

PCI 288-Q3D~~II~~ SOUND CARD

User's Manual

Version 1.0

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Chapter 1

Introduction

Congratulations on your purchase of the PCI 288-Q3DII Sound Card!

PCI 288-Q3DII uses QSound® Qsoft3D™ 3D positional technology to produce 3D interactive audio effect with 2 or 4 speakers. 3D interactive effect adds more excitement to games and reproduces music with a higher degree of realism than stereo alone can achieve!

*The control panel applet – **PCI Audio** – will give you access to the sound and speakers configurations. In addition, the variety of software applications bundled are excellent for the creation, editing and playback of MIDI and MP3 files.*

The following sections will show you how to install and configure your sound card, as well as the applications utilities bundled. In no time, you can sit back and let the PCI 288-Q3DII sound card storm your sensations!

Chapter 2



Before You Begin

This chapter contains information that you need to know before installing your sound card. They are the basic system requirements needed for your sound card to run, the safety rules to follow, as well as the installation guidelines.

2.1 Minimum System Requirements

- PC-based computer with Pentium® 166MHz MMX processor
(Pentium® 233MHz MMX-based processor or better is highly recommended)
- PCI Bus slot
- 16MB RAM (32MB RAM and above for computers with Windows® 98/
Windows NT®)
- Minimum 15MB hard disk space (system files and audio drivers only)
- CD-ROM drive
- Active (amplified) speakers
- Windows® 95/98/NT® 4.0



2.2 Safety Precaution

- Do not remove your card from its protective bag until you are ready to install it.
- Always try to hold your card by its edges. Avoid touching any electronic components on your card.
- Static electricity can cause permanent damage to your card. To prevent such a damage, you must ground yourself during the installation:
 - » Use a grounding strap - a coiled wire with a clip at one end and an elastic strap at the other. Wear the strap around your wrist and attach the clip to any non-painted metal surface of your computer chassis.

OR

- » If you do not have a grounding strap, touch any non-painted surface of your computer chassis before you begin installation, and again every minute or so until the installation is completed.

2.3 Installation Notes

- Computers vary in configuration, appearance and layout. The installation procedures in this manual apply generally and you should compare the illustrations here with your computer.
- A Philips screwdriver is required.
- The documentation for your computer should come in handy during the installation. Have it ready by your side.
- If you have an existing *non* Plug-n-Play sound card installed in your computer, you must first de-install its audio drivers before you remove the card. Refer to the documentation of your existing sound card for more details.

If your existing sound card is Plug-n-Play, you may proceed to install your new sound card.

Chapter 3



Setting Up Your Sound Card

This chapter contains information on how to install the sound card to your computer and to other audio equipment.

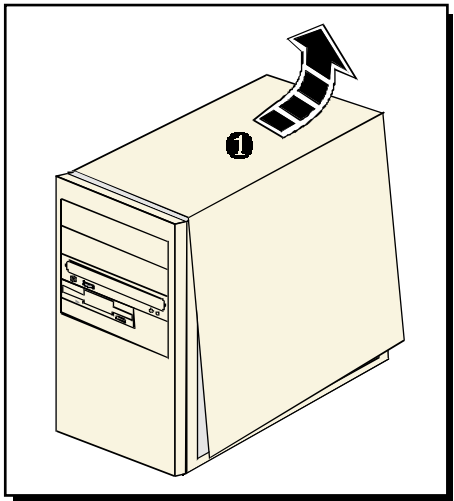
Power off your computer and any connected devices before installing your sound card !

3.1 Installing Your Sound Card



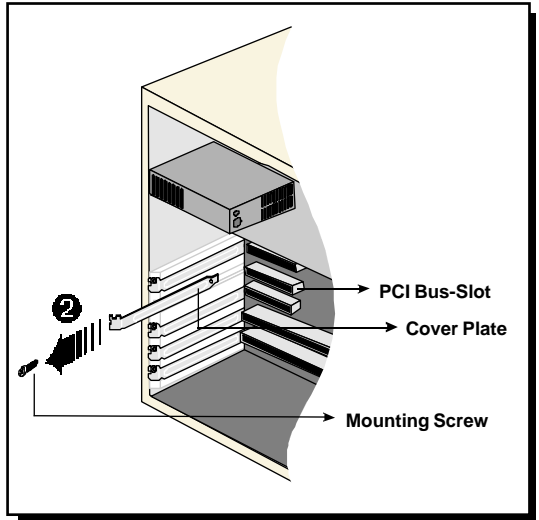
You need to remove any existing sound card installed in your computer. If the sound card is non Plug-and-Play, de-install its audio drivers before you remove it from your computer. Check the documentation on your existing sound card for details.

1. Remove the chassis cover of your computer and set it aside out of your way.



2. Select an available **PCI Bus-Slot** and remove its cover plate.

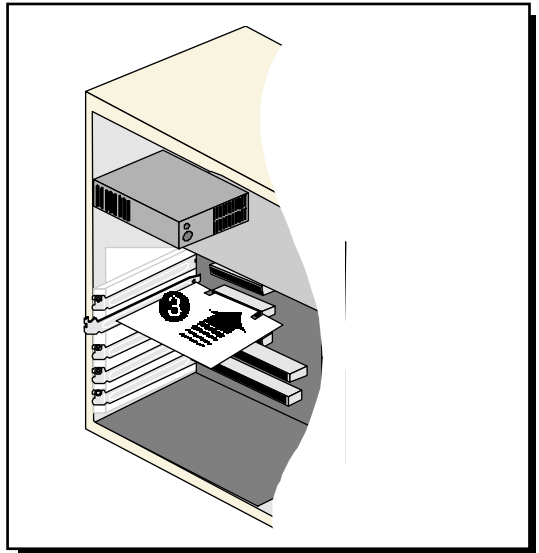
Keep the mounting screw to secure your sound card later.

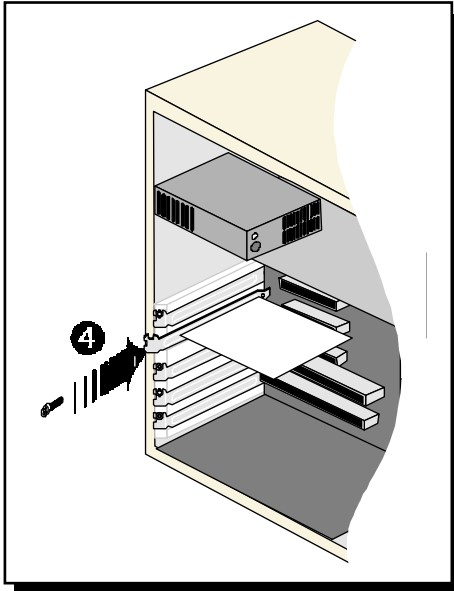


3. Align your sound card with the selected PCI Bus-Slot and firmly push it into the slot.

If the sound card does not slide in, do not force it.

