- Provides simultaneous playback of up to three stereo wave samples of 8- and/or 16-bit mono or stereo sound.
- Enables playback of standard PC Wave files (e.g., .VOC, .WAV, ...)
- Under DOS, provides compatible digital audio playback

MIDI

- Provides an MPU-401 compatible MIDI interface, including MIDI In and MIDI Out/Thru
- Adds an external MIDI In/Out port to your PC
- Allows the recording of MIDI events from an external MIDI keyboard controller.
- Enables playback of standard PC MIDI files (e.g., .MID, .ROL, ...) to either the on-board synthesizer or to an external synthesizer

CD-ROM Controller

- Supports the following CD-ROM drives:
 - Sony CDU-31A and CDU-33A

Mitsumi CRMC- LU005-S

Mitsumi CRMC-FX001 and CRMC-FX001D

Matsushita CR-52x and CR-56x

Mixer

- ❑ Provided software mixer allows synthesizer and digital audio output to be mixed with signal arriving at the card's "CD/Aux" and "Mic/Line" inputs.

Included Software

Soundscape comes supplied with installation software, configuration and initialization utilities, device drivers, and a number of applications for both DOS and Windows. See the software applications manual included with this package for details on the DOS and Windows applications.

Soundscape Technology

Soundscape technology is a combination of hardware and software that provides the highest quality in PC sound and the greatest compatibility with current standards. Soundscape's driver compatibility enables continued software support as new standards emerge.

Soundscape technology was developed by ENSONIQ, a recognized leader in the electronic musical instrument industry. The same advanced chip designs that function as the engines for ENSONIQ's line of professional-level synthesizers, samplers, and effect processors have been used in Soundscape. In addition to this impressive array of hardware technology, your Soundscape card contains the result of many years experience in sound development. Every instrument sound has been created with wavetable synthesis and held to a professional performance standard. Each sound in the wavetable is derived from real instrument sounds that have been carefully produced for inclusion in ENSONIQ's extensive sound library.

ENSONIQ™

LEADING THE WORLD IN SOUND INNOVATION

For more information about the ENSONIQ Product Line, write to this address:

ENSONIQ Corp.
Accessory Desk, Dept. SS
155 Great Valley Parkway
P.O. Box 3035
Malvern, PA 19355-0735

About This Manual

We recognize that many people do not read manuals; however, an ounce of caution is worth a pound of prevention, so we do strongly recommend that you take a few moments to go through these pages before installing your Soundscape hardware and software. In particular, we recommend that you carefully read the information preceded by the following two symbols, which have these special meanings:

- ★ This is a CAUTION. It lets you know that if you fail to heed the accompanying message, you could damage your system or software. Be sure to read these!

- ☞ This is a hint, tip, or other piece of valuable information that can save you valuable time and energy, especially during initial installation.

INSTALLING SOUNDSCAPE

What You Need

To use Soundscape, your computer system should meet the following requirements:

- 20MHz 80386 processor or better
- VGA or SVGA graphics adapter and monitor
- Mouse
- DOS 3.3 or higher
- Windows 3.1 or higher
- One open expansion slot

What You Should Have

At least 3 Mb of free hard disk space (to install all software)

Check to see that your Soundscape package contains all of the following items:

- Soundscape Sound Card in antistatic bag
- Soundscape Hardware Manual (this manual)
- Soundscape Software Manual
- Warranty/Registration card
- (2) 3 1/2" floppy disks

Preparing Your Computer

★ Static electricity can damage your equipment, but can be easily avoided. Before installing any internal optional equipment such as the Soundscape card, make sure that your computer system is turned OFF and that you observe the following antistatic precautions:

□ Ground yourself by wearing an antistatic wrist strap (available at most electronics stores). To use this wrist strap:

1. Make sure that the AC cable is securely connected to the computer and is plugged into a surge protector or grounded AC wall outlet. (If you are using a surge protector, be sure to plug it into a grounded AC wall outlet.) Don't try to use a two-pronged electrical outlet or attempt to defeat the power cord's electrical ground! **DO NOT TURN THE COMPUTER'S POWER ON DURING THE INSTALLATION PROCEDURE.**
2. Place the wrist strap on your wrist. Look for an "alligator clip" on the other end of the wrist strap's elastic cord. Some wrist straps require you to "snap" (attach) the clip to the elastic cord.
3. Attach the alligator clip securely to the edge of a D-shell shaped connector in one of the computer's serial ports (the D-shell shape surrounds the pins) or to an unpainted portion of the computer's chassis. To maintain proper grounding, the clip must remain securely attached (grounded) to the serial port connector or to an unpainted portion of the computer's chassis throughout the installation procedure.

□ If you don't have an antistatic wrist strap, you can ground yourself by performing the following steps:

1. Make sure that the AC cable is securely connected to the computer and is plugged into a surge protector or grounded AC wall outlet. (If you are using a surge protector, be sure to plug it into a grounded AC wall outlet.) Don't try to use a two-pronged electrical outlet or attempt to defeat the power cord's electrical ground! **DO NOT TURN THE COMPUTER'S POWER ON DURING THE INSTALLATION PROCEDURE.**
2. Touch and maintain continuous contact with an exposed metal

surface of the computer (e.g., an unpainted portion of the computer's rear panel, such as an unoccupied serial port) while handling or touching any chips or internal components such as the Soundscape card.

★ Always consult your system manual before opening your computer to avoid any damage.

3. Switch off your computer and all external options (printer, display, and others). *Be sure to leave the computer's power cord connected to a grounded surge protector or AC outlet with the computer's power OFF! Follow the anti-electrostatic discharge procedure described on the preceding pages.*
4. If it is necessary to disconnect peripheral equipment cables from the back of the computer, be sure to note cable positions for proper reconnection later.
5. Remove the cover-mounting screws and save them for reinstalling the cover. Your computer may resemble the one shown in figures 1 or 2.

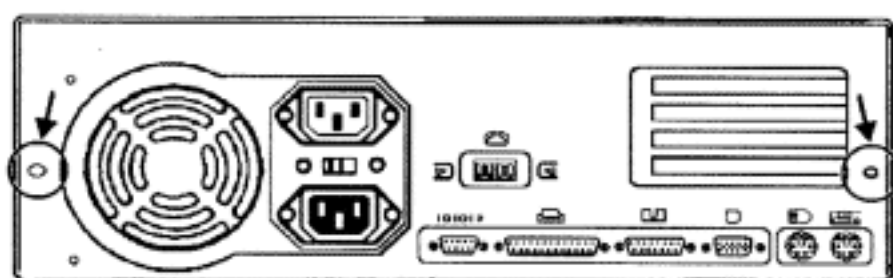


Figure 1.

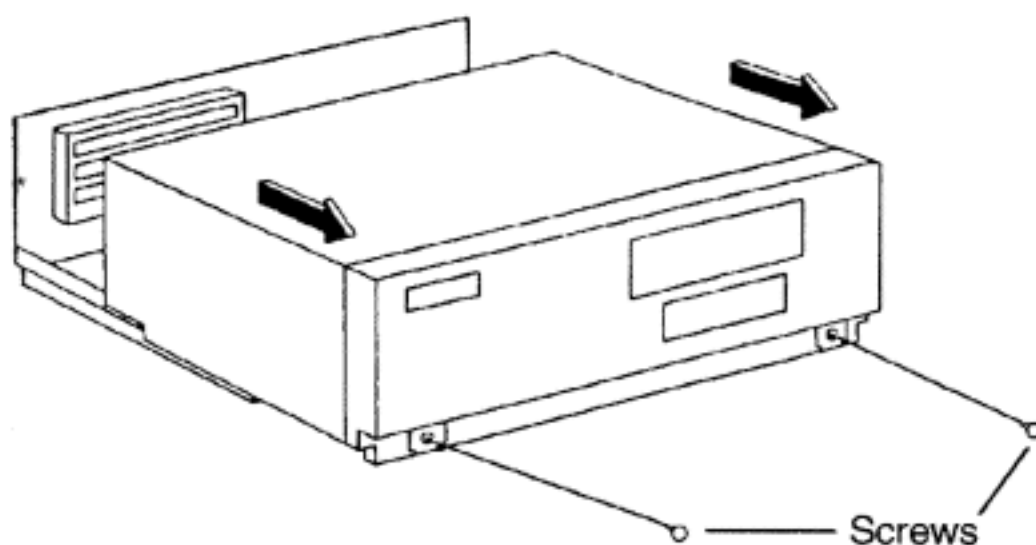


Figure 2.

6. Facing the front of the computer, hold onto both sides of the system cover. Slide the cover toward you.

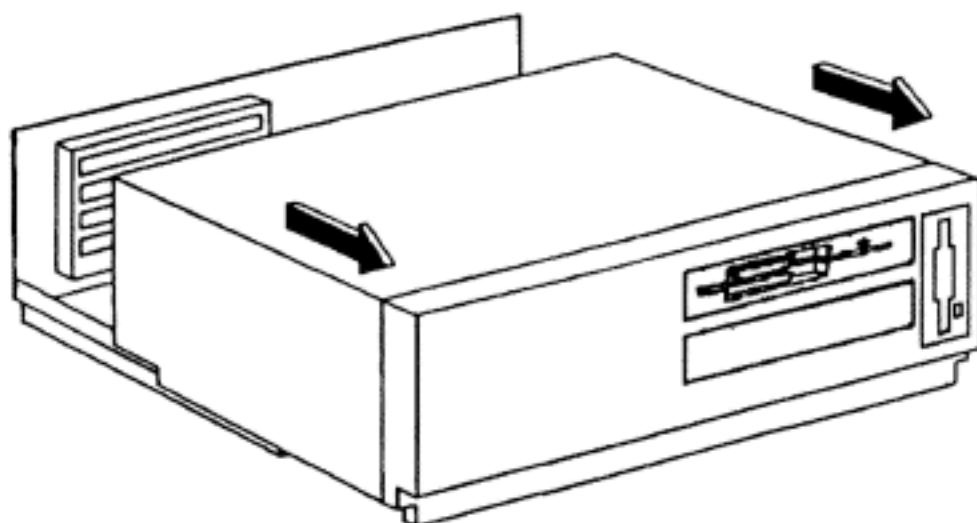


Figure 3.

7. If you have a CD-ROM drive which you are connecting to your Soundscape card, you should install it at this time. Consult the manual provided with your CD-ROM drive for detailed instructions. Make sure that your CD-ROM drive is in place with its power supply connected before continuing.

Configuring Your Soundscape Card Prior to Installation

Depending upon the settings of other expansion cards and optional components in your computer, you may need to change some or all of the Soundscape factory default settings by moving small plastic connectors called *jumper*s on the Soundscape card. This will only be necessary if one or more of the following conditions are met:

- If another expansion card or optional component in your system utilizes Soundscape's default base port address of 330H
 - Most MPU-401 compatible MIDI interfaces utilize base port 330H. If you already have such an interface card in your system, remove it before installing the Soundscape card.
- If another expansion card or optional component in your system utilizes Soundscape's default wave port address of 534H
- If you are using the Soundscape card to act as an interface for a Sony or Mitsumi CD-ROM drive.

- ❑ If you will be connecting an electret condenser microphone without a built-in battery (that is, a microphone that requires 2.5 Volts of phantom power) to the Soundscape Mic/Line input.

As you configure and install the Soundscape card, follow these basic precautions:

- ❑ Handle the card by the edges only, being careful not to touch edge connectors or exposed circuitry.
- ❑ Keep the board inside its protective antistatic packaging until you are ready to install it.
- ❑ Never place the board on a metal surface.

Jumper Locations and Functions

Do not change Soundscape's default jumper settings unless you are certain it is necessary (that is, if one or more of the four conditions listed above are met)—and if you do change a jumper location, be sure to make a note of it so that you can make appropriate selections when installing the software. To remove a jumper, grip it with a small pair of needlenose pliers and lift straight up (you can gently rock it back and forth if you meet any resistance). To replace it, position it over the desired pin(s) and press down gently but firmly until it is seated in place.

Following is a listing of the Soundscape jumpers and their functions. Default settings are indicated with bold type. Refer to figure 4 for the location of the jumpers and internal CD-ROM connectors.

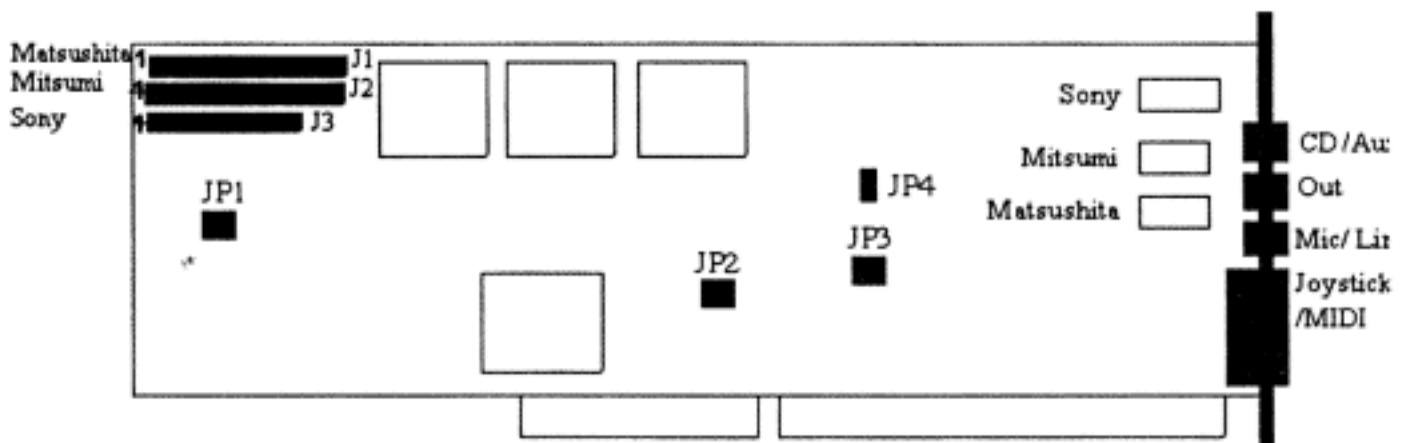


Figure 4. Jumper Locations

JP1: CD-ROM Select

This jumper selects one of three CD-ROM interfaces.

Table 1: CD-ROM Select

Position Jumper on:	To use this CD-ROM:
None	Disabled (Soundscape is not being used as a CD-ROM Interface)
Pins 1-2	Sony
Pins 3-4	Mitsumi
Pins 1-2 and 3-4	Matsushita (default setting)

- Even if you are not using Soundscape as your CD-ROM interface, you can still leave the JP1 jumpers on pins 1-2 and 3-4; this will not adversely affect performance.

JP2: Base Port Address

This jumper selects the base port address of the Soundscape card. This also corresponds to the base port address of the MPU-401 interface.

Table 2: Base Port Address

Position Jumper on:	To use this Base Port Address:
None	350H
Pins 1-2	340H
Pins 3-4	330H (default setting)
Pins 1-2 and 3-4	320H

- Many DOS games assume that your MPU-401 compatible MIDI interface uses base port 330H. Some games may not function if a different address is set.

JP3: Wave Port Address

This jumper selects the base port address of the Soundscape wave record/playback device.

Table 3: Wave Port Address

Position Jumper on:	To use this Wave Port Address:
None	F44H
Pins 1-2	534H (default setting)
Pins 3-4	608H
Pins 1-2 and 3-4	E84H

JP4: Microphone Phantom Power Supply

This jumper is used to connect 2.5 volt phantom power to the Mic/Line input jack. Leave this jumper off when using a dynamic microphone or a battery powered electret condenser microphone. Place the jumper on pins 1-2 when using an electret condenser microphone without a built-in battery.

