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# NuSound PnP 32

## User's Manual



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## INTRODUCTION

Welcome to a new level of multimedia - NuSound PnP 32! The Orchid NuSound PnP 32™ features the latest in audio technology including: Plug and Play™ compatibility, Spatializer™ 3D audio technology for two speaker surround sound effects and superior wavetable synthesis. NuSound PnP 32 provides complete compatibility with software written for the leading sound standards like Sound Blaster, Sound Blaster Pro, Windows Sound System, General MIDI, Roland MT-32 and General Synthesizer.

Thank you for purchasing the NuSound PnP 32. Care has been taken to ensure that it will provide you with years of trouble-free operation and performance. We believe you will be pleased with your purchase.

## ABOUT THIS MANUAL

While the NuSound PnP 32 is designed to be easy to install, we recommend that you refer to your computer's reference manual when terminology or installation steps are unfamiliar to you.

### **Chapter 1: Hardware Installation**

How to properly install the NuSound PnP 32 hardware and information on connecting external devices.

### **Chapter 2: Driver Installation & Configuration**

How to install the NuSound PnP 32 software and configuring the address settings.

### **Chapter 3: Utilities and Applications**

Several sound-producing utilities and applications.

### **Chapter 4: Technical Information**

Help to ensure that NuSound PnP 32 is operating properly.

### **Appendix A: Technical Specifications**

NuSound PnP 32's technical specifications.

### **Appendix B: Glossary**

Definitions for terms and programs used in this manual.

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## *BEFORE YOU BEGIN*

This manual will familiarize you with the features, installation and use of the NuSound PnP 32. There are several symbols and conventions used throughout this manual which will help to draw your attention to a feature or to focus on important information:



When you see the Magnifying Glass, it refers to something you should take a closer look at before proceeding further.



When you see the Exclamation Mark, it gives important information on avoiding damage to property.

### **Common Names**

<b>BBS</b>	Bulletin Board System
<b>DAC</b>	Digital/Analog Converter
<b>DMA</b>	Direct Memory Access
<b>I/O</b>	Input/Output
<b>IRQ</b>	Interrupt Request
<b>MIDI</b>	Musical Instrument Digital Interface
<b>MPC</b>	Multimedia PC
<b>PC</b>	Refers to the family of IBM PC, PC/XT or PC/AT compatible computers
<b>PnP</b>	Plug and Play
<b>SB</b>	Sound Blaster Emulation
<b>WSS</b>	Windows Sound System Emulation



## INSTALLING NUSOUND PNP 32

Whether you are a beginner or experienced user, NuSound's simplified design allows you to get up and running quickly.

### Hardware Installation

*If you are connecting a CD-ROM drive, go to "Installing a CD-ROM Drive," otherwise please continue.*



**STATIC!**

*Before handling the NuSound PnP 32, be properly grounded by touching the power supply housing.*

1. If you previously installed another sound card, remove all associated files and drivers from your hard drive. Consult the sound card's documentation for information on removing drivers.
2. Turn off the power to your computer and remove the computer cover.
3. Install the NuSound PnP 32 into a 16-bit ISA expansion slot. Secure the mounting bracket to the computer case.
4. Connect your external devices such as speakers and microphone to the appropriate connector on the NuSound PnP 32 bracket (refer to Figures 1.1 and 1.3).
5. Replace the cover of the computer and reconnect previously removed cables.

You are now ready to install the NuSound PnP 32 software. Refer to Chapter 2: Software Installation.

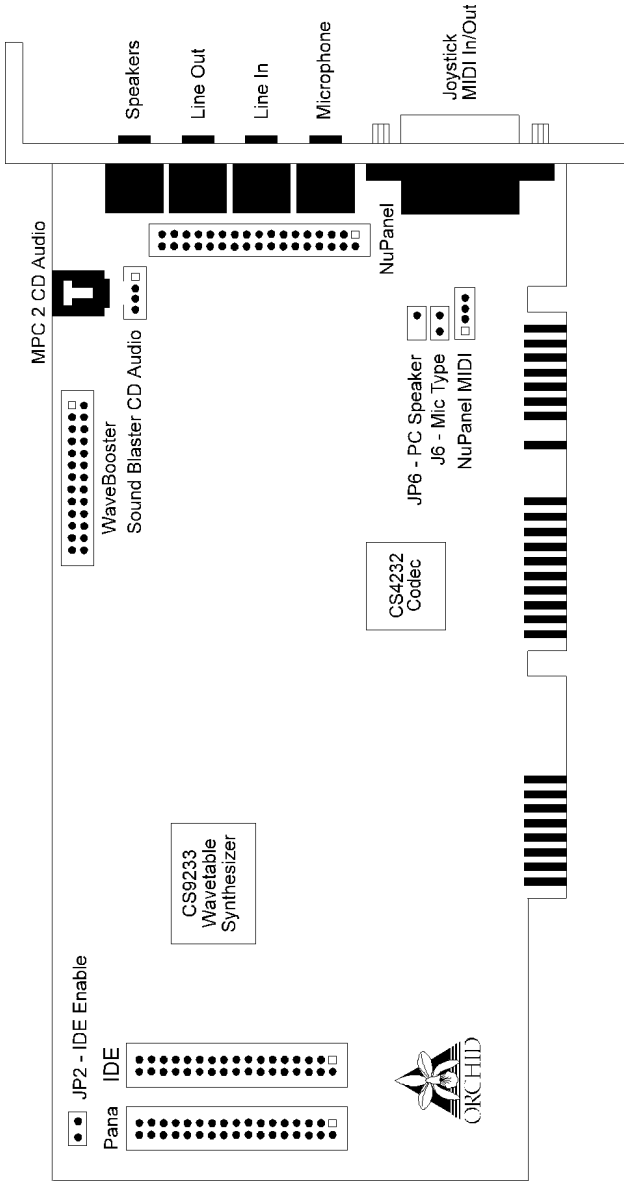


Figure 1.1: NuSound PnP 32 Diagram

J6 - Microphone type - Factory Setting

JP2 - IDE/ATAPI Interface Enabler - Closed/Disabled, Open/Enabled, Default/Closed

JP6 - Internal Motherboard/PC Speaker Connector

NOTE: Pin 1 on the connectors is indicated by a square

### Installing a CD-ROM Drive

NuSound PnP 32 has interface connectors for Panasonic and IDE/ATAPI CD-ROM drives. The instructions here will assist you in connecting your CD-ROM drive; however, you should also refer to the documentation provided by the CD-ROM drive manufacturer. Before you begin, verify that your CD-ROM drive kit includes the following:

- CD-ROM Drive with installation hardware
- 40-pin Interface Cable
- CD Audio Cable



*Try to avoid excessive twists or bends in the cables that might damage them or interfere with other boards in your computer.*



