16-Bit 3D Stereo Sound Card HOT-235

NOTICE

TRADEMARKS

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Introduction

HOT-235 is a *16-bit 3D stereo sound card* based on the OPTi 82C930 integrated Audio controller chip. HOT-235 is compatible with the Sound Blaster™ and Sound Blaster Pro™, as well as Windows Sound System™, MPU-401 and Ad Lib™.

HOT-235 coupled with 3D (three dimensions) stereo enhancement technology. The technology eliminates "speaker crosstalk" and increase the depth and breadth of the sound image.

HOT-235 sound card includes an IDE CD-ROM interface, which is compatible with all IDE CD-ROM drives available today. The HOT-235 sound card also has multiple input and output ports for recording and playback of stereo sound.

HOT-235 Features:

The HOT-235 is a full-featured sound card which include the following:

Wave Audio
> Maximum recording and playback sampling rate of up to 44.1 kHz stereo.

16-bit digital-to-analog and analog-to-digital converter
> 16-bit and 8-bit digitizing in stereo and mono mode.

20-Voice FM Music Synthesizer
> Yamaha OPL3 FM Synthesizer technology. Play up to 20 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 & Digitized voice sources. Digital stereo mixing from Microphone, Line-in, CD-audio and Line-out.

Built-in 3D Effect
> Minimizes the effect of speaker crosstalk, increase the depth and breadth of the sound image.

Built-in Stereo Amplifier
> About 2-watt per channel stereo amplifier.

MIDI Interface/Joystick Port

     Built-in integrated MIDI MPU-401 interface with FIFO, IBM PC joy-stick/game port.

CD-ROM

     CD-ROM interface connections and circuitry fro IDE CD-ROM drives and CD Audio-In connectors.

Other Interfaces

     Wave-table synthesizer interfaces, Speakers Out, Line Out, Line In, and Microphone In.

What is in your package?

You should have the following items in your package:

HOT-235 Sound Card

HOT-235 DOS/Windows 3.X and Windows 95 Installation Diskettes

HOT-235 User Manual

System Requirements

IBM-compatible computers 386, 486, PS/2 model 25/30 and com-patibles

At least 2MB RAM (4MB RAM for Windows 3.1 applications, 8MB for Windows 95)

VGA or SVGA graphics adapter and monitor

2MB free on hard disk for installing all HOT-235 software

MS DOS or PC DOS 3.1 or later, MS Windows 3.1 and Windows 95

Installation Guide

Hardware Installation

1   Power down your computer, remove the cover and find an empty 16-bit expansion slot.

2   **For CD-ROM Installation**: Refer to page 12 CD-ROM Configuration.

3   Install the HOT-235 into an open slot and secure it.

4   Connect a pair of speakers to the Speaker-Out connector. Refer to the diagram listed on page 7 for connecting other external devices.

5   Replace your computer's cover. Hardware installation is complete.

DOS/Windows' Drivers Installation

1   Insert the HOT-235 Installation disk in your floppy drive, log onto that drive and type **INSTALL** at the DOS prompt.

2   The HOT-235 menu-driven installation program will appear. Follow the on-screen instructions to configure the HOT-235 for your system.

3   After setup, you should test the HOT-235 by clicking on the Sound Test button. If there are any problems, check your I/O, IRQ and DMA settings.

4   Once you are satisfied with your settings, click on the **Accept** button at the bottom of your screen. The HOT-235 Installation program will finish setting up your system by modifying your **AUTOEXEC.BAT** and **CONFIG.SYS** files and copy the appropriate drivers to your system.

5   If you are running Windows 3.1, the **Installation** program will update your Windows system files and copy Windows sound applications to your hard drive. Next time you start Windows, a dialog box will ask if you want to create a Windows program group for the HOT-235 sound applications. You can run these applications by click on the various icons in the new program group.

6   The last screen of the HOT-235 **Installation** program will prompt you to **Reboot** your system, or **Exit to DOS**. Choose **Reboot** option, the software installation will be complete, and the sound card is now ready for use.