Table 4: Microphone Phantom Power Supply

Position Jumper on:	To:
None	Phantom supply not connected
Pins 1-2	Phantom supply connected

- ★ If you are using the Microsoft Windows Sound System, note that this system includes both a microphone and a microphone adapter. The microphone is designed to be used with the adapter (the adapter adds phantom power and boosts and compresses the mic signal); however, in some circumstances, you may wish to use the microphone without the adapter. Soundscape can accommodate the usage of the Microsoft WSS microphone either with or without this adapter. If you use the Microsoft WSS microphone with its adapter, leave the JP4 jumper off. If you choose to use the Microsoft WSS microphone without its adapter, place the JP4 jumper on pins 1 and 2.

- ☛ If you use the Microsoft WSS microphone with its adapter, you should connect it to Soundscape's CD/Aux input rather than its Mic/Line input. This is due to the additional gain provided by the WSS microphone adapter.
- ☛ Because the Soundscape drivers are completely Microsoft Windows Sound System compatible, all WSS functions should work perfectly "off the shelf," with no need for modification.

Internal CD-ROM Connectors

The Soundscape board provides three proprietary interfaces for connection to Matsushita, Mitsumi, or Sony internal CD-ROM drives. Each of these interfaces has its own PC interface connector as well as an internal audio connector. The following instructions describe how to make the proper connections based on your CD-ROM type. See the illustration on the preceding page for connector locations.

Matsushita:

1. Connect the 40-pin post header on the back of your CD-ROM drive to the 40-pin post header J1 on your Soundscape card using the ribbon cable supplied with your CD-ROM drive. *Make sure that pin #1 on the CD-ROM drive is connected to pin #1 on the Soundscape card.*
2. Connect the 4-pin audio cable on the back of your CD-ROM drive to the Matsushita 4-pin audio connector on your Soundscape card using the audio cable supplied with your CD-ROM drive.

Mitsumi:

1. Connect the 40-pin post header on the back of your CD-ROM drive to the 40-pin post header J2 on your Soundscape card using the ribbon cable supplied with your CD-ROM drive. *Make sure that pin #1 on the CD-ROM drive is connected to pin #1 on the Soundscape card.*
2. Connect the 4-pin audio cable on the back of your CD-ROM drive to the Mitsumi 4-pin audio connector on your Soundscape card using the audio cable supplied with your CD-ROM drive.

Sony:

1. Connect the 34-pin post header on the back of your CD-ROM

drive to the 34-pin post header J3 on your Soundscape card using the ribbon cable supplied with your CD-ROM drive.

Note: Make sure that pin one on the CD-ROM drive is connected to pin one on the Soundscape card.

2. Connect the 4-pin audio cable on the back of your CD-ROM drive to the Sony 4-pin audio connector on your Soundscape card using the audio cable supplied with your CD-ROM drive.

- ☞ The internal CD-ROM audio connection will be overridden by any external source that is plugged into the "CD" input jack on the Soundscape card.

External Audio Connectors

Below is a listing of the external connectors found on the back of Soundscape card. Consult Figure 4 for connector locations.

- ☐ **CD/Aux:** This is a line-level input which accepts a 1/8" TRS stereo plug. It can be used as a source for digital sound recording, a source to be mixed with the output, or both. *If you are using Soundscape as a CD-ROM interface, note that connecting a plug into this input will cause the internal CD-ROM audio connection to be broken and overridden by the input signal.*
- ☐ **Out:** This is a stereo line level output through which the combined signal of all internal and external audio sources on the board is output. It can be connected to Walkman-type (1/8" TRS stereo) headphones or to amplified speakers.
- ☐ **Mic/Line In:** This is a 1/8" mono jack which provides a switchable line or microphone level input (select one or the other in the SSINIT.EXE program Mixer module). It can be used as a source for digital sound recording, a source to be mixed with the overall output signal, or both.

- ☞ Using the Mic/Line input in "Mic" mode provides an additional 20 dB of input signal gain.

- ☞ If you are using the Microsoft Windows Sound System microphone, be sure to set jumper JP4 correctly, as described on page 17. If you use the WSS microphone with its adapter, you should connect it to Soundscape's CD/Aux input rather than its Mic/Line input. This is due to the

additional gain provided by the WSS microphone adapter. If you use the WSS microphone without its adapter, connect it to Soundscape's Mic/Line input.

- **Joystick/MIDI:** This is a 15-pin D-sub connector. It can be used with standard MIDI adapters and joystick connectors. The joystick interface will support both single and dual joysticks.

Placing the Card in Your Computer

1. Remove the cover to your computer as described earlier. Your Soundscape card can be installed in any available 16-bit expansion slot. A 16-bit expansion slot can be identified by its double connector:

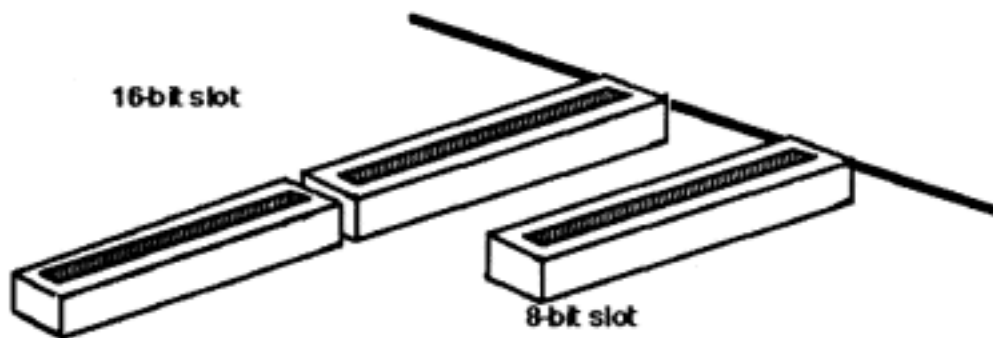


Figure 5. 16 and 18-bit slots

2. Remove the metal expansion slot cover for the selected slot. Save the screw for installing the board.

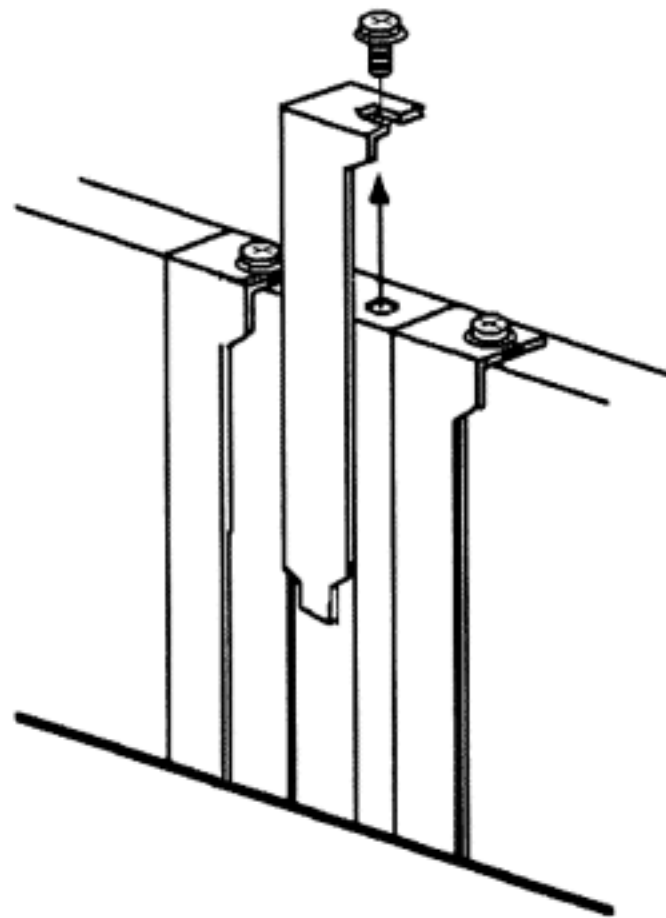


Figure 6. Expansion slot cover

3. If you are using the Soundscape card as a CD-ROM interface, connect the CD-ROM cables, as described in the "Internal CD-ROM Connectors" section above.
4. Hold the Soundscape card by the edges and press the connector gently but firmly into the expansion slot.

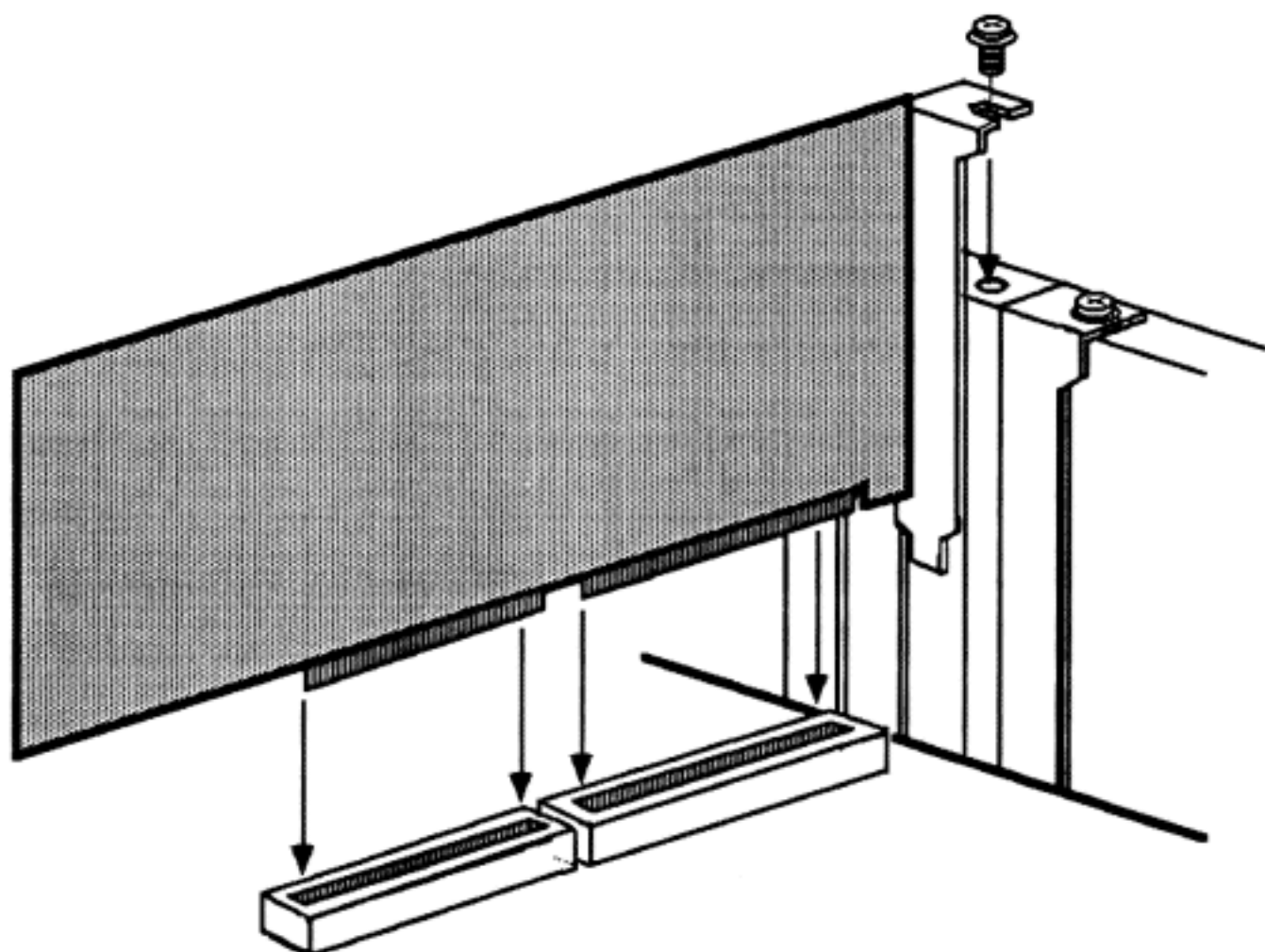


Figure 7. Placing the card in the expansion slot

5. Align the notch in the mounting bracket of the Soundscape card with the screw hole in the rear panel of the computer case. Use the screw that you removed from the metal expansion slot cover to secure the Soundscape card in place. This step is important for proper grounding of the card.
6. Secure all internal cables before you replace the computer cover. If you are installing an internal CD-ROM drive, make sure you connect it properly.
7. Replace the computer cover.
8. Reconnect any peripheral equipment cables that you may have previously disconnected.
9. Make the audio connections you desire to Soundscape's inputs and outputs.
10. If you wish to use a joystick, a MIDI device, or both, connect an adapter cable to the Soundscape Joystick/MIDI port.

Software Installation

After installing the Soundscape card, it is necessary to install the software. We recommend that you make a copy of your master disks and put the originals away in a safe place, using the copies for the rest of this procedure (consult your DOS manual for disk copying instructions). Approximately 3 megabytes of space on your hard disk are required to install all of the Soundscape software.

Tips for Successful Installation

Here are some things to be aware of when installing the Soundscape software:

- ☛ **IMPORTANT:** *When using the Express Install option, the software assumes certain default settings. These settings are: Board Address - 330; Base IRQ - 2; Base DMA - 1; Wave Port - 534.; Wave Port/Sound Blaster IRQ - 7. If these settings create a conflict (when a hardware device already uses one of these settings, for example), you must use SSInit to change the settings. See "Part 3—Configuring Soundscape" for details. Alternatively, you can use the setup utility for the hardware device responsible for the conflict to reconfigure its settings.*
- ☛ Do not change default IRQ and DMA settings unless you are aware of an immediate conflict and have a thorough understanding of what they do and how they work.
- ☛ Changing the sound card's base address during installation requires first changing jumpers on the board. See the section titled "Jumper Locations and Functions" in Part 2 of this manual.
- ☛ If you are using any memory management utilities such as EMM386 or QEMM be aware that the installation program doesn't recognize them. Therefore, if you opt to have the Soundscape installation program install CD-ROM drivers and you want them loaded into high memory, you must manually edit your CONFIG.SYS and AUTOEXEC.BAT files and modify the command lines to load the drivers into high memory.

Software Installation Procedure

The following installation procedure *must* be executed from the Windows Program Manager:

1. Insert Soundscape Installation Disk 1 into your floppy disk drive.
2. From the Windows **File** menu, choose *Run*.
3. If your system's 3.5" floppy drive is configured as drive A, type "A:setup" in the Run dialog box; if it is configured as drive B, type "B:setup" in the Run dialog box.
4. Follow the instructions on the screen. In most instances, you should choose the Express Installation option; this automatically assumes all defaults and places all required files onto your hard disk. If you need to change any installation defaults, choose the Custom Installation option. Click on the Cancel button to abort the installation procedure, or click on the Exit icon at the bottom right of the screen at any time to exit the Setup program.
5. After a few moments, you will be prompted to insert the Soundscape Installation Disk 2 into your floppy disk drive. Do so and then click on OK or press the <Enter> key.
6. You will be returned to the Windows Program Manager and a dialog will ask you if you wish to add a Level Control Utility to your start-up program group. If you click on Yes (or press the <Enter> key, a Soundscape level control slider (which allows you to adjust Soundscape's overall master volume) will appear onscreen each time you start up Windows. If you click on No, this Level Control Utility will be added instead to the Soundscape S-2000 program group and can be activated any time it is required.
 - ☛ If you do opt to place the Level Control Utility in your start-up group and later change your mind, you can always move it out of the start-up program group and into the Soundscape S-2000 program group; this will have precisely the same effect as if you had selected "No" in the first place.
7. Be sure to look at the READ ME file at the end of the installation procedure for up-to-date changes in the Soundscape software.
8. Make sure you restart your computer at the end of the installation. *The computer must be re-booted after installation in order for the Soundscape card to work.*

9. After re-booting, run the Soundscape DOS and Windows configuration software, as described in Part 3 of this manual.

Standard Modifications to Start-up Files

The installation procedure makes the following modifications to your start-up files:

AUTOEXEC.BAT

The following lines will be inserted into your AUTOEXEC.BAT file:

```
SET BLASTER=A220 Ixx Dx T1
SET SNDSCAPE=dirname
Calldirname\SSINIT GM
```

Where:

SET BLASTER is included for Software compatibility and should not be removed. The x's in this entry will be dynamically altered by the Soundscape configuration program.