*NuSound PnP 32 uses either an MPC-2 or Sound Blaster compatible audio cable. Contact your CD-ROM drive manufacturer for these cables.*

1. If you are installing an IDE/ATAPI CD-ROM drive to the NuSound PnP 32, remove the jumper from JP2 to enable the secondary IDE/ATAPI CD-ROM interface (refer to Figure 1.1). *NOTE:* If you are using the NuSound's secondary IDE interface, you must disable any secondary IDE interface on your system board or IDE controller.
2. Connect one end of the interface cable (ribbon-type) to the CD-ROM drive interface connector. Be sure to match the colored stripe to Pin 1 of the CD-ROM drive interface connector.
3. Connect the other end of the cable to the Panasonic or IDE connector on the NuSound PnP 32 card. Make sure that Pin 1 on your cable (colored stripe) is connected to this pin (refer to Figure 1.1).
4. Connect one end of the audio cable to the CD-ROM drive's audio connector.
5. Connect the other end of the audio cable to either the MPC-2 compatible CD-ROM audio connector or the Sound Blaster CD Audio interface.
6. You are now ready to install NuSound PnP 32. Return to the Hardware Installation section at the beginning of this chapter.

## Installing the Optional NuPanel

NuPanel is an optional feature available for NuSound PnP 32. It brings your audio connections and controls within easy reach. The Rear Speaker or Line Out, Headphone, Line In and Microphone connections, as well as 3D On/Off, Mute and Volume Control, can be conveniently accessed from the front of your computer.

If your NuSound PnP 32 includes the NuPanel feature, follow the installation steps below. To purchase the NuPanel Interface Kit, call Orchid Customer Service.

### Connecting NuPanel:

1. Select an available 3.5" drive bay. The NuPanel can be installed either horizontally or vertically.
2. Attach the appropriate NuPanel label to NuPanel for either the horizontal or vertical installation.
3. Secure the NuPanel in place with the enclosed installation kit.
4. Configure jumpers JP1 and JP2 on the NuPanel interface card for either 3D Speaker support or Line Out operation. 3D Speaker support is designed to further enhance the Spatializer 3D audio technology of NuSound PnP 32 with an additional set of powered speakers. (Refer to Table 1.1 for information on 3D Speaker versus Line Out support).
5. Connect the color stripe side of the 34-pin interface cable to Pin 1 of the NuPanel interface on NuSound PnP 32 (refer to Figure 1.1).
6. Match the other end of the colored stripe side of the cable to Pin 1 on the NuSound NuPanel connector. NuPanel is installed!

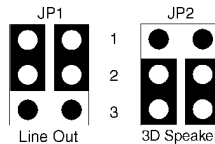


Figure 1.2



*You can also install NuPanel in a 5.25" drive bay with a standard floppy drive adapter kit. Contact your local computer dealer or Orchid Customer Service.*



*Refer to your computer's reference guide for information on installing jumpers if necessary.*

The NuPanel Controls

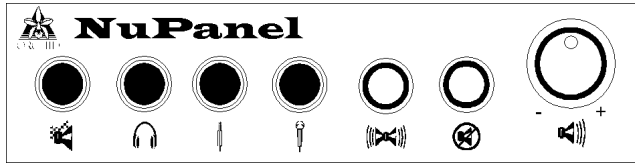


Figure 1.3: NuPanel Diagram








NuPanel Controls		Used For
3D Speaker		Enhances 3D effect, requires amplified speakers
Line Out		Recording source, amplified speakers, VCR
Headphones		Stereo output for connecting headphones
Line In		Tape player, record from home stereo
MIC		Microphone input connection
3D		Spatializer 3D ON/OFF
Mute		Disables the audio output of the NuSound
Volume		Adjusts the volume of the NuSound

Table 1.1: NuPanel Controls

Connecting External Devices

NuSound Bracket Connections		Used For
Speaker	Headphones, non-amplified speakers	
Line Out	Recording source, amplified speakers, VCR	
Line In	Tape player, record from home stereo	
MIC	Microphone	
DB-15 pin	Joystick, MIDI instruments such as a keyboard (MIDI In/Out) (Requires MIDI adapter cable)	
NuSound On-Board Connections		Used For
NuPanel	Bring the audio control features to the front of your PC	
CD Audio	CD-Audio input (MPC2 and Sound Blaster compatible)	
CD-ROM	Play audio CD tracks, digital audio and MIDI music files	
WaveBooster	Wavetable synthesis card that increases polyphony up to 56 voices	

Table 1.2: Connecting External Devices

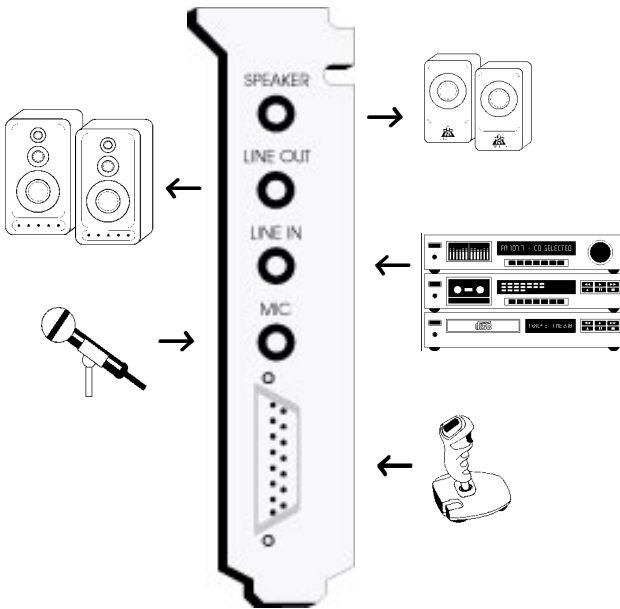


Figure 1.4: NuSound PnP 32 Bracket

## SOFTWARE INSTALLATION

Once you complete the hardware installation and connect your external devices, you can begin the software installation. This chapter gives you information on installing the NuSound PnP 32 software and changing the configuration for Windows 3.1x, DOS and Windows 95 operating system environments.

NuSound PnP 32 also includes support for digital audio functions in Windows NT 3.5x and OS/2 Warp. Software drivers for Windows NT 3.5x and OS/2 Warp are available through Orchid Customer Service or may be downloaded from the Orchid Bulletin Board System or CompuServe.