HOT-235 Card Layout & Devices Connect

Speaker Out: to amplified or non-amplified speakers

Line Out: to headphones or amplified speakers

Line In: to CD-ROM Audio or other line-out devices

Microphone: to microphone or other line-in devices

Joystick/MIDI: to game paddle, joystick, or MIDI devices
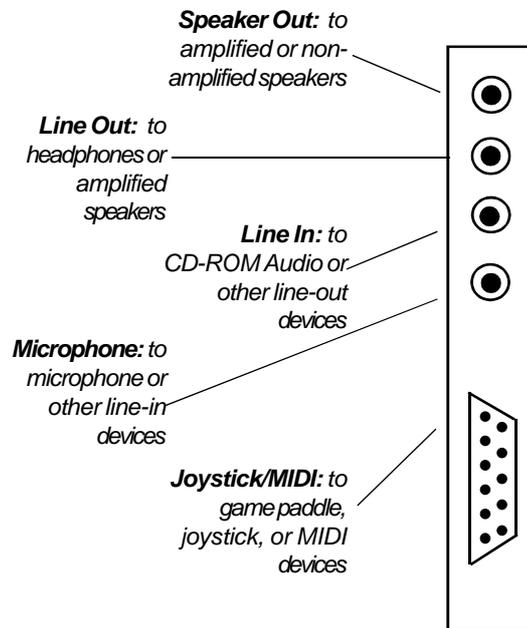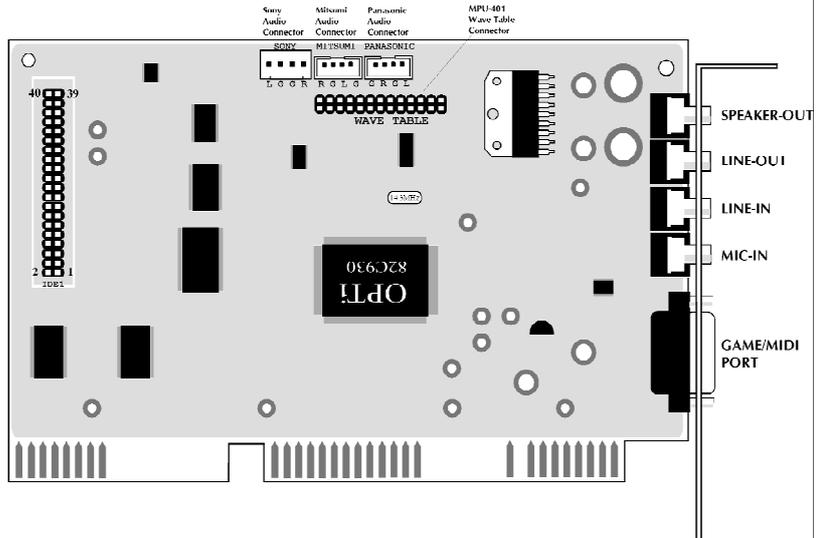
NOTE ON SOFTWARE INSTALLATION

README.TXT file

The README.TXT file on the installation disk contains the most updated information after the printing of this installation guide. Please read it before you start the installation procedure.

Changes to **AUTOEXEC.BAT**

The installation program will add several changes to your **AUTOEXEC.BAT** file. You can choose to have INSTALL make these changes for you, or store the changes in a separate file called **AUTOEXEC.MAD.** Then you must edit the **AUTOEXEC.BAT** and make the changes yourself.

Your path statement will have the C:\OPTi930 subdirectory added to it (with the PATH %PATH%; C:\OPTi930 command).

The **AUTOEXEC.BAT** file shall have the following added :

```
Syntax:                          Example:
SET SOUND16=<DRIVE:\PATH> SET SOUND16=C:\OPTI930
<DRIVE:\PATH>\SNDINIT /B      C:\OPTI930\SNDINIT /B
SET BLASTER=AN IN DN TN       SET BLASTER=A220 I5 D1 T4
```

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 shall have the following changes:

```
Syntax:  DEVICE=<drive:\path>\CDSETUP.SYS /T:n /P:n
Example:DEVICE=C:\OPTI930\CDSETUP.SYS/T:I P:170
```

CD-ROM Configuration

You must set the exact hardware settings that match to your CD-ROM drive. For IRQ, DMA channel, and I/O base address.