- ☛ During the installation, you will be asked if you have a Sound Blaster or similar card installed in your system. If you answer yes, the SET BLASTER line will not be written to your AUTOEXEC.BAT file.

SET SNDSCAPE is included so that your Soundscape configuration program knows where to find certain files. *dirname* corresponds to the Soundscape directory i.e., C:\S2000.

***dirname*\SSINIT GM** initializes the Soundscape card to General MIDI mode at boot time. *dirname* corresponds to the Soundscape directory, i.e., C:\S2000.

- ☛ If any of the above entries are removed, your system will not be able to properly initialize your Soundscape card.

In addition, the installation program will add the root directory to your PATH statement if it does not exist. This will allow you to invoke the three initialization batch files from any directory on your system (See Part 3).

SYSTEM.INI

The Soundscape installation modifies the SYSTEM.INI file in your WINDOWS directory, adding [sndscape.driv] and [aapipkb4.driv] sections as well as adding some lines to the [drivers] and [386Enh] sec-

tions. *Do not edit or alter this file unless you are absolutely certain you know what you are doing!*

In both the 386 enhanced and drivers sections, there may be drivers installed that conflict with Soundscape. If the install program detects these, it will comment them out (showing you that the modification has been made).

MIDIMAP.CFG

The Soundscape installation places a new MIDIMAP.CFG file in your WINDOWS\SYSTEM directory and renames your old file MIDI-MAP.SND. To restore the MIDI Mapper to its prior state, simply delete the new MIDIMAP.CFG file and rename the MIDIMAP.SND file MIDIMAP.CFG. For more information, see Part 4 in this manual.

CD-ROM Modifications

The following lines will be inserted into your start-up files only if you selected CD-ROM options during the installation. Refer to this section when manually installing CD-ROM drivers.

CONFIG.SYS

If you have installed a CD-ROM drive, the following line will be inserted into your CONFIG.SYS file for all CD-ROM types.

```
DEVICE=directory\SSCD.SYS PORT=3x0 NUM=8
```

This line simply sets up the sound card to address a CD-ROM interface. It will not stay resident in memory after it runs. *directory* corresponds to the Soundscape installation directory, i.e., C:\S2000. The **PORT=** assignment corresponds to the base port address of your Soundscape card (320, 330, 340 or 350). The next line inserted into your CONFIG.SYS will be one of the following entries, as determined by your CD-ROM type.

Matsushita CR-56x or CR-53x:

```
DEVICE=directory\CDMKE.SYS /D:SSCD_000 /P:3x8 /V
```

Mitsumi CRMC-LU005S:

```
DEVICE=directory\MTMCD.SYS /D:SSCD_000 /P:3x8 /V
```

Mitsumi CRMC-FX001 or CRMC-FX001D:

```
DEVICE=directory\MTMCDAS.SYS /D:SSCD_000 /P:3x8 /V
```

Sony SLCD-31A or SLCD-33A:

```
DEVICE=directory\SLCD.SYS /D:SSCD_000 /B:3x8 /M:P /K /C /V
```


directory in all of the above entries corresponds to the Soundscape installation directory, i.e., C:\S2000. The /P: and /B: assignments correspond to the base port address of your Soundscape card + 8 (328, 338, 348 or 358).

Also, locate the following line in your CONFIG.SYS file:

LASTDRIVE=*driveletter*

Note that *driveletter* should be greater than or equal to the drive letter allocated for your CD-ROM (See MSCDEX.EXE below).

- SSCD.SYS must precede the CD-ROM driver for your CD-ROM interface to work.

AUTOEXEC.BAT

Also, if you have installed a CD-ROM drive, the following line will be inserted into your AUTOEXEC.BAT file for all CD-ROM types:

```
directory\MSCDEX.EXE /D:SSCD_000 /M:10 /L:driveletter /E /V
```

directory in the above entry corresponds to the location of MSCDEX.EXE. Usually, this will be either the DOS directory or the Soundscape installation directory. If you are using DOS version 6.0 or later, *directory* should be your DOS directory. *driveletter* corresponds to the drive letter assigned to the CD-ROM device, i.e., D.

CONFIGURING SOUNDSCAPE

Although your Soundscape card comes configured and ready to use, there may be times when you need to alter its basic configuration. For example, you may want the card to operate in a specific mode (GM, MT-32, or FM) for optimum performance when playing a particular game, resolve a hardware conflict, or change settings on the mixer or synthesizer.

Configuring Your Soundscape Card Under DOS

DOS Operating Modes

Under DOS, Soundscape can be set to operate in one of three modes. We've provided these modes in order to ensure that Soundscape has maximum compatibility with the vast number of DOS games and multimedia applications on the market. Each one of the following three Soundscape modes is simultaneously used with a digital audio support game or multimedia software set-up; such as PCM, Adlib, or Sound Blaster:

- General MIDI mode (GM) - provides an MPU-401 compatible General MIDI synthesizer. This selection provides the best possible sound and should be used with programs that offer selections for MPU-401, General MIDI or Roland Sound Canvas.
 - MT-32 mode (MT32) - provides Roland MT-32 emulation utilizing the on-board synthesizer. This selection should be chosen when a program provides only selections for Roland MT-32 or LAPC-1.
- ☞ Some games apply custom programming to the MT-32 sounds; however, Soundscape's MT-32 emulation cannot accommodate this. Therefore,

some sounds may sound different than when played back using a real MT-32 and, in extreme cases, some sounds may not be heard at all.

- FM mode (FM) - provides FM music emulation utilizing the on-board synthesizer. In this mode Soundscape emulates the FM Synthesis process to support software that can only be run with an FM board.
- ☛ Games and multimedia applications should not be run from Windows unless they are specifically Windows or MPC compatible. Similarly, DOS games and multimedia applications should not be run from a DOS session under Windows—run them from DOS only.
- ☛ There are many versions of the Sound Blaster card. For programs that offer separate Sound Blaster and Sound Blaster Pro selections, use the Sound Blaster option.
- ☛ Soundscape is not compatible with the few games that require ADPCM.

For your convenience, the Soundscape software installation process places three batch files (called GM.BAT, MT32.BAT, and FM.BAT) into your root directory (normally C:\) so that they may be called from any directory in your system. These files allow you to set the Soundscape operating mode with a single command line entry—simply type the mode name (GM, MT32, or FM) and press the <Enter> key. (For example, typing GM <Enter> will set Soundscape to the General MIDI mode). It's usually a good idea to run one of these batch files immediately before running a DOS game or multimedia program.

Choosing the Best Sound Option

Most DOS applications (especially games) offer a menu choice for sound when they start up. Because General MIDI (GM) mode provides the highest quality sound, most new games offer this as an option. Those that do not almost always offer MT-32 as a choice—this option provides the second-best sound quality. FM mode—which provides the lowest quality sound—should be used only when GM and MT-32 options are not available (or simply to hear for yourself how much better Soundscape's sampled sounds are than the Sound Blaster/AdLib-style FM sounds!). Make sure that the option you choose for the program's sound matches the batch file run immediately prior to launching the application.

You can also use the DOS configuration program SSInit to change Soundscape's operating mode. The use of this program is described below.

Using SSInit

- ☛ The SSInit program cannot be run from Windows, nor can it be run from a DOS session under Windows.

Soundscape's DOS configuration program is called SSInit.EXE, located in the Soundscape installation directory (normally C:\S2000). SSInit allows you to set the operating mode, configure Soundscape's hardware parameters, and adjust mixer controls. To launch SSInit:

1. Go to the Soundscape installation directory (e.g., type CD C:\S2000, then press the <Enter> key)
2. Launch SSinit by typing SSINIT, then press the <Enter> key. At this point, a graphical user interface (described in the following section), will appear.

- ☛ In order to take advantage of all of the SSInit configuration options, a mouse should be installed under DOS.

SSInit Hardware Configuration Interface

The SSInit program provides four screens for configuring Soundscape: Quick Setup, Hardware, Mixer, and Synth. On-line help is available for any screen by simply pressing F1 on your keyboard while viewing the screen with which you need help.

Quick Setup Screen

The Quick Setup screen, shown below, is the first screen that appears after launching SSInit. This screen allows you to quickly configure some of the Soundscape volume settings and to set the operating mode.

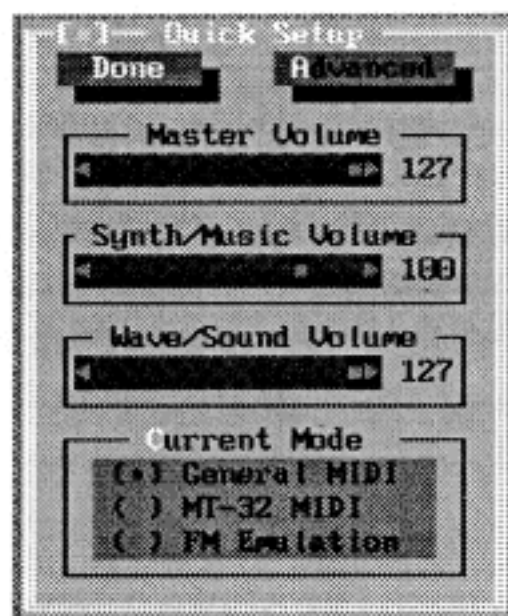


Figure 8. The Quick Set-up Screen

The following configuration options are available in the Quick Setup Screen:

- Master Volume** simultaneously adjusts the level of all playback sources (a mouse is required to adjust this parameter). The default is 127.
- Synth/Music Volume** sets the playback volume of the synthesizer only (a mouse is required to adjust this parameter). The default is 127.
- Wave/Sound** sets the digital audio playback volume only (a mouse is required to adjust this parameter). The default is 96.
- Current Mode** allows selection of the operating mode for Soundscape. You can select the current mode by using the mouse or typing "C" and using the Up and Down arrows on your keyboard. Note: The FM emulation mode will not be selectable if you have Sound Blaster emulation disabled (See the Section below entitled "Hardware Setup Screen").

If no further adjustments are needed, simply click on "Done" (or type "D"). If you have made any changes, you will be presented with the Exit screen (See the Section below entitled "Exit Screen"). If you need to make more advanced adjustments, click on "Advanced" (or type "A") to access the other three SSInit screens.

Using Advanced Settings

When you select "Advanced" from the Quick Setup screen, the values selected in Quick Setup are entered and you can now access any of four additional screens—Hardware, Mixer, Synth, or Exit—by clicking the menu selection at the top of the screen or by holding down the <Alt> key and typing the highlighted letter corresponding to the menu you wish to select. When the menu appears, click on the setting you wish to change or type the highlighted letter to select it, and adjust as required.

- Most menu selections can be altered using a combination of key sequences. The <Tab> key will move you between fields of the menu. The <Up Arrow> and <Down Arrow> keys will let you select items in a field. The <Space> key will select or deselect items in a check box. Sliders (i.e. Volume controls) can only be adjusted with your mouse.

When you finish making adjustments and you wish to save them, click "OK" (or type "O"). If you wish to discard your changes, click "Cancel" (or type "C"). After you finish making all necessary adjustments, click the "Exit" selection in the menu bar (or type <Alt> X) to exit SSInit.

Hardware Settings Screen

The Hardware Settings screen configures the hardware settings that determine how Soundscape communicates with your computer.

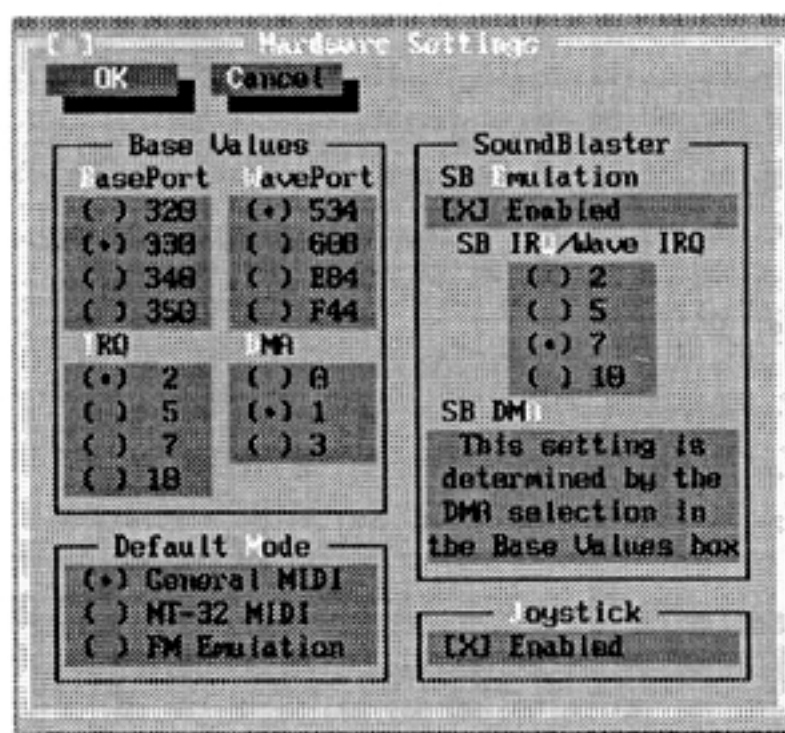


Figure 9. The Hardware Settings Screen

Base Values

This box enables you to set the basic hardware parameters for your Soundscape card.

BasePort selects the base port address used by Soundscape—this also corresponds to the MPU-401 MIDI interface base port address. The default is 330.

- ☞ The Port address named in the Base Values screen must correspond to the hardware JP2 jumper setting. For more information on Soundscape's jumpers, see Part 2 of this manual.
- ☞ Many DOS games assume that your MPU-401 compatible MIDI interface uses port 330. Some games may not function if a different address is set.

WavePort selects the base port address of Soundscape's primary wave device (that is, the device that plays back wave soundfiles). The default is 534.

IRQ selects the interrupt request line that the Soundscape synthesizer and MPU-401 compatible MIDI interface will use for basic communications. The default is 2. This IRQ value must be different than the IRQ value selected in the Sound Blaster section of the Hardware Settings screen.

- ☞ IRQ 2 is the default IRQ setting for an MPU-401 in many DOS applications. Some applications may not work with a different selection.
- ☞ Setting the IRQ value to 10 will cause SSInit to generate a warning message since IRQ 10 is not a legitimate MPU-401 IRQ for some DOS applications. However, this will not affect Soundscape's operation under Windows.

DMA selects the DMA (Direct Memory Access) channel that Soundscape uses for board initialization and digitized sound transfer. This setting also determines the DMA selection for Sound Blaster digital audio emulation and the DMA channel for the primary wave device under Windows. The default is 1.

Sound Blaster

This box enables you to set Soundscape's Sound Blaster compatibility parameters.

- ☛ The Soundscape Sound Blaster emulation uses a fixed base port address of 220. Therefore, if you are running a DOS game or multimedia program that provides only for Sound Blaster compatibility, make sure that program expects to find a "Sound Blaster" card at Base Port address 220.
- ☛ Compatibility with Sound Blaster's digital audio is available in all three operating modes (GM, MT32, and FM).