*This manual presumes that you are familiar with the basics of Microsoft Windows. Please refer to the Microsoft manual when terminology or installation steps are unfamiliar to you.*

### Windows 3.1x

#### *Software Installation*

1. Start Microsoft Windows.
2. Insert the NuSound PnP 32 Disk 1 into your floppy drive.
3. From the Program Manager File menu, choose Run.
4. Type the floppy drive letter, then SETUP, e.g., A:\SETUP. The NuSound PnP 32 Welcome screen appears. Click on Next to continue with the setup program. The following screen appears:



**Figure 2.1:** NuSound PnP 32 Setup Screen

5. Select the software installation location. Click on Next to install the NuSound PnP 32 audio software.
6. Proceed through the installation as prompted by the program. Once the software installation is complete, the NuSound PnP 32 configuration screen appears:

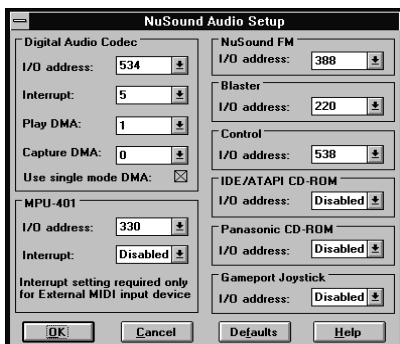


Figure 2.2: NuSound PnP 32 Audio Setup



*If you need to change the configuration at a later time, click on the NuSound PnP 32 Audio Setup icon in the NuSound program group.*

7. You can change the NuSound PnP 32 settings or accept the default settings. The SETUP program will automatically update your system files.
8. Click on OK to continue. You are then prompted to restart your computer to initialize NuSound PnP 32. After Windows is restarted, the NuSound program group appears on the Windows desktop.

## DOS Configuration

The NuSound PnP 32 DOS configuration program allows you to change your NuSound PnP 32 configuration from the DOS prompt. You can run the DOS configuration program from the DOS prompt by typing:

**CDINUSOUND**

then

**NUSDCFG**



*If you encounter a conflict that prevents you from entering Windows, you can make changes to your configuration from DOS.*



Make your selections from the menu bar. Select OK to save your settings. You will need to restart your computer for the new settings to take effect.

### Configuration Program Descriptions

The following information describes the options available for the Windows and DOS configuration programs.

#### **Digital Audio Codec**

**I/O Address:** Used for digital audio operation in Windows. Setting is required for Windows Sound System.  
**Interrupt:** Used for digital audio operation in Windows and shared with Sound Blaster operation in DOS. Setting is required for Windows Sound System and Sound Blaster.

**Play DMA:** Used for digital audio operation in Windows and shared with Sound Blaster operation in DOS. Setting is required for Windows Sound System and Sound Blaster.

**Capture DMA:** Used for full duplex operation in Windows. Setting is required for full duplex mode with Windows Sound System. If full duplex operation is not required, the selection should be configured for the same setting as Play DMA.

**Single Mode DMA:** Used for digital audio playback in Windows. Enabling the setting is recommended for Windows Sound System.

#### **Blaster**

**I/O Address:** Used for Sound Blaster in DOS. Setting is required for Sound Blaster.

#### **Control**

I/O Address: Used to access the internal register settings of NuSound PnP 32. Setting is required for NuSound PnP 32 operation.

### **GamePort Joystick**

I/O Address: Used for GamePort Joystick operation in Windows 95 and DOS. Setting is required for GamePort Joystick use.

### **NuSound PnP 32 FM**

I/O Address: Used for FM synthesis operation in Windows. Setting is required for FM synthesis playback.

### **MPU-401**

I/O Address: Used for wavetable synthesis operation in Windows and DOS. Setting is required for wavetable synthesis playback.

Interrupt: Used for MIDI recording operation in Windows and DOS. Setting is only required for MIDI recording.

### **IDE ATAPI CD-ROM**

I/O Address: Used for CD-ROM operation in Windows and DOS. Setting is required for CD-ROM use.

### **Panasonic CD-ROM**

I/O Address: Used for CD-ROM operation in Windows and DOS. Setting is required for CD-ROM use.

### About CD-ROM Drives

#### IDE/ATAPI

The NuSound PnP 32 secondary IDE interface requires I/O address 170 and IRQ 15. No DMA setting is required. *NOTE:* Different operating systems include drivers for IDE/ATAPI CD-ROM drives. Ensure that you are using the latest driver for your CD-ROM drive. Contact the CD-ROM drive manufacturer should you encounter any problems with the drivers.

#### Panasonic

The NuSound PnP 32 Panasonic interface requires only an I/O address. No IRQ or DMA setting is required. To configure the I/O address, run the configuration program.

### About CD-ROM Device Drivers

If you have installed a CD-ROM drive with NuSound PnP 32, verify that the following device driver line:

```
"Device=C:\NuSound PnP 32\CS4232C.EXE /O /V"
```

is loaded in the CONFIG.SYS file before any other CD-ROM device drivers. *NOTE:* When configuring device drivers for CD-ROM drives, verify that the address settings match the NuSound's address settings (run the configuration program).

### Windows 95

#### Driver Installation

Because NuSound PnP 32 is Plug and Play compatible, Windows 95 will automatically detect and configure the NuSound's address settings. Follow the steps below to install the NuSound PnP 32 software.

1. Start Microsoft Windows 95, the following screen appears:



**Figure 2.3:** New Hardware Found Screen

2. Insert the NuSound PnP 32 Disk 1 into your floppy drive.
3. From the New Hardware Found screen, select the Driver From Disk Provided By Hardware Manufacturer option. Click on OK.
4. Windows 95 will automatically detect and install drivers for the NuSound audio, MPU-401 interface and GamePort. *NOTE:* If you choose not to install a NuSound PnP 32 feature, select the Do Not Install option.
5. Windows 95 copies the NuSound PnP 32 drivers to your hard drive and updates your system files. You are then prompted to Restart or Shut Down your computer for the changes to take effect.



*If you happen to install a compatible audio driver, you should remove it through the Device Manager.*

6. Select the Shut Down option. After it is safe to shut down your computer, turn the power off and back on to restart Windows 95.



*Please note that some Plug and Play configurations may not allow you to change resources.*

### Changing the Configuration

1. From the My Computer group, double-click on the Control Panel icon.
2. Double-click on the System icon and the following screen appears:



**Figure 2.4:** System Properties Menu

3. From the tabs at the top of the screen, select Device Manager. The following screen appears:



**Figure 2.5:** Device Manager Screen

4. Double-click on the Sound Video and Game Controllers option.
5. Click on your selection and then click on properties.
6. Click on Resources to change the configuration.
7. From the Resources Settings box, select the Resource Type you want to configure.
8. Click on the Use Automatic Settings box to uncheck the option.
9. Click on the Change Settings box to configure the new setting. *NOTE:* You may be able to use a different configuration by clicking a different option in the Settings Based On box.
10. Repeat steps 5 through 9 for each selection. Once all your selections are made, click on OK to restart your computer for the changes to take effect.



