

# **<Product>**

**Controller Name**  
**Audio Card**

**Deluxe User's Manual**

Revision: 2.0  
913-0000-024  
August, 1996

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## **I. Introduction**

The <Product> Audio Controller is a 16-bit stereo sound card based on the OPTi 82C931 Plug-and-Play Integrated Audio controller chip. The <Product> is compatible with all major PC sound standards, including Sound Blaster™ Pro, Ad Lib™, MPU-401 and Windows Sound System™. The <Product> provides an integrated sound solution for business audio, educational and entertainment sound, and other multimedia applications.

The <Product> Sound Controller card will let you run thousands of Sound Blaster and Sound Blaster Pro compatible games and applications, including a rapidly growing number of Windows business applications that are compatible with the Windows Sound System.

Included with full support for these popular PC sound standards, the <Product> Sound Controller card includes an IDE CD-ROM interface. The <Product> Sound Controller card also has multiple input and output ports for recording and playback of stereo sound.

### **I.i Features**

The <Product> Sound Controller card is a full featured sound card which includes the following:

- **ISA Plug and Play (PnP)**—Supports the Plug and Play Specification 1.0a which allows the system to automatically detect and configure devices that conform to the standard. This eliminates the user having to know and configure the correct IRQ, DMA and I/O channel settings.
- **Wave Audio**—Maximum recording and playback sampling rate of up to 48 KHz stereo.
- **Sixteen-bit digital-to-analog and analog-to-digital converter**—16-bit and 8-bit digitizing in stereo and mono mode.
- **Twenty-two Voice FM Music Synthesizer**—Yamaha OPL3 FM Synthesizer technology. Play up to 22 instruments simultaneously to deliver a high quality of rich and crisp music.

- **Digital/Analog Mixer**—Mix analog stereo from CD-audio, Line-In, FM music and digitized voice sources. Digital stereo mixing from Microphone, Line-in, CD-audio and Line-out Master volume control.
- **Built-in Stereo Power Amplifier**—4-watt per channel stereo power amplifier.
- **MIDI Interface/Joystick Port**—Built-in integrated MIDI MPU-401 interface with FIFO, IBM PC joystick/game port.
- **Interfaces**—Wave table synthesizer interface, Speakers Out, Line Out, Line In, and Microphone In.

**I.ii What is in your package?**

You should have the following items in your package:

- <Product> Sound Controller Card
- <Product> Device Driver Installation Disk (Windows 3.1 and Windows 95)
- <Product> Sound Controller User Manual (this document)

**I.iii System Requirements**

The <Product> Sound Controller is manufactured for IBM PC compatible computers, software, and related computer components:

- IBM - compatible computer models AT, 286, 386, 486, Pentium, PS/2 (model 25/30) and compatibles (486 minimum for Windows 95)
- At least 4MB RAM, 8MB for Windows 95
- VGA or SVGA graphics adapter and monitor
- 2MB free on hard disk for installing all <Product> Sound Controller software
- Windows 95 or Windows 3.1
- External speakers, microphone or headphones (optional)

**I.iv Latest Information**

Please read the README.TXT file on the installation disk for any changes made after this manual was printed.

## **II. Quick Installation Windows 3.1**

This section is for those who are familiar with the hardware and software installation of PC peripherals, especially PC compatible sound cards, and the Windows 3.1 operating system.

If you run into difficulties, please see the full instructions provided in Chapter 1 (Hardware Installation) and Chapter 2 (Software Installation). These Quick Installation instructions are intended to be brief and do not cover all of the <Product> Sound Controller options and configurations.

### **II.i Hardware Installation**

1. Power down your computer, remove the cover and find an empty 16-bit expansion slot.
2. Install the <Product> Sound Controller into the open slot and secure it.
3. Connect a pair of speakers to the Speaker Out connector on the <Product> Sound Controller bracket. Refer to Section 1.3 for details concerning connecting other external devices.

---

**WARNING!** To avoid temporary or permanent hearing loss or impairment due to unexpected noise or static, always hold your headphones away from your ears before turning on the computer. You should also lower your speaker's volume before testing.

---

4. For details on CD-ROM installation refer to Section 1.4.
5. Replace your computer's cover. Hardware installation is complete.

### **II.ii Software Installation**

1. After installing the hardware as explained above, turn the computer back on and start Windows.
2. Insert the <Product> Sound Controller Installation disk in your floppy drive.
3. Select File and Run.
4. Type a:\setup and click OK.

5. The <Product> Sound Controller menu driven installation program will appear. Follow the on-screen prompts to configure the <Product> Sound Controller for your system.
6. The middle of the installation program will prompt you to REBOOT your system, be sure to select OK and then press Ctr-Alt-Del when prompted. This will insure that the <Product> Sound Controller is properly configured.

---

**WARNING!** If you experience compatibility problems after running through this quick installation guide, please refer to the full installation instructions in Chapter 2 and the troubleshooting section in Chapter 4.

---

The software installation will then be completed and a new product group will be visible in Windows. The utilities in this group allow you to reconfigure the settings of the card and configure the audio mixer and karaoke features.



### **III. Quick Installation Windows 95**

This section is for those who are familiar with the hardware and software installation of PC peripherals, especially PC compatible sound cards.

#### **III.i Hardware Installation**

You must already have Windows 95 installed on your computer and running properly before continuing.

1. Power down your computer, remove the cover and find an empty 16-bit expansion slot.
2. Install the <Product> Sound Controller into the open slot and secure it.
3. Connect a pair of speakers to the Speaker Out connector on the <Product> Sound Controller bracket. Refer to Section 1.3 for details concerning connecting other external devices.