SB Emulation enables or disables Sound Blaster mode. This option should be turned off only if you have a Sound Blaster or Sound Blaster-compatible card in your system. The default is Enabled.

- ☛ During the installation, you will be asked if you have a Sound Blaster or similar card installed in your system. If you answer yes, the SET BLASTER line will not be written to your AUTOEXEC.BAT file and SB Emulation will be disabled. If you later turn this switch on, make sure you add the following line to your AUTOEXEC.BAT file: SET BLASTER=A220 Ixx Dx T1.

SB IRQ/Wave IRQ selects the interrupt that will be used for Sound Blaster digital audio emulation. The recommended IRQ setting is either 7 or 5. The default is 7. This IRQ setting is also used by your primary wave device under Windows.

SB DMA. As indicated, the DMA channel used by Sound Blaster digital audio emulation is determined by the DMA selection in the Base Values box.

Default Mode determines which of the three modes Soundscape will be initialized into when you exit the SSInit program.

- ☛ Changing the Hardware Settings screen Default Mode will not change the mode selected at re-boot, since the entry in the AUTOEXEC.BAT file explicitly selects the General MIDI mode ("SSInit GM").

Joystick enables or disables the Joystick port on your Soundscape card. The default is Disabled. Enable the Joystick port only if your system has no other joystick card.

- Settings changed in the Base Values and Sound Blaster boxes will be reflected in your Windows Driver setup box (see the "Windows Driver Configuration" section below). Conversely, changes made to your configuration in the Windows driver setup box will be reflected in the Hardware Settings screen.

Mixer Settings Screen

This screen allows you to adjust all of the audio levels on the Soundscape card.

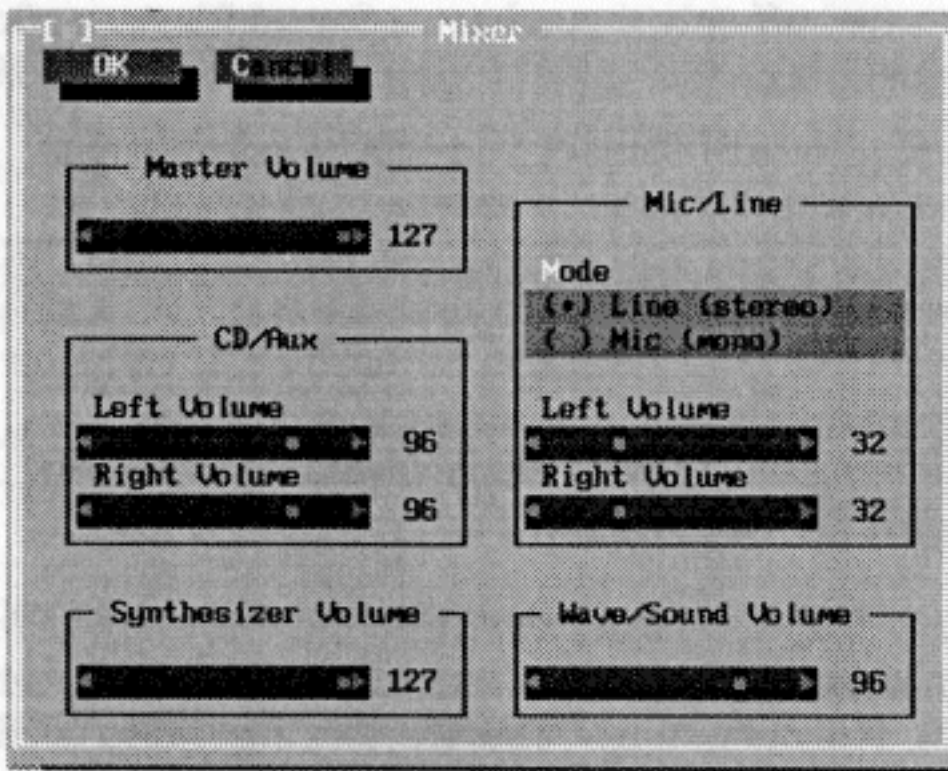


Figure 10. The Mixer Settings Screen

Master Volume adjusts the overall output volume of the sound card. The default is 127.

CD/Aux Volume

Left adjusts the left output level of the CD or Auxiliary audio input. The default is 96. *Right* adjusts the right output level of the CD or Auxiliary audio input. The default is 96.

Mic/Line Volume

Mode allows you to choose either line-level or mic-level input. Line input is stereo, while mic input is mono. Select "line" when connecting a device such as a cassette deck, tape recorder, or when routing signal from a home stereo amplifier. Select "mic" when connecting a microphone.

- ☞ Using the Mic/Line input in "Mic" mode provides an additional 20 dB of input signal gain.

Left adjusts the left output level of the Mic/Line input. The default is 32. *Right* adjusts the right output level of the Mic/Line input. The default is 32.

Synthesizer Volume adjusts the output level of the Soundscape synthesizer. The default is 127.

Wave/Sound Volume adjusts the digital audio output level. This setting will also affect the Sound Blaster digital audio emulation. The default is 96.

- ☞ For parameters with separate left and right controls (i.e. CD/Aux Left Volume/ Right Volume), both controls will move together when either one is moved. Either control may be moved independently by holding down the Shift key while moving it.

Synthesizer Configuration

This screen allows you to prioritize and choose which of the 16 MIDI channels will be active for the on-board synthesizer.

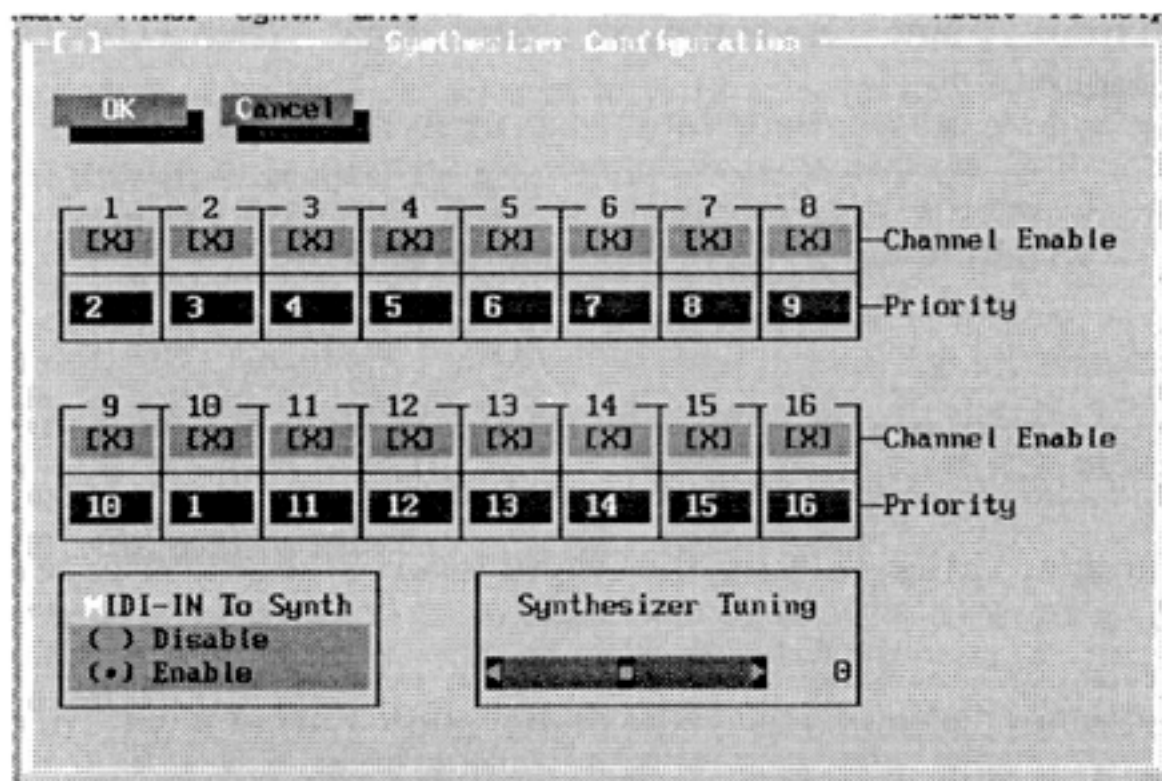


Figure 11. The Synthesizer Configuration Settings Screen

Channel Enable allows the synthesizer to respond to or ignore messages received on each of the 16 MIDI channels. When a channel is not enabled, MIDI messages received on that channel are simply ignored. The default has all 16 channels enabled.

Priority refers to how Soundscape handles situations where more voices are demanded than are available at the moment (Soundscape can play up to 32 voices at a time—thus, it is said to have 32-note polyphony). When more than 32 voices are sounded simultaneously, some voices will be stolen to allow the new notes to be played. The higher the priority of a channel (that is, the lower its priority number), the more protected it is from voice stealing. Usually, Channel 10 (which is defined in General MIDI as being used for drums and percussion) is given the highest priority, with Channel 1 given the next-highest priority, then Channel 2, etc.

- The Synthesizer Configuration settings are optimized for the Soundscape card and in most cases should not be adjusted.

MIDI-In To Synth determines whether or not the Soundscape synthesizer responds to MIDI data coming from the external MIDI con-

necter. This switch does not affect MIDI data being sent internally from the PC to the Soundscape synthesizer. The default is Enable.

Synthesizer Tuning is a master tuning parameter that allows the entire synthesizer to be tuned down or up one semitone. The default is 0, which causes the synth to play at concert (A440) tuning. This should be changed only if you are accompanying Soundscape with acoustic instruments (such as piano) which cannot be easily tuned.
Exit Screen

When you have finished making changes and wish to leave SSInit, select the Exit item on the top of the screen, or type Alt-X. If any configuration values have been changed, the Exit screen shown below will appear.

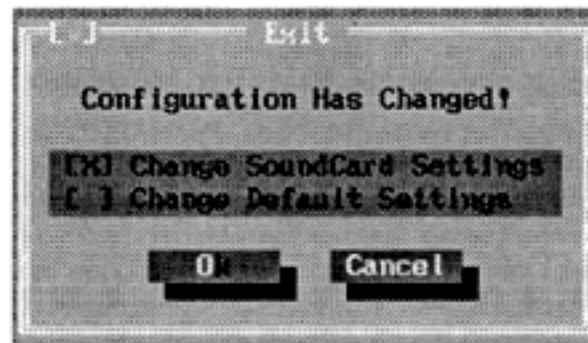


Figure 12. The Exit Screen

Change Sound Card Settings

When this box is checked, the changes you just made in SSInit will be applied to the Soundscape card.

Change Default Settings

When this box is checked, the changes you just made in SSInit will be applied to the Soundscape card and also will be saved to an initialization file so that they are reflected in subsequent uses of SSInit.

Selecting OK will perform the changes indicated by the check box selections and then exit SSInit. If you would like to quit SSInit without applying any of your changes, deselect both check boxes and select OK.

Selecting Cancel will abort the Exit screen and allow you to continue making configuration changes in SSInit.

Configuring Your Soundscape Card Under Windows

The Soundscape software installation process installs all required Windows wave and MIDI drivers. These drivers allow you to run standard Windows Multimedia applications. Note that, under Windows, the Soundscape card will operate in General MIDI (GM) mode only (see Part 4 in this manual for more information).

Because Windows provides a standardized method of communicating with sound devices, the following two rules must be obeyed.

- ❑ Do not run any DOS based sound applications (e.g., games, DOS sequencers, etc.) under Windows.
- ❑ Do not run any applications under Windows that are not Windows Multimedia compliant. Applications that are compliant will usually be referred to as "Multimedia for Windows," "MPC (Multimedia PC)," or something similar.

The Soundscape Windows driver inherits all the hardware settings made by SSInit and also offers some additional configuration functionality that is not addressed by the SSInit program. If you will be using Soundscape with Windows applications, we recommend that you run the Windows driver setup routine following installation in order to view all hardware configuration settings and to make any necessary changes.

To open the Soundscape Windows driver setup display:

1. Open the Main program group under the Windows Program Manager.
2. Open the Control Panel applet inside the Main program group.
3. Open the Drivers applet inside the Control Panel.
4. Inside the Drivers applet, select the item entitled Soundscape DVD MIDI, WAVE, AUX and then click on the Setup button.

The Soundscape Windows driver setup display is shown in Figure 13 in its default state.

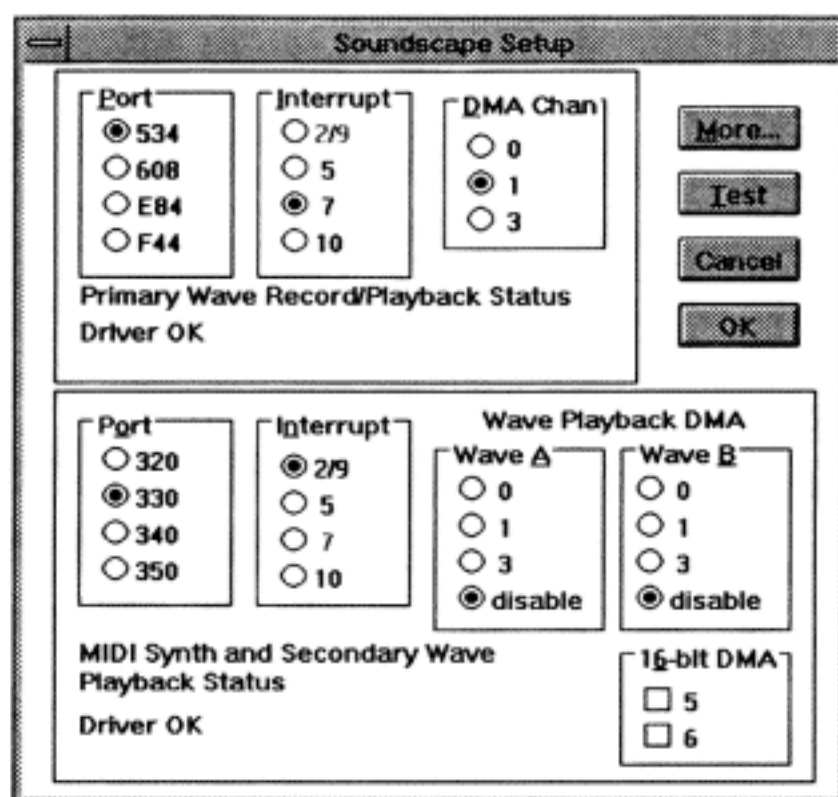


Figure 13. The Soundscape Windows Driver Setup Display

The top half of the setup display presents the configuration options for the Primary Wave Record/Playback device. This is the area of Soundscape used for the recording of digital audio soundlessly and the playback of monophonic digital audio soundlessly.

The bottom half of the setup display presents the configuration options for the MIDI Synth and Secondary Wave Playback device. The Secondary Wave Playback device is a unique feature of Soundscape which extends the soundfile playback capability of Windows, allowing up to three wave files (instead of just one) to be played back simultaneously. Soundscape is fully compatible with the Windows Multimedia applications even without this extended capability. By default, Secondary Wave Playback is disabled since it requires the use of additional DMA resources. However, if you know that your system has additional DMA resources available, you can enable one or both of the Secondary Wave Playback devices, as described below.

Primary Wave Record/Playback Setup

Port selects the base port address of Soundscape's Primary Wave Record/Playback device. This corresponds to the WavePort selection made in the Hardware Setup screen of SSInit (Soundscape's DOS configuration utility) and also must correspond to the JP3 jumper setting

on the card itself (See Part 2 of this manual for more information). The default is 534.