Make sure the card is aligned properly and try again.



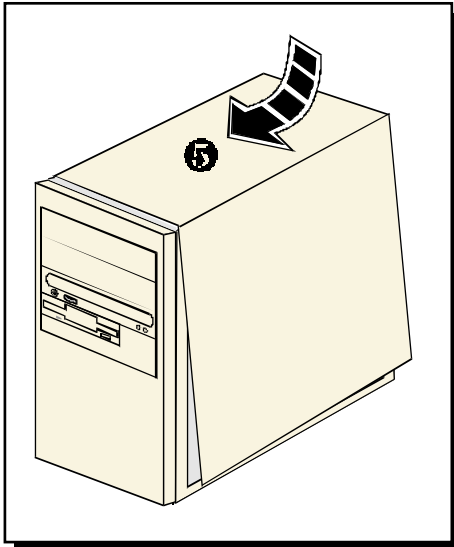


4. Secure your sound card to the chassis of your computer with the mounting screw.



*You may wish to connect your CD-ROM audio cable to the sound card for CD-ROM audio output. See **Appendix C - Sound Card Layout** for the location of the CD Audio connector on the sound card.*

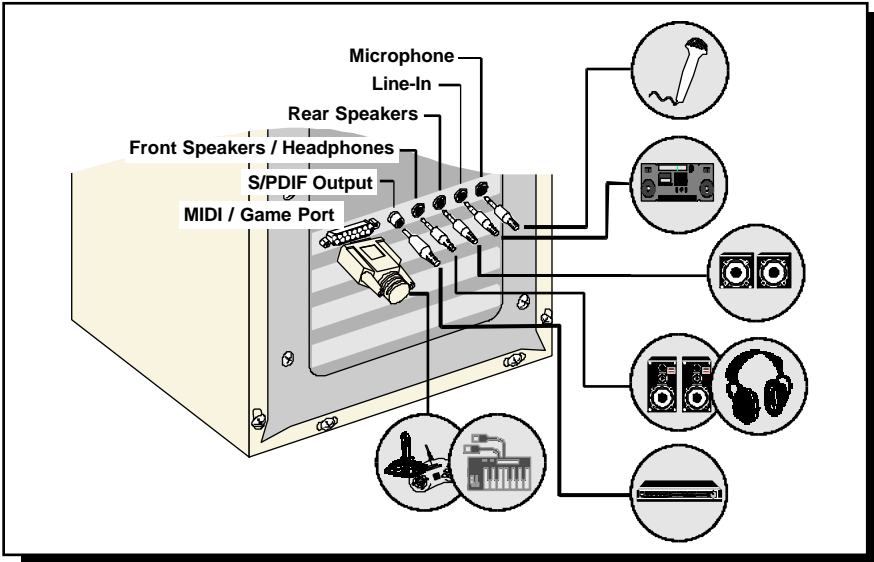
(The audio cable should be supplied with the CD-ROM drive. However, as CD-ROM audio cables are not standardized, you need to make sure that your CD-ROM audio cable is suited for use with this sound card)



5. Replace the cover of your computer.

3.2 Connecting Your Sound Card

You may connect a variety of audio equipment to your sound card as shown in the illustration below:



Microphone:

Connect to a microphone. For example, you can sing Karaoke through the microphone. *(Sound will be output from the attached speakers)*



Line-In: Connect from any external sound sources, example, from the Line/Audio Out of your external Audio CD-ROM or mini-hifi. *(Sound will be output from the attached speakers)*



1 Front Speakers / Headphones:

Connect a pair of active (amplified) speakers. You may also connect to your headphones for private listening.



2 Rear Speakers:

Connect another pair of active speakers to enjoy better 3D sound effect.

S/PDIF Output: Connect to either a S/PDIF receiver or AC3 receiver.

MIDI / Game Port:

Connect to either a joystick, game pad or a MIDI keyboard.

Chapter 4

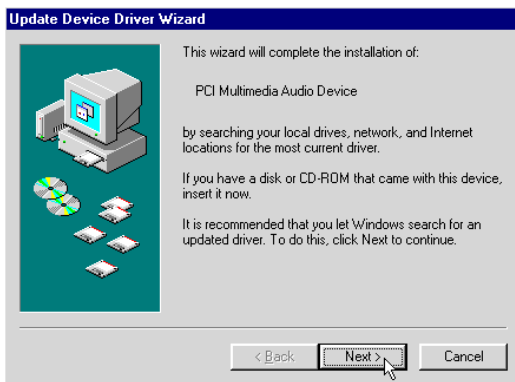
Installing the Sound Card Drivers & Software Utilities

This chapter contains information on how to install the sound card drivers and software utilities found in the PCI Audio Multimedia Studio CD.

4.1 Installing the Sound Card Drivers

4.1.1 For Windows® 95

1. Power on your computer and start Windows® 95. Windows® 95 will detect your newly-installed sound card and the following **Update Device Driver Wizard** will appear.



Place your **PCI 288-Q3DII Multimedia Studio CD** in the CD-ROM drive.

Click **Next**.

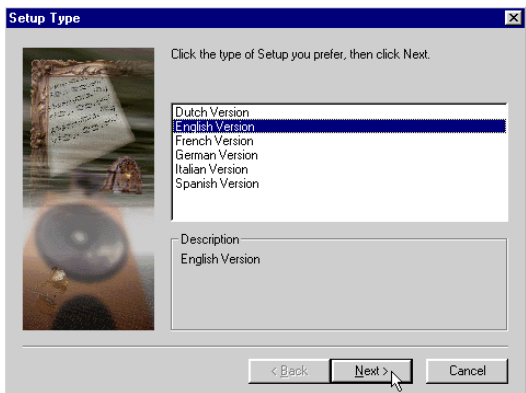
2.



Windows will prompt that the sound card drivers have been located.

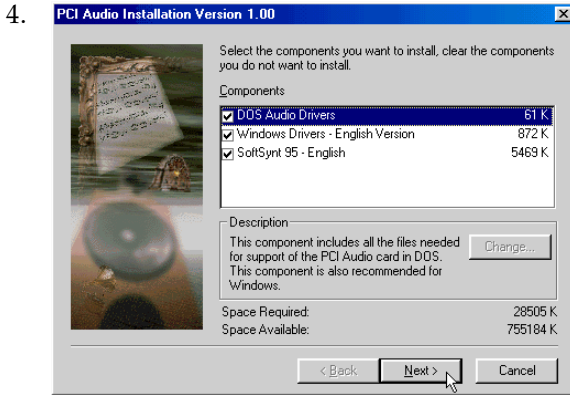
Click **Finish** to install the drivers found.

3.



A **Setup Type** Window will appear.