---

**WARNING!** To avoid temporary or permanent hearing loss or impairment due to unexpected noise or static, always hold your headphones away from your ears before turning on the computer. You should also lower your speaker's volume before testing.

---

4. For details on CD-ROM installation refer to Section 1.4.
5. Replace your computer's cover. Hardware installation is complete.

#### **III.ii Software Installation**

Please follow the steps below for a proper installation of the drivers for Windows 95. It is assumed that you already have Windows 95 installed and have properly plugged in your Sound Card.

1. Turn your computer on. The system will boot the Windows 95 operating system.
2. The Windows 95 Plug-and-Play capabilities will detect the <Product> card and ask you to install the driver. Select "Driver from disk provided by hardware manufacturer" and click "OK".

3. Insert the driver diskette into the diskette drive (A or B) and click "OK".
4. After reading the diskette, Windows 95 will find the installation information for the OPTi Plug and Play devices and the following screen will appear. Click on the option that matches the installed hardware, either simple audio, audio with IDE CD-ROM, audio with modem, or audio with IDE CD-ROM and modem. Windows 95 will copy the driver file to your hard drive.
5. After the files are copied, Windows 95 will ask you to restart your computer. Click "Yes" to restart the computer.
6. After Windows 95 restarts, it will detect the logical devices that are available and you will see each device as it is found, first the Windows Sound System, then the Game Port and Joystick, and finally the MPU-401.

This will complete the Windows 95 installation. The program will continue to load and when it is complete, you should hear the Windows 95 start up wave file.

---

<b>Warning!</b>	If you experience compatibility problems after running through this quick installation guide, please refer to the full installation instructions in Chapter 3 and the troubleshooting section in Chapter 4.
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## 1. Hardware Installation

The hardware installation of the <Product> Sound Controller is easy and can be performed in just a few steps. The sound controller has no switches (see Figure 1-1). The sound controller installation program configures all of the settings. This section will describe the hardware installation and configuration options using the sound controller installation program.

Note: This section presumes that you are familiar with your particular PC compatible computer and with DOS and Windows terminology.

Note: If you are installing the <Product> into a system that is running Windows 95, you must already have Windows 95 installed on your computer and running properly before installing the hardware.

### 1.1. Default Configuration

The <Product> Sound Controller sound card supports both Sound Blaster Pro and Windows Sound System applications. The <Product> Sound Controller defaults to Sound Blaster Pro mode when the system is booted up in DOS. It switches to Windows Sound System mode when Windows 3.1 is launched. The default configuration of a system that supports the Plug and Play 1.0a specification will depend on the available system resources.

If your system is not PnP compatible the default configuration is as follows:

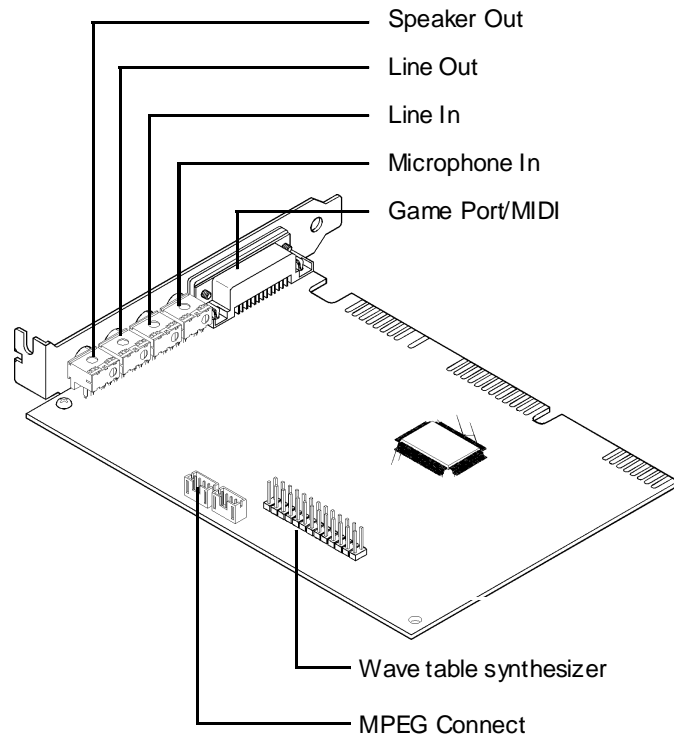
Operation Mode	Sound Blaster Pro Compatible
IRQ	5
DMA Channel	1
I/O Port Address	220h
CD-ROM Interface	None

---

<b>Warning!</b>	The <Product> Sound Controller is susceptible to damage from electrostatic discharge. Please make sure you are properly grounded before proceeding with these installation instructions.
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Figure 1-1 Sound Controller Layout

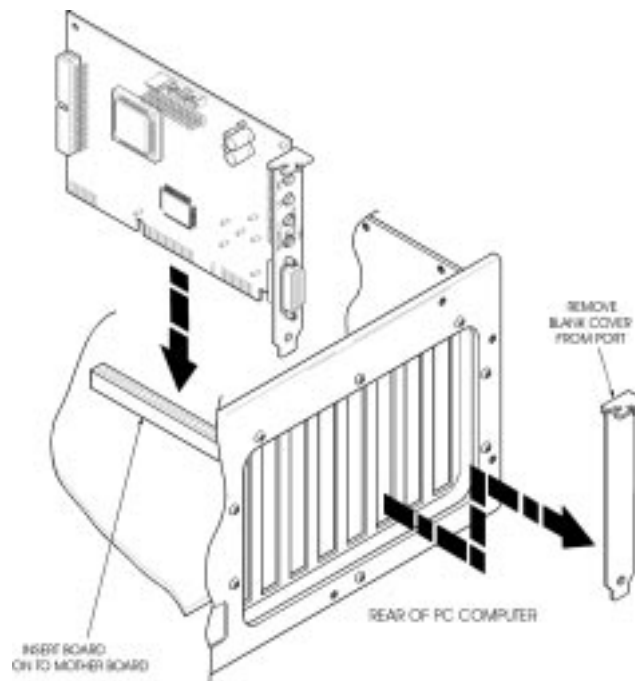


## 1.2. Installing the <Product> Sound Controller

To install the board:

1. With your computer system's power off, remove the cover, find an empty 16-bit expansion slot, and remove the metal bracket.
2. Insert the <Product> Sound Controller into the expansion slot firmly and evenly (see Figure 1-2). Take care not to force it into the slot. Once you have properly positioned the <Product> Sound Controller into the slot, secure the <Product> Sound Controller with the bracket screw.