Interrupt selects the interrupt request line (IRQ) of Soundscape's Primary Wave Record/Playback device. This value corresponds to the IRQ selection made in the SB IRQ/Wave section of the Hardware Setup screen of SSInit. The default is 7.

DMA Chan selects the DMA channel that Soundscape's Primary Wave Record/Playback device will use for wave (digital audio) data transfer. This value corresponds to the DMA selection made in the Hardware Setup screen in SSInit and is also the DMA channel that is used when Soundscape emulates Sound Blaster digital audio under DOS. The default is 1.

MIDI Synth and Secondary Wave Playback Setup

Port selects the base port address of the Soundscape synthesizer and MPU-401 compatible MIDI interface. This value corresponds to the BasePort selection made in the Hardware Setup screen in SSInit and also must correspond to the JP2 Base Port Address jumper setting on the card itself (See Part 2 of this manual for more information). The default is 330.

Interrupt selects the interrupt request line that the Soundscape synthesizer and MPU-401 compatible MIDI interface use for basic communications. This value corresponds to the IRQ selection made in the Base Values section of the Hardware Setup screen of SSInit. The default is 2.

Wave Playback DMA assigns a DMA channel(s) to one or both of the Secondary Wave Playback devices. By default, these are disabled to avoid potential conflicts with other devices in your system. If you wish to enable one or both of these selections, make sure that the DMA assignments are different than the DMA Chan assignment in the top half ("Primary Wave Record/Playback") of the setup box.

16-bit DMA allows the Soundscape secondary Wave Playback driver to use 16-bit DMA channel(s) 5 and/or 6 when playing back 16-bit wave data. Enable both (if there are no conflicts with other devices in your system) to play back stereo 16-bit soundfiles. Note that 16-bit wave data can be played over the normal DMA channels (0, 1, 3), but using a 16-bit DMA channel is much more efficient.

The More button displays information about the driver.

The Test button checks the driver configuration for possible Port and Interrupt conflicts. Due to the nature of DMA usage, DMA conflicts cannot always be detected. The test status information will be displayed on the status lines under Primary Wave Record/Playback Status and MIDI Synth and Secondary Wave Playback Status. Under normal conditions, both of these lines should read Driver OK. Consult Appendix B in this manual (“Troubleshooting”) if an error message appears.

The Cancel button exits the Driver Setup box without applying changes.

The OK button exits the Driver Setup box and applies any changes.

USING SOUNDSCAPE

Using Soundscape under DOS

Using Soundscape with Games

The most common use for the Soundscape card under DOS is with games. This section will describe how to select the best Soundscape operating mode for any particular game. Most DOS-based games that provide sound have some procedure for sound setup. These procedures generally present you with a list of popular sound cards or sound devices. The Soundscape card will work with one or more of the available options.

There are differences in the way games present sound options. Some may present a single option that corresponds to a particular sound device. (e.g., Soundscape, Sound Blaster, Roland Sound Canvas, etc.). Others will provide a separate music and digital audio option, either as a single menu selection or as two separate menus (e.g., General MIDI music with Sound Blaster digital audio, etc.).

Some game programs allow you to set the base port address and IRQ for music and sound. Make sure that these settings correspond to the settings made in the Hardware Settings Screen of SSInit. If the game offers MPU-401 General MIDI or MT-32 modes and allows you to set the base address and/or IRQ, make sure they match the Base Port and IRQ settings in the Base Values section of SSInit. If the game offers Sound Blaster settings, make sure that they correspond to the Sound Blaster settings in SSInit. Remember that Soundscape emulates a Sound Blaster only at a fixed base port address of 220H.

In general, you should set your Soundscape operating mode to correspond to the music selection in the game menu. Table 5 contains a list

of some common game menu music selections and their corresponding Soundscape operating modes.

Table 5: Common game menu selections

Game Selection for Music	Soundscape Operating Mode
Soundscape	GM
General MIDI	GM
Roland Sound Canvas	GM
Roland MPU-401	GM or MT32
Roland MT-32	MT32
Roland LAPC-1	MT32
Sound Blaster	FM
AdLibFM	FM

- Keep in mind that the Soundscape GM mode will always provide you with the best-sounding music. MT32 should be your second choice. If neither option is available, use Soundscape's FM mode. Remember, all three modes offer Sound Blaster digital audio emulation.

Using Batch Files with Games

Remembering which Soundscape operating mode goes with which game can be difficult, especially if you have many games on your system. One way to make this easier is to construct simple batch files that first set the Soundscape card to its predetermined mode and then run the game. Use the following template when creating a batch file:

```
@echo off
call mode.bat
call game_name
```

where `MODE` is the name of the batch file in your root directory (GM, MT32, or FM) and `GAME_NAME` is the name of the file used to run your game.

For example, let's suppose you want to play a game called CROW that is set up for General MIDI and is normally run by typing CROW and then pressing the <Enter> key. Here's how you would construct the batch file to first set up the Soundscape card and then run the game:

1. Go to the directory in which the game resides (e.g., type CD C:\GAMES\CROW then press the <Enter> key).
2. Use your favorite DOS editor (such as EDIT) to create a file called GOCROW.BAT.
3. Edit the GOCROW.BAT file to contain the following lines:

```
@echo off  
CALL GM.BAT  
CALL CROW
```

Now, to run the game at any time, go to the game directory (e.g., type CD C:\GAMES\CROW then press the <Enter> key), type GOCROW, and then press the <Enter> key. In this example, the Soundscape card will be initialized to General MIDI (GM) mode before starting the game.

- ☛ Make sure that the name of the batch file is different than the name of the game program.

Consult your DOS manual for any general questions you have about batch files.

Using Soundscape with the DOS Command Line Players

The Soundscape software includes a set of DOS-based utilities for playing digital audio (.VOC, and .WAV) files as well as MIDI (.MID) music files. Consult your Soundscape software manual for specific operating instructions. When using these DOS-based utilities, please observe the following precautions:

- ❑ The Soundscape card must be in GM mode to use these applications.
- ❑ You cannot use these utilities without first loading the DOS driver (from the Soundscape directory, type DRIVER then press the <Enter> key).
- ❑ You must unload the drivers before using SSInit, playing any games, or running Windows (from the Soundscape directory, type DRIVER /REM then press the <Enter> key).

Using Soundscape with Windows

Under Windows, the Soundscape card will operate in GM mode only. If the card is not initialized when you run Windows (this is normally done by AUTOEXEC.BAT during boot-up), the Soundscape drivers will automatically do it for you.

Multimedia Applications

The Soundscape software includes a set of easy-to-use Windows based multimedia applications that allow you to get the most out of your card. These applications are documented in the Soundscape software manual.

MIDI Devices under Windows

The Soundscape card includes three MIDI devices in the Windows environment. These three devices are classified as either "MIDI Out" or "MIDI In," as follows:

MIDI Out

Soundscape Synthesizer is a MIDI Output device provided by the Soundscape Windows driver for routing MIDI data from Windows applications to the onboard synthesizer on your Soundscape card.

Soundscape MIDI Output is another MIDI Output device provided by the Soundscape Windows driver for routing MIDI data from Windows applications to the Soundscape external MIDI Out port.

Most MIDI applications will send MIDI output data through the Windows MIDI Mapper (see the "Using The MIDI Mapper With Soundscape" section below for more information). The MIDI Mapper has the capability to route this data to any MIDI output device connected to your system. Some applications have the capability to select a particular MIDI output device directly, bypassing the MIDI Mapper.

MIDI In

Soundscape MIDI Input is a MIDI Input device provided by the Soundscape Windows driver for routing MIDI data received at the Soundscape external MIDI port to Windows applications.

Normally, the synthesizer in your Soundscape card will respond to MIDI data arriving at the external MIDI input. However, under Windows, when an application opens the Soundscape MIDI Input device, external MIDI input data will bypass the onboard synthesizer, and go directly to the application that opened the MIDI Input device. This is

done so that the application can route the data through the MIDI Mapper, and back out to either the onboard synthesizer or an external synthesizer (via an external MIDI out port). Many applications that handle MIDI In will automatically route the data out to the MIDI Mapper. Other applications require this capability to be enabled by the user.

- ☛ If you are playing notes on an external synthesizer and are not hearing anything, you may have to actively turn on the application's "MIDI Thru" or "MIDI Merge" capability in order for the Incoming MIDI data to be sent back out to the MIDI Mapper, or directly to a MIDI Out device. Make sure that you are monitoring the device to which the MIDI data is being directed.

Using the External MIDI Connector

The external MIDI port (available from the MIDI/Joystick connector on the rear panel) allows you to connect an external MIDI device (such as a MIDI keyboard) to your Soundscape card for sending and receiving MIDI data to and from your computer. If you are going to use an external MIDI connector, make sure it complies with the specification for an external MIDI connector described in Appendix C of this manual. Make sure that the cable with the "In" label is connected to the external keyboard's MIDI "Out" jack, and that the cable with the "Out" label is connected to the external keyboard's MIDI "In" jack.

Using the MIDI Mapper with Soundscape

This section describes how to use the Windows MIDI Mapper with Soundscape. For more information about MIDI, see Appendix A of this manual.

The MIDI Mapper is one of the multimedia extensions provided by Windows 3.1 and higher. It is installed by using the Add command in the Drivers applet (in the Windows Control Panel)—once installed, it is also located in the Windows Control Panel. The MIDI Mapper enables *channel mapping* (sometimes called *channelizing*), *patch mapping* and *key mapping*, as well as allowing outgoing MIDI data to be routed to either a sound card synthesizer or to an external MIDI port.

Setups

The MIDI Mapper allows you to create and store any number of

MIDI setups, so that you can call up different routings as required. These setups are stored in a configuration file called MIDIMAP.CFG, located in your WINDOWS/SYSTEM directory. The Soundscape installation process (as described in Part 2 of this manual) automatically creates a new MIDIMAP.CFG file and renames your old file MIDIMAP.SND. To view the Soundscape MIDI Mapper setups:

1. Locate and open the Main group window, then double-click on the Control Panel icon.
2. Double-click the MIDI Mapper icon.
3. Click **Setups** in the Show section if it is not already selected. Next to "Name:" it should say "SNDSCAPE Synth," as shown below. This is the default setup.



Figure 14. MIDI Mapper Default Setup

4. Click on the arrow at the right of the setup name. A drop-down menu will appear. The other available setups are "SNDSCAPE MPort" and "Vanilla."
5. Close the Name box by clicking on the arrow, making sure that "SNDSCAPE Synth" is still selected. Now click on the Edit... button. Here's the screen you'll see (Figure 15):

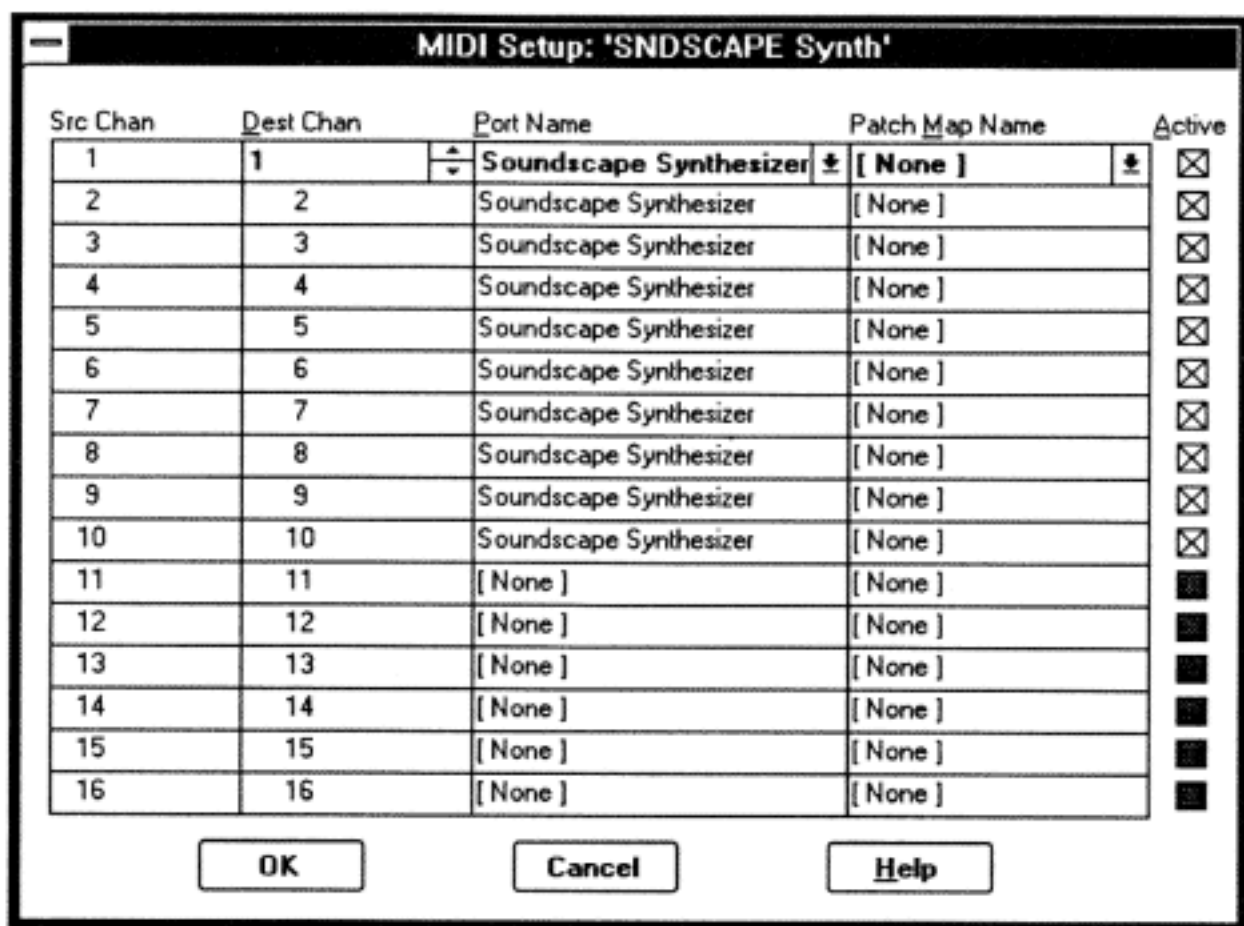


Figure 15. MIDI Mapper Default Setup

The two columns on the left (**SrcChan** and **DestChan**) show the channelizing functions of the setup. Here, each source MIDI channel is mapped to the equivalent destination channel. However, this could be changed if required so that, for example, data being played over MIDI channel 10 could be rerouted to MIDI channel 16 or any other channel.

The column in the middle (**Port Name**) shows the output routing for each of the 16 MIDI channels. In this default “SNDSCAPE Synth” setup, data transmitted on channels 1 - 10 is being routed to the Soundscape Synthesizer device—in other words, to the onboard synth on the Soundscape card. Data transmitted on channels 11 - 16 is routed nowhere (the Port Name is “None”) and will not be heard. This enables Soundscape to act as what Windows terms an *Extended Synthesizer* (one which can play at least nine different instrument sounds plus eight drum sounds simultaneously [over MIDI channels 1 - 10], with at least 16-note polyphony), as opposed to a *Base-Level Synthesizer* (one which can play just three different instrument sounds plus three different drum sounds [over MIDI channels 13 - 16], with 6-note polyphony). In fact, Soundscape's capabilities go far beyond that of an *Extended Synthesizer*, but this MIDI Mapper setup will allow you to easily play “hybrid” MIDI files which contain both

Extended and Base-Level MIDI data (many commercially available MIDI files use this format in order to make them compatible with the widest range of sound cards). If you want to use all 16 MIDI channels with your Soundscape card, simply change the Port Name for channels 11 - 16 to "Soundscape Synthesizer"—this will automatically make those channels Active (see below for more information).