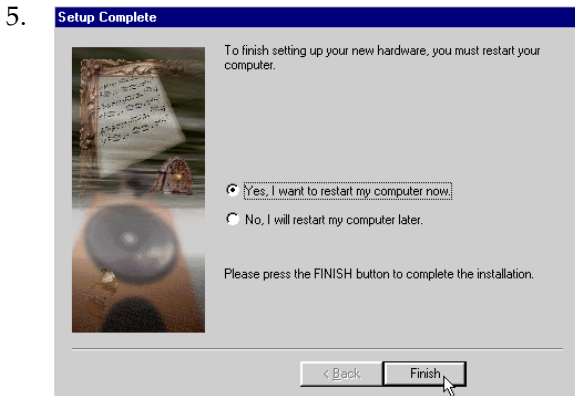
Choose the language preferred and click **Next** to continue.



Select the components and utilities that you want to install.

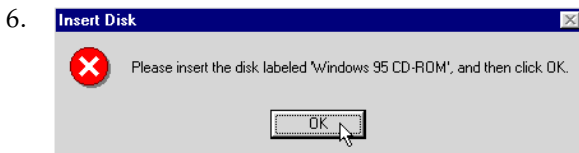
(If you are playing DOS games, you will need to install the DOS drivers.)

Click **Next** to continue.



If you had chosen to install **Clef3** (Multimedia Application Software), a **Clef Studio 3.0** program group will be created.

Select the **Yes, I want to restart my computer now** option and click the **Finish** button to complete the installation of the sound card drivers.



Windows® 95 may now prompt you for the **Windows® 95 CD**. This usually happens if you did not install some Windows® 95 multimedia applications

previously. If this occurs, follow the instructions below:

- (i) Place the **Windows® 95 CD** in the CD-ROM drive and click **OK**.
- (ii) Specify where the required files can be found on the Windows® 95 CD and click **OK**.

7. During installation of drivers, DirectX™ 5.2 drivers will also be installed.
8. When the installation of DirectX™ 5.2 drivers is completed, you will be prompted to restart your system.

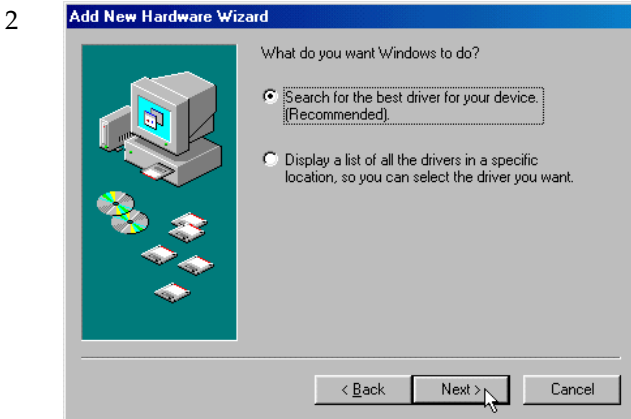
Select the **Yes, I want to restart my computer now** option. Click the **Finish** button.

4.1.2 For Windows® 98



Power on your computer. Windows® 98 will run and detect your newly installed sound card.

Click **Next**.



Click the option **Search for the best driver for your device (Recommended)**.

Click **Next**.

3



Place the **PCI 288-Q3DII Multimedia Studio CD** in the CD-ROM drive and select the **CD-ROM drive** option.

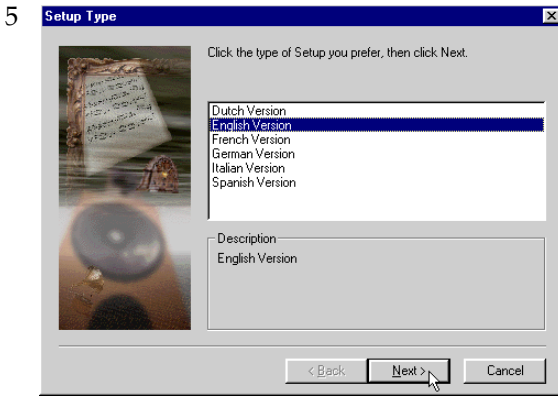
Click the **Next** button to continue.

4

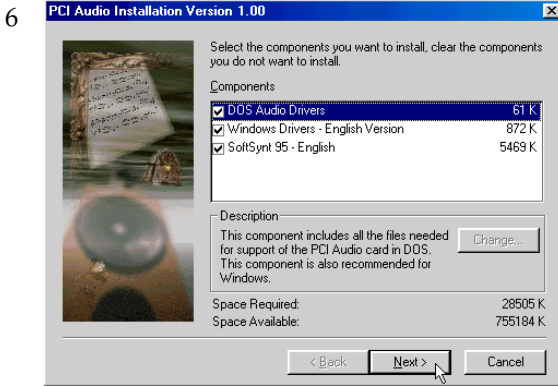


Windows® 98 will now prompt you that the sound card drivers have been located.

Click the **Next** button to install the drivers.

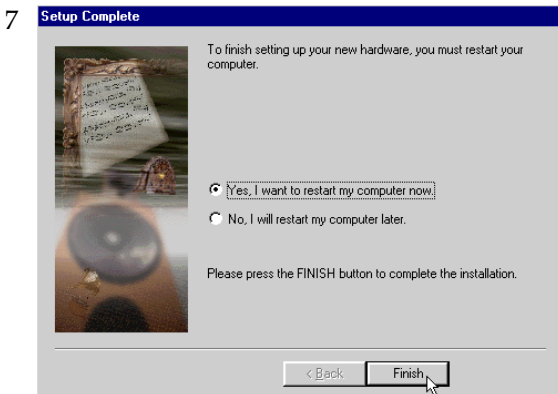


A **Setup Type** Window will appear. Choose the language preferred and click **Next** to continue.



A **Multimedia Studio CD Installation** Window will appear. Select the components and utilities you want to install and click **Next**.

(If you are playing DOS games, you will need to install the DOS drivers.)



If you had chosen to install **Clef3** (Multimedia Application Software), a **Clef Studio 3.0** program group will be created.

You will be prompted to restart your system when the installation of drivers is completed.

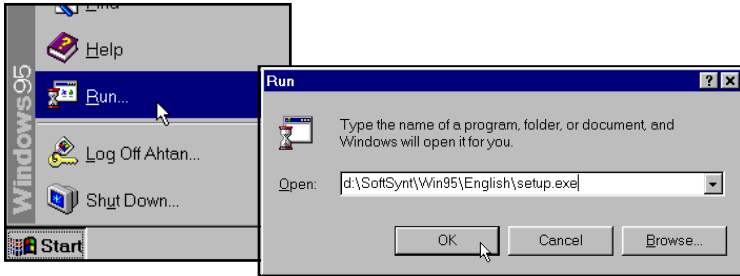
Select the **Yes, I want to restart my computer now** option and click the **Finish** button.

