



PCI24
Digital Audio I/O Card Macintosh & PC Drivers

TABLE OF CONTENTS

Introduction	1
Specifications	1
Macintosh Systems	
Hardware Installation	2
Software Installation	3
PC Systems	
Hardware Installation	5
Software Installation	5
Service	8
Declaration of Conformity	9

Rev B.01, 27 January, 2000

Lucid part number 53PC240B01

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The logo for Lucid, featuring the word "lucid" in a lowercase, serif font. A thin, curved line arches over the letters "i" and "c", ending in a small dot above the "i".

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Congratulations on your purchase of the Lucid Technology PCI24 card. You are now a member of a growing community of audio engineers who have turned their desktop computers into studio quality audio recording systems. The PCI24 is a gateway that provides you with the means to transfer digital audio to and from your computer.

This user's guide is not intended as a primer for digital audio or recording. It is assumed that you are reading this guide after purchasing the PCI24 and therefore already know your way around digital audio equipment. Our purpose here is to simply lead you through the installation of the PCI24. We're also assuming that you already have a PCI bus equipped computer and have installed editing or signal processing applications that are compatible with the PCI24.

The PCI24 has been built to the highest standards, should you have any questions regarding it or any Lucid Technology product please feel free to contact us.

What is the PCI24?

The PCI24 is a PCI bus compatible digital audio I/O card for both Macintosh and Windows based computers. It allows the connection of S/PDIF or AES/EBU format digital audio equipment such as:

1. Lucid Technology ADA1000 20 bit, A-to-D and D-to-A converter
2. Digital I/O equipped DAT recorders
3. Digital audio mixers
4. CD and DVD recorders

The PCI 24 accepts input word lengths up to 20 bits, and will playback at up to 24 bit resolution.

Specifications

- Digital I/O connectors: AES/EBU 1/4" TRS and S/PDIF RCA/coaxial
- Input dynamic range: 120dB
- Output dynamic range: 144dB
- Input sample rates: 32kHz, 44.1kHz, and 48kHz
- Output sample rates: 32kHz, 44.1kHz, and 48kHz
- Sample rate conversion (digital input only): Input range 8kHz - 48kHz converted to 44.1kHz or 48kHz
- Size: Conforms with short PCI card specification

System requirements

- Power Macintosh or Pentium PC with an available 7" PCI slot
- CPU speed greater than 75MHz for stereo applications and greater than 120MHz for multitrack applications
- 16MB RAM (32MB recommended)
- Mac OS 7.5.5, 7.6.1, or 8.0 (Mac platform)
- Windows 95 or Windows 98 (PC platform)

MACINTOSH SYSTEMS

Hardware Installation

The PCI24 has been designed to the physical specifications for short PCI cards and should be physically compatible with most brands of PCI bus computers. Start by powering down the computer and removing the cover to expose the motherboard and PCI slots. (This is often easier said than done.

Depending on the computer, you may have our sympathy!) Insert the PCI24 into any vacant slot and screw the PCI24's mounting bracket to the computer's card bracket rail. Replace the computer's cover panel and power up.

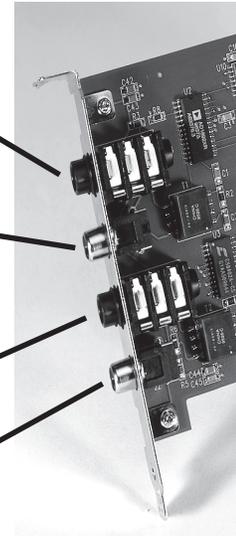
As viewed from the top of the mounting bracket (the end that is farthest from the motherboard) the connectors are from top to bottom: AES/EBU input, S/PDIF input, AES/EBU output, and S/PDIF output. Connect either (**but not both**) of the card's input connectors to the digital output of a DAT machine, CD player or A/D converter. Connect either (**but not both**) of the card's outputs to a DAT machine or D/A converter.

AES/EBU

S/PDIF

AES/EBU

S/PDIF OUT-



Software and Extensions

The PCI24 audio card needs a software interface or driver to communicate with your audio application. Applications such as Cubase VST use an ASIO interface in place of the Macintosh Sound Manager. ASIO (Audio Stream In/Out) is a VST software interface for input/output of digital audio via audio cards. Please refer to the documentation included with your digital audio software to determine the proper driver/software combination (i.e