The **Patch Map column** indicates whether or not a custom MIDI Mapper Patch Map is to be used for any or all of the 16 MIDI channels. For more information, see the "Patch Maps" section below.

Finally, the **Active column** indicates which of the 16 MIDI channels are active (as shown by a box with an "X") and which are inactive (as shown by a gray box). Since the default "SNDSCAPE Synth" setup has no Port Name for MIDI channels 11 - 16, these channels are currently inactive. To activate/deactivate any MIDI channel, simply click on the box.

Routing MIDI Data to Soundscape's External MIDI Out Port

As we've seen, the Soundscape Windows driver provides another MIDI output device, called Soundscape MIDI Output. This device is used when you wish to route outgoing MIDI data for a particular channel to the Soundscape external MIDI Out port. You can modify the default "SNDSCAPE Synth" setup so that any or all of the 16 MIDI channels utilizes this output device, but an easier way is to call up another setup created during the Soundscape installation called "SNDSCAPE MPort."

If you are using an external synthesizer, make sure it is connected to Soundscape as described in the previous section before proceeding.

1. Open the MIDI Mapper and click **Setups** in the Show section if it is not already selected. Click on the arrow at the right of the setup name. A drop-down menu will appear. Choose "SNDSCAPE MPort."
2. Click on the **Edit...** button. Here's the screen you'll see (Figure 16):

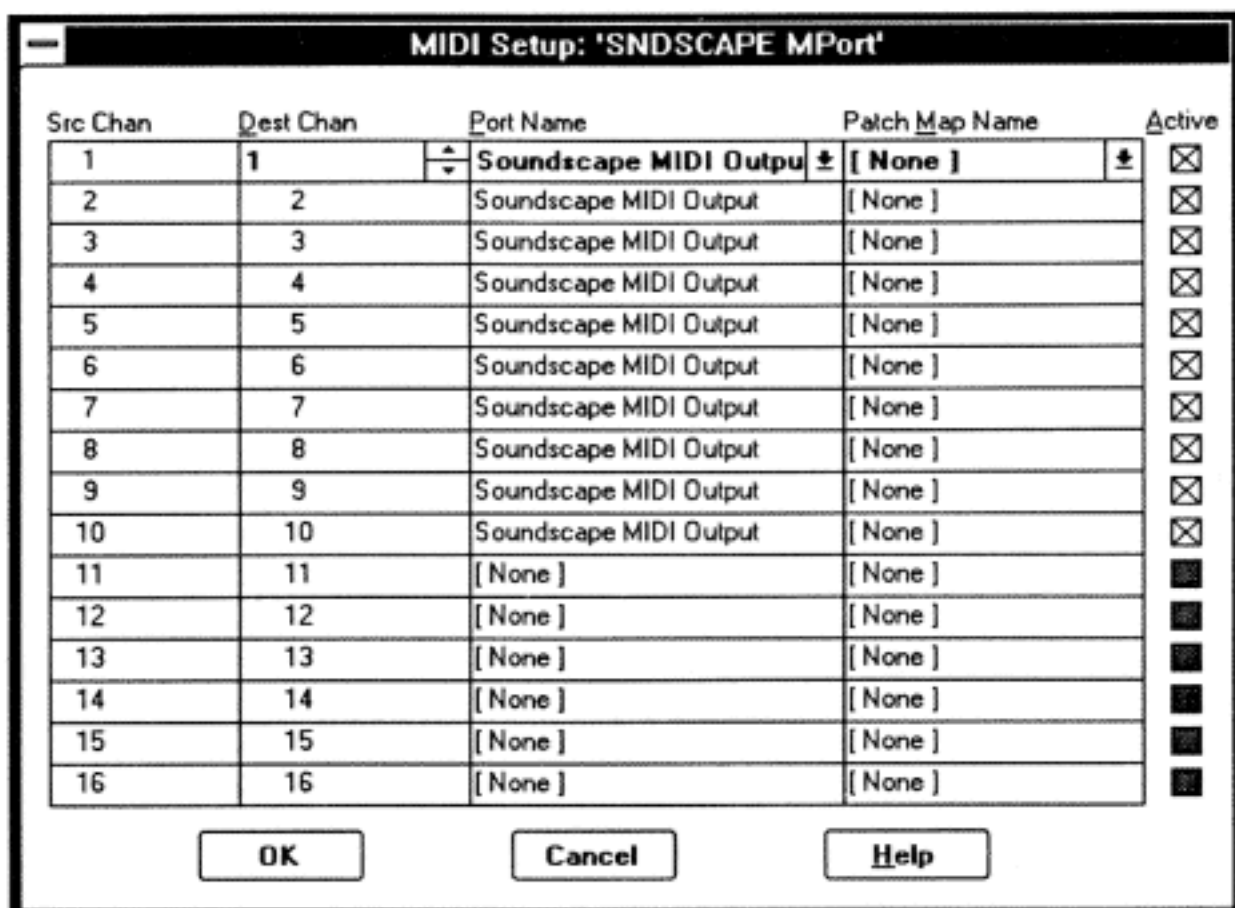


Figure 16. MIDI Mapper SNDSCAPE MPort Setup

As you can see, this setup is identical to the “SNDSCAPE Synth” default setup except for the Port Name output device assigned to MIDI channels 1 - 10. Here, all MIDI data on channels 1 - 10 is routed to Soundscape’s external MIDI port—and, again, MIDI channels 11 - 16 are unused. To make them active, simply select the “Soundscape MIDI Output” Port Name for channels 11 - 16.

The third and final MIDI Mapper setup provided by the Soundscape installation is simply called “Vanilla.” This is simply a “scratch” setup with no output device assignments.

- ☞ Be sure to restore the original MIDI Mapper setup (“Soundscape Synth”), or Soundscape’s internal synthesizer will not respond to MIDI data.

Patch Maps

The MIDI Mapper also allows you to create custom patch maps that enable Windows to locate various sounds (“patches”) on different “Destination” devices such as sound cards and external MIDI synthesizers. For example, if you use the MPU-401 compatible MIDI interface in your Soundscape card to connect to an external synthesizer that does not support the General MIDI standard, you must tell Windows where to find the sounds on that synthesizer. Windows has

internal "Source" patch numbers and names that cannot be changed (for example, Source patch number "Zero" is always an Acoustic Grand Piano), but an external synthesizer may assign any patch name to any patch number (for example, patch Zero on your external synthesizer could be a Saxophone). To resolve this potential conflict, create an original patch map:

1. Open the MIDI Mapper and click on **Patch Maps** in the **Show** section.
2. Click on the **New...** button and name your patch map something useful (such as the name of your synthesizer). Click on **OK**, and the patch map editor will appear (Figure 17):

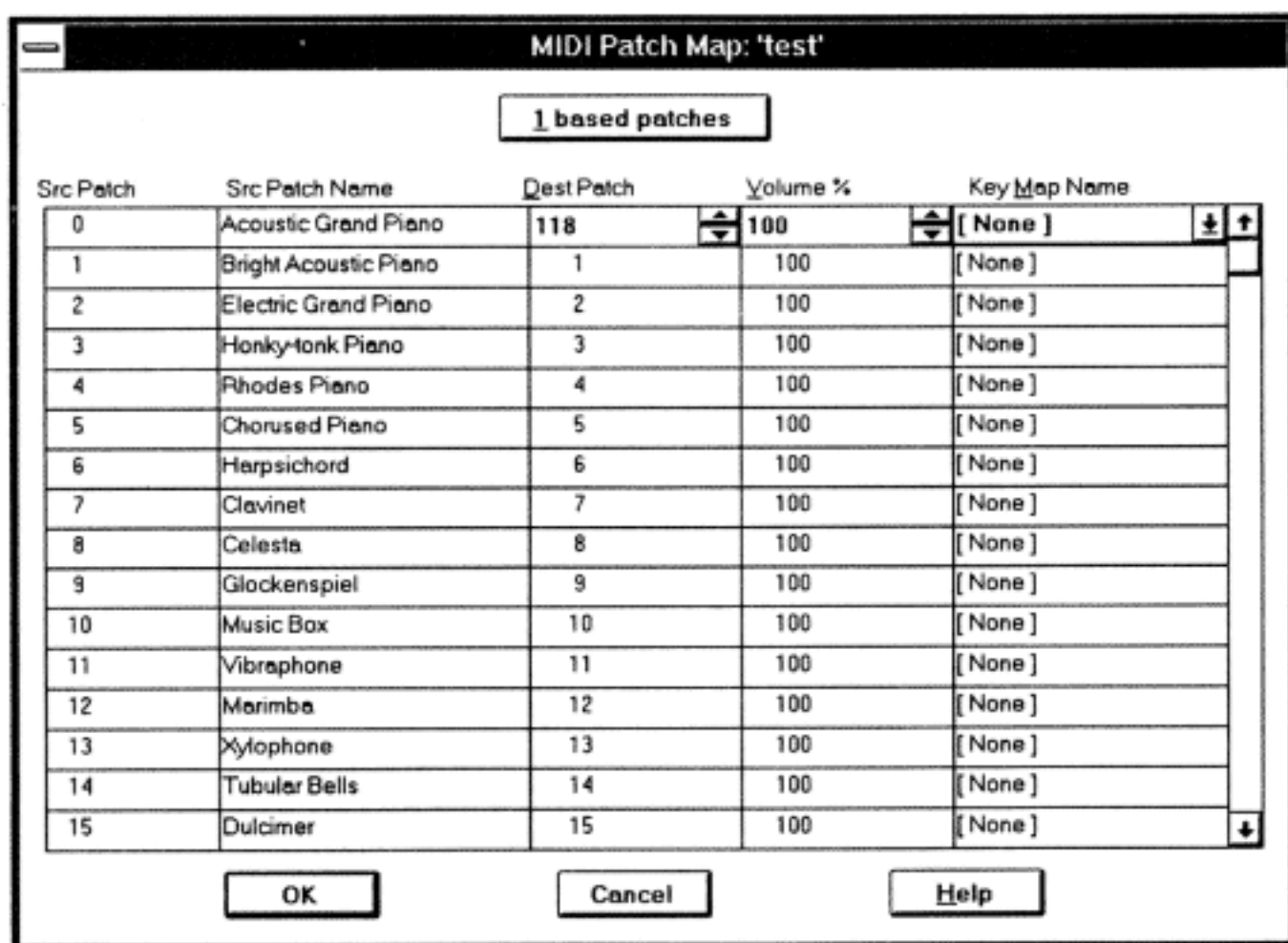


Figure 17. MIDI Patch Map Editor

This patch map editor shows the list of Source Patches and the corresponding Destination Patch. *If you are using an external MIDI synthesizer, you may have to change the destination patch number to match the sounds on your synthesizer.* For example, if the Acoustic Grand Piano on your external synthesizer is patch number 118, make the Destination Patch 118, as shown above. After you have changed all of the patches to match your keyboard, click **OK**. In your MIDI Mapper setup (as described above), you can assign the same patch map to each MIDI channel, or you can assign a different patch map to each MIDI channel.

Key Maps

In addition to “melody” sounds, most synthesizers (including Soundscape's onboard synth) are capable of playing special sounds called “drum” or “percussion” sounds. These are unique in that each key of a keyboard plays an entirely different sound, as opposed to simply playing the same sound at a different pitch. General MIDI deals with drum sounds by specifying that certain keys play specific sounds—in other words, specific keys are “mapped” to specific sounds. However, if you wish to use an nonstandard drum sound mappings with Windows applications, the MIDI Mapper allows you to create custom key maps:

1. Open the MIDI Mapper and click on **Key Maps** in the **Show** section.
2. Click on the **New...** button and name your patch map something useful (such as the name of your synthesizer). Click on **OK**, and the key map editor will appear (Figure 18):

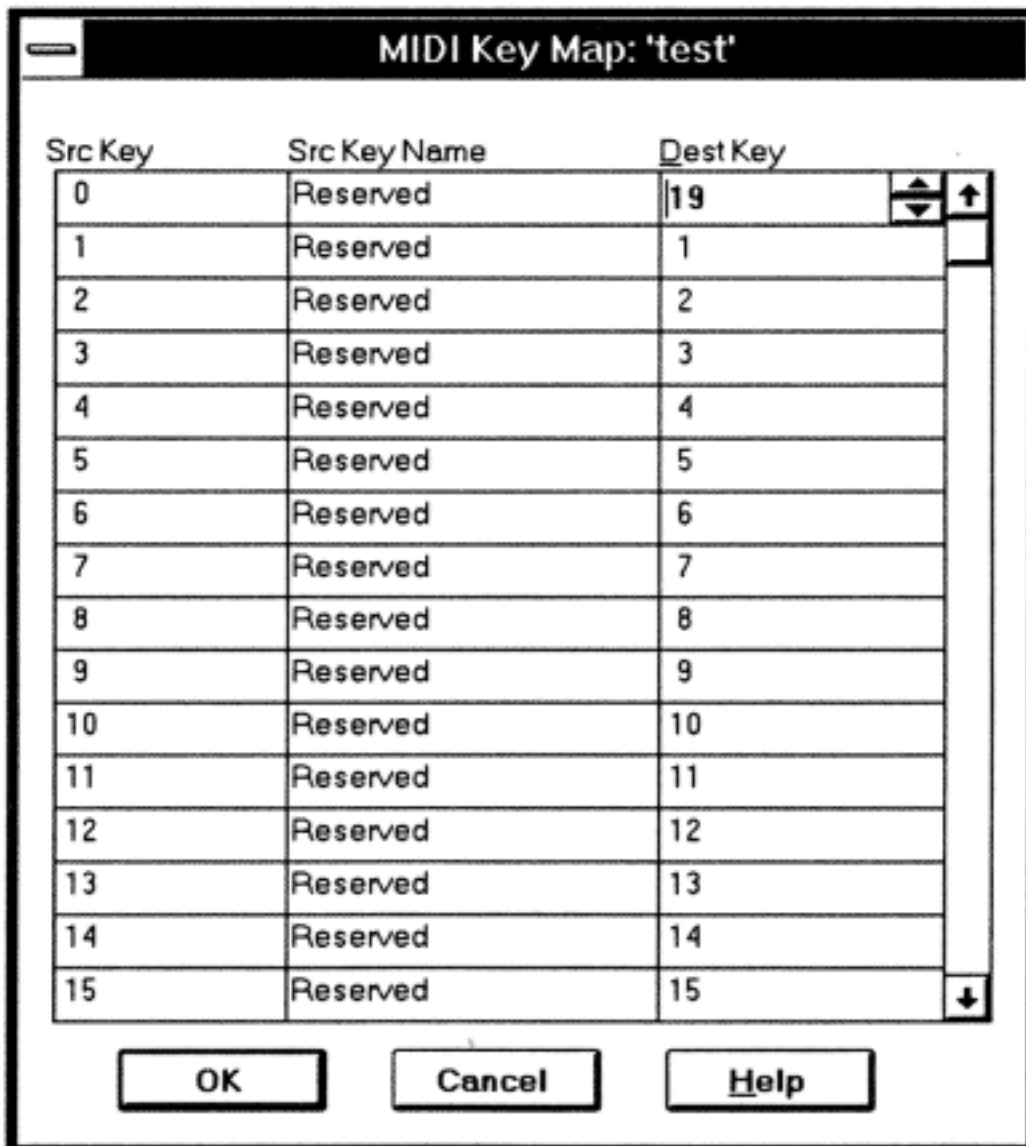


Figure 18. MIDI Key Map

The key map editor works similarly to the patch map editor, showing a list of Source Keys and Destination Keys. *If you are using an external MIDI synthesizer, you may have to change the Destination Key numbers to match the Source Key Names of the synth's drum sounds.* In the patch map editor, you can assign any key map to any source patch.

