

SONIC IMPACT

USER'S GUIDE



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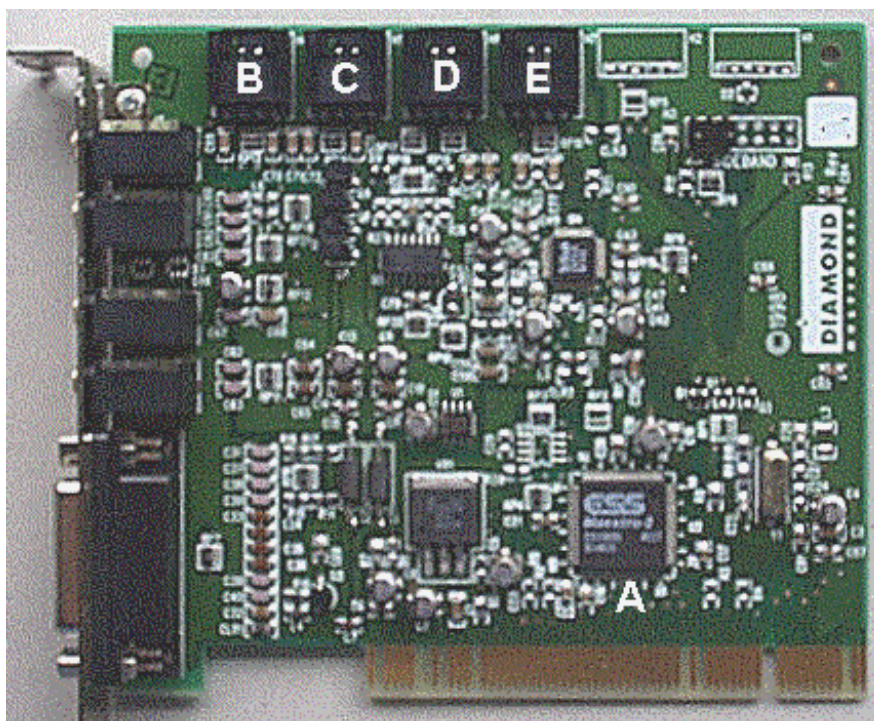
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ABOUT SONIC IMPACT

Congratulations on your purchase of Sonic Impact. This versatile sound card runs under Windows™ 95/98 and Windows™ NT 4.0, and includes real-mode DOS support.

Sonic Impact is a powerful, PCI-based audio accelerator designed for the mainstream PC user for high-quality multimedia, games, music and Internet audio. It's based on the ESS Maestro-2 Audio Accelerator, which incorporates a 64-voice hardware wavetable synthesizer. Sonic Impact accelerates DirectSound™ & DirectSound 3D™ under DirectX 5.0, supports up to 32 independent, CD-quality, digital streams and provides a signal to noise ratio in excess of 90dB. It's compliant with the Microsoft PC 97 specification and WHQL audio requirements, and it provides full SoundBlaster Pro DOS game compatibility. It also delivers full-duplex stereo sound through a stereo speaker output, stereo line output, and a stereo line input and microphone input. Sonic Impact provides full Plug & Play compatibility as well as power management features including support for the ACPI and PPMI standards.

SONIC IMPACT FEATURES AND SPECIFICATIONS



Note: Your Sonic Impact board may have a slightly different layout from that pictured above.

A	ESS Maestro-2 audio controller and hardware wavetable
B - E	These are standard MPC-3 connectors for connecting various devices to your Sonic Impact card (cables not included). These connectors are also labeled on the reverse side of the card.
B	CD—Use this to connect your CD-ROM drive with Sonic Impact.
C	Video—For connecting MPEG, DVD, or TV tuner devices.
D	Aux—Additional connector for video devices.
E	Modem—For connection to a speakerphone modem.

Features

Full-Featured PCI Audio Add-in Card solution

- 32 CD-Quality Audio Stream Mixing
- Acceleration of DirectSound™ & DirectSound 3D™
- Quality 3D positional Audio under DirectX 5.0

64-Voice Wavetable

- General MIDI Compatible
- Chorus & Reverb Effects
- DLS Compatible

Compliance & Certifications

- SoundBlaster Pro DOS Game Compatible
- PC 97 Compliant
- WHQL Certified
- Power Management (ACPI, PPMI)
- FCC & CE Approval
- 16 Bit Full Duplex Stereo Audio
- 48 kHz Sample rate (programmable from 4kHz to 48kHz)
- >90dB Signal/Noise
- Stereo Line in & out (simultaneous Stereo Playback & Record)
- Stereo Speaker/Headphone Output