Figure 1-2 Sound Card Installed on Motherboard



1. Replace the cover of the computer.
2. Connect your speaker or headphones to the external output connections on the <Product> Sound Controller bracket. For more information on connecting external devices, see Section 1.3, Connecting External Devices.

Hardware installation is complete.

### **1.3. Connecting External Devices**

The <Product> Sound Controller provides a number of ways for you to connect external devices to it, such as headphones, microphones and speakers. This chapter will describe the <Product> Sound Controller connectors and the process of connecting external devices. The <Product> Sound Controller supports the following external devices:

- Speakers

- Headphones
- Power amplifier
- Microphone
- Joystick
- MIDI adapter

Please have the user reference manuals of the external devices on hand for reference.

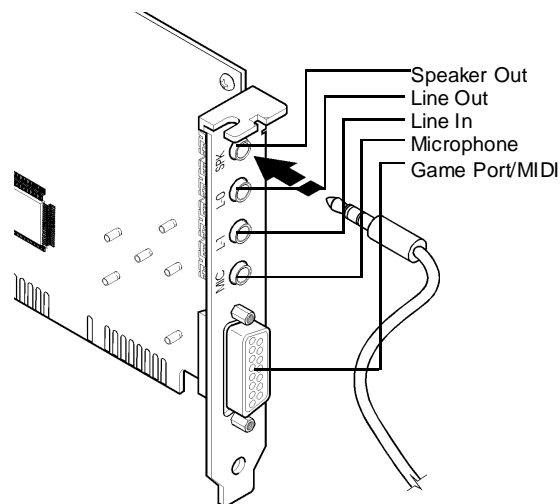
Figure 1-3 shows the different external device connectors on the sound card.

---

**Warning!** Use the configuration program, SNDINIT.EXE, to adjust the volume to mid-range before connecting any speakers to the sound card to avoid damaging your hearing or your equipment.

---

Figure 1-3 External Connector Locations



**Speaker Connection:** Speakers are connected to the Speaker Out connector. This is the top most connector on the right side of the sound card.

**Line-Out/Headphones Connector:** The Line-Out connector is located below the Speaker Out connector. You can connect this to the Line-In connector of any external amplified speakers or to a set of headphones.

**Line In/CD-Player/Hi-Fi Connection:** Below the Line Out connector is the Line-In connector. Connect this to the Line-Out connector of any hi-fi set, radio set, CD-player, synthesizer, Walkman™, etc.

**Microphone In Connection:** A microphone can be connected to the Microphone In connector on the sound card. Use a dynamic monaural or stereo microphone with a resistance of not more than 600 ohms.

**Joystick Connector:** The Joystick/MIDI port is a 15-pin female connector located just below the Microphone In connector. This port can be connected to any IBM PC compatible joystick with a 15-pin D-sub connector. Disable the joystick port on the sound card (using the SNDINIT.EXE program) if you already have a game port or game card.

**MIDI Instrument Connection:** You need a MIDI adapter to connect a MIDI instrument to the sound card. The MIDI adapter can be connected to the Joystick/MIDI port. You will also need MIDI sequencing software to run MIDI instruments with your computer.

#### **1.4. Windows 3.1 CD-ROM Setup**

This section will help you setup your <Product> Sound Controller supported CD-ROM to work properly with the <Product> Sound Controller. The first section will explain how to connect the CD-ROM interface cable and the CD-ROM audio cable (optional) to the <Product> Sound Controller. The next section will show you how to setup the CD-ROM using the SNDINIT.EXE configuration program. The last section describes the installation of the correct MSCDEX.EXE driver for the CD-ROM.

The <Product> Sound Controller supports all IDE CD-ROM drive models. You can configure and setup these CD-ROM drives when you first setup the <Product> Sound Controller, using the INSTALL.EXE program, or later with the SNDINIT.EXE program.

Before proceeding, make sure you have installed your CD-ROM Drive hardware into your computer system as well as the CD-ROM Drive's device driver and related software successfully.

#### **1.4.1. CD-ROM Hardware Installation**

The CD-ROM interface connector is located on the back end of the <Product> Sound Controller.

**Note** You should have your CD-ROM drive user guide handy during this installation. It may have information not covered here.

Your internal CD-ROM drive should have come with an appropriate CD-ROM ribbon cable. The cable will connect to the <Product> Sound Controller.

If you have a separate CD-ROM controller card, and you do not wish to use the built-in CD-ROM interface on the <Product> Sound Controller, you do not have to make any changes to your existing environment. Make sure that you choose "None" from the configuration list for the CD-ROM drive.

##### **1.4.1.1. Connecting an IDE CD-ROM Drive**

To connect an IDE CD-ROM:

1. Install the CD-ROM drive into your system. Refer to the documentation that comes with your CD-ROM drive for installation.
2. Connect the interface cable from the CD-ROM drive to the 40-pin IDE CD-ROM interface connector on the sound card.