Testing the HOT-235 Sound

In a system, it is important that you test the HOT-235 sound card when you are in the installation program. This will insure that your settings are correct and working properly. If you do not hear any sound, you can try and adjust the volume. If you still do not hear any sounds, you will need to make sure your settings are correct. Check the Sound Blaster or Windows Sound System settings first. If your system locks up during the sound test, you will need to reboot, run the SNDINIT.EXE program, and check your settings.

Testing and Re-Configuring the HOT-235 Sound Card

You can run the **SNDINIT.EXE** program at anytime to make changes to your HOT-235 configuration. When re-configuring the HOT-235, you can use the following parameter lines:

SNDINIT /B	Runs the **SNDINIT** program using the values specified in the **SOUND16.CFG** configuration file.
SNDINIT /?	Displays help information to explain how to use **SNDINIT.**
SNDINIT	Runs the **SNDINIT** program to let you change your HOT-235 configuration. You will see the main configuration screen you had when you first setup the HOT-235 with the installation program.

VOLTSR.EXE -- Volume Control Utility

The installation disk comes with an TSR volume control utility, **VOLTSR.EXE**. You can use this utility to control the volume in the DOS environment. Load the program by typing **VOLTSR** at DOS prompt. Then use the following hot keys to change the volume:

CTRL-ALT-U	Raise the volume
CTRL-ALT-D	Lower the volume
CTRL-ALT-M	Mute the volume

To remove the program from the memory, type **VOLTSR/U** at the DOS prompt.

Some games do not allow this TSR to take effect. In this case, you will not be able to access these hot keys and use the keyboard to control the volume. You can exit the game, and run **SNDINIT.EXE** to adjust the volume or use an external amplifier with its own volume control adjustments.

KARAOKE.EXE -- Karaoke Utility

The installation disk contains a karaoke utility **KARAOKE.EXE** The program is a TSR program that redirects input from the microphone input line directly to the Speaker Out line. This will let you talk or sing directly to your speakers.

To run the program, enter **KARAOKE ON** at the DOS prompt. This will make the program resident in memory and will begin redirecting your microphone input to your speaker output. To turn it off, enter **KARAOKE OFF** at the DOS prompt. This will turn off the KARAOKE program and remove it from memory.

When you use **KARAOKE** with the **VOLTSR** program, you can adjust the microphone volume with the following keys:

CTRL-ALT-PgUp	Raises the volume
CTRL-ALT-PdDn	Lowers the volume

3DSOUND.EXE -- 3D Stereo Effect On/Off

The HOT-235 3D stereo effect allows you to minimizes the effect of speaker crosstalk and increases the depth and breadth of the sound image.

The HOT-235 3D stereo effect can be ON or OFF in DOS.

To turn ON or OFF the 3D effect in DOS :

1   At the DOS prompt, change to directory containing your HOT-235 sound card's software, \OPTi930.

2   Type 3DSOUND /ON to turn on the effect or 3DSOUND /OFF to turn off the effect.

> **3DSOUND /ON** Turn on 3D stereo effect
> **3DSOUND /OFF** Turn off 3D stereo effect

CD-ROM CONFIGURATION

This portion will help you set up your CD-ROM to work properly with the HOT-235. This section will explain how to set up the CD-ROM using the **SNDINIT.EXE** configuration program.

The HOT-235 supports all IDE CD-ROM drive models. You can configure and set up these CD-ROM drives when you first set up the HOT-235 using the **INSTALL.EXE** program, or later with the **SNDINIT.EXE** program.

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

The following steps will help you set up your CD-ROM drive with the **SNDINIT.EXE** program.