Operating System Support

- Microsoft Windows® 95, Windows® 98
- Microsoft Windows NT™ 4.0, Windows NT™ 5.0
- DOS 6.x

Technical Specifications

Audio Processing Chipset

- Audio controller ESS Maestro-2
- Hardware wavetable ESS Maestro-2
- 64 voice audio codec AC 97 Codec

Bus Type: PCI

Signal to Noise Ratio: > 90 dB at output of Audio DACs

Sample Rates: Up to 48 kHz

Audio Output: Stereo Speaker Out & Line Out

Audio Input Microphone Input, Stereo Line Input, CD, Modem, Aux, Video

Connectors: MIDI Port, Game Port, Mic input, Line input

System Requirements

Pentium 90 MHz

8 MB RAM (16 MB recommended)

12 MB min. free hard drive space

1 available PCI 2.0 compliant slot

Powered speakers or headphones

Windows® 95, Windows® 98 or Windows NT™

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ABOUT THIS MANUAL

For your convenience, this online User's Guide has been formatted as a PDF file for use with Adobe's Acrobat Reader. This format gives you great flexibility in how you want to use this documentation. If you like, you can easily print this manual so you can access it off-line and it will look like any standard document complete with Table of Contents and page numbers.

- This manual may display with slightly reduced magnification in your Reader. If you experience any difficulty in viewing text or images online, use the Reader's Zoom feature to adjust the magnification.
- For printing the User's Guide, a print resolution of 600 dpi is recommended.
- Hypertext links are active inside this manual. If you are reading this manual online, place your mouse cursor over Table of Contents entries or main headings. If the hand icon changes to a pointing index finger, simply click to move to that place in the document. Some E-mail or World Wide Web addresses inside this manual may be active as well. Go directly to a Web or FTP site or E-mail program simply by clicking on an active link.

For last-minute information about your product, please consult the Readme file on your Sonic Impact SuperCD.



This icon marks useful tips or important operational notes.

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INSTALLING SONIC IMPACT

This chapter will help you with the hardware installation of your Sonic Impact board, and with the installation of drivers and software for your board. It covers the following topics:

- **BEFORE YOU INSTALL THE SONIC IMPACT CARD**
- **INSTALLING THE SONIC IMPACT CARD**
- **INSTALLING THE SONIC IMPACT SOFTWARE DRIVERS**
- **INSTALLING THE SOFTWARE UTILITIES**

BEFORE YOU INSTALL THE SONIC IMPACT CARD:

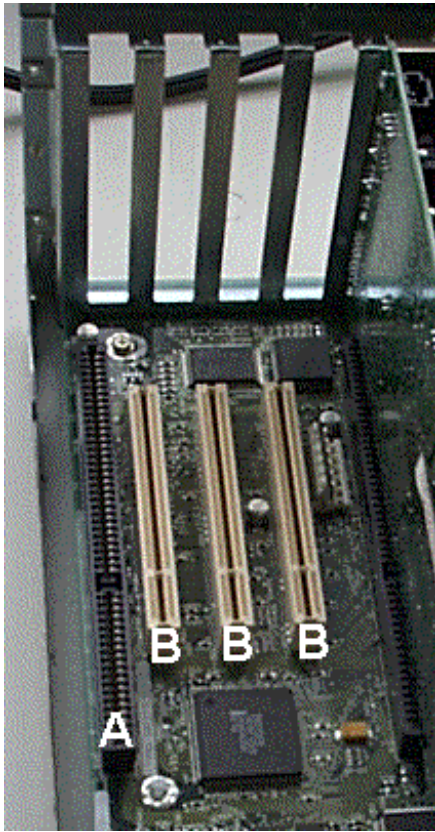
1. Be sure that Windows 95/98 or Windows NT 4.0 is installed and functioning properly
2. Remove any ISA or Sound Blaster compatible sound cards.
3. Handle plug-in cards by their edges and do not directly touch internal components or connector contacts.
4. Verify the operating system you have (Windows 95, Windows 98, or Windows NT 4.0) and what version you are running

INSTALLING THE SONIC IMPACT CARD



Warning! To avoid accidental electric shock, be sure to shut your computer down and unplug the power cord before starting the following procedures. To protect your Sonic Impact card from damage due to static electrical discharge, ground yourself by touching the power supply box inside your computer