For further information on the various MIDI Mapper functions, consult your Windows Reference Manual.

Appendix A

MORE ABOUT MIDI

What is MIDI?

MIDI (an acronym for the Musical Instrument Digital Interface) is a hardware and software specification that allows electronic musical instruments and a wide variety of related equipment (such as personal computers) to communicate with each other. MIDI carries *information that describes a performance rather than sound*. Think of it as being the modern equivalent of the player piano roll: the roll itself is just paper with holes punched in it, but, played back on the proper instrument, the "holes" (which represent a performance) are turned into "music."

In MIDI, the "holes" are messages that indicate when a note has been played (indicated by a Note On message), which note it was (indicated by a MIDI note number), and how hard it was played (indicated by a velocity value). There are 128 possible notes in MIDI, which translates to nearly an 11 octave range. Other messages carry gestural information from continuous controllers (such as *pitch bend* or *sustain switch*), timing information for synchronizing systems, or program change information that tells an instrument which of its sounds to use.

Just as your television set has different channels to carry separate programs, MIDI uses a system of 16 channels to allow a number of instruments to be independently controlled. Unlike television channels, however, the only difference between MIDI channels is a number carried in the first byte of most MIDI messages. This means that information for all 16 channels can be simultaneously carried on a single cable.

Personal computers came into being around the same time as MIDI, which was no accident, since it was the development of microproces-

sors that enabled both to happen. Personal computers can record, play back, and perform sophisticated manipulations of MIDI data. A personal computer be used to record information about a performance and can even be used to simplify the programming of sounds on a synthesizer. Recorded MIDI data can be stored in a Standard MIDI File (SMF) format which, in Windows, is called a ".MID" file.

General MIDI

General MIDI (GM) is an enhancement to the original MIDI specification designed to make it easy to play back a Standard MIDI File on a variety of instruments, with some assurance that the proper sounds will be heard. General MIDI assigns specific sounds to individual program change numbers, (for example, sending *MIDI program change 1* message to a GM instrument will always call up a Grand Piano sound). The exact *quality* of the Grand Piano sound always depends on the capabilities of the particular synthesizer.

The General MIDI specification divides sounds into instrument groupings, each of which represents a family of instruments or class of sounds. MIDI channel 10 is defined in General MIDI as being used for percussion, with each percussion sound being assigned to a specific note number.

General MIDI instruments respond to a number of controllers, specifically: Modulation Wheel (MIDI Continuous Controller #1), Main Volume (CC#7), Expression (CC#11), and Sustain Pedal (CC#64).

1. Acou Grand Piano	33. Acoustic Bass	65. Soprano Sax	97. FX 1 (rain)
2. Bright Acou Piano	34. Elec Bass (finger)	66. Alto Sax	98. FX 2 (Soundtrack)
3. Elctric Gmd Piano	35. Elec Bass (pick)	67. Tenor Sax	99. FX 3 (crystal)
4. Honky-tonk Piano	36. Fretless Bass	68. Baritone Sax	100. FX 4 (atmosph)
5. Elec Piano 2	37. Slap Bass 1	69. Oboe	101. FX 5 (brightness)
6. Elec Piano 1	38. Slap Bass 2	70. English Horn	102. FX 6 (goblins)
7. Harpsichord	39. Synth Bass 1	71. Bassoon	103. FX 7 (echoes)
8. Clavi	40. Synth Bass 2	72. Clarinet	104. FX 8 (sci-fi)
9. Celesta	41. Violin	73. Piccolo	105. Sitar
10. Glockenspiel	42. Viola	74. Flute	106. Banjo
11. Music Box	43. Cello	75. Recorder	107. Shamisen
12. Vibraphone	44. Contrabass	76. Pan Flute	108. Koto
13. Marimba	45. Tremelo Strings	77. Blown Bottle	109. Kalimba
14. Xylophone	46. Pizzicato Strings	78. Shakuhachi	110. Bag Pipe
15. Tubular Bells	47. Orchestral Harp	79. Whistle	111. Fiddle
16. Dulcimer	48. Timpani	80. Ocarina	112. Shanai
17. Drawbar Organ	49. String Ensemble 1	81. Lead 1 (Square)	113. Tinkle Bell
18. Percussive Organ	50. String Ensemble 2	82. Lead 2 (sawtooth)	114. Agogo
19. Rock Organ	51. SynthStrings 1	83. Lead 3 (calliope)	115. Steel Drums
20. Church Organ	52. Synth Strings 2	84. Lead 4 (chiff)	116. Woodblock
21. Reed Organ	53. Choir Aahs	85. Lead 5 (charang)	117. Taiko Drum
22. Accordion	54. Voice Oohs	86. Lead 6 (voice)	118. Melodic Tom
23. Harmonica	55. Synth Voice	87. Lead 7 (fifths)	119. Synth Drum
24. Tango Accordion	56. Orchestral Hit	88. Lead 8 (bass+lead)	120. Reverse Cymbal
25. Acou Guit (nylon)	57. Trumpet	89. Pad 1 (new age)	121. Guit Fret Noise
26. Acou Guit (steel)	58. Trombone	90. Pad 2 (warm)	122. Breath Noise
27. Elec Guit (jazz)	59. Tuba	91. Pad 3 (polysynth)	123. 123 Seashore
28. Elec Guit (clean)	60. Muted Trumpet	92. Pad 4 (choir)	124. Bird Tweet
29. Elec Guit (muted)	61. French Horn	93. Pad 5 (bowed)	125. Telephone Ring
30. Overdriven Guitar	62. Brass Section	94. Pad 6 (metallic)	126. 126 Helicopter
31. Distortion Guitar	63. SynthBrass 1	95. Pad 7 (halo)	127. Applause
32. Guit Harmonics	64. SynthBrass 2	96. Pad 8 (sweep)	128. Gunshot

Table 6: General MIDI Level-1 Sound Set

35. Ac Bass Dm	51. Ride Cym 1	67. Hi Agogo
36. Bass Dm 1	52. Chinese Cym	68. Lo Agogo
37. Side Stick	53. Ride Bell	69. Cabasa
38. Ac Snare	54. Tambourine	70. Maracas
39. Hand Clap	55. Splash Cym	71. Short Whistle
40. Elec Snare	56. Cowbell	72. Long Whistle
41. Lo Floor Tom	57. Crash Cym 2	73. Short Guiro
42. Closed Hi-Hat	58. Vibraslap	74. Long Guiro
43. Hi Floor Tom	59. Ride Cym 2	75. Claves
44. Pedal Hi-Hat	60. Hi bongo	76. Hi Woodblock
45. Lo Tom	61. Lo bongo	77. Lo Woodblock
46. Open Hi-Hat	62. Mute Hi Conga	78. Mute Cuica
47. Low-Mid Tom	63. Open Hi Conga	79. Open Cuica
48. Hi-Mid Tom	64. Lo Conga	80. Mute Triangle
49. Crash Cym 1	65. Hi Timbale	81. Open Triangle
50. Hi Tom	66. Lo Timbale	

Table 7: General MIDI Level-1 Percussion Map

Soundscape also supports the following extensions to the General MIDI Percussion Map:

35. Shaker
36. Jingle Bell
37. Bell Tree
38. Castanets
39. Mute Suirdo
40. Open Suirdo

Table 8: Extensions to the General MIDI Percussion Map

MT-32 Sound Set

The Roland MT-32 was an early, pre-General MIDI sound module. It used a different MIDI Program Change map than General MIDI now uses.

0. Acou Piano 1	33. Harmo Pan	66. Elec Bass 1	99. Syn Mallet
1. Acou Piano 2	34. Chorale	67. Elec Bass 2	100. Windbell
2. Acou Piano 3	35. Glasses	68. Slap Bass 1	101. Glock
3. Elec Piano 1	36. Soundtrack	69. Slap Bass 2	102. Tube Bell
4. Elec Piano 2	37. Atmosphere	70. Fretless 1	103. Xylophone
5. Elec Piano 3	38. Warm Bell	71. Fretless 2	104. Marimba
6. Elec Piano 4	39. Funny Vox	72. Flute 1	105. Koto
7. Honkytonk	40. Echo Bell	73. Flute 2	106. Sho
8. Elec Org 1	41. Ice Rain	74. Piccolo 1	107. Shakuhachi
9. Elec Org 2	42. Oboe 2001	75. Piccolo 2	108. Whistle 1
10. Elec Org 3	43. Echo Pan	76. Recorder	109. Whistle 2
11. Elec Org 4	44. Doctor Solo	77. Pan Pipes	110. Bottleblow
12. Pipe Org 1	45. School Daze	78. Sax 1	111. Breathpipe
13. Pipe Org 2	46. Bellsinger	79. Sax 2	112. Timpani
14. Pipe Org 3	47. Square Wave	80. Sax 3	113. Melodic Tom
15. Accordion	48. Str Sect 1	81. Sax 4	114. Deep Snare
16. Harpsi 1	49. Str Sect 2	82. Clarinet 1	115. Elec Perc 1
17. Harpsi 2	50. Str Sect 3	83. Clarinet 2	116. Elec Perc 2
18. Harpsi 3	51. Pizzicato	84. Oboe	117. Taiko
19. Clavi 1	52. Violin 1	85. Engl Horn	118. Taiko Rim
20. Clavi 2	53. Violin 2	86. Bassoon	119. Cymbal
21. Clavi 3	54. Cello 1	87. Harmonica	120. Castanets
22. Celesta 1	55. Cello 2	88. Trumpet 1	121. Triangle
23. Celesta 2	56. Contrabass	89. Trumpet 2	122. Orche Hit
24. Syn Brass 1	57. Harp 1	90. Trombone 1	123. Telephone
25. Syn Brass 2	58. Harp 2	91. Trombone 2	124. Bird Tweet
26. Syn Brass 3	59. Guitar 1	92. Fr Horn 1	125. One Note Jam
27. Syn Brass 4	60. Guitar 2	93. Fr Horn 2	126. Water Bell
28. Syn Bass 1	61. Elec Gtr 1	94. Tuba	127. Jungle Tune
29. Syn Bass 2	62. Elec Gtr 2	95. Brs Sect 1	
30. Syn Bass 3	63. Sitar	96. Brs Sect 2	
31. Syn Bass 4	64. Acou Bass 1	97. Vibe 1	
32. Fantasy	65. Acou Bass 2	98. Vibe 2	

Table 9: MT-32 Sound Set

34. Drum Sound	51. Drum Sound	68. Drum Sound
35. - - -	52. Acou High Tom	69. Low Timbale
36. Acou Bass Drum	53. Ride Cymbal	70. High Agogo
37. Acou Bass Drum	54. - - -	71. Low Agogo
38. Rim Shot	55. - - -	72. Cabasa
39. Acou Snare Drum	56. Tambourine	73. Short Whistle
40. Hand Clap	57. - - -	74. Long Whistle
41. Elec Snare Drum	58. Cowbell	
42. Acou Low Tom	59. - - -	
43. Closed Hi-Hat	60. - - -	
44. Acou Low Tom	61. - - -	
45. Open Hi-Hat 2	62. High Bongo	
46. Acou Middle Tom	63. Low Bongo	
47. Open Hi-Hat 1	64. Mute High Conga	
48. Acou Middle Tom	65. High Conga	
49. Acou High Tom	66. Low Conga	
50. Crash Cymbal	67. High Timbale	

Table 10: MT-32 Percussion Set

Appendix B

TROUBLESHOOTING

If your Soundscape card is not functioning as it should, don't panic. The problem is probably very simple to find and fix as long as you remain calm and approach the situation methodically.

The secret to troubleshooting is to examine the evidence you have, gain as much information as you can, and eliminate possibilities one by one. In most cases, the source of the problem will soon become clear.

For example, if Soundscape works fine when you remove all other cards from your computer, but it stops working when you replace your fax-modem, a conflict between the sound card and the fax-modem (such as port address or IRQ) may be indicated.

Often, problems are extremely simple; things like bad cables, things not plugged in or turned on, etc. Check the obvious first, not last.

Problems When Using Two Sound Cards

Having another sound card in your system in addition to the Soundscape card will greatly increase the chances of having system conflicts. *We highly recommend that any other sound devices and their associated Windows drivers be removed before installing the Soundscape card.*

Configuration Problems

Adding new hardware and software to your computer requires ensuring that there are no conflicts with your existing system. If you have difficulty with the installation procedure or are unable to make the card work, a conflict may be present. There are three major configuration settings to consider: I/O Port Address, Interrupt Request

lines (IRQ), and Direct Memory Access channels (DMA).

To resolve such conflicts, it is very important to know the settings of other cards (it is best to remove other sound cards) and peripherals currently in your system, including the mouse, fax-modem, video accelerators, etc. Many peripherals come with setup software similar to Soundscape which lets you see and change the current configuration. There are also utility programs that investigate and report on the configuration of your system and its peripherals. In either event, make a record of the settings used by all the peripherals in your system for reference when installing new hardware and software or troubleshooting problems.

One quick way to check for conflicts is to check the Setup window in the Soundscape Windows driver. See Part 3 in this manual for details on accessing this window. The Status section of the window will give an initial indication as to whether or not the driver is communicating properly with the sound card. The Test button will check for IRQ and port address conflicts (unfortunately, DMA conflicts cannot always be detected since DMA channels *can* be shared by multiple devices).

Generally, you will only have a DMA conflict if your system contains another sound card or an external CD-ROM drive (the Soundscape CD-ROM drivers do not use DMA).

Audio Problems

If you are satisfied that the Soundscape hardware and software are properly installed with no conflicts, but you hear no sound at all, the problem may be with your audio connections. Here are some suggestions:

- Try playing both a .WAV file and a .MID file to ascertain that there is no sound at all coming from the speakers. If you hear one and not the other, the problem is internal and has nothing to do with your audio system.
- Be sure that your monitoring system is properly set up. Try connecting a sound source other than Soundscape, such as an audio CD player, and establishing whether or not you can hear it.
- Be sure that the sound card is properly connected to the monitoring system (a 1/8" mini-phone cable should be running from Soundscape's Out connector to a line input on the monitoring system). To eliminate the possibility of a bad cable, try plugging a pair of high-impedance headphones (such as most Walkman-

type phones) to the Soundscape Out jack and see if you hear any sound.

Problems Internal to Soundscape

If you suspect that the problem is internal, the computer or the card may have become "confused," which is generally simple to remedy.

- Run the **SSInit** program to reinitialize the board.
- Open the mixer in **SSInit** or **Audiostation** and move the faders to make sure that the mixer values aren't set to zero.
- Initialize the card without changing any settings. To do this, run **SSINIT** with a specific mode argument (i.e., **SSINIT GM**, **SSINIT MT32**, or **SSINIT FM**). Entering **SSINIT** with no specific mode argument will take you into the configuration screens discussed in Part 3 in this manual.
- In general, it is good practice to reset the computer (power off-on or "warm" reboot by pressing **CTRL+ALT+DEL**) after changing port, DMA, or IRQ settings.

Problems with Games

- Make sure that the Soundscape is in the proper operating mode. One way to be sure is to follow the guidelines for choosing the proper mode in the section Part 4 of this manual entitled "Using Soundscape with Games."
- If the game locks up or doesn't give you any sound, make sure that you removed the DOS Command Line Application drivers from memory (see Part 4 in this manual as well as your Software Manual for more information). By default, these applications are not loaded.
- If the game's Install or Setup program doesn't give you a particular sound option that you know the game supports, (e.g., the game's box and manual specify **MT-32**, but the game's Install or Setup doesn't support it), try rerunning the game's Install or Setup program after first initializing the sound card to the particular mode. Some "smart" install programs try to auto-detect your sound card, and if Soundscape is set to the wrong mode, the Install program may not recognize it.
- If you select a game mode and the game's Install program says something like "Sound card not found, proceed anyway?", choose "yes". In some cases, you can still install the program and

it will work fine. The problem lies in the way some install programs check for the presence of sound cards.