1. Run SNDINIT.EXE and choose Configure.

2. Select CHANGE OPTIONS in the CD-ROM Interface section.

3. Select the correct CD-ROM from the CD-ROM Drive List and click "OK".

    A line similar to the following has been added :

    DEVICE=C:\OPTI930\CDSETUP.SYS /T:I

4. You must now exit the program and reboot your computer for the settings to take effect.

    If you decide to change your current CD-ROM options, you need to run **SNDINIT.EXE** again. Each time you make changes to your configuration, your CONFIG.SYS file must be updated again.

    The **SNDINIT.EXE** program will only make changes to the Config.sys line that begins with:

    DEVICE=C:\OPTI930\CDSETUP.SYS . . .

    If you have changed your CD-ROM drive, your CD-ROM manufacturer will have recommended changes for its own CD-ROM device drivers that you must follow. Refer to your CD-ROM drive's user manual for more information.

Installing the MSCDEX Driver

Your CD-ROM will require that the proper MSCDEX driver is loaded on system boot-up. During installation, the HOT-235 installation program will take several steps to insure that the proper MSCDEX is used for your system.

1   First, the HOT-235 installation program will look at your Autoexec.bat file for an existing MSCDEX driver. If it finds it 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 you DOS operating system programs. If the HOT-235 installation program finds the MSCDEX.EXE program it will use it. If more than one copy of **MSCDEX.EXE** exist on your system, the HOT-235 installation program will display all known files on your system, and ask you to select the one you want to use.

3   The HOT-235 comes with three MSCDEX drivers. If **MSCDEX.EXE** is not found on your system, the HOT-235 installation program will check your DOS version (DOS 5.0, 6.0 and 6.2), then copy and install the **MSCDEX.EXE** program which will work best with your system.

4   If the HOT-235 installation program determines that your DOS version is earlier than 5.0, 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:\OPTI930\MSCDEX.EXE

When you copy the proper **MSCDEX.EXE** program that works with your CD-ROM into the **C:\OPTI930** subdirectory, edit the above line in your **AUTOEXEC.BAT** file by removing the word **"REM"** so that the line looks as follows:

C:\OPTI930\MSCDEX.EXE

The proper **MSCDEX.EXE** program will then be loaded when you re-boot your system.

WINDOWS CONFIGURATION

During the Software installation process, the HOT-235 sound card installation program added Windows sound drivers to your system. This section will describe how to change the DMA channel, IRQ, I/O Port Address, and Advanced Settings of the HOT-235 in Windows 3.1. To change settings under Windows, please follow the steps below:

1 Start Windows.

2 Select the Main file group.

3 Click on the Control Panel icon. When the Control Panel appears, Click on the Drivers icon.

4 When the Drivers Dialog Box appears, highlight OPTi HOT-235 Audio Driver (OPTi 82C930 Audio Driver), then double click the Setup button.

5 The HOT-235 sound card Audio Device Driver Configuration Dialog Box will appear. Make the necessary changes by clicking on the selections.

6 **Enable Full Duplex :** The Enable Full Duplex option allows you to select two DMA channels to enable simultaneous playback and recording. When disabled, the DMA channel will operate as both playback and recording, and you can do either digital wave recording or playback at the same time.

7 **MPU-401 Configuration :** The Enable MPU-401 option allows you to use the wavetable synthesis connector for advanced sound synthesis. The I/O Add. and IRQ settings can only be modified after the option is enabled.
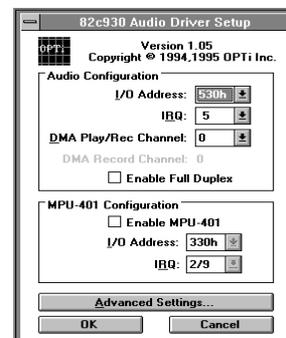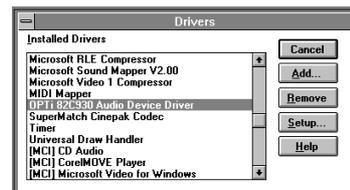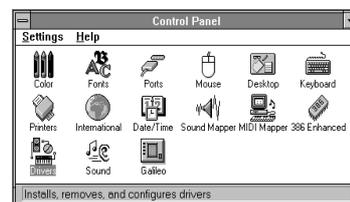
8 Advanced Settings :
If you wish to modify the advance settings, click on Advance Settings and a Window will appear. Make the necessary changes and click OK.