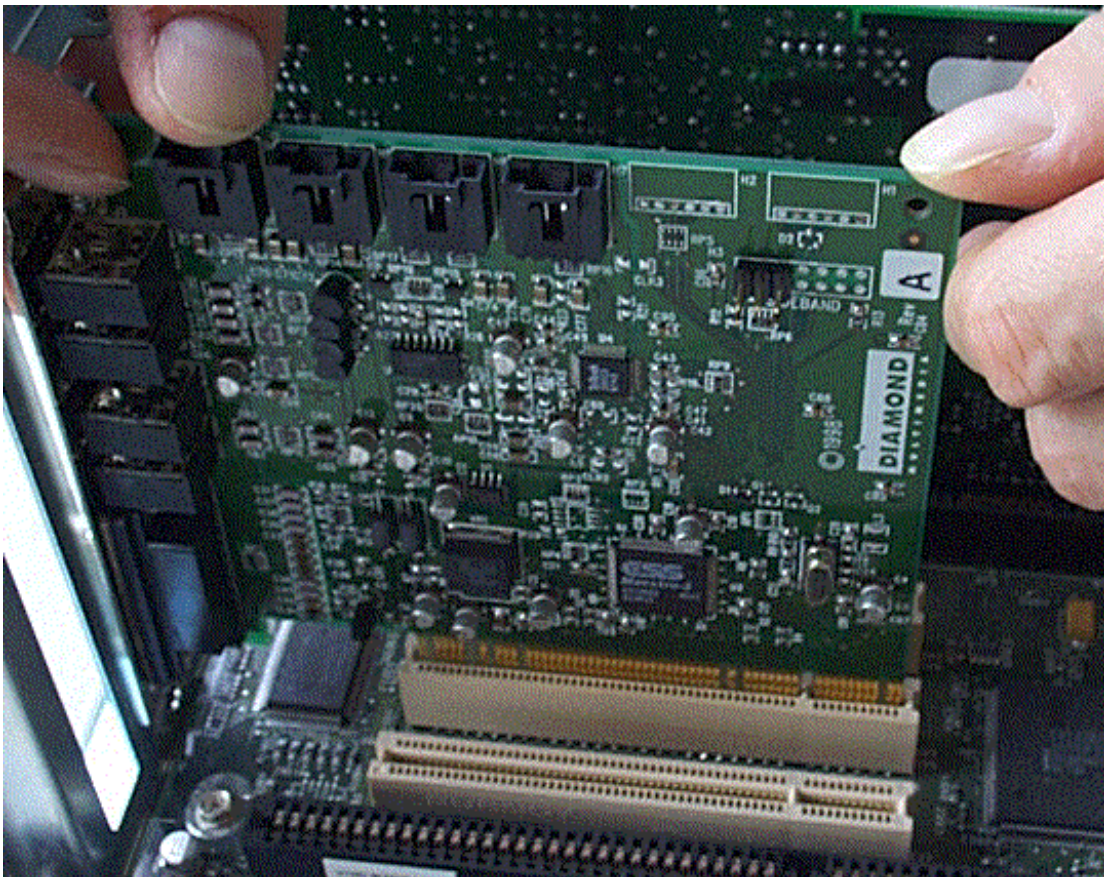
1. With the power off, remove all computer cables. Take note of which cables go to which connectors (to avoid confusion, label the cables before removing them)



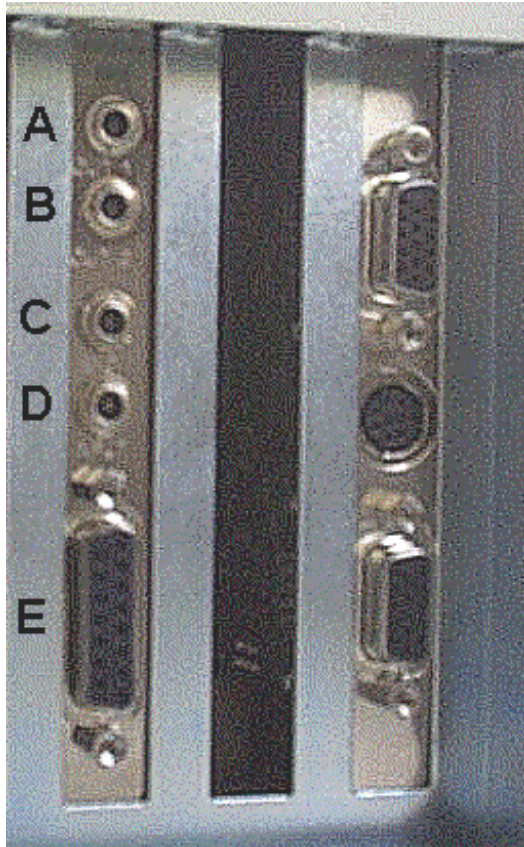
2. Remove the computer cover and find an available PCI slot (B). Remove the bracket and save the screw.