*If you choose a setting that is already in use by other hardware, the conflict may be listed in the Conflict Information box.*

### *Switching between FM and Wavetable Synthesis*

1. From the My Computer group, double-click on the Control Panel icon.
2. Double-click on the Multimedia icon. The following screen appears:



**Figure 2.6:** Multimedia Properties Screen

3. From the tabs at the top of the screen, select MIDI.
4. Make your selection and click on OK.

### *Installing NuSound PnP 32 Applications for Windows 95*

1. From the Windows 95 desktop, click on Start then click on Run.
2. Insert the NuSound PnP 32 Disk 1 into your floppy drive.
3. Type the floppy drive letter, then SETUP, e.g., A:\SETUP.
4. The installation program automatically copies the NuSound PnP 32 audio software to your computer.





Chapter

# 3

## UTILITIES AND APPLICATIONS OVERVIEW

NuSound PnP 32 comes with great sound-producing software for DOS, Windows 3.1x and Windows 95. These utilities and applications will enhance the performance of your NuSound PnP 32 and your CD-ROM drive.



*This manual presumes that you are already familiar with the basics of Microsoft Windows. Please refer to the Microsoft manual when terminology or installation steps are unfamiliar to you.*

### UTILITIES

#### DOS Control Panel

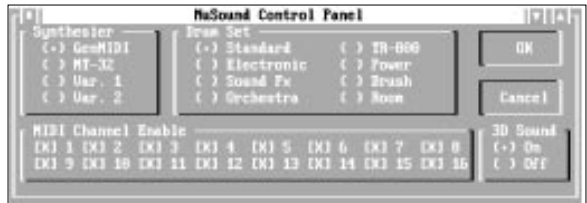
The NuSound PnP 32 DOS Control Panel allows you to easily fine tune your instrument settings for DOS games and sequencing applications. You can run the NuSound PnP 32 Control Panel from the DOS prompt by typing:

**CD\NUSOUND**

then

**NUCTLDOS.EXE**

The following screen appears:



**Figure 3.1:** NuSound PnP 32 DOS Control Panel

The changes you make while the control panel is open will not take effect until you click on the OK button.

#### Selections

##### Synthesizer

The Synthesizer instrument selection can emulate different music synthesizers. Before running any game, make sure that the proper emulation mode is selected.

### Drum Set

The Drum Set instrument selection allows you to choose from one of eight different drum sets.

### MIDI Channel Enable

The channel where MIDI messages are received.

### 3D Sound ON/OFF

Enables or disables the 3D sound Spatializer chip.

## DOS Mixer

The DOS Mixer allows you to control the output levels of all sound devices supported by NuSound PnP 32. You can run the Mixer utility from the DOS prompt by typing:

**CDINUSOUND**

**Enter ←**

then

**NUSDMIX.EXE**

**Enter ←**

The following screen appears:



**Figure 3.2:** NuSound PnP 32 DOS Mixer Screen

## Selections

### Volume Controls

To adjust the volume for the Master, Wave, Line, MIC, FM and CD options, move the scroll bar to the desired level.

### Input Select

Use this selection to select a port to use for recording. Your port options are: Line, MIC and CD.

### Gang

This selection is used for modifying the left and right volume of each volume control simultaneously. After modifying the volume value for each channel, use the OK button to save the new values.

### DOS CD Player

The DOS CD Player lets you play music from your own audio CD's using the same familiar interface you find on your home stereo CD player. You can run the CD Player from the DOS prompt by typing:

**CD\NUSOUND**

**Enter ↵**

then

**ORCHIDCD.EXE**

**Enter ↵**

The following screen appears:



**Figure 3.3:** NuSound PnP 32 CD Player Screen

While your CD is playing, the CD Player utility displays the CD length, time elapsed, track number and time in the track.

## DOS Diagnostic

The diagnostic utility tests the address settings configured for your NuSound PnP 32 card. You can run the Diagnostic utility from the DOS prompt by typing:

CD\NUSOUND

then

ORCHDIAG.EXE

The following screen appears:



Figure 3.4: NuSound PnP 32 Diagnostic Screen



The DMA, IRQ and I/O settings are displayed, but are not selectable. To change the address settings, run the configuration program.

You can move between fields using the TAB key, arrow keys or your mouse. Select the Test button for the device you want to test.

**NOTE:** The joystick test will require a joystick to be attached to perform the test. If the test is attempted with no joystick device attached, the ESC key can be used to abort the test. The joystick test field will be highlighted to indicate the test failure.

The diagnostics will run a series of tests to verify the correct operation of the selected device. On completion of the test, the field between I/O and <Test> will change to reflect Pass or Fail. In case of a failure, the failing device will be highlighted.

### Windows MIDI Control Panel

The MIDI Control Panel allows you to easily configure your MIDI input and output device(s) and fine tune your instrument settings.

1. From the NuSound group, double-click on the MIDI Control Panel icon and the following screen appears:



To access on-line help, click on Contents from the Help menu.



Figure 3.5: MIDI Control Panel Screen

2. Use your mouse to click on the menu selections or hold down the ALT key and press the underlined letter.
3. Click on the control panel feature of your choice and move the slider to adjust the performance selection you want.

### WINDOWS APPLICATIONS

#### Media Rack Audio Control System

Media Rack lets you control and play audio using your PC and NuSound PnP 32. Even without audio experience or special equipment, you can do all of the following:

- Play MIDI music files
- Play digital audio (wave) files
- Play audio CD tracks
- Make custom collections of your favorite music and sounds
- Have your PC tell you the current date and time in a human voice, and play audio reminders
- Control the volume levels of your NuSound's inputs and outputs

#### To run Media Rack:

1. From the NuSound group, double-click on the Media Rack icon. The following screen appears:



Figure 3.6: Media Rack Screen

2. Click on the component buttons on the Button Bar to alternately hide or display a player component.
3. Click on the sideways-pointing arrow on the Button Bar to show Media Rack in full or condensed view.
4. Click on any component to make its component-specific menu available on the Menu Bar.
5. Use your mouse, keyboard, or keystroke macros to control the component from the component's menu.

### Media Rack Features

From the Select Menu you can select the following features:



To access on-line help, click on Contents from the Help menu.

- *Control Center* - Provides overall control of Media Rack's components. Allows you to display or hide the components and control them through menus.
- *Alarm Clock* - Speaks aloud the current time and date at intervals you specify, and plays selected wave files as reminders or alarms at times you set.
- *MIDI Player* - Plays MIDI music. It allows you to create playlist collections of music, and play them once or repeatedly, in sequential or random order. You can also launch external MIDI sequencer programs to modify MIDI music files.
- *Wave Player* - Records, plays and edits digital audio (wave) files. It allows you to create playlist collections of audio files and play them once or repeatedly, in sequential or random order.
- *CD Player* - Plays your favorite audio CD's. It allows you to create playlist collections of CD tracks (songs), and play them once or repeatedly, in sequential or random order.
- *System Mixer* - Controls the volume levels of all PC audio inputs and outputs.