4.1.3 For Windows NT® 4.0

1. Power on your computer to start Windows NT®.
2. Place your **PCI 288-Q3DII Multimedia Studio CD** in the CD-ROM drive.
3. From the Windows NT® taskbar, click the **Start** button.
4. Select **Settings** and click on **Control Panel**.
5. Double-click the **Multimedia** icon. Click the **Devices** tab.
6. Select the **Audio Devices** option and click the **Add** button.
7. Select the **Unlisted or Updated Driver** option. Click **OK** to continue.
8. Direct Windows NT® to the **DRIVERS\NT40** directory on the CD and select the preferred language directory where the audio drivers can be found (this would be "*D:\DRIVERS\NT40*", assuming your CD-ROM drive letter is **D**).
9. Select the **PCI Audio Device** option and click **OK**.
10. A **Wavetable Sample Setup** screen will appear. Click **OK** to proceed.
11. Do not restart your system when prompted.
12. Repeat Steps 6-7 to install **PCI Audio Gameport**.
13. Choose **Restart Now** when prompted.

4.2 Installing Yamaha Soft Synthesizer S-YXG50

1. Place the **PCI 288-Q3DII Multimedia Studio CD** in the CD-ROM drive.
2. From the Windows® 95/98/NT® 4.0 taskbar, click the **Start** button and then click **Run**.



3. Type “**D:\SoftSynt\Win95[†]\<Language>\Setup.exe**” in the text box, where <Language> = *English*
Dutch
German
French
Italian
or *Spanish*

[†] Type “**Win95**” when using Windows® 95/98. Substitute with “**Nt40**” if you are using Windows NT® 4.0. (Assuming your CD-ROM drive is D, if not, substitute the drive letter accordingly). Click **OK**.

4. Follow all on-screen instructions to complete the installation of the Soft Synthesizer.

During registration, if the serial number is prompted, please obtain it from the PCI 288-Q3DII Multimedia Studio CD

After the software has been installed, a **Yamaha Soft Synthesizer S-YXG50** program group will be created.

5. To check that the Yamaha Soft Synthesizer is installed successfully, from **Control Panel**, double-click **Add/Remove Programs**. The **Yamaha Soft Synthesizer S-YXG50** should be displayed. To run the application, see section **5.2 - Running Yamaha Soft Synthesizer S-YXG50**.

4.3 Installing Other Bundled Applications

1. Start Windows® 95/98.
2. Place the **PCI 288-Q3DII Multimedia Studio CD** in the CD-ROM drive.
3. From the Windows taskbar, click **Start > Run**.
Type **'D:\cdsetup.exe'** in the text box and click **OK**. *(Assuming your CD-ROM drive is D. If not, substitute the drive letter accordingly)*



4. A **PCI 288-Q3DII CD Loader** Window will appear.
5. Follow all on-screen instructions to complete the installation of the applications.



Chapter 5

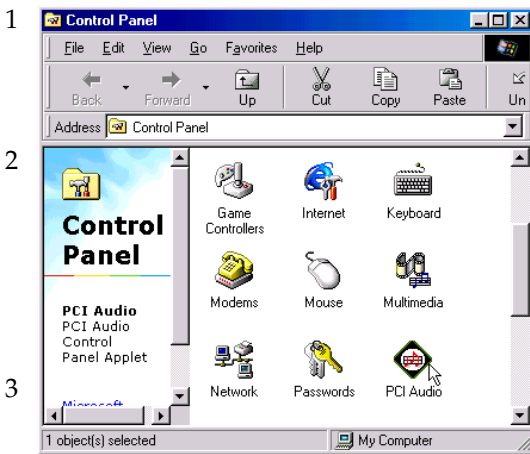
Running the Software Utilities

This chapter will give a brief guideline on running the

- *PCI Audio Control Panel Applet (for sound configurations)*
- *Yamaha Software Synthesizer S-YXG50 (for enhancing the quality of MIDI files)*
 - *Clef Studio 3.0 (for creating and editing of sound files)*
 - *Audio Catalyst™ (for encoding MP3 files)*
- *MIDI Orchestrator Plus (for creating and playing of MIDI files)*
 - *Adobe Acrobat Reader (for viewing of PDF files)*
 - *Audio Demo (for Audio Demo of the sound card)*


5.1 Running PCI Audio Properties Control Panel

The **PCI Audio Properties Control Panel** allows you to customise the sound card settings to enhance output when running different software/games/utilities.



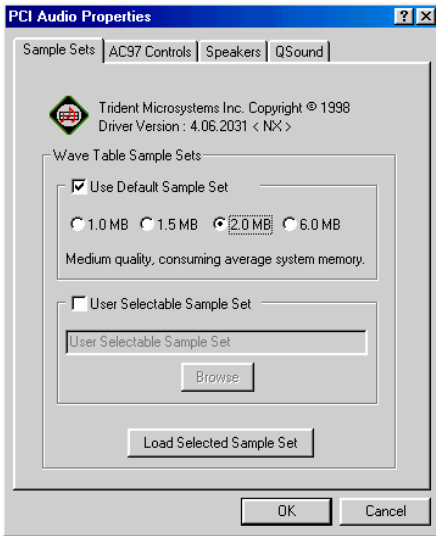
From the Windows taskbar, click **Start > Settings > Control Panel**.

Double-click the **PCI Audio** icon.

(Alternatively, you may double-click the  icon at the right hand corner of the taskbar.)

The **PCI Audio Properties** Window will be displayed. The following sections will describe the settings and options available under this applet.

5.1.1 Sample Sets

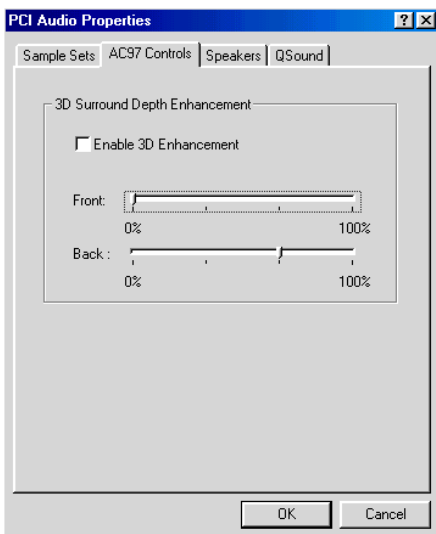


You can choose to use the Default Wave Table Sample Set or other Sample Sets.

If you choose to use the Default Sample Set, you can also select different wavetable sample sets. Higher sample sets will provide better quality but requires more system memory.