A ISA
B PCI

3. Insert the Sonic Impact card firmly into the free PCI slot. Carefully press it evenly and snugly into the slot. Secure it with the screw.



4. If you have a CD-ROM drive, connect the CD-ROM cable to the connector labeled “CD” on your Sonic Impact card. (See the illustration on p. 1.)
5. Secure the computer cover and attach any previously removed cables.
6. Next, connect any speaker(s), joystick, and microphone to the Sonic Impact card. Consult the illustration below for assistance.



-
- A OUT 1 – for headphone or speaker output
 - B OUT 2 – line out for stereo or powered speaker output
 - C MIC – connect microphone here
 - D INPUT – stereo line input
 - E Gameport controller – connect joystick here
-

7. Restart your computer.

INSTALLING THE SONIC IMPACT SOFTWARE DRIVERS

This section describes the installation of the software drivers for Windows 95, Windows 98 and Windows NT 4.0.

If you want to install drivers for Windows 95, you'll need to determine your Windows 95 version. To do this, right-click on the **My Computer** icon on the desktop and select **Properties**. You should see the exact version number in the **General** properties window. If the version number is followed by a letter B or above, you have Windows 95 OSR2.

Windows 95 (version 4.00.950) Driver Installation:



You may need your original Windows 95 CD to complete this installation. If you are using OSR2, go to **Windows 95 OSR2 Driver Installation** below.

After your system boots, it will inform you that it has found a new **PCI Multimedia Device** and prompt you with selections. Insert the Sonic Impact SuperCD into your CD-ROM drive and proceed as follows:

1. Select the option "Driver from disk provided by hardware manufacturer" from the PCI Multimedia Device dialog. Click OK.
2. In the space "Copy manufacturers files from" type D:\DRIVERS (or replace D: with the letter that corresponds to your CD-ROM drive). You can also click on the Browse button and navigate to the DRIVERS directory on your CD-ROM.
3. Click OK. Windows 95 will now copy the Sonic Impact driver files to your hard drive.

Note—Windows may ask you for the original Windows CD to update and install some necessary options. Remove the Sonic Impact SuperCD and insert the Windows CD into the CD-ROM drive. Once Windows has installed the necessary components, the Sonic Impact installation requests the SuperCD. Remove the Windows CD and insert the SuperCD.

4. You may be requested to reboot your computer. If so, please restart your computer now. Once Windows boots, the Sonic Impact Software Utilities installation automatically starts up. If the Sonic Impact Utilities fails to start automatically, double-click on the CD-ROM icon from **My Computer**. Now continue with the section [Installing the Software Utilities](#) below.

Windows 95 OSR2 Driver Installation:



You may need your original Windows 95 CD to complete this installation.

After your system boots, it will inform you that it has found a new **PCI Multimedia Audio Device** and will bring up the **Update Device Driver** Wizard. Insert the Sonic Impact SuperCD into your CD-ROM drive and proceed as follows:

1. Click **Next**. Windows now searches for the location of the driver files. Wait a few moments until you see the **Other Locations** button before continuing. Click on **Other Locations**.

2. Set the path in the install window to **D:\DRIVERS** (or replace D with the letter that corresponds to your CD-ROM drive). You can also click on the **Browse** button and navigate to the DRIVERS directory on your CD-ROM.
3. Click **OK**, then click **Finish**. The driver files will be copied to their destination directories. Occasionally Windows will produce an error message during this process. If this happens, close the error message window and repeat step 2.

Note —Windows may ask you for the original Windows CD to update and install some necessary options. Remove the Sonic Impact SuperCD and insert the Windows CD into the CD-ROM drive. Once Windows has installed the necessary components, the Sonic Impact installation requests the SuperCD. Remove the Windows CD and insert the SuperCD.

4. You may be asked to reboot your computer. If so, please restart your computer now. Once Windows boots, the Sonic Impact Software Utilities installation automatically starts up. If the Sonic Impact Utilities fails to start automatically, double-click on the CD-ROM icon from **My Computer**. Now continue with the section [Installing the Software Utilities](#) below.

Windows 98 Driver Installation:

Note: The driver installation procedure described below is for the Windows 98 beta 3 version. It may differ from the procedure for the official Windows 98 release.