Boost for Microphone Recording
Enables you to enable a 20dB boost to the recording level for the microphone input (MIC IN). This allows you to compensate for less powerful microphones and increase the recording 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 trans- ferring 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.
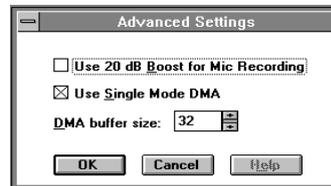
DMA Buffer Size
Setting the DMA buffer size tells the CPU how much data to transfer between memory and a device at one time. If you specify a larger size, it allows the CPU to complete the transfer of data faster, but increases the memory consumption. The default size should be 32 Kilobytes (32KB). If you decide to change the buffer size, be sure to make it multiples of 4K.

9 When you are done, click OK to accept the changes. A dialog box will appear asking if you would like to restart windows. select the Restart Now button to restart Windows.

WINDOWS 3.1 APPLICATION

The OPTi82C930 Installation program will install applications for use in Windows 3.1. The first time you run Windows 3.1 after running the Install program you will be asked if you want to create a Program Group for the OPTi 82C930 applications. Answer "Yes" to this question to install the applications.

The current applications are shown right. Be sure to check the README.TXT file for information on any applications that may have been installed since this manual was published.
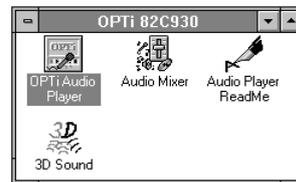
Audio Mixer

The Audio Mixer pallet lets you adjust the volume settings for each of the individual audio sources that the 82C930 supports.

The following table describes each of the controls.

Audio Player

| Control	Definition
Master	This sets the volume level of all the combined audio sources.
Mute	Will mute all the available audio sources.
Line	Sets the volume level for the line-in source.
Wave	Sets the volume level for playback of .WAV files (internal files)
Synth	Sets the volume level for the auxiliary source (synthesizer).
Recording	Sets the recording level for each of the possible recording sources: line-in, microphone and CD-ROM. Mix sets the master volume (as a subset of the record levels of all the available recording sources).
Default	Resets all the volume levels back to the original default values.
Un-Lock/ Lock	Lock will keep the left and right channels at the same volume level. Un-Lock allows you to set the left and right channels to different volume levels.
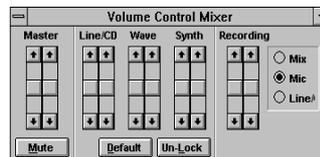
The Audio Player pallet allows you to play and record .WAV files from your hard drive, or play music CDs from your CD-ROM drive. Click on the Audio Player icon to bring up the OPTi Audio Player.

Loading .WAV Files or CDs

To play either a .WAV file or a CD you must first load the media. To load a CD, simply load the CD into the CD-ROM drive as you would normally. Then you can use CD player interface to play the CD.
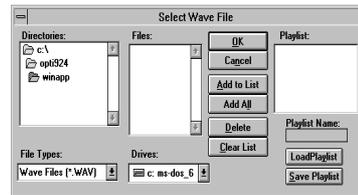
To load a .WAV file. click on the Select Wave button to access your had drive (see figure).

From this menu, you can select a .WAV file from a particular drive and directory, load a play list if file names, or create your own play list.

Building and Using Play Lists

To use an existing play list, click on the Load Playlist button and then select the list from the available file names, or change the directory to point to the available play lists.
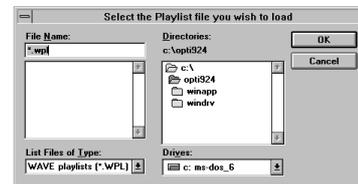
Once loaded, go the Using the Player section for information on playing the files.