### Wave Shaper

Wave Shaper allows you to record, play and edit digital audio (wave) files. Wave Shaper also lets you "audio annotate" documents. That is, you can record audio using Wave Shaper and insert it as a comment into documents you create using most Windows applications.

1. From the NuSound group, double-click on the Wave Shaper icon. The following screen appears:



**Figure 3.7:** Wave Shaper Screen

2. Open an existing wave file or record new audio.
3. To play the file, click on the Play button. To stop playing, click on the Stop button. The Position Slider moves to the right during file playing and indicates the current file position.
4. To record the open wave file, click in the Zoom View window to select the point at which you wish to record. From the Options menu click on Paste Mode to select how you wish to insert your audio.
5. Click on the Record button. Speak into the microphone (or press the Play button on your recording device).
6. When finished, click on the Stop button.



To access on-line help, click on Contents from the Help menu.

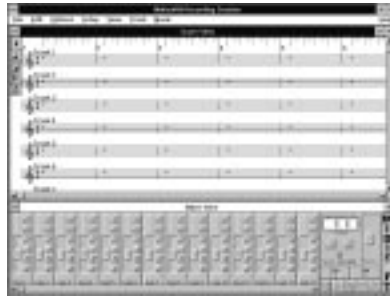


### Recording Session

Recording Session is a powerful sequencer offering many standard MIDI sequencing features, as well as an editable musical notation display. There are three windows, or views that you use to play and edit your musical compositions: Score View, Mixer View and MIDI List View.

#### Opening a Song:

1. From the NuSound group, double-click on the Recording Session icon. The following screen appears:



**Figure 3.8:** Recording Session Window



To access on-line help, click on Contents from the Help menu.

2. From the File menu, click on Open. Click on the File Types list box and choose a file format.
3. Select the song file you want to open. Click on OK to load the song into memory.

#### Recording a Song

1. To record a song file, first clear the memory by choosing the New command from the File menu. This clears the memory and sets you up with the equivalent of a blank canvas.
2. From the View menu, select the Mixer View.
3. Click on the Record button in the Mixer View, and the metronome will start to tick. You are ready to record.



Verify that your MIDI instrument is properly connected before recording.

### Key-Z Player

Key-Z Player brings an innovative approach to playing music. With Key-Z Player you can play instrumental music from your computer, using a standard computer keyboard. The unique note mapping feature prevents you from playing an incorrect note in your chosen Key or Scale. Your computer is transformed into an intelligent polyphony (multiple notes at a time) musical instrument that is exhilarating to play.

Key-Z Player incorporates the following features: a standard MIDI file song player, graphic piano keyboard display, graphic mixer with volume, channel, patch, pan and mute control, and over 40 song styles.

#### To run Key-Z Player:

1. From the NuSound group, double-click on the Key-Z Player icon. The following screen appears:



**Figure 3.9:** Key-Z Player Screen



To access on-line help, click on Contents from the Help menu.

The buttons at the top of the screen are from left to right: File, Key, Scale, Layout, Settings, Player, Piano, Mixer, and Help. To access a feature, click once on the feature.

### Key-Z Player - Solo

Key-Z Player can be used to perform solo compositions, test melodies, play rhythm and bass tracks, and learn scales and arpeggios in various keys.



To access on-line help, click on Contents from the Help menu.

1. Select the Key and Scale you desire.
2. Select the Patch for the sound you desire.
3. Select the keyboard mapping from the Layout menu.
4. Set your Volume and begin playing by tapping out notes on your computer keyboard.

### Key-Z Player - Accompanied



See on-line help for the MIDI Drum Patch Settings.

Key-Z Player can perform melodies while being accompanied by any standard MIDI Song File played in real-time.

1. Open the Song Player window by clicking on the Player menu button.
2. Click on the Open Song button and select a song to play.
3. When the file is opened, it will use the default settings for Key, Scale and Tempo. In addition, the track structure of the Song File (including the instrument name and MIDI channel) is set into the Mixer.

*NOTE:* Key-Z Player can read and play Format 0 and Format 1 MIDI files. The standard MIDI files included with Key-Z Player are Format 1 files and contain the optional Key and Scale data.

### Note Progression

Notes begin with the lowest left row (the Z row) in Horizontal Mapping, and the "A" key in Jagged Mapping. This ends with the highest note on the upper right.

### Sustain

There are several ways to get sustained notes: (1) For continuous sustain, press the Caps Lock key. The notes played are sustained until the Caps Lock key is pressed again. (2) Hold down the Shift key while playing various notes.



Chapter

# 4

## TECHNICAL INFORMATION OVERVIEW

Orchid Technology is known for its responsiveness to its customers. So we have created a list of helpful hints for troubleshooting your NuSound PnP 32.

### CompuServe

In addition to calling Orchid technology, technical support is now available through the CompuServe Information Service (CIS). You can also download drivers and get new product information. To find us on CompuServe, follow the instructions below:



*All commands can be typed in lower or upper case letters.*

1. Log onto CompuServe.
2. You may type GO ORCHID to get immediate access to the Orchid section . . .

or

Type GO MULTIBVEN to get into the Multimedia Vendor Forum B. Once you are in this forum, select Message Section #10. The message and library sections are labeled Orchid.

### Before You Begin

Because of the unique hardware design of the NuSound PnP 32, each sound standard is independent of the other. This is how NuSound PnP 32 can emulate multiple sound standards simultaneously. When troubleshooting the NuSound PnP 32 for potential conflicts, it is important to remember that if a sound standard works correctly, the problem generally becomes a software issue.

### Troubleshooting

The following information will help you diagnose problems you may have with the NuSound PnP 32. The symptom and solution serves a twofold purpose:

You may be able to fix your problem. . .

or

if these tips do not help solve your problem, they will most certainly give you a better handle on what to tell Technical Support once you contact them.

### Installation

Symptom	Solution
Computer locks up on bootup with the NuSound	(1) Possible IRQ, DMA or I/O address conflict. Verify that the address settings of other peripherals in your computer are not in conflict with those configured for NuSound. (2) Possible secondary IDE interface conflict. If not in use, verify that the NuSound IDE interface is disabled by closing jumper JP2. (3) If your system BIOS supports Plug and Play, but your operating system (MSDOS) is not Plug and Play, verify that the Plug and Play option in the system BIOS is disabled.
My joystick does not work when connected to the NuSound	(1) Verify that the Gameport Joystick on the NuSound is enabled. Run the NUSDCFG program from DOS or double-click on the NuSound Audio Setup icon in Windows. (2) Possible address conflict. Select another address for the NuSound Gameport Joystick.
NuSound is not recognized or initialized properly in DOS	(1) Verify that the device driver line: C:\NUSOUND\CS4232C.EXE /O /V is loaded in the CONFIG.SYS file. (2) If your system BIOS supports Plug and Play and your operating system (Windows 95) is Plug and Play, verify that the Plug and Play option in the system BIOS is enabled.
No display in Windows with NuSound installed	(1) If you are using a non-Plug and Play operating system, go to the [sndsys.driv] section of your SYSTEM.INI file and verify that the following line is present: UsePnP=0.