After your system boots, it displays the **Add New Hardware** Wizard with the message "This wizard searches for new drivers for: PCI Multimedia Audio Device." Insert the Sonic Impact SuperCD into your CD-ROM drive and proceed as follows:

1. When you see the above message, click **Next**.
2. You are prompted with two options for finding the drivers. Select "**Search for the best driver for your device.**" Click **Next**.
3. You are offered several search options. Select the "**Specify a location**" check box.
4. Set the path in the install window to **D:\DRIVERS** (or replace D with the letter that corresponds to your CD-ROM drive). You can also click on the **Browse** button and navigate to the DRIVERS directory on your CD-ROM. Click **Next**. The driver files will be copied to their destination directories.
5. You may be asked to reboot your computer. If so, please restart your computer now. Once Windows boots, the Sonic Impact Software Utilities installation automatically starts up. If the Sonic Impact Utilities fails to start automatically, double-click on the CD-ROM icon from **My Computer**. Now continue with the section [Installing the Software Utilities](#) below.

Windows NT 4.0 Driver Installation:

Put the Sonic Impact SuperCD into your CD drive and start the installation as follows:

1. Click the **Start** button in the task bar, select the **Run** option and then select START.EXE from the root directory of the CD.
2. Choose English as your language for the installation.

3. Click the **Start Installation** button.
4. If necessary, select the hardware for which you wish to install; this is displayed in the Product drop-down list. The installation program usually recognizes your hardware automatically.
5. Click the **Next** button.
6. A README file will be displayed. Please read this file!
7. After you have read the README, click **Next**.
8. If desired, enter a path to which the software will be installed.
9. Click the button corresponding to the type of installation you want. If you select **Custom**, a list of software components will be displayed. Click the check boxes to specify the components you want to install.
10. When prompted to restart your computer, choose **Yes**. After Windows boots, continue with the section **Installing the Software Utilities** below.

INSTALLING THE SOFTWARE UTILITIES

Sonic Impact includes software utilities to help you maximize the use of your Sonic Impact card and enhance your 3D sound.

Note : Windows 95/98 should be installed and working properly before you install your Sonic Impact card. You can install the Sonic Impact software before installing the hardware.

If your system is configured for AutoRun, you can launch the Start program by simply inserting the Sonic Impact SuperCD into the CD-ROM drive. If AutoRun is not enabled on your system, you can run the START.EXE program directly from the SuperCD.

If you have already installed the Sonic Impact card in your system, Windows will start the Sonic Impact setup program automatically the next time you boot.

OSR2 users may be prompted to locate the Sonic Impact installation CD. Enter D:\ (or replace D: with the letter that corresponds to your CD-ROM drive).



To see if your system is running Windows 95 OSR2, go to the **Start** menu, navigate to **Settings**, then click on **Control Panel**. Double click on the **System** icon. On the General property page in the System Properties dialog, OSR2 users will find Microsoft Windows 95 4.00.950B listed.

Once the Start program is running:

1. Check that the correct language is selected and click on **Start installation** from the main menu to start the software setup program.
2. In the 'Installation: Windows 95' dialog box click on the icon for 'Multimedia Add-Ons (Digital video, 3D Accelerator, ...)' under product group and choose **Sonic Impact** from the dropdown list under **Product**. Click on the **Next** button.
3. In the 'Diamond Install' dialog box select the directory you would like to install to. You can either do so by entering the path or by clicking on the '**Browse...**' button. In the 'Browse Box' you can then choose the directory from the scrolling list and click **OK** when you are finished.

4. Select the type of installation that you would like to perform (standard or custom). If you click on the icon for **Custom** installation you can choose the desired components from a list. The description of a component is displayed as soon as you highlight it. The choices are:
 - ESS Device Manager – driver for the Sonic Impact card
 - Sound Blaster Emulation – only needed for DOS games
 - DirectX 5.2 – the latest version
 - Audio Utilities – programs for CD player, WAV file playback, etc.
5. To tick an item click on the check box. After selecting the components, select **Next** and follow the on-screen dialogs until installation is successfully completed. (Click on **Next** whenever you are prompted to. When you click on **Next** on the last screen, your computer will be rebooted.)

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REMOVING SONIC IMPACT

If you need to remove Sonic Impact from your system, follow the instructions below.

REMOVING THE SONIC IMPACT HARDWARE

1. Shut down your computer and disconnect its power cable from the electrical outlet.
2. Remove the computer's cover as outlined in the hardware installation instructions in Chapter 3.
3. Ground yourself by touching the power supply box.
4. Now simply reverse the hardware installation procedures described in Chapter 3.

REMOVING THE SONIC IMPACT SOFTWARE

1. Click on **Start > Programs > Diamond** and select **Sonic Impact**.
2. Click on the **Sonic Impact Setup** option. The Sonic Impact Readme file will be displayed.
3. Click **Next**.
4. Click **Remove the Product**, then **Next**. The software will be removed from your system.
5. Click **Next** to reboot your computer or **Cancel** to return to Windows.

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SONIC IMPACT TROUBLESHOOTING



Please examine the **Readme** file located on your **Sonic Impact SuperCD**. It contains the latest information and known issues regarding your **Sonic Impact** card.