To build your own play list, add the .WAV files that you want to appear on the list, then save the list using the Save Playlist button. Once you have created a play list, you can then load that list as described in the previous section.

Recording .WAV Files

Another feature of the Audio player is recording your own wave files. If you have an audio input device (such as a microphone or a CD player), you can record an save your own wave files. These can then be used for things like error beeps.

Record Button   Stop Button

To record your own wave file, click on the record button (the red circle).

Then will begin the recording. You will be able to track the minutes and seconds the recording has been active. When you are finished, press the stop button.

When you press stop you will be given the choice of saving, discarding, or playing the wave file.

Choose Audition to replay the wave file, or to save it to disk, or discard to delete it.

Using the Player

The audio player interface is similar to the interface of most CD players. It includes stop, play, rewind, and fast forward buttons.

Data Resolution   Track Skip
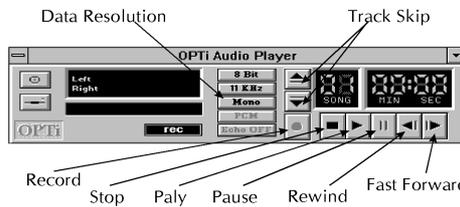
The buttons work the save way they do on CD players, once the CD or the wave file has been loaded.

Record
Stop   Paly   Pause   Rewind   Fast Forward

Data Resolution - These four options define the format of the data being recorded. The options are :

Data Size	8 bit / 16 bit / 4 bit
Refresh Rate	11KHz / 22KHz / 44KHz
Output	Stereo / Mono
Data Format	PCM/ADPCM - Adaptive Differential pulse code modulation.

being recorded. The options are :

Track Skip - Skips forward or back one song.

Operation - These buttons are used to start and stop recording, start and stop playing a CD, pause the current track, rewind the current track, or fast forward through the current track.

Exiting

To exit the Audio Player, click on the Off Button.

3D Sound

The 3D (Three Dimensions) stereo enhancement effect allows you to minimize speaker crosstalk and increase the depth and breadth of the sound image when two speakers are placed close together.

The 3D stereo enhancement effect can be on/off by click on the **3D Sound** off/on button.
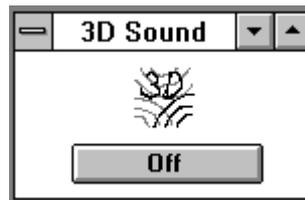
WINDOWS 95 SOFTWARE INSTALLATION

Installation Process

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

1   You should have the HOT-235 windows 95 drivers on a floppy diskette ready for installation.

2   Start Windows 95 and proceed to the Control Panel folder and select (double click) the SYSTEM icon.

3   Select the Device Manager tab to display the list of devices currently present on your system.

4   Check to see if you have previously installed the device. Usually, the device name starts with "OPTi .. Sound System." If a previous instance of the device does not exist, exit the System Properties dialog box and proceed to STEP 6.

5   If the device has been installed previously, double click on the device name to expand the list of sub-devices and select "OPTi .. Sound System:..." to remove the set of devices plus this parent device. You will not be able to remove child devices which are controlled by this parent device unless this parent device is removed.

Check also to see if you have previously installed any Windows Sound System or Sound Blaster audio devices or their compatibles, and if so, please remove them from the list.

Once the devices has been removed, you must restart Windows 95 and proceed to STEP 6.

6   Select (double click) the **Add New Hardware** icon located in the Control Panel folder to add/update the new device and it's associated drivers.

7 When prompted by Windows 95 for the Auto-Scan option for detecting new devices on your System - select NO and proceed to the next page.

8 Windows 95 will display a list of known devices that you currently wish to install. Select "Other Devices" eventhough the name of the device is included in the list. This forces Windows 95 to perform a fresh install for your device. Select Next to proceed.

9 Windows 95 will again display a list containing manufacturer names and at which point you should ignore the list and select the "Have Disk..." button. This tells Windows 95 to read special installation instructions from your diskette to correctly install the drivers for your OPTi Sound device. You will have to direct Windows 95 to the proper location of the floppy diskette.