---

**WARNING!** Make sure that the color coded line on your CD-ROM interface cable is connected to Pin 1 of the interface connector on the sound card.

---

3. If an audio cable is included with your CD-ROM drive, determine which audio connection interface (Sony, Mitsumi or Panasonic) it conforms to. You will need to contact your IDE CD-ROM drive dealer or manufacturer for that information. Once you know connect it from the CD-ROM drive to the correct audio input connector on the <Product> Sound Controller.
4. When everything is securely connected, put the cover of your computer back on and power on your computer and start installing your IDE CD-ROM drive's device driver



and related software as instructed by your IDE CD-ROM drive's user manual.

5. After you have installed your IDE CD-ROM drive's software, you will need to install the OPTi <Product> Controller software.

If you have already run the OPTi <Product> device driver installation program, skip to Section 1.4.2, CD-ROM Software Installation, to install the CD-ROM drivers.

If you have not already installed the OPTi <Product> device drivers, refer to Chapter 3 for instructions on running the installation program.

#### **1.4.2. Installing the MSCDEX Driver**

Your CD-ROM will require that the proper MSCDEX driver is loaded on system boot-up. During installation, the <Product> Sound Controller installation program will take several steps to insure that the proper MSCDEX is used for your system.

1. First, the <Product> Sound Controller installation program will look at your AUTOEXEC.BAT file for an existing MSCDEX driver. If it finds one, it will use it.
2. If it doesn't find it there, it will scan your hard drive to find the MSCDEX.EXE program. Usually this will be found with your DOS operating system programs. If the <Product> Sound Controller installation program finds the MSCDEX.EXE program it will use it. If more than one copy of MSCDEX.EXE exist on your system, the <Product> Sound Controller installation program will display all known files on your system, and ask you to select the one you want to use.
3. If the <Product> Sound Controller installation program determines that your DOS version is earlier than 5.0 or there is no MSCDEX.EXE installed in your system, it will request that you use the MSCDEX program that came with your CD-ROM drive (available from your CD-ROM manufacturer). The following line will be added to your AUTOEXEC.BAT file:

```
REM C:\82C931\MSCDEX.EXE
```

4. When you copy the proper MSCDEX.EXE program that works with your CD-ROM into the C:\82C931 subdirec-

tory, edit the above line in your AUTOEXEC.BAT file by removing the word "REM" so that the line looks as follows:

```
C:\82C931\MSCDEX.EXE
```

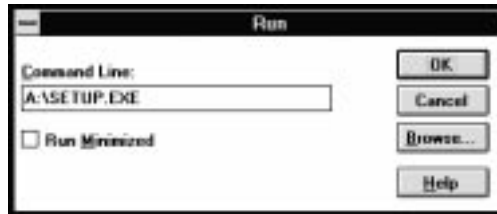
5. The proper MSCDEX.EXE program will then be loaded when you reboot your system.

## 2. Windows 3.1 Software Installation

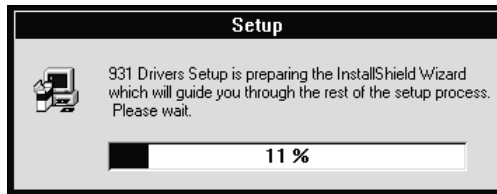
The <Product> Sound Controller installation program (SETUP.EXE) will install all of the software drivers and applications needed to achieve both Sound Blaster Pro and Windows Sound System compatible operation.

The following steps will guide you through the full software installation and configuration for the <Product> Sound Controller. We recommend that you read through them now, and become familiar with them before installing the software.

1. After installing the hardware as explained in Chapter 1, turn the computer back on and start Windows.
2. Insert the <Product> Sound Controller Installation disk in your floppy drive.
3. Select File and Run.
4. Type a:\setup and click OK as shown.



5. The <Product> Sound Controller menu driven installation program will copy the installation files to your hard drive.



6. After the install files are copied, the installation program will start.

It is strongly recommended that you exit all Windows programs before running this Setup Program.

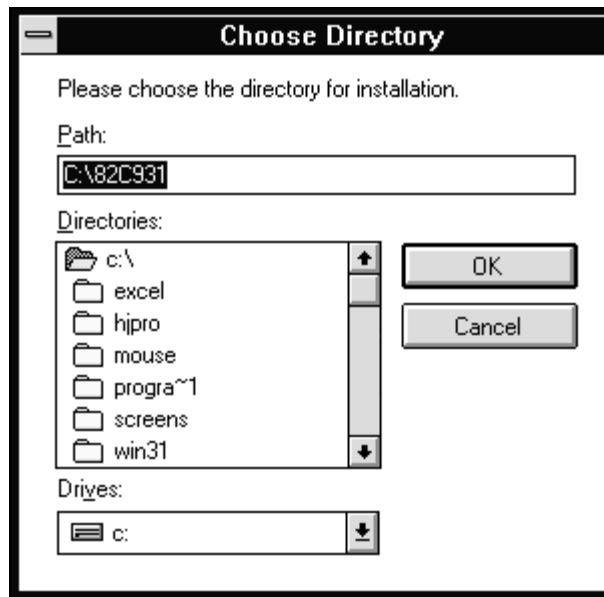


Click Cancel to quit Setup and then close any programs you have running. Click Next to continue with the Setup program.

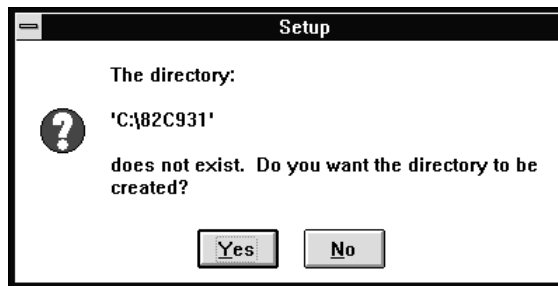
7. The next screen lets you select a directory to install the software. The default is 82C931.