### CD-ROM

Symptom	Solution
I cannot access an IDE/ATAPI CD-ROM drive	<p>(1) Verify that the NuSound device driver line is loaded in the CONFIG.SYS file before any other CD-ROM device drivers. Verify that the MSCDEX or similar device driver is loaded in the AUTOEXEC.BAT file.</p> <p>(2) Verify that the NuSound IDE Interface is enabled by opening jumper JP2.</p> <p>(3) If there is a LASTDRIVE statement in the CONFIG.SYS file, verify that the drive letter used is set to a letter after the CD-ROM drive.</p> <p>(4) Check the CD-ROM cable connection. Verify that the color strip is connected to pin 1 on both the NuSound and CD-ROM drive.</p> <p>(5) Verify no other devices are using I/O address 170 and IRQ 15.</p>
I cannot access a Panasonic CD-ROM drive	<p>(1) Verify that the NuSound device line is loaded in the CONFIG.SYS file before any other CD-ROM device drivers. Verify that the MSCDEX or similar device driver is loaded in the AUTOEXEC.BAT file.</p> <p>(2) Verify that the NuSound and CD-ROM drive are configured for the same address settings.</p> <p>(3) If there is a LASTDRIVE statement in the CONFIG.SYS file, verify that the drive letter used is set to a letter after the CD-ROM drive.</p> <p>(4) Check the CD-ROM cable connection. Verify that the color strip is connected to pin 1 on both the NuSound and CD-ROM drive.</p>
My CD-ROM does not play CD audio	<p>(1) Verify that the CD audio cable used matches the pin-outs for the CD Audio connector. See Appendix A for the MPC-2 and Sound Blaster CD Audio interface pin assignments.</p> <p>(2) The CD Volume in the system mixer may be muted or turned down. Verify mixer settings.</p> <p>(3) Verify that the speakers are connected properly to the speaker jack.</p>

### Digital Audio

Symptom	Solution
No digital audio playback (Sound Blaster Emulation) in DOS games	<ol style="list-style-type: none"><li>(1) Insufficient resources to run the application properly. See your game's instruction manual for memory requirements and tips on how to configure your computer.</li><li>(2) Verify that the application is configured for either Sound Blaster or Sound Blaster Pro emulation for digitized sound.</li><li>(3) Verify that the application is configured for the same Sound Blaster address settings used by NuSound.</li><li>(4) The volume may be muted or turned down. Check the DOS mixer settings and/or the application's volume settings.</li><li>(5) Verify that the speakers are connected properly to the speaker jack.</li></ol>
Digital WAV files do not playback (WSS Emulation) in Windows 3.1x or Windows 95	<ol style="list-style-type: none"><li>(1) Verify that the NuSound WSS Audio Driver is installed and the WSS interface is operating properly. (In Windows 3.1x, click on the NuSound Setup icon in the NuSound Program Group. In Windows 95 click on the System icon in Control Panel and select Device Manager).</li><li>(2) Possible address conflict. Verify that the settings for the NuSound WSS Audio Driver are not in conflict with another hardware device.</li><li>(3) The WAV Volume in the system mixer may be muted or turned down. Verify mixer settings.</li><li>(4) If another sound card was previously installed, verify all associated drivers have been removed from the system files (CONFIG.SYS, AUTOEXEC.BAT, SYSTEM.INI).</li><li>(5) Verify that the speakers are connected properly to the speaker jack.</li></ol>



### Digital Audio (cont.)

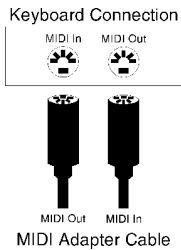
Symptom	Solution
Digital WAV file keeps repeating	(1) IRQ conflict. Change NuSound WSS IRQ setting.
Computer locks up when attempting to play Digital WAV files	(1) DMA conflict. Change NuSound WSS DMA setting.
When using the microphone, audio does not record properly or quality is poor	(1) The microphone is a mono input source. Verify that recording settings are configured for mono. (2) Verify that the microphone is connected properly to the microphone input jack. (3) Make sure that the microphone is selected as the recording source. (4) Verify that microphone input level is set to an appropriate setting. (5) Verify that the format used for recording is configured for the desired sound quality.

### MIDI

Symptom	Solution
No MIDI music playback (General MIDI emulation) in DOS games	<ol style="list-style-type: none"><li>(1) Insufficient resources to run the application properly. See your game's instruction manual for memory requirements and tips on how to configure your computer.</li><li>(2) Verify that the application is configured for General MIDI emulation for music.</li><li>(3) Verify that the application is configured for the same General MIDI address settings used by NuSound.</li><li>(4) The volume may be muted or turned down. Check the DOS mixer settings and/or the application's volume settings.</li><li>(5) Verify that the speakers are connected properly to the speaker jack.</li></ol>
The MIDI music playback quality sounds poor in DOS games	<ol style="list-style-type: none"><li>(1) Verify that the application is configured for General MIDI for music playback. This produces superior wavetable synthesis playback versus FM synthesis.</li></ol>
MIDI files do not playback (General MIDI Emulation) in Windows 3.1x or Windows 95	<ol style="list-style-type: none"><li>(1) Verify that the NuSound MPU-401 Audio Driver is installed and the MPU-401 interface is operating properly. (In Windows 3.1x, click on the NuSound Setup icon in the NuSound Program Group. In Windows 95 click on the System icon in Control Panel and select Device Manager).</li><li>(2) Possible address conflict. Verify that the settings for the NuSound MPU-401 are not in conflict with another hardware device.</li><li>(3) The SYNTH volume in the system mixer may be muted or turned down. Verify mixer settings.</li><li>(4) If another sound card was previously installed, verify all associate drivers have been removed from system files (CONFIG.SYS, AUTOEXEC.BAT, SYSTEM.INI).</li><li>(5) Verify that the speakers are connected properly to the speaker jack.</li></ol>

MIDI (cont.)