10 Once information from the floppy diskette has been read by Windows 95, a list of devices available for installation will be displayed. This list includes options such as what type of CD-ROM that you wish to connect to your Sound Card (meaning using the connectors on your Sound Card for your CD-ROM interface). Select the correct CD-ROM type combination that you desire but make sure that the CD-ROM has already been installed and connected to your Sound Card. If you do not wish to use your Sound Card for CD-ROM support (as a CD-ROM controller), just select the basic option which includes only the Sound/Game support.

11 Select Next and Windows 95 will proceed to install the drivers needed for your device and configure your device accordingly. Once your device has been successfully configured, Windows 95 will prompt you to restart your system - select "Yes" to restart Windows 95.

12 Install REAL MODE DOS Support: If you prefer to use your Sound Card in Real Mode DOS environment, you have to select "Yes" at the "Restart System" prompt in Step 11. During the reboot process the DOS Installer will be invoked automatically. Please follow the instruction of DOS Installer and it will setup the sound card properly for your Real Mode DOS Games or Applications.

Connecting External Devices

Wave Table Device

To enable driver support for your Wave Table device, you will need to reconfigure the "OPTi .. Sound System: Sound/Game.." device properties and change the settings to use "Basic Configuration 0."

Reconfiguration Of Resource

The resources for OPTi 82C930 should be reconfigurable on-the-fly unless due to a similar conflicting device present in the system.

To reconfigure the resources, use the SYSTEM icon located in your Control Panel folder and choose Device Manager. From Device Manager, double click the "OPTi .. Sound System" option and the list of sub-devices will be displayed. Double click on the "OPTi .. Sound System: Sound/Game..." device to change the desired resources for this parent and it's child devices.

Once resources have been changed, the driver will be reconfigured to operate with the new resources and function as before. You may be asked to restart your system and at which point you may select No since Windows 95 should have reconfigured your device accordingly.

Audio Support Under Real Mode DOS

[Systems with Win95/DOS Setup] To enable support for DOS Games or multimedia applications under a REAL MODE DOS environment, please follow the Step 12 of INSTALL PROCESS. If you decide not to do DOS setup now, it's OK to skip it. Type C:\SND4DOS at real mode DOS prompt at any time will bring up the DOS Installer.

[Systems with Dual Boot Win95/Win31 Setup] Please run OPTi's Win31/ DOS Install package at Real Mode DOS prompt. When prompted during the installation for the path to your Windows directory, specify the path if you have Windows 3.1 installed on your system (under a separate directory from Windows 95). Select None if you do not have Windows 3.1 installed.

Audio Support Under Windows 95 DOS Box

DOS Game support has been added for this release and is fully functional. During the setup for your DOS games, you must ensure that the current resources assigned to the sound card matches with the current settings requested by your DOS game. To find out what resources are currently assigned to the sound card, proceed to open the properties box associated with the "OPTi .. Sound System" (Device Manager) and select the Resource tab. From the Resources box, you should see the current I/O Address range for Input/Output Range Number 1. We recommend the 220 Hex address range as opposed to the 240 Hex be selected as most games support 220 Hex by default. We also recommend the Interrupt and Direct Memory Access settings of 7 and 1 respectively. Reconfigure these resources as appropriate and select OK for Device Manager to dynamically change and update your current resources and configure the hardware. At this point, you may setup your DOS game with the settings which you have just configured.

Also, if you have a Wave Table Device on board or attached to your sound card, you should also follow the recommended steps above but this time check on the "OPTi .. MPU-401" device settings instead. You will need it's current settings if you wish to enable General MIDI support in your DOS games.

To ensure an ideal environment for DOS games, it is recommended that you modify the Idle Sensitivity property of your DOS Game environment to High. To do this, press the ALT+ENTER keys to change to a DOS Box Window (if not already in a Windowed session) and click on the top left hand corner of the DOS Box Window. A drop down menu will appear and at which point you should select Properties. Select the Misc tab and proceed to modify the above mentioned property.