8. If you do want to install the files in this directory, click on Browse to change it. You will see the following screen



9. From here, either select a directory that exists or type in the name of a new directory. If you type in a new directory you will be asked:

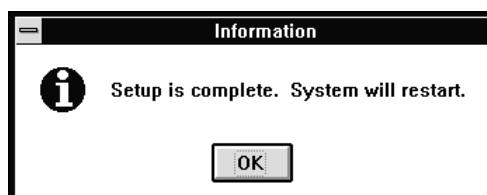


Choose yes.

10. Select Next to continue the installation. The install program will begin copying the files to the directory you selected.



11. When it has finished you will be asked if you wish to view the README file. It is recommended that you select yes because this file will have the latest information available about this sound controller.
12. This concludes the installation and the program will prompt you to REBOOT your system, be sure to select OK and then press Ctr-Alt-Del when prompted. This will insure that the <Product> Sound Controller is properly configured.



The software installation will then be completed and a new product group will be visible in Windows. The utilities in this group allow you to reconfigure the settings of the card and configure the audio mixer and karaoke features. Refer to the next section for more information.

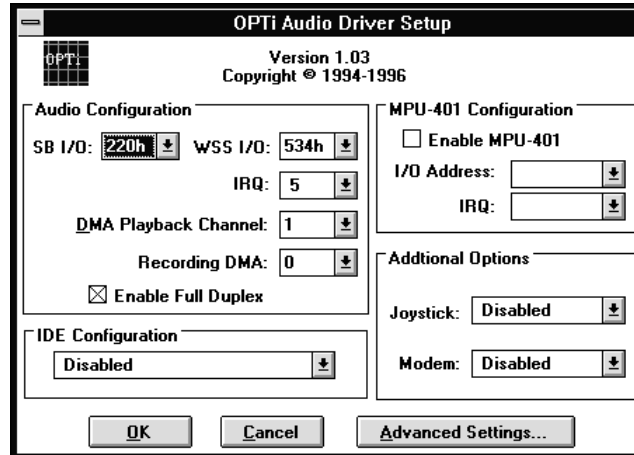
## **2.1. Windows 3.1 Configuration and Applications**

After the installation is complete and you have rebooted Windows 3.1, you will see a new program group on your desktop.



### 2.1.1. Configuration

The configuration icon gives you access to all of the configuration settings for the sound card.



#### 2.1.1.1. Audio Configuration

The Audio Configuration section allows to set the I/O address (for both Sound Blaster and Windows Sound System configurations), IRQ settings, DMA Channels, and Full Duplex. To change any of these settings click on the arrow next to the selection and use the scroll bars to choose another setting.

**WARNING!** Do not change these settings unless you are familiar with your system configuration and know they will not cause conflicts with other hardware settings. Incorrect settings can cause the system to hang.

Possible settings are:

Option	Default	Other Settings
SB I/O	220h	240h

WSS I/O	534h	608h, E84h, F44h
IRQ	5	7, 9, 10, 11
DMA Playback Channel	1	0, 3, 5, 6
Recording DMA*	0	1, 3, 5, 6

\* Not available when Full Duplex is disabled.

#### **2.1.1.2. IDE Configuration**

This selects the I/O address and IRQ setting for the IDE controller. Possible selections are:

<b>I/O Address</b>	<b>IRQ</b>
Disabled	Disabled
36e, 168	10
376, 170	15
3ee, 1e8	11

#### **2.1.1.3. MPU-401 Configuration**

This enables the MPU-401 interface and selects the I/O Address and IRQ settings. Possible selections are:

<b>I/O Address</b>	<b>IRQ</b>
300h	Disabled
310h	5
320h	7
330h	2/9
340h	11
350h	
360h	

#### **2.1.1.4. Additional Options**

This allows you to set up the joystick and modem options. Possible settings are:

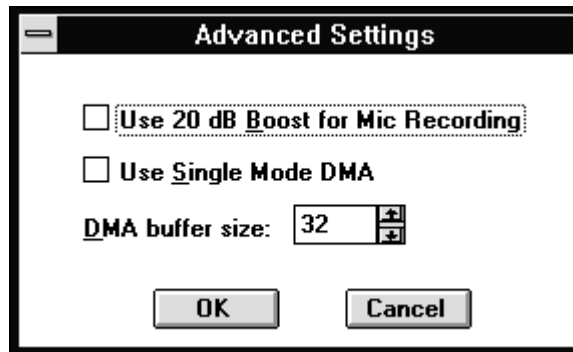
<b>Option</b>	<b>Settings</b>
---------------	-----------------



Joystick	Disabled
	Enabled
Modem	Disabled
	I/O: 2e8 IRQ: 3

#### 2.1.1.5. Advanced Settings

Another selection on configuration menu is advanced settings. If you wish to modify the advance settings, click on Advance Settings and the following will appear.



Make the necessary changes as described below and click OK.

##### **Boost for Microphone Recording**

Enables you to enable a 20dB boost to the record level for the microphone input (MIC IN). This allows you to compensate for less powerful microphones and increase the record signal.

##### **Use Single Mode DMA**

Your computer system may support both Single Mode DMA as well as Demand Mode DMA. Demand Mode DMA provides a more efficient means of transferring chunks of data between memory and a device. However, if your system does not support Demand Mode DMA, you must select Single Mode DMA instead.