If **Sonic Impact** fails to function properly after installation:

- Check that you are using powered speakers. Powered speakers are required.
- Check that the speaker power switch is on and that the cables are properly connected.
- Make sure the Windows mixer sliders and speaker volume knobs are properly adjusted.
- Make sure that **Maestro** is selected as the preferred playback and recording devices: Click on **Start > Settings > Control Panel**. When the **Control Panel** directory opens, double-click on **Multimedia Properties**. Click on the **Audio** properties tab. Verify that **Maestro Playback** is selected for the **Playback**, and **Maestro Record** is selected for the recording options.

If you are using Windows 95/98, see if there is a resource conflict with another device in the system by checking the status of **Sonic Impact** using the Windows Device Manager. There you will find information regarding possible resource conflicts or other problems.

To open the Device Manager (Windows 95/98):

1. Click on **Start > Settings > Control Panel**.
2. Double-click on the **System** icon and the System Properties sheet will be displayed.
3. Click on the **Device Manager** tab, then double-click on both the **ESS Media Device Controllers** and the **Sound, video and game controllers** sections.

If there is a problem, there will be an exclamation mark symbol next to the **ESS Device Manager** or the **Maestro...Devices**. If this is the case, highlight the device and click on the **Properties** button. The Device Status box will indicate the source of the problem.

Check the settings for your PCI BIOS, and make sure that the PCI slot used by **Sonic Impact** is properly configured and enabled.



Sonic Impact may not operate properly if your system is equipped with an older PCI BIOS. You may need to obtain an upgrade from the system or BIOS manufacturer.

If you need to reinstall Windows 95/98 with the **Sonic Impact** hardware already in your system, please be aware of the following:

1. Upon rebooting your system, Windows will detect the card and attempt to install the drivers; however, it will incorrectly detect the Sound Blaster compatibility of the Sonic Impact card and install the following devices under the Sound, video and game controllers section of the Device Manager:
 - Creative Labs Sound Blaster Pro
 - Gameport Joystick
 - MPU-401 Compatible
2. Windows will also show the PCI Multimedia Audio Device under the Other devices section.
3. You must remove these four devices from the Device Manager, then shut down and reboot your system. After Windows restarts, follow the instructions for your Windows version in the **Installing the Sonic Impact Software Drivers** section.

If, after encountering the situation described above, there are two Gameport Joystick entries listed in the Sound, video and game controllers section of the Device Manager, do the following:

1. Open the Windows Device Manager (see instructions above).
2. One device should appear normally and the other will have a yellow exclamation icon.
3. Select and remove both entries from the Device Manager using the **Remove** button.
4. Click the **Refresh** button.
5. Windows should re-detect the device attached to the Gameport and install the appropriate drivers.

CONTACTING DIAMOND

[Diamond on the Web: www.diamondmm.de](http://www.diamondmm.de)

Frequently Asked Questions (FAQs) and their answers, as well as other product-related information, can be found [here](#).

Fast Track to Technical Support

[Click here](#) for information on contacting Diamond's Technical Support department.

A

ActiveX

A Microsoft Technology that enables software components to interact with one another in a networked environment, regardless of the language(s) used to create them. Most World Wide Web (WWW) users will experience ActiveX technology in the form of ActiveX controls, ActiveX documents, and ActiveX scripts.

AC-3

Sometimes referred to as "Dolby Digital". The third generation digital audio coding scheme from Dolby Laboratories used to encode 6 discrete audio channels (front-left, front-center, front-right, surround-left, surround-right, and low-frequency effects). Primarily used for movie soundtracks, found on new generation laser-discs, DVD titles and HDTV.

Adapter

An expansion card that enables greater functionality for your computer. The Sonic Impact card is an adapter.

Analog-to-digital converter

A device on the Sonic Impact card that converts analog information, such as sound or voltage, into digital signals that can be handled by a computer. These devices create a sample.

API

Application Programming Interface. A definition of functions or operations that programmers can use to ease their development cycle.

ASIC

Application Specific Integrated Circuit (ay-sick). A chip designed for use on a particular circuit board, or for a very narrow range of use.

BIOS

Stands for Basic Input/Output System. This is software that provides basic read/write capabilities. Usually kept as firmware (Flash based). The system BIOS on the mainboard of a computer is used to control the booting of the system.

Bit

1: A binary digit, usually 1 or 0. 2: The smallest unit of information recognized by a computer and its associated equipment. Several (usually 8) bits make a BYTE, or a COMPUTER WORD

Bus

A collection of unbroken signal lines across which information is transmitted from one part of a computer system to another. Connections to the bus are made via "taps" on the lines.