HOT-KEY Support Under Windows 95 DOS Box

The following are the Hot-Keys and their associated channel controls.

`<CNTRL>+<ALT>+M`	=Decrease Master Volume
`<SHIFT>+<ALT>+M`	=Increase Master Volume
`<CNTRL>+<SHIFT>+M`	=Mute Master Volume
`<CNTRL>+<ALT>+V`	=Decrease Voice (Digital Sound) Volume
`<SHIFT>+<ALT>+V`	=Increase Voice (Digital Sound) Volume
`<CNTRL>+<SHIFT>+V`	=Mute Voice (Digital Sound) Volume
`<CNTRL>+<ALT>+F`	=Decrease FM Music Volume
`<SHIFT>+<ALT>+F`	=Increase FM Music Volume
`<CNTRL>+<SHIFT>+F`	=Mute FM Music Volume
`<CNTRL>+<ALT>+C`	=Decrease CD Audio Volume
`<SHIFT>+<ALT>+C`	=Increase CD Audio Volume
`<CNTRL>+<SHIFT>+C`	=Mute CD Audio Volume

Full-Duplex Dual DMA Support

To enable Dual-DMA channel operation for simultaneous playback and recording, please ensure the following:

1   The DMA resource settings under Device Manager must be different and paired as follows:

Playback DMA: 0   1   3   Recording DMA: 1   0   0

2   The frequency format (e.g.. 11KHz, 22KHz..) must be the same during simultaneous playback and recording.

3D Sound in Windows 95

The 3D (Three Dimensions) stereo enhancement effect allow you to eliminate speaker crosstalk and increase the depth and breadth of the sound image when two speakers are placed close together.

To enable or disable the 3D stereo effect in Windows 95 :

1 Click **Start** [Start] in the task bar.

2 Select **Program** and then **Accessories**.

3 Select **Multimedia** and then **Volume Control**.

4 The dialog box of Master Volume will show up.

5 Click on the **Advanced** button.

6 The dialog box of Advanced controls for Master Volume will show up.

7 Click on the **SF-3D** check box to enable the 3D stereo enhancement effect.

8 Choose Clock to leave Advanced controls for Master Volume dialog box.
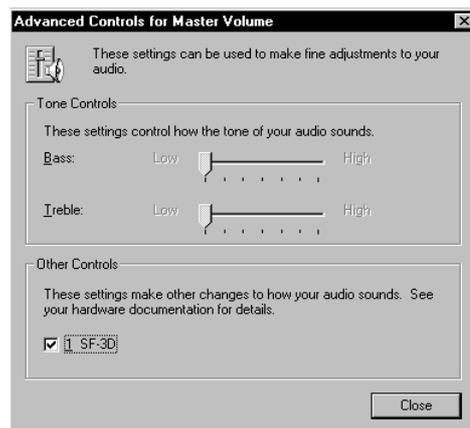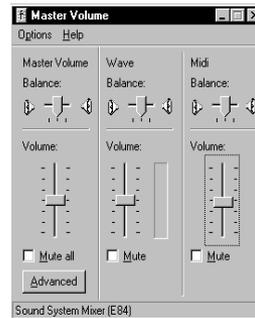
FCC Notice:

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used properly. In strict accordance with the manufacturer's instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures :

Reorient or relocate the receiving antenna.

Increase the separation between the equipment and receiver.

Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

Consult the dealer or an experienced radio/television technician

for help and for additional suggestions.

The user may find the following booklet prepared by the Federal Communications Commission helpful "How to Identify and Resolve Radio-TV Interference Problems." This booklet is available from the U.S. Government Printing Office. Washington, DC 20402, Stock o. 004-000-00345-4

FCC Warning

The user is cautioned that changes or modifications not expressly approved by the manufacturer could void the user's authority to operate this equipment.

Note : In order for an installation of this product to maintain compliance with the limits for a Class B device, shielded cables and power cord must be used.

16-Bit 3D Stereo
Sound Card