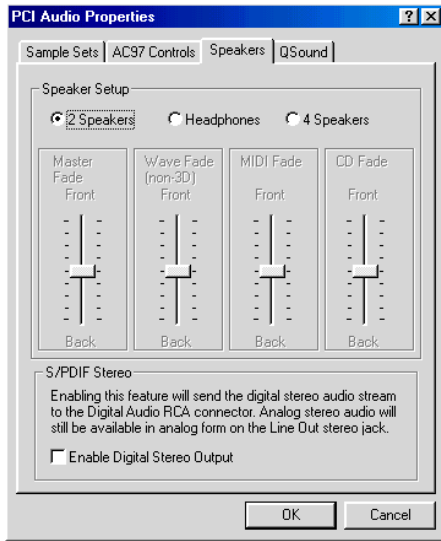
Alternatively, a User Selectable Sample Set can be used.

5.1.2 AC97 Controls



The 3D Enhancement button will enable an analog 3D feature that will broaden the audio field. This is not the same feature as the positional audio found in today's computer games. The codec on the sound card supports the "3D Enhancement" feature and hence, you are able to further modify the effects by moving the available sliders.

5.1.3 Speakers



The **Speakers Setup** allows you to configure the sound card for headphones, 2 or 4 speakers setup.

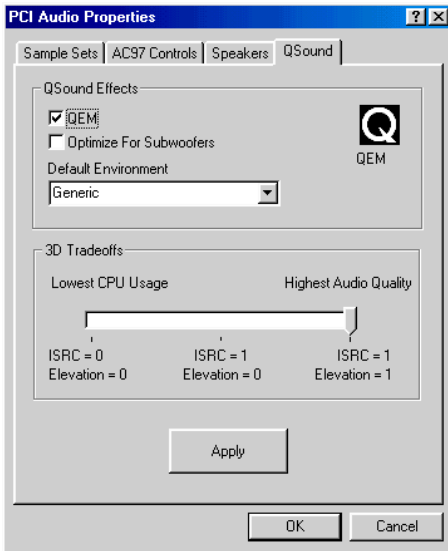
When the 4 speakers button is checked, you can adjust the available sliders to change the fading towards the front or rear speakers.

If a S/PDIF device is connected to the S/PDIF Output Jack, you need to check the **Enable Digital Stereo Output** box in order for digital stereo audio stream output through the S/PDIF connector.

5.1.4 QSound

You can choose to activate the following QSound Effects by checking them:

QSound Environment Modeling



QEM: QEM™ is an environmental audio rendering engine providing reverberation and other special audio effects. It is compatible with the EAX™ API (Application Programming Interface) provided to software developers by Creative Labs, Inc (see Appendix D - QEM™ for details). Checking this box will add more realism to EAX™ games.

Optimize For Subwoofers

By checking this box, you will filter out the low frequency content from the 3D processing. With closely-spaced PC speakers (due to acoustic cross talk) and in subwoofer systems, 3D processing can cause some loss of low frequency content. Depending on the audio content, this effect can be very subtle.

Default Environment

Select your preferred default environment from the drop-down list.

(This option will only affect Non-EAX™ 3D sound games. EAX™ games will use the environmental effects pre-programmed with the game)

SD Tradeoffs

Adjust the sliders to enhance the elevation effects within your DirectX™ games. However, this will increase CPU loading and therefore is not recommended on slower CPUs (166MHz MMX).

5.2 Running Yamaha Soft Synthesizer S-YXG50

Yamaha Soft Synthesizer S-YXG50 is designed for computers with MMX technology for playback of MIDI files with a much higher sound quality.

1. From the Windows taskbar, click **Start > Programs > Yamaha Soft Synthesizer S-YXG50**.
2. Select **S-YXG50 Player**.
3. The on-line help (**Help > Contents**) gives a detailed description on running the synthesizer.

5.3 Running Clef Studio 3.0

Clef Studio 3.0 is a comprehensive audio application that comes with PCI 288-Q3DII. Besides playing your favourite Audio CD, you are also able to create, record and edit sound files using this utility.

1. From the Windows taskbar, click **Start > Programs > Clef Studio 3.0**.
2. Select **Clef Studio 3.0**.
3. A virtual “mini-hifi” will be displayed. It has similar functions and features as a real mini-hifi system. The on-line help (**Help (?) > Contents and Index**) gives a detailed description on running the player.

5.4 Running AudioCatalyst™

Based on the world's fastest encoder – XingMP3, and the most widely used digital audio ripper – AudioGrabber, AudioCatalyst™ converts audio CD to high quality MP3 files in one easy step.

1. From the Windows taskbar, click **Start > Programs > AudioCatalyst**.
2. Select **AudioCatalyst**.
3. The on-line help (**Help > Contents**) gives a detailed description on running the program.

5.5 Running Voyetra MIDI Orchestrator Plus

(applicable for German Retail Pack only)

1. From the Windows taskbar, click **Start > Programs > Voyetra**.
2. Select **MIDI Orchestrator Plus**.
3. The on-line help (**Help > Contents**) will give a detailed description on running the MIDI Orchestrator Plus.

5.6 Running Adobe® Acrobat® Reader

1. From the Windows taskbar, click **Start > Programs > Adobe Acrobat**.
2. Select **Acrobat Reader**.

5.7 Running Audio Demo

This utility program serves the purpose of demonstrating the sound effects in which the sound card is capable of, in particular, 3D environmental audio and sound positioning.

1. From the Windows taskbar, click **Start > Programs > SoundFeel**.
2. Select **SoundFeel**.

Frequently Asked Questions

This chapter highlights some of the more commonly asked questions and their possible solutions. Reviewing this chapter can help you solve many problems and often eliminate the need for telephone assistance.



Will PCI 288-Q3DII work on all motherboards ?



*Yes, it will if the motherboard has at least one free PCI slot and meets the minimum system requirements (see **section 2.1 - Minimum System Requirements**).*



Is PCI 288-Q3DII full-duplex capable ?



Full duplex is the ability for a sound card to record and playback audio at the same time. PCI 288-Q3DII is able to do this while maintaining full 16-bit 48KHz quality.



Why is it that some of my games do not seem to work with the Q3D™ Positional Sound feature?



Not all games, especially older ones, support the Q3D™ Positional Sound feature. However, Q3D™ Positional Sound is becoming a popular standard among game developers and Q3D™ will also work with any game written to support the Microsoft® DirectSound3D™ standard and Aureal A3D™.



What wave file types is PCI 288-Q3DII compatible with (ie. what wave types can it playback) ?



Almost all wave files types. Most of the supported sample rates of audio applications such as Soundforge or Wavetable are supported, although one or two non-standard ones may not work.



What games can PCI 288-Q3DII support ?



It can support almost all PC titles.



Can PCI 288-Q3DII work with A3D™ API or EAX™ API applications?



Yes. It supports the majority of the A3D™1.0 API and EAX™1.0 API applications.



What version of DirectX™ should be installed ?



For most applications and particularly for games, it is recommended that you install DirectX™5.0 or higher. DirectX™ 6.0 can be found on the PCI 288-Q3DII Multimedia Studio CD.



Do I need to connect all 4 speakers at the same time ?



You do not need to connect all 4 speakers to enable your sound output. You can have only the front 2 speakers connected.