Symptom	Solution
MIDI playback quality is poor in Windows 3.1x or Windows 95	(1) Verify that the MIDI Mapper is configured for General MIDI, MPU-401 or Wavetable, not OPL3 FM. (In Windows 3.1x, click on the MIDI Mapper icon in the Control Panel. In Windows 95, select MIDI from the Multimedia icon in the Control Panel).
Some MIDI sequences produce strange sounds with the MIDI Mapper configured to send all 16 MIDI channels	(1) If the sequences in question were written to conform to the MPC MIDI authoring standard, then these sequences will contain two separate versions of the composition. If all 16 MIDI channels are sent to NuSound when playing these sequences, both arrangements are heard simultaneously. (2) Try configuring the MIDI Mapper to send only MIDI channels 1-10 to NuSound's MPU-401 driver. Select None for channels 11-16. (In Windows 3.1x, click on the MIDI Mapper icon in the Control Panel. In Windows 95, select MIDI from the Multimedia icon in the Control Panel).
External keyboard or synthesizer does not perform properly when connected to NuSound	(1) Verify that the MPU-401 Input IRQ is enabled and configured. (2) Verify that MPU-401 is selected as the input device. (3) Possible IRQ conflict. Verify that the IRQ settings for the NuSound MPU-401 Input is not in conflict with another hardware device. (4) Verify that the MIDI connections are installed properly. NuSound MIDI IN to Keyboard MIDI OUT - NuSound MIDI OUT to Keyboard MIDI IN. (5) You may have a defective MIDI connector device.



### Avoiding Address Conflicts

A conflict may occur if you have another card in your computer using the same I/O, DMA or IRQ addresses as NuSound PnP 32. Resolve the conflict by selecting another available address. When selecting a different address, please *note* the following information:

- ☞ A BUS mouse commonly uses I/O address 240H
- ☞ Network cards commonly use the following addresses:
  - IRQ 10 or 11
  - I/O 300H, 320H, 340H or 360H
- ☞ Other devices such as SCSI cards, hard disks and CD-ROM drives commonly use the following addresses:
  - IRQ 10, 11, 14 or 15
  - I/O 330H or 340H
- ☞ When you encounter an IRQ conflict, you will normally hear a continuous noise from the speakers. I/O and DMA conflicts normally lock up your computer.
- ☞ For Full Duplex mode, NuSound PnP 32 must have a separate DMA Channel specified for the Capture DMA. If Full Duplex is not desired, set the Capture DMA to the same setting as the Play DMA.

Appendix

# A

## TECHNICAL SPECIFICATIONS

This appendix provides the technical specifications and features of NuSound PnP 32.

### **NuSound PnP 32 Configuration**

NuSound PnP 32 (16-bit ISA Slot)

#### **Multimedia Compatibility**

Full compatibility with the following sound and multimedia standards:

- Sound Blaster/Sound Blaster Pro
- AdLib
- Microsoft Windows Sound System
- General MIDI (for Wavetable Synthesis)
- General Synthesizer and MT 32
- Roland MPU-401 MIDI Interface
- MPC Level I and Level II

#### **Chipsets**

Crystal Semiconductor 4232 Codec

Crystal Semiconductor 9233 Wavetable Synthesizer

Crystal Semiconductor 4331 18-Bit DAC

#### **Computers Supported:**

ISA machines: 386, 486 and compatibles

#### **Temperature:**

Operating: from 0 to 40 degrees C

Storage: from -25 to 90 degrees C

#### **Humidity:**

Operating: from 15% to 90%

Storage: from 0% to 90%

### **Audio Connections:**

- 3.5 mm Amplified Speaker Output
- 3.5 mm Line Level Stereo Output
- 3.5 mm Line Level Stereo Input
- 3.5 mm Dynamic or Condensed MIC - Mono
- Internal CD-Audio Inputs (MPC 2 and Sound Blaster Compatible)

### **Other Interfaces:**

- Panasonic CD-ROM Interface
- IDE ATAPI CD-ROM Interface
- DB-15 Joystick/MIDI Port
- MIDI IN/OUT Ports (MIDI interface kit sold separately)
- WaveBooster/WaveBlaster Compatible Synthesizer Header (for WaveBooster Daughtercard)
- Optional NuPanel Interface

## **NuSound PnP 32 Synthesizer Specifications**

### **Sound Blaster Mode**

- 20-Voice FM Synthesis

### **General MIDI, MT-32, General Synthesizer**

- 1MB Wavetable ROM (compressed)
- Up to 32 Simultaneous Voices
- 190 Instrument Sounds
- 107 Percussion Sounds
- 46 Special Effects

### **NuSound PnP 32 Audio Specifications**

- 8-bit and 16-bit Sample Modes
- Sampling Rate of: 2KHz to 48KHz
- Audio Compression Formats:  $\mu$ -law (2:1), PCM (1:1), ADPCM (4:1) and Big Endian
- S/N Ratio: >85 DB
- Frequency Response: 20Hz to 22KHz

### NuSound PnP 32 Pin Assignments

The following information provides you with the pin assignments for the NuSound PnP 32 audio interfaces, PC speaker, NuPanel interface and joystick/MIDI port.

#### Sound Blaster CD Audio Interface

Pin	Assignment
1	Ground
2	CD Audio Left
3	Ground
4	CD Audio Right

**Table A.1:** CD Audio Pin-Outs

#### MPC-2 CD Audio Interface

Pin	Assignment
1	CD Audio Left
2	Ground
3	Ground
4	CD Audio Right

**Table A.2:** CD Audio Pin-Outs

#### PC Speaker Interface

Pin	Assignment
1	No Connection
2	PC Speaker

**Table A.3:** PC Speaker Pin-Outs

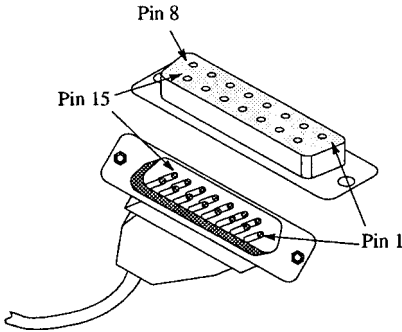
*NOTE: PC Speaker is the motherboard's internal PC Speaker connection. It allows PC Speaker sound to play through NuSound PnP 32.*

### Joystick/MIDI Port

The joystick port on NuSound PnP 32 is identical to the standard PC Game Control adapter. The 15-pin D-sub connector is also used as the built-in MIDI interface. The pin-out assignments are as follows:

Pin	Function	Pin	Function
1	+5V	9	+5V
2	A-1	10	B-1
3	A-X	11	B-X
4	GND	12	MIDI-OUT
5	GND	13	B-Y
6	A-Y	14	B-2
7	A-2	15	MIDI-IN
8	+5V		

**Table A.4:** Joystick/MIDI Pin-Outs



**Figure A.1:** Joystick/MIDI Connector



## NuPanel Interface

Pin	Function	Pin	Function
1	Line In Left	2	Ground
3	Line In Right	4	Ground
5	Microphone In	6	Ground
7	Volume Left	8	Ground
9	Line Out Left	10	Ground
11	Line Out Right	12	Ground
13	Speaker Out Left	14	Ground
15	Speaker Out Right	16	Ground
17	Volume Right	18	Ground
19	Synthesizer Out Left	20	Ground
21	Synthesizer Out Right	22	Ground
23	Not Used	24	Ground
25	Not Used	26	Ground
27	3D Rear Speaker	28	Ground
29	3D Depth	30	+12 Volt
31	3D On/Off	32	Ground
33	Not Used	34	Ground

Table A.5: NuPanel Pin-Outs

## NuPanel MIDI Interface

Pin	Assignment
1	MIDI Transmit
2	MIDI Receive
3	+5V
4	Ground

Table A.6: NuPanel MIDI Pin-Outs



Appendix

# B

## GLOSSARY

**CD Player** A DOS utility that lets you play music from your own audio CD's using the same familiar interface you find on your home stereo CD player.