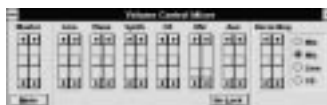
##### **DMA Buffer Size**

Setting the DMA buffer size tells the CPU how much data to transfer between memory and a device at one time. If you specify a larger size, it allows the CPU to complete the trans-

fer of data faster but increases the memory consumption. The default size should be 32 Kilobytes (32K). If you decide to change the buffer size, be sure to make it multiples of 4K.

### **2.1.2. Audio Mixer**

The Audio Mixer applet lets you adjust the volume settings for each of the individual audio sources that the <Product> supports.



### **2.1.3. Karaoke Control**

The Karaoke enables you to direct the microphone input directly to the speaker output so that you can sing along with the CD audio or other audio sources.

## **2.2. DOS Configuration and Utilities**

Once you have installed the sound drivers in Windows 3.1, there are three utilities that are accessible from DOS if you wish to enable and use sound in any DOS based application.

### **2.2.1. SNDINIT.EXE**

The sound initialization program (SNDINIT.EXE) allows you to select many of the options that are available in the Windows Configuration program.

You can run the SNDINIT.EXE program at anytime to make changes to your <Product> Sound Controller configuration. When re-configuring the <Product> Sound Controller, you can use the following parameter lines:

- |                      |  |
|----------------------|--|
| <b>SNDINIT /B</b>    | Runs the program using the values specified in the SOUND16.CFG configuration file.   |
| <b>SNDINIT /B /M</b> | Setup games from Mindscape.  |
| <b>SNDINIT /V</b>    | Enters the Volume Control menu on start up.  |
| <b>SNDINIT /?</b>    | Displays help on how to use SNDINIT.   |
| <b>SNDINIT</b>       | Runs the program to let you change your sound controller configuration. You will see |

the Configuration and Sound Test menu you used in the installation program.



#### 2.2.1.1. Sound Device Settings Selection

Selection	Settings
Current Mode	Sound Blaster Pro, Windows Sound System
Sound Blaster Pro IO Port	220, 240
Windows Sound System IO Port	534, E84, F44, 608
IRQ	5, 7, 2/9, 10
Play DMA	0, 1, 3, 5, 6
Record DMA	0, 1, 3, 5, 6

#### 2.2.1.2. Sound Card CD-ROM Interface

Selection	Settings
IO and IRQ	IO:376/170 IRQ:15 IO:36e/168 IRQ:10 IO:3ee/18e IRQ:11

### 2.2.1.3. MPU401 Interface

Selection	Settings
Select	OFF, ON
IO Port	300, 320, 330
IRQ	OFF, 5, 7, 2/9

### 2.2.1.4. Additional Options

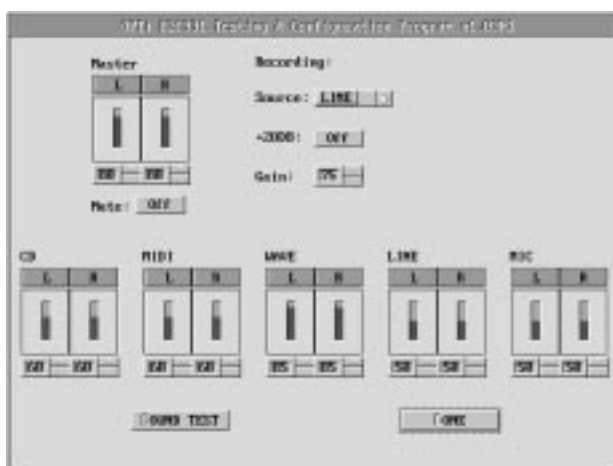
Selection	Settings
Joystick	Enabled, Disabled
Modem	Enabled, Disabled

At the bottom of the menu are three selections.

The **Help** option displays a help file that shows you how to navigate through the menus and save information.

The **Accept** option loads the settings as they appear on the screen and exits the program.

The **Mixer** option displays the following screen:



This menu allows you to set the recording playback levels for the audio mixer as well as select the input source for recording.

The volume level all range from 0 to 99 and can be changed by clicking on the up and down arrows next to the level or by clicking on the gauge that shows the current level. You can also turn on the mute to silence all audio levels.

The Source can be either Line, CD, Mic, or Mix. You can also set the microphone volume to be 20dB higher than normal (this is to compensate for some microphones that have low output levels) and gain to a value between 0 and 99.

There is also a button that allows you to test the sound. Press this button and you will here a sample wave sound. If the it sound correct and the volume is OK, press **Done** to return to the Configuration Menu.

## **2.3. Notes on Software Installation**

The notes below will provide a little more information concerning the <Product> Sound Controller Installation software. You can also look in the Troubleshooting section in Chapter 4.

### **2.3.1. Read the README.TXT file**

We highly recommend that you read the README.TXT file at the beginning of the installation program (this is also a text file located in the 82C931 directory). It includes any changes that might have taken place in the <Product> Sound Controller installation process that might not be included here.

### **2.3.2. Changes to AUTOEXEC.BAT**

The installation program will need add several lines to your AUTOEXEC.BAT file. You can choose to have INSTALL make these changes for you immediately, or store the changes in a separate file called AUTOEXEC.MAD so you can use your own text editor and edit the system files and make the changes later.

Your path statement will have the C:\82C931 subdirectory added to it (with the PATH %PATH%;C:\82C931 command). The following lines also will be added:

```
SET BLASTER=A220 I5 D1 T4
SET SOUND16=C:\82C931
C:\82C931\SNDINIT /B
C:\82C931\MIXER /B
```

These lines indicate default settings. Changes you made to the default path or <Product> Sound Controller configuration will be reflected accordingly.

**2.3.3. Changes to CONFIG.SYS**

The installation program will also make changes to your CONFIG.SYS file. You can choose to have install make these changes for you immediately, or store the changes in a separate file called CONFIG.MAD so you can make the changes later.