- ❑ If you are having difficulty with the playback of Sound Blaster digital audio emulation, there could be an IRQ conflict with your selection for SB IRQ/Wave IRQ in SSInit. One possible cause is that IRQ 7, which is used automatically by many games for digital audio, is being used by your LPT1 port. Try setting your SB IRQ/Wave IRQ in SSInit to 5 (Remember not to set the SB IRQ/Wave IRQ to the same value as your IRQ under Base Values).
- ❑ It is a good practice to initialize Soundscape before playing each game (See Part 4).
- ❑ If you are having a problem with your external game/joystick controller, make sure that the Soundscape Joystick is disabled. This should solve the problem. Do this in the SSInit Hardware Configuration screen.
- ❑ In order to use two joysticks, you will need to use a Sound Blaster-compatible Y-connector, or use an industry-standard MIDI Joystick kit. This will make allowances for the proper direct connections for dual joysticks.

Problems under Windows

- ❑ If you are able to run Windows, but the Soundscape software applications don't work, it is likely that your Windows device drivers are not functioning properly. This is the first place where you should look for problems. It is also the first thing you should look at when running the sound card under Windows for the first time. See the section in Part 3 entitled "Configuring Soundscape Under Windows" for information on configuring and troubleshooting the Windows device drivers using the Driver Setup screen.
- ❑ If digital audio playback is consistently repeating, then your Primary Wave Interrupt assignment is probably incorrect. Go to the Driver Setup screen and look at the Status Line.
- ❑ If digital audio playback is intermittently bad then you probably have a DMA conflict in your machine. Go to the Driver Setup screen and try a different DMA channel.
- ❑ If you are not able to start Windows in the 386 Enhanced mode, follow these steps:
 1. Start Windows in Standard mode (win /s). If Windows runs in Standard mode and *not* in 386 Enhanced mode, you probably

have a conflict with a virtual device driver from another sound card or another device that uses DMA under Windows. Open the Drivers Applet in the Control Panel (in the Main Program Group) and remove any sound drivers associated with other sound cards that are not installed in your system.

2. Edit the SYSTEM.INI file in the Windows directory to find and remove any *virtual* device drivers that are in conflict with your Soundscape device drivers. To do this, locate the section of the file under the [386Enh] header. Look for "device=*.386" entries, where * is the device driver name, and remove any entries that correspond to other sound cards' virtual MIDI or DMA device drivers. Examples of such entries would be:

device=vmqxd.386 (Music Quest virtual MPU-401 [MIDI] device driver)

device=vsbd.386 (Sound Blaster virtual DMA device driver)

Be careful *not* to remove the following:

device=*vdmad (Microsoft's virtual DMA driver)

device=vtdapi.386 (Microsoft's virtual timer driver)

device=vvdmad.386 (Soundscape's virtual DMA driver)

3. If all else fails, delete the System.INI file (first, make sure it's backed up), reinstall Windows, and then reinstall the Soundscape software.

Problems with MIDI under Windows

If you are able to play and record .WAV files with no problem, but are experiencing difficulty getting the synthesizer or MIDI functions to work, try the following.

- Check the MIDI Mapper and make sure that MIDI data is being directed where you want it to go (remember that the **Soundscape MIDI Out** device will bypass the Soundscape synthesizer and will instead drive *only* the external MIDI port). If the MIDI Mapper icon does not appear in the Control Panel, it means that your MIDI drivers are not properly installed. In this case, open the Drivers applet (in the Windows Control Panel) and install the MIDI Mapper driver.
- If you are trying to use MIDI Out to drive an external MIDI device, be sure:
 - that the channels are properly assigned in the MIDI Mapper;

- that a genuine MIDI cable (not just any cable with 5-pin DIN connectors) is connecting the Soundscape MIDI Out to the external device's MIDI In; and
 - that the channel, mode, and sound of the external device are properly set up.
- ❑ Take note that the “In” and “Out” labeling on the MIDI adapters refers to MIDI “In” and “Out” on your sound card and not the external device. Therefore, the cable labeled “In” should go to the MIDI connector labeled “Out” on your external synthesizer, and the cable labeled “Out” should go to the connector labeled “In” on your external synthesizer.
 - ❑ Confirm that you are using the proper adapter for the Joystick/MIDI port.
 - ❑ If you are playing MIDI data into Soundscape but you aren't hearing anything, it is likely that the software you are using needs to be set to **echo** the information back out to a sound device. You can accomplish this by turning on a feature in the Windows application called **MIDI Thru** or **MIDI Merge**. This function will take any incoming MIDI data and echo it back out to the MIDI Mapper. *In this instance, make sure your MIDI Mapper setup is sending MIDI data to the device which you are trying to hear.*

Appendix C

TECHNICAL SPECIFICATIONS

Specifications

- ❑ On-board Processor: 8 MHz Motorola 68EC000

Synthesizer

- ❑ Architecture: Digital Wavetable Synthesis
- ❑ Voices: Up to 32
- ❑ Polyphony: Up to 32 notes
- ❑ Sample Memory: 2 Mbytes of ROM
- ❑ D/A Converter: 16-bit Linear Serial
- ❑ Playback Sample Rate: 31.250 kHz
- ❑ Level and Panning Controls: Separate 12-bit L&R controls for each voice
- ❑ Filters: Separate Configurable 4-Pole Digital Filter for each voice
- ❑ Envelopes: Hardware Envelopes for Amplitude and Filters

FM Synthesis

- ❑ Software emulation of Yamaha OPL-2 Synthesizer.

Audio Inputs

- ❑ Mic/Line
 - Connector 3.5 mm (1/8") mini phone jack
 - Tip = signal
 - Sleeve = Ground
 - Nominal Input Level 100 mV r.m.s. (70 mV p-p) in Mic mode, 1 V r.m.s.

(70 mV p-p) in Line mode

- Nominal Input Impedence = 100K Ohms

❑ CD/Aux

- Connector: 3.5 mm (1/8") TRS mini phone jack
 - Tip = L channel
 - Ring = R channel
 - Sleeve = Ground
- Max Input Level = 1 V r.m.s. (2.8 V p-p)
- Nominal Input Impedence = 22 k Ohms

Output

- ❑ Connector: 3.5 mm (1/8") TRS mini phone jack
 - Tip = L channel
 - Ring = R channel
 - Sleeve = Ground
- ❑ Max Output Level into a Line Input = 2 V r.m.s. (5.6 V p-p)
- ❑ Max Output Level into Headphones = 100 mW into Hi-Z headphones (Walkman Style)

Digital

❑ PCM Playback Section

- Devices: Three Wave output (playback) devices and one Wave input (record) device.
- Capability: Playback of three simultaneous mono or stereo streams *or* playback of two simultaneous mono or stereo streams while recording a single mono or stereo stream.
- D/A Converter: 16-bit Linear Serial Sigma-Delta Converter
- Max Playback Sample Rate: 48.0 kHz
- Level and Panning Controls: Separate 12-bit L&R controls for each voice
- Data Formats: 8-bit unsigned linear, 8-bit u-law and a-law, 16-bit signed linear. All formats Mono or Interleaved Stereo.

❑ Digital Recording Section

- A/D Converter: 16-Bit Linear Serial Sigma-Delta Converter
- Available Sampling Rates: 5.5125, 6.615, 8.0, 9.6, 11.025, 16.0, 18.9, 22.05, 27.42857, 32.0, 33.075, 37.8, 44.1, and 48.0 kHz
- Source Selection: Any external source, microphone, CD, synthesizer, or wave
- Level Control: Individual

- Level Control Range: 0 to -38 dB on all other record sources
- Formats: 8-bit unsigned linear, 8-bit u-law and a-law, 16-bit signed linear. All formats Mono or Interleaved Stereo.

Audio Mixing

- Input Sources: Synthesizer Output, PCM Output, CD/Aux Input , Mic/Line Input
- Level Control: 12-bit for Synthesizer and PCM, 5-bit for all others
- Level Control Range: 0 to -62 dB for all
- Frequency Response: 20-20,000 Hz \pm 1 dB
- Distortion: <0.5%
- Signal/Noise Ratio: >80 dB

Host Interface

- Configuration: 68B50 Communications Interface, MPU-401 MIDI Interface. Emulation of MPU-401 or 68B50 UART-based MIDI Interface
- Number of Ports: 4
- Base Port Address: Hardware Selectable
- Interrupt Usage: 2, 5, 7, 10; up to two possible, software selectable
- DMA Usage: 0, 1, 3, 5, 6; up to five possible, software selectable
- CD-ROM Interface: I/O Decode and Bus buffering
- Number of Ports: 1 In, 1 Out/Thru (using Optional Expander Cable)
- Software Features: MIDI Split, Merge, and Time Stamp
- MIDI Clock: 12-bit, 1 MHz Counter with Synchronized Tempo Updates
- Joystick Interface: Standard PC-Compatible Joystick Port
- Max Number of Joysticks: 1 (4 Axis, 4 Buttons)

Connector Pinout

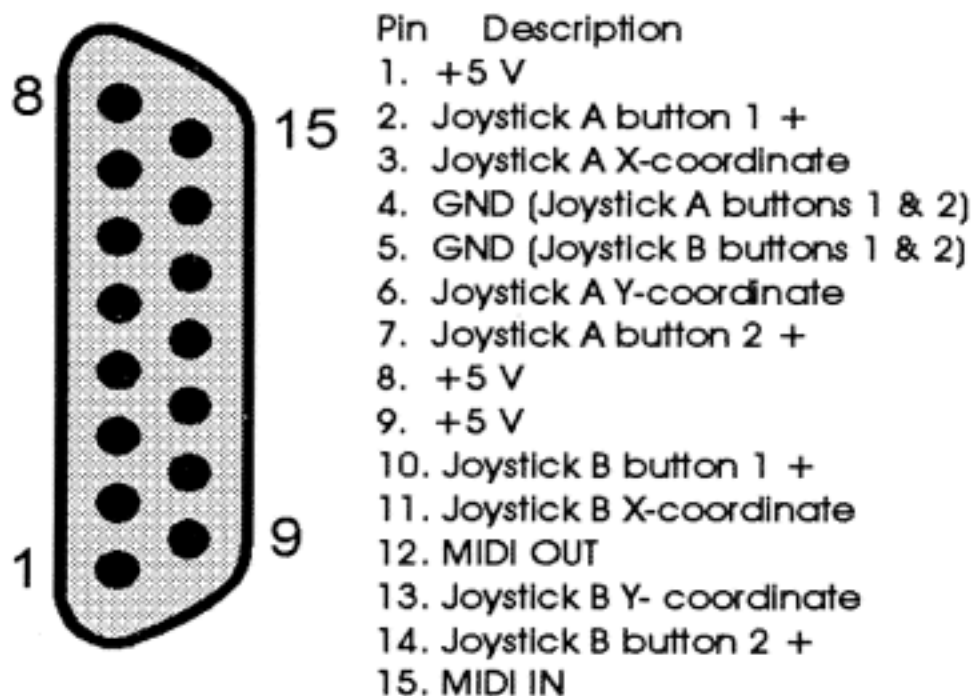


Figure C-19. MIDI/Joystick Connector

Appendix D

GLOSSARY

ASCII: American Standards Committee on Information Interchange. A standard used by PC-compatible computers to represent numbers and characters in binary form.

AUTOEXEC.BAT: A batch file that directs the activities performed by the computer during system startup, including a good deal of setup and configuration.

BIOS: Stands for Basic Input-Output System. Code in your computer's ROM (Read Only Memory) that provides the power-on, self test and other operating functions.

Booting/Booting Up: Starting the computer. There are two types. Warm Booting is accomplished by simultaneously pressing the CTRL/ALT/DEL keys (or by pressing your computer's RESET button) and can occur only when the computer is running. A cold boot requires activation of the ON/OFF switch.

CONFIG.SYS: An ASCII file that is created to provide the computer with special information about applications and hardware.

DMA: Direct Memory Access. A facility that allows a peripheral to access system memory without having to involve the CPU.

Driver: A small program that performs as the software interface between a peripheral (i.e., video and sound card, printer, keyboard, etc.) and the host (main) computer. Drivers are often loaded as specified by CONFIG.SYS when the system is booted up.

Expansion Card: An internal peripheral, added to expand a computer's capability. Soundscape is an expansion card.

Expansion Slot: The physical space and accompanying connectors within the computer where expansion cards are installed.

FM Synthesis: A method of synthesizing sound, popularized by Yamaha and used by most early sound cards, that is based on Frequency Modulation.

General MIDI: An extension to the MIDI specification that defines a minimum set of standards for a class of instrument known as a "General MIDI Instrument." These standards include correlation between MIDI program change numbers and types of instrument sounds. See also **MIDI**.

I/O Port: Input/Output port. Computers typically use a memory address to communicate with a peripheral via an I/O port. Knowing and accessing the specific address and port for a given peripheral is usually the job of the driver. See also **Driver**.

.INI File: An ASCII text file that specifies default values and configuration variables for a program. An .INI file is read and used when the program is booted.

Interrupt Request (IRQ): Signal used by a device, such as a mouse, to inform the computer that it is in need of attention.

Jumper: A small plastic plug that fits over a pair of pins. When the cap or plug straddles two pins, it makes an electrical connection. The computer makes decisions based on whether the connection is made or not. A group of jumper pins is called a *jumper block*.

.MID file: The Windows format for Standard MIDI Files. See also **Standard MIDI File**.

MIDI: A specification, consisting of both hardware and software components, that allows a wide variety of music synthesizers, audio equipment, and other entertainment-related devices to communicate with each other.

MPU-401: A popular PC MIDI interface protocol developed by Roland Corp.

MT-32: A popular sound module manufactured by Roland Corp whose sound set became somewhat of a standard in sound cards. The MT-32 was a primary catalyst for the adoption of General MIDI.

Multimedia: The integration of numerous audio and visual media, such as graphics, animations, sound recordings, MIDI data, etc., in the presentation of a work.

OPL-2/OPL-3: Two generations of FM synthesis chips produced by Yamaha and made popular in early sound cards.

Peripheral Equipment: Auxiliary equipment connected to a computer (e.g., sound card, monitor, printer, keyboard, etc.). A peripheral may reside inside or outside the computer.

RAM: Random Access Memory; memory that can be read from and written to. In common usage, RAM refers to the internal, volatile memory used by the computer to hold programs and data while it is working with them. Information stored in RAM is lost if power is removed

ROM: Read Only Memory; memory space in your computer for storing permanent operating instructions. Information stored in ROM is retained even if power is removed

.SND files: A DOS file format for storing digital audio recordings.

Sound Blaster: References a software setting for compatibility.

Standard MIDI File: An addition to MIDI specification that defines a standard file format for MIDI sequences.

SYSTEM.INI: A configuration file executed when Windows is booted. It is used primarily to load device drivers into memory.

Terminate and Stay Resident (TSR): Programs that remain in memory after being run in order to make it easy to reactivate them. TSRs may use substantial memory and cause conflicts with other programs.

.WAV files: The standard Windows file format for digital audio recordings.

Wavetable Synthesis: A type of synthesis based on playing back short samples of actual instruments. Since it uses recordings of actual instruments, wavetable synthesis sounds more realistic than FM.

WIN.INI: A file specifying how Windows should be configured when it is booted.

ENSONIQTM

155 great valley parkway
po box 3055
malvern, pa 19355
© Copyright 1994

PN 9305000201