Why isn't there any sound from the speakers ?



Go through the following steps:

- 1. Make sure that the connections from your speakers to your computer are as described in **section 3.2 - Connecting Your Sound Card.***
- 2. Your speakers are **active (amplified)** speakers (with built-in power supply and amplifier). **Passive** speakers (without built-in power supply and amplifier) can only be used if connected to an external amplifier.*
- 3. Power from the Mains to your speakers are properly connected and turned ON.*
- 4. You are running Windows® 95/98/NT®4.0. If you are running Windows® 95, you need to install DirectX™ that comes with your CD. (See the FAQ - What version of DirectX™ should be installed ?)*
- 5. The Output Mode (**PCI Audio Properties Control Panel > Speakers** tab) must be set to **2 Speakers** if you are using only the 2 front speakers and to **4 Speakers**, if you are using 4 speakers.*

6. Check that the Volume Playback level in the sound mixer is not set at zero. To open the sound mixer, double-click on the taskbar's Volume icon. If the Volume icon is not on the taskbar, you can open it from Start>Programs>Accessories>Multimedia>Volume Control.



There is a yellow exclamation mark (error) for the “PCI 288-Q3D II PCI Audio” device.



Certain motherboards with USB capability may encounter this problem. The USB port(s), when enabled, may contend with the PCI Legacy Audio for the same IRQ resource resulting in a conflict.

The PCI Legacy Audio typically uses IRQ 5 and IRQ 10.

Depending on the type of motherboard you have, there may be 2 possible ways to solve this problem:

1. Reserve IRQ 5 for ISA slots (configurable in the BIOS).
2. Disable COM Port 2 (configurable in the BIOS).



How do I de-install the audio drivers ?



Windows 95/98

1. From the Windows taskbar, click **Start > Settings > Control Panel**.
2. Double-click the **Add/Remove Programs** icon.
3. Select “**PCI Audio Uninstallation**” from the window prompted and click **Add/Remove...**
4. The audio drivers for the PCI 288-Q3DII will be removed.

Windows NT

1. From the Windows taskbar, click **Start > Settings > Control Panel**.
2. Double-click on the **Add/Remove Programs** icon.
3. Select your product devices and click **Add/Remove**.
4. The system will start removing your sound card drivers. Upon completion, click **Finish** and restart your system.



How do I see the resource listings ?



Windows 95/98

1. From the Windows taskbar, click **Start** > **Settings** > **Control Panel**.
2. Double-click the **System** icon.
3. Select **Device Manager** and double-click **Sound, video and game controllers**. Select your device and click **Properties**. Click **Resources**.

The IRQ and memory range used by the card will be listed.

Windows NT

Run the **Windows NT Diagnostics** as follows:

1. From the Windows taskbar, click **Start** > **Programs** > **Administrative Tools (Common)**.
2. Click **Windows NT Diagnostics**. From the Diagnostics Window, click the **Resources** tab > **Devices** tab.
3. Double-click **WinAcPci**.

The IRQ and memory range used by the card will be listed.



If IRQ5 is not being assigned, can I still play DOS games?



Yes. The sound card will remap the games' IRQ (normally IRQ5) back to the IRQ assigned to the card.



My system does not detect the sound card when I boot up for the first time. What's wrong?



Windows 95/98

Make sure your sound card is fully inserted into the PCI Bus slot. However, if the sound card has been properly installed, do the following:

1. From the Windows taskbar, click **Start** > **Settings** > **Control Panel**.
2. Double-click **System** icon.
3. Click the **Device Manager** tab.

4. Check whether there is a yellow exclamation mark (error) on any of the '*PCI288-Q3D II PCI Audio/PCI Legacy Audio/PCI288 Direct Input Driver*' devices. If there is, remove all devices (by selecting each device one at a time and click **Remove**) and re-install the sound card drivers. See section 4.1 - Installing the Sound Card Drivers.

Windows NT

Not applicable.

Appendix

B

Technical Specifications

This chapter contains the technical specifications of your card. The information may be more useful for technically inclined users.

B.1 Compatibility & Compliance

- EAX™ Emulation
- A3D™ Emulation
- Sound Blaster®
- Sound Blaster® Pro
- AdLib
- General MIDI
- MPU401 UART
- AC'97 Rev 2.1
- Microsoft PC'97 & PC'98

B.2 Sound Card Features

B.2.1 PCI PERIPHERAL

- PCI Bus Master for optimized multiple streams operation
- Compliance with PCI Bus Specifications Revision 2.1
- Compliance with PCI Power Management Revision 1.0

B.2.2 3D POSITIONAL AUDIO

QSound® QSoft3D™ 3D positional technology for 3D interactive audio playback using 2 speakers or 4 speakers

B.2.3 ACCELERATES DIRECTSOUND & DIRECTSOUND3D

- Accelerates DirectSound3D™ for IID (Interaural Intensity Difference), ITD (Interaural Time Difference) and Doppler effects
- Accelerates DirectSound™ for volume, pan and pitch shift control

B.2.4 WAVETABLE SYNTHESIZER

- 320-voice wavetable synthesis
- Compliance with DLS (Downloadable Samples) 1.0
- Supports Microsoft® DirectMusic™
- Per channel volume and envelope control, pitch shift, tremolo and vibrato
- Per channel effect processing and effect volume control for reverb, chorus and echo
- 1, 1.5, 2 or 6 MB General MIDI (GM) / General Sound (GS) sample library

B.2.5 LEGACY AUDIO COMPATIBILITY

- Proven legacy audio support in Windows DOS Boxes and Real-Mode DOS Environments
- Supports FM Synthesis via VirtualFM™ technology
- Supports General MIDI (GM) / General Sound (GS) command interpreter for wavetable and effect synthesis via VirtualGM™ / VirtualGS™ technology
- Supports Legacy Address MPU401 MIDI and Joystick

B.2.6 MULTI-CHANNEL OUTPUT

- Supports two and/or four speaker output
- Supports output through stereo headphone

B.2.7 HIGH QUALITY AUDIO & AC'97 SUPPORT

- CD quality audio with SNR > 90dB using an external AC'97 codec
- High-precision 26-bit digital mixer with 16-bit and 20-bit digital audio output
- On-chip sample rate converter ensures all internal operation at 48kHz

B.2.8 3D STEREO ENHANCEMENT

Hardware-based 3D stereo enhancement

B.2.9 FULL DUPLEX AUDIO

Supports simultaneous full duplex record and playback at independent sampling rate

B.2.10 PLUG & PLAY

Fully Plug and Play PCI controller and software

B.2.11 POWER MANAGEMENT

- PCI Bus Power Management (PPMI) – compliant
- ACPI - compliant

B.3 Interfaces

B.3.1 MIDI INTERFACE

- MPU401 UART Mode Interface
- Full duplex interface for connectors of MIDI instruments (need optional MIDI kit)
- MIDI I/O goes through the joystick port connector