Your CONFIG.SYS file will have the following line added:

```
DEVICE=C:\82C931\CDSETUP.SYS /T:XDOS/
```

### 3. Windows 95 Software Installation

The <Product> supports the Plug and Play Specification 1.0a which makes installation into a Windows 95 system fast and easy.

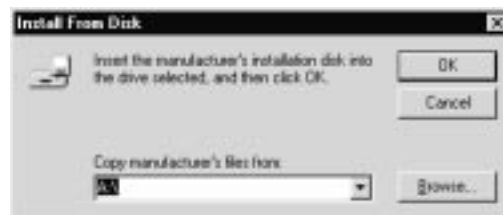
Note: You must already have Windows 95 installed on your computer and running properly before installing the hardware.

To install the <Product> Sound Controller into a systems that is running Windows 95:

1. Turn your computer on. The system will boot the Windows 95 operating system.
2. The Windows 95 Plug-and-Play capabilities will detect the <Product> card and ask you to install the driver. Select "Driver from disk provided by hardware manufacturer" and click "OK".



3. Insert the driver diskette into the diskette drive (A or B) and click "OK".



4. After reading the diskette, Windows 95 will find the installation information for the OPTi Plug and Play devices and the following screen will appear.



Click on the option that matches the installed hardware, either simple audio, audio with IDE CD-ROM, audio with modem, or audio with IDE CD-ROM and modem. Windows 95 will copy the driver file to your hard drive.

5. After the files are copied, Windows 95 will ask you to restart your computer.



Click "Yes" to restart the computer.

6. After Windows 95 restarts, it will detect the logical devices that are available and you will see each device as it is found, first the Windows Sound System, then the Game Port and Joystick, and finally the MPU-401.





This will complete the Windows 95 installation. The program will continue to load and when it is complete, you should hear the Windows 95 start up wave file.

## 4. Troubleshooting

### 4.1. Resolving Hardware Conflicts

This chapter describes the possible hardware conflicts between your sound card and other interface cards if your system does not support the Plug and Play (PnP) 1.0a specification, and ways of resolving these conflicts. PnP systems will not have hardware conflicts because the system assigns the appropriate configuration from available resources.

Hardware conflicts occur when two or more devices use the same I/O address, IRQ, or DMA channel. The default setting of the <Product> Sound Controller Audio Card is as follows:

```
DMA = 1
I/O Address = 220H
IRQ = 5
```

This setting might come into conflict with other devices such as a network card, video card, scanner, printer or SCSI adapter/controller card.

#### **To resolve hardware conflicts:**

1. Find out the current board setting (DMA channel, IRQ, I/O port address) of the sound card by running SNDINIT.EXE.
2. If you know of any peripheral card in your system that is using the same setting, change the hardware setting for the other card or the sound card.
3. If you are unsure of the settings of the peripheral card, remove all cards except the sound card and other essential cards from your system. Run SNDINIT.EXE each time you remove an interface card. If your sound card functions properly after removing an interface card from your system, the interface card you just removed is in conflict with your sound card. Find out the DMA channel, Interrupt request line, I/O port address which the interface card is using. Change the settings on your sound card or the interface card so that the two are not using the same values.

**Note** It is advisable to change the jumper settings on the other interface card since some Sound Blaster games use the default Sound Blaster settings i.e. I/O Port Ad-

dress = 220H, Interrupt = 5, DMA = 1. These games might not work properly if you change the resource settings on the sound card.

### **Commonly Encountered Problems and Solutions**

#### **Problem**

Your computer would not boot up after you installed <Product> Sound Controller.

#### **Solution**

The sound board was not inserted completely into the 16-bit slot. Refer to Chapter 1 to install the sound board properly.

#### **Problem**

The computer hangs, reboots itself, or issues a parity error after the sound card is installed.

#### **Solution**

There is a hardware conflict between <Product> Sound Controller and other interface cards in your system. Run SNDINIT to find out which hardware setting is giving a hardware conflict.

#### **Problem**

A device in your computer does not work or does not work properly after the sound card is installed.

#### **Solution**

- a. There might be a hardware conflict between the sound card and another device. Try removing other hardware cards in your system to try and isolate and determine where the hardware conflict is originating from. Once found, see if you can change the settings on the other device
- b. Run SNDINIT.EXE to find out which hardware setting on the <Product> Sound Controller is conflicting

#### **Problem**

The system hangs when you enter or exit Windows 3.1.

#### **Solution**

- a. If you have installed another sound card in your system before, make sure you have removed all its drivers in Windows 3.1 including any virtual device driver.
- b. There might be conflicts with another device in your system. Refer to Chapter 2 to reconfigure the Windows 3.1 driver.

**Problem**

There is no sound output in games.

**Solution**

- a. Check that the speakers are connected properly to the Speakers-Out connector on the sound card. If your speakers use batteries, make sure that they have the batteries they need.
- b. The volume setting is too low. Run SNDINIT.EXE to adjust the volume to a higher level.
- c. Make sure that the sound board is inserted properly into the computer.
- d. If your games are Sound Blaster compatible, make sure the card is in Sound Blaster mode. You can find out what mode the sound card is in by entering SNDINIT /B at the DOS prompt. Run SNDINIT.EXE if you need to change the mode.
- e. There might be a DMA conflict between the sound card and other interface cards in your computer. Make sure the DMA channel your sound card is using is not being used by another device in your system.
- f. Some games need EMM to play digitized voice. Please refer to the documentation that comes with your game.

**Problem**

The sound is distorted during sound test or during normal usage.

**Solution**

- a. Your speakers might be defective or the quality of the speakers is poor. Make sure you have a good pair of speakers.
- b. Volume setting is too high. Use SNDINIT.EXE to adjust the volume.
- c. Interference from another interface card in your computer. Try to install the sound card into a different slot.