Coprocessor

A chip whose function is to relieve the CPU and accelerate the system by performing certain functions for the CPU.

CPU

Abbreviation for Central Processing Unit. The part of a computer that manipulates most of the data.

DAC

Stands for Digital to Analog Converter. This is a device your Sonic Impact card uses to convert a stream of digital information to its analog equivalent. Use of this device is how a .WAV file (digital) gets converted to sound (analog).

Decibel

A unit for expressing the ratio of two acoustic (or electric) signals, equal to 10 times the common logarithm of the ratio of the signals. In general terms, it's a means of measuring the relative loudness ordinarily detectable by the human ear whose range includes about 130 decibels on a scale beginning with 1 for the faintest audible sound.

Digital

Operating in discrete units or steps. A device that uses discrete units is a digital device.

Digital mixing

Digital mixing is the ability to merge multiple digital streams into one or more streams. This ability is superior to analog mixing, because with each new input stream an analog mixer adds noise to the output stream. The Sonic Impact board performs digital mixing.

DirectSound and DirectSound3D

Both are DirectX wave audio playback APIs that allow you to simultaneously play multiple wave files and move sound sources within a simulated 3D space (DirectSound3D). They take advantage of sound-accelerator hardware (like your Sonic Impact board) to improve performance and minimize CPU usage.

DirectX

Microsoft's set of standardized application programming interfaces (APIs) for games and other multimedia applications, including DirectDraw, Direct3D, DirectSound, DirectInput, and others.

DOS Shell

A DOS shell is an emulation of DOS within a Windows 95/98 environment, which can be viewed as a DOS window (DOS Box) or full screen.

DSP

Stands for Digital Signal Processor. A device or circuit which modifies and processes algorithms for various features, such as 3D positional sound and multiple data stream playback, instead of using the host processor (Intel, AMD, Cyrix, etc.), thus improving system speed and performance.

Firmware

This is software that is permanently stored in ROM and it can be accessed during boot time.

Format conversion

Format conversion is used to convert all input stream types to match the output stream type. Some streams may need to be converted from 8-bit to 16-bit to match the DAC output type.

FM

Frequency Modulation. The process of changing the frequency of a generated signal at an audio rate, spectrum of result contains the carrier plus sidebands spaced at the frequency of the modulator.

FM Synthesis

Algorithm which uses frequency modulation to create complex waveforms in digital synthesizers.

Gameport

A jack for connecting an input device such as a joystick, gamepad, steering wheel, etc. The Sonic Impact gameport supports these devices and doubles as a MIDI port for connection of keyboards, synthesizers, etc.

Hardware

Refers to the parts of a computer system that are physical objects.

Hertz

A measure of frequency in cycles per second. Named after Heinrich Hertz.

HRTF

Stands for Head Related Transfer Function. This refers to all the possible angles through which sound is delivered. This provides the listener with realistic 3D audio, whereby the sound appears to approach from above, behind, beside, or far away.

IRQ

Stands for Interrupt Request Channel. This is the path through which a device can receive immediate attention of your computer's CPU. The PCI controller assigns an IRQ path for each of your PCI devices.

ISA

Stands for Industry Standard Architecture. This is a type of computer bus used in most PC's in the past, and has been used to support legacy sound card designs. It allows devices to send and receive data 16-bits at a time.

JAVA

A Sun Microsystems, Inc. technology—similar to ActiveX—that enables software components to interact with one another and run in a networked environment regardless of the specific computer platform in which it operates. Most World Wide Web (WWW) users will experience JAVA technology in the form of JAVA applets and JavaScript.

Joystick

A pointing device used in computer games, named after a similar control device in airplanes.

KHz

Stands for Kilohertz. This is a unit of frequency at 1000 cycles per second.

Latency

The period of time it takes a piece of information to go from sender to receiver across a medium.

Legacy card

An expansion card that utilizes jumpers for setting changes. Any card that uses older PC standards, i.e. ISA.

Legacy sound board

Any ISA Sound Blaster or Sound Blaster-compatible sound card, generally used for older DOS applications.

Main memory

The RAM that is in the CPU's address space.

MB

Stands for Megabyte, 1,048,576 bytes. Also known as a million bytes. A unit of memory and data storage size.

MIDI

Stands for Musical Instrument Digital Interface. MIDI files usually have the extension .mid. They contain sequencing information, which differentiates the how, what, when, where, and why an instrument should be played.

Motherboard or mainboard

A large circuit board that holds RAM, ROM, the CPU microprocessor, custom integrated circuits, and other components that enable a computer to function.