B.3.2 GAME PORT

- MIDI port doubles as game port providing support to two standard PC joysticks
- Digital enhanced game port enabling analog joystick to emulate digital joystick performance, eliminating CPU overhead

B.3.3 CONNECTORS ON BOARD

Audio Internal

- 4-pin MPC connector (Black) for CD-In
- 4-pin MPC (White) connector for AUX-In
- 4-pin MPC (Green) connector for TAD
- (Optional 4-pin friction lock header for internal Line-Out)

Audio External

- 3.5mm jack for Mono Microphone Input
- 3.5mm jack for Stereo Line-In
- 3.5mm jack for Stereo Front Line-Out / Headphone-Out
- 3.5mm jack for Stereo Rear Line-Out

Game Port

D-SUB 15 connector for Joystick and MIDI interface

SPDIF

RCA transformer isolated S/PDIF output

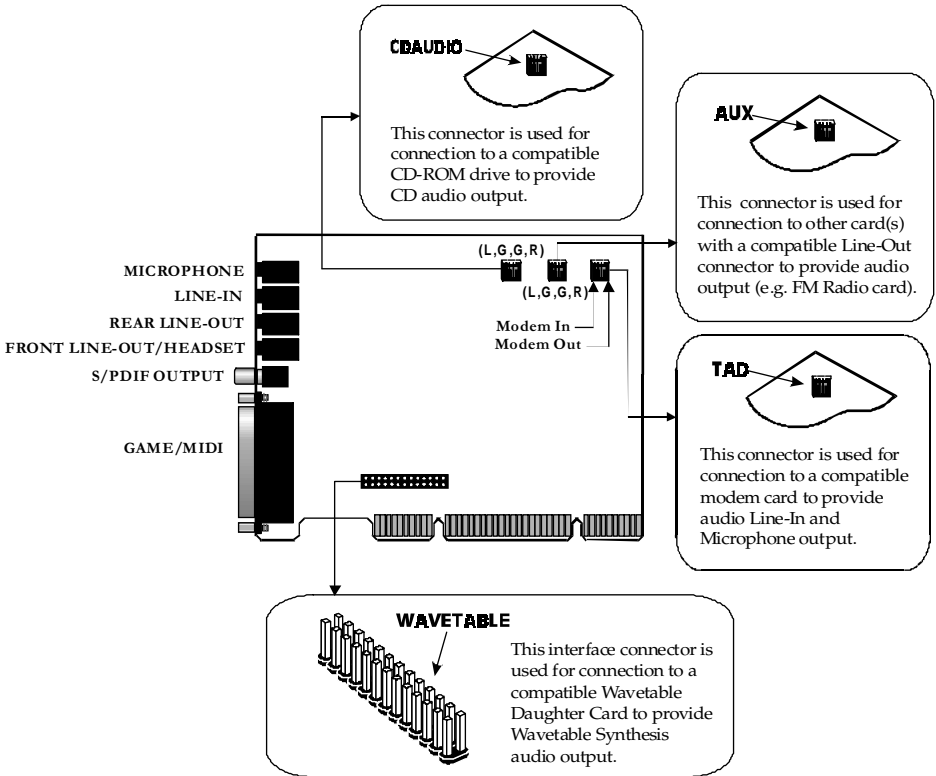
Headphone Driver

Stereo 60mW, 32 Ohms drive



The product specifications herein are subject to change without prior notifications.

Sound Card Layout



Appendix D

QEM™ (QSound Labs, Inc.)

D.1 What is QEM™?

QEM™ stands for QSound® Environmental Modeling™, a sound rendering technology that produces reverberation and other special audio effects. QEM™ is compatible with the EAX™1.0 API (application programming interface) from Creative Labs which means that any game written to take advantage of EAX™ will also work with your sound card.

D.2 What does QEM™ do?

In real life, every room, or “environment” you enter has some sort of *reverberant quality*, depending on different factors like its *size*, and the *material* the surrounding objects (e.g. walls, mountains, etc.) are made of.

QEM™ attempts to model this in a game world, by applying environment effects to DirectSound™ audio streams, by way of presets that can be either set manually, or called automatically from within an “EAX™-enabled” program. (See Figure 1)

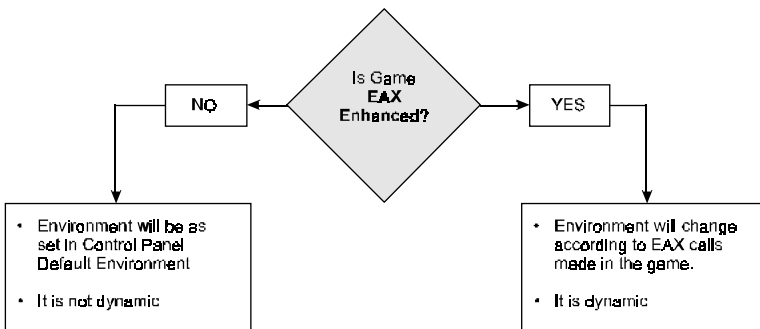


Figure 1: How QEM™ Works

From a player's perspective, this means that they can get ambient environment effects on all the Direct Sound™ games they play. Using **PCI Audio Properties**, there are **2 ways** they can achieve this:

D.2a Getting QEM™ To Work On A Non-EAX™ DirectSound™ Game

If the game you want to play has not been programmed to take advantage of QEM™ (i.e. non EAX™-Enabled DirectSound™ games), all you need to do is select a suitable environment from the **Default Environment** list in the PCI Audio Properties, and run the game. The effect you have selected will be present throughout the game. You can select any standard environment from the list.

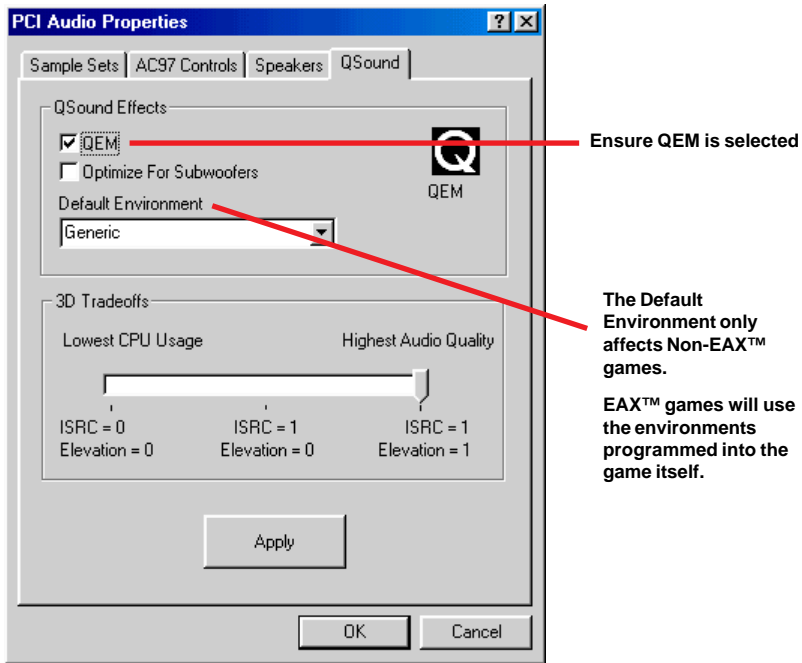


Figure 2: Control Panel – QEM Tab

D.2b Getting QEM™ to work on an “EAX™-ENABLED” DirectSound™ Game (See Figure 2)

“EAX™-enabled” is a term used for games/applications that have been programmed to take specific advantage of EAX™ technology. These games use the EAX™ API to make calls regularly throughout the program to change the current environmental effect, as is appropriate to the current in-game scenario.