**Problem**

There is no music or digitized voice or there is only music in some games (e.g. XWing, Mixed-Up Mother Goose.)

**Solution**

- a. Some applications need extended or expanded memory to run properly. Use a memory manager to set up the required memory in your system. Refer to the application's user guide on what is required.
- b. You do not have enough memory to run the game. Remove nonessential device drivers or the volume control TSR program, VOLTSR.EXE, from memory.
- c. You are not in Sound Blaster mode. Type SNDINIT /B to find out what mode you are in. Type SNDINIT and change to Sound Blaster mode if you are not already in that mode.
- d. Make sure you have the following line in your AUTO-EXEC.BAT file:

SET BLASTER=A220 I7 D1

**Problem**

Your joystick does not work after installing the sound card.

**Solution**

There is a conflict between the game port on the sound card and the game port in your system. Run SNDINIT.EXE to disable the game port on the sound card or remove the additional joystick from your system.

**Problem**

Joystick is not working properly in some programs.

**Solution**

The CPU speed of your computer might be too fast. You might want to reduce the speed. Refer to your computer's manual for instructions on setting up your computer's operating speed.

**Problem**

You cannot record any sound using a microphone.

**Solution**

- a. If your microphone has an On/Off switch, make sure the switch is turned on.
- b. Make sure you plug the microphone into the microphone-in connector.

**Problem**

You cannot use the hot keys to control the volume while in a game.

**Solution**

- a. You did not load the program into memory. Type VOLTSR at the DOS prompt to load the program.
- b. Some games block the TSR from the keyboard. You will not be able to use the hot keys if this is the case.

**Problem**

No sound when running Windows 3.1 application, MIDI files cannot be played, or you get a MIDI error message.

**Solution**

- a. If you have not installed the <Product> Sound Controller software as described in Chapter 2, please do so now.
- b. Check that you have the following drivers installed in the Windows 3.1 Drivers Dialog Box:

OPTi Audio Device Driver

OPTi External MIDI Device Driver

If you are missing any one of the above drivers, check the SYSTEM.INI file as follows:

1. Choose RUN from the File menu in Program Manager.
2. Type SYSEDIT in the command Line text box and choose OK. Look for the following entries:

```
[drivers]
timer=timer.drv
midimapper=midimap.drv
wave=SND931.drv
aux=SND931.drv
midi=SND931.drv
mixer=SND931.drv
midi1=MPU401P.drv
```

```
[SND16.drv]
SINGLEDMA=YES
CODECTYPE=AD1845
MPU401=YES
```

3. Add any missing lines if necessary.

c. Verify that the MIDI mapper is a valid selection. Refer to the Control Panel section of the Windows 3.1 manual for more details.

**Problem**

There is no sound or the sound is distorted when you are running Windows Sound System applications.

**Solution**

a. You need the Microsoft Audio Compression Manager to play compressed files in Windows Sound System applications. Make sure you have the following line in the [drivers] section of your SYSTEM.INI file:

wavemapper=msacm.drv

b. You have disabled the Single Mode DMA option in the Advance Setting box. Some motherboards can only support Single Mode DMA and therefore your environment can only operate under this mode. Refer to Chapter 2 to change your Windows 3.1 driver configuration and select the Single Mode DMA option in the Advance Settings Box.

**Problem**

You get the following error message when you boot up your computer:

"The wave file for sound testing could not be found or is corrupted. Please reinstall the file from the installation diskette."

**Solution**

The path to the directory where the <Product> Sound Controller files are located is not set or the required file, SNDTEST.WAV, is missing. Type SET at the DOS prompt. If the <Product> Sound Controller files are in the 82C931 directory in your C: drive, you should see the following line:

SOUND16=C:\82C931

If this line is not present, type:

SET SOUND16=C:\82C931

to set up the path to the <Product> Sound Controller directory temporarily. You need to add the following line to your AUTOEXEC.BAT file to set the path permanently:

SET SOUND16=C:\82C931

If the line is already in your AUTOEXEC.BAT file, check that you have the file SNDTEST.WAV in your C:\82C931 directory. Rerun the installation program if necessary.

**Problem**

You get the following error message when you boot up your computer.

"Your start-up configuration file could not be detected. Please reinstall the original file from your installation diskette."

**Solution**

The path to the directory where the <Product> Sound Controller files are located is not set or the required file, SOUND16.CFG is missing. Type SET at the DOS prompt. If the <Product> Sound Controller files are in the 82C931 directory in your c: drive, you should see the following line:

```
SOUND16=C:\82C931
```

If this line is not present, type

```
SET SOUND16=C:\82C931
```

to set up the path to the <Product> Sound Controller directory temporarily. You need to add the following line to your AUTOEXEC.BAT file to set the path permanently:

```
SET SOUND16=C:\82C931
```

If the line is already in your AUTOEXEC.BAT file, check that you have the file SOUND16.CFG in your C:\82C931 directory. Rerun the installation program if necessary.

**Problem**

There is no music coming from the game even though the music synthesizer is set to General MIDI.

**Solution**

a. Make sure that the game does support General MIDI for music synthesis.

b. Make sure that the MPU-401 interface is ON by using SNDINIT.EXE. Also, change the I/O port and interrupt if necessary.

**Problem**

In Windows 3.1, the sound quality of MIDI file playback does not improve as compared with ordinary FM synthesis.



**Solution**

- a. Check the MIDI mapper on the Control Panel. Make sure that the MIDI mapper output is set to OPTi MPU-401 instead of the OPTiFM™ synthesis.
- b. Check the MIDI output selection in your MIDI application. Make sure that MPU-401 is selected.