Mixer

A device or concepts that receives inputs and merges them with a single output.

Native DOS

This is a Disk Operating System that functions outside of the Windows environment.

Noise

1: Continuous signal or waveform lacking any periodicity. 2: Any undesired sound or signal.

OS

Operating System. The master set of programs that manage the computer. An OS controls the input at output from the screen, disks, display screen, and other peripheral devices; controls the execution of other applications.

PCI

Stands for Peripheral Component Interconnect. It is a local bus specification that allows the connection of a peripheral directly to the computer memory via the north bridge. It bypasses the slower ISA and EISA buses, allowing devices to send and receive data 32 bits at a time.

Quantization noise

Noise in a digital system attributable to the fact that all values must be rounded to a whole number of bits.

RAM

Stands for Random Access Memory. This is the computer's primary working memory in which program instructions and data are stored, which are accessible to the CPU. Information can be written to and read from RAM. The contents of RAM are lost when the computer is turned off.

ROM

Stands for Read Only Memory. This is memory from which information can be read but not changed. The contents of ROM are not erased when the computer is turned off.

Sampling

Collecting a subset of data relevant to a system.

Sampling Rate

The frequency at which sampling occurs. When the computer records sounds, it stores the information into a specific file. As the computer records, it deciphers the information, (i.e., it takes a sampling of the information). The higher the sampling rate, the more samples taken; resulting in a better quality of recording.

Signal-To-Noise Ratio

The ratio of the (wanted) signal to the (unwanted) noise. The Sonic Impact card has a signal-to-noise ratio of greater than 90dB.

Voice

1: Circuitry or software of a synthesis system with the capability for producing a musical note; a "four voice" instrument implies four more or less independent notes may be produced at once. 2: To specify the values of parameters that describe a sound on a synthesis system.

Volume

A rough description of the loudness of sound produced by an electronic sound system.

VRML

Stands for Virtual Reality Modeling Language. This is an open, extensible, industry-standard scene description for 3D scenes, or "worlds" on the Internet.

Wavetable-lookup

Algorithm for producing complex tones in digital systems by taking sample values from a pre-calculated list.

B

TRADEMARKS, COPYRIGHT AND WARRANTY

TRADEMARKS

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SONIC IMPACT WARRANTY

Your Sonic Impact card comes with a three-year hardware warranty. Diamond warrants the Sonic Impact card against defects in material and workmanship for a period of three years from the date of purchase from Diamond or an authorized Diamond agent. This warranty applies only to the original purchaser of the Sonic Impact card and is not transferable. This warranty does not cover any incompatibilities due to the user's computer, hardware, software or any other related system configuration in which Sonic Impact card interfaces.

Proof of purchase will be required before any warranty consideration by Diamond occurs. To ensure your warranty, it is necessary that you keep the invoice for your Sonic Impact card. If your Sonic Impact card is damaged, contact your retailer first.

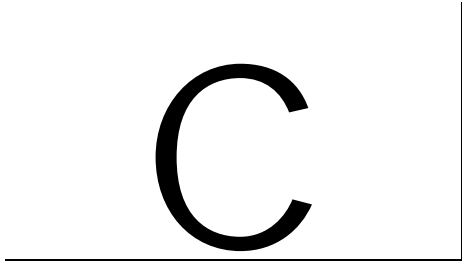
This warranty does not cover any damage caused by negligence, non-authorized modifications, or parts installed without prior written permission from Diamond.

This warranty does not apply if the product has been damaged by accident, abuse, misuse, or misapplication, nor as a result of service to the product by anyone other than by Diamond.

DIAMOND IS NOT RESPONSIBLE FOR ANY LOST PROFITS, LOST SAVINGS OR OTHER INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OF, OR INABILITY TO USE, THIS PRODUCT. THIS INCLUDES DAMAGE TO PROPERTY AND, TO THE EXTENT PERMITTED BY LAW, DAMAGES FOR PERSONAL INJURY. THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES INCLUDING IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

Some states do not allow limitation of implied warranties, or exclusion or limitation of incidental or consequential damages, so the above limitations may not apply to you. This warranty gives you specific legal rights. You may have other rights which may vary from state to state.

This warranty applies only to this product, and is governed by the laws of the State of California.



CE AND FCC INFORMATION

This device complies with CE Certification pursuant to EN55022:1994-08/A1:1995-05 class B

This device has been tested to comply with the FCC standards for home or office use.

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.

DECLARATION OF CONFORMITY

We, the Responsible Party

Diamond Multimedia Systems, Inc.

2880 Junction Avenue

San Jose, CA 95134

declare that the product

Sonic Impact

is in conformity 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.