Here’s a typical example of what an EAX™-enabled game would do: If the current scenario in the game is a *cave-like* setting, the game will automatically select the “cave” environment preset from the **Default Environment** list (*this all happens internally, so you won’t see anything changing in the control panel*). If the player’s character then moves into a *larger room*, the game might then call for an “Auditorium” environment preset, giving the overall impression that the player has indeed entered a large room.

In other words, an EAX™-enabled game will automatically select the appropriate environment from the list (*excluding the special “game-specific” presets for non-EAX™ games*), and will keep doing this throughout the game.

(If you manually selected a preset from the list, any EAX™-enabled game you play subsequently will make its own calls that will override the setting you have selected.)

Some examples of EAX™-enabled titles on the market are, *Unreal* (updated with the most recent patch), *Half-life*, and *Jurassic Park: Trespasser*.

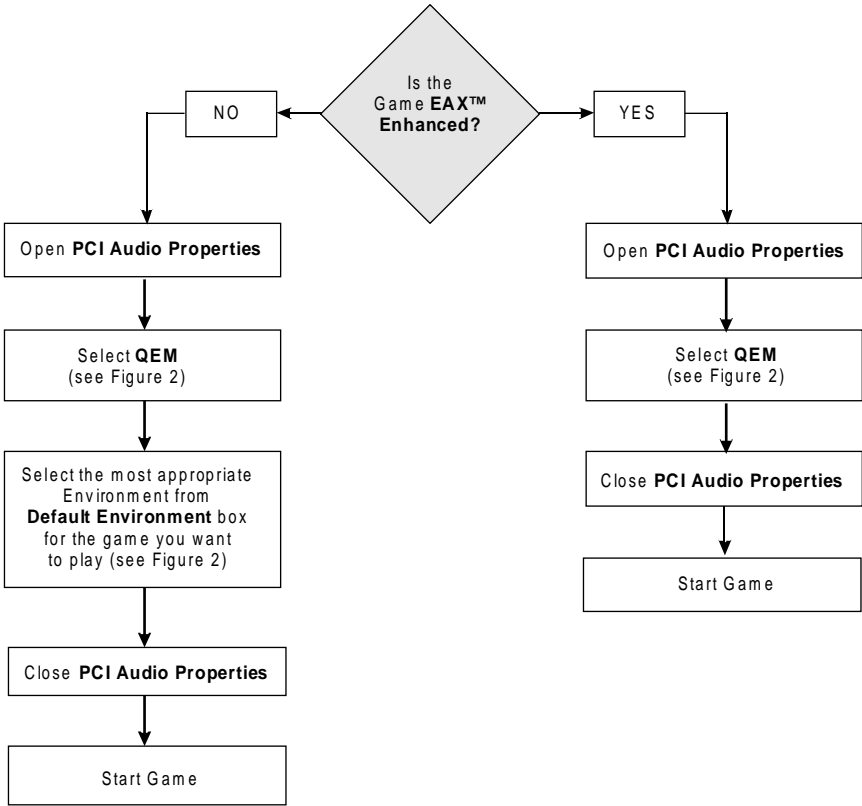


Figure 3: How to use QEM™
(Remember QEM™ only works with DirectX™ Games)

Glossary

3D Positional Sound

3-Dimensional Positional sound allows you to hear sound from every direction in 3D space.

A3D™

3D Positional audio standard produced by Aureal.

Active (amplified) Speakers

Speakers having a built-in amplifier and therefore requiring an external power supply such as an AC adapter.

API

Application Programming Interface. An interface that defines the functions/operations a programmer uses, to write software routines, sometimes specific to a type of hardware.

DirectX™ drivers

Microsoft's set of standardized APIs (application programming interfaces) for games and multimedia applications. With these standards, programmers are able to write programs that access the hardware features of the computer without knowing exactly what hardware will be installed on the machine where the program eventually runs.

DLS

Downloadable Sounds. It provides a means for game developers and composers to add their own custom sounds to the GM sound set stored in a sound card's ROM. DLS-compatible devices will automatically download these custom sounds from the card, disk or CD-ROM into system RAM, allowing MIDI music to be freely augmented with new instrument sounds, dialog or special effects, providing an unlimited palette of sounds.

EAX™

Environmental Audio Extensions™ (EAX™) by Creative Labs.

Line-In Jack

Audio-in connector on the sound card that allows you to connect to your mini-hifi / radio / CD-ROM Player. Amplified/active speakers connected to Line-out will output the music.

Line-Out Jack

Audio-out connector on the sound card that allows you to connect to your amplified/active speakers. Any input to your sound card (from Line-In) will be heard from the speakers.

Microphone Jack

Microphone connector on the sound card that allows you to connect your microphone such that you can do voice recording or playback.

MIDI

Musical Instrument Digital Interface. It is a musical communication standard that lets you (with the help of a MIDI keyboard/guitar) instruct a sound to play from your synthesizer.

MIDI Port

A physical interface enabling the interconnection of multimedia computers and electronic musical instruments to record, store and play back music performance data in the form of MIDI commands.

PCI-Bus

Peripheral Component Interconnect expansion bus connector. The PCI bus sends/receives data 32-bits at a time, superceding the slower 16-bit ISA (Industry Standard Architecture) expansion bus. By making use of the PCI bus, the PCI288-Q3DII allows higher data throughput and indirectly gives rise to faster game play.

Plug-n-Play

Also known as PnP, it is an Intel Standard for the design of PC expansion boards. It eliminates the need to configure the IRQ (Interrupt Request Channel) and DMA (Direct Memory Access) settings as well as I/O and memory addresses when adding new peripherals. Windows will automatically configure your new device to work properly on your system.

QEM™

QSound® Environmental Modeling™ by QSound Labs, Inc. (See *Appendix D - QEM™*)

Q3D™

Patented positional 3D audio technology developed by QSound Labs, Inc.

Wavetable

A table of stored sound waves that are digitized samples of actual recorded sound.