**CODEC** Compression/Decompression Algorithm. A software compression and decompression method.

**Control Panel** The Windows MIDI Control Panel allows you to easily configure your MIDI input and output device(s) and fine tune your instrument settings from Windows.

**CS4232** The NuSound PnP 32's on-board CODEC chip.

**DOS CD Player** The CD Player lets you play music from your own audio CD's using the same familiar interface you find on your home stereo CD player.

**DOS Diagnostic** The diagnostic utility tests the address settings configured for your NuSound PnP 32 card.

**DOS Mixer** The Mixer allows you to control the output levels of all sound devices supported by NuSound PnP 32 from DOS.

**Full Duplex** A method to play and record digital audio simultaneously.

**General MIDI** A multimedia sound standard that provides for compatibility between MIDI software and MIDI equipment. General MIDI defines 128 musical instrument sounds and 47 percussion sounds.

**General Synthesizer** A multimedia sound standard that expands on the General MIDI standard by providing additional banks of instrument sounds.

**Half Duplex** A way to play and record digital audio but not simultaneously.

**Key-Z Player** A Windows application that allows you to play instrumental music from your computer, using a standard computer keyboard.

**Media Rack** Media Rack is a Windows application that lets you control and play audio using your PC and NuSound PnP 32.

**MIDI** Musical Instrument Digital Interface. A standard format for computer generated music. MIDI music on PCs running Windows is stored in files with the .MID file extension.

**MIDI Control Panel** The MIDI Control Panel allows you to easily configure your MIDI input and output device(s) and fine tune your instrument settings from Windows.

**MIDI Interface** A hardware device that allows your computer to communicate with other MIDI devices such as an electronic keyboard. NuSound PnP 32 has a DB-15 connector used for MIDI instrument connections.

**Mixer** The Mixer utility allows you to control the output levels of all sound devices supported by NuSound PnP 32 from DOS.

**MPU-401** Industry standard hardware MIDI interface first developed by Roland. This made possible the productive relationship between computers, electronic musical instruments and musicians.

**MT-32** One of the first wavetable synthesizer add-on modules. It features different mappings as compared to General MIDI. Many older games support MT-32.

**NuPanel** NuPanel brings audio connections and controls to the front of your PC. The NuPanel interface provides Rear Speaker or Line Out, Headphone, Line In and Microphone connections, as well as 3D On/Off, Mute and Volume Control.

**Plug and Play** A specification for hardware and software that allows automatic configuration of Plug and Play devices in your computer. The idea is to provide minimal user intervention in the computer configuration.

**Recording Session** A Windows sequencer application offering many standard MIDI sequencing features, as well as an editable musical notation display.

**Spatializer 3D** Audio technology that produces two-speaker sound effects.

**Wave Shaper** A Windows application that allows you to record, edit and play WAV files.

**Wavetable Synthesis** A method of synthesizing sound based on playing back short samples of actual instruments. Because it uses recordings of actual instruments, wavetable synthesis sounds more realistic than FM synthesis.

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## LIMITATION OF LIABILITY

Neither Orchid Technology nor anyone else who has been involved in the creation, production or delivery of this product shall be liable for any direct, indirect, special, punitive, consequential or incidental damages (including, without limitation, damages for loss of business profits, business interruption, loss of business information and the like) arising out of the use of or inability to use this product, even if Orchid Technology has been advised of the possibility of such damages.

Because some states do not allow the exclusion of liability for consequential or incidental damages, the above limitation may not apply to you. In any event, Orchid Technology's liability arising in any manner in connection with this product, whether based in contract, product liability, or tort, shall not exceed the purchase price of the product.

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## FCC NOTICE

### NuSound PnP 32

Certified compliant with FCC Class B limits, part 15  
To meet FCC requirements, shielded cables are required  
to connect the unit to a Class B certified device.

"This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation."

This equipment generates and uses radio frequency energy and, if not installed and used properly in strict accordance with the manufacturer's instructions, may cause interference to radio or television reception.

This device has been tested and found to comply with the limits for a Class B computing device in accordance with the specifications in Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference in a residential installation. Only equipment (computer input/output devices, terminals, printers, etc.) certified to comply with the Class B limits may be attached to this product.

If this equipment causes interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try and correct the interference by one or more of the following measures:

1. Reorient the receiving antenna.
2. Relocate the computer with respect to the receiver.
3. Move the computer away from the receiver.
4. Plug the computer into an outlet which resides on a different circuit breaker than the receiver.
5. If necessary, consult your dealer, or an experienced radio or television technician for additional suggestions.

You may find the booklet **How To Identify and Resolve Radio-TV Interference Problems** helpful. It was prepared by the Federal Communications Commission and is available from the U.S. Government Printing Office, Washington, DC 20402. Refer to stock number: 004-000-00345-4.

Orchid Technology is not responsible for any radio or TV interference caused by unauthorized modifications to this equipment. It is the responsibility of the user to correct such interference.

Operation with non-certified equipment is likely to result in interference to radio and TV reception. The user must use shielded interface cables in order to maintain the product within FCC compliance.

# Declaration of Conformity

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## DECLARATION OF CONFORMITY

Application of Council Directives 89/336/EEC and 72/23/EEC.

Standards to which the conformity is declared:

EN55022 EN50082-1 IEC801-2 IEC801-3 IEC801-4

Manufacturer's Name: Micronics Computers, Inc.

Manufacturer's Address: 221 Warren Avenue  
Fremont, California 94539  
USA

Tel: (510) 651-2300

Fax: (510) 651-9450

Type of Equipment: Sound card for Personal Computer

Model Name: NuSound PnP 32

Tested By: BEMA Technology Corp.  
4063 Clipper Court  
Fremont, California 94538  
USA

Tel: (510) 490-9215

Fax: (510) 490-5790

Test Engineers: Jagtar Sahota (EN55022, EN50082-1,  
IEC801-2, IEC801-3, IEC8014)

Nasir Pirani (EN55022, EN50082-1,  
IEC801-2, IEC801-3, IEC8014)

I, the undersigned, hereby declare that the specified equipment conforms to the directives and standards listed above.



Ming Ming Hsu  
Director of Technical Services  
November 12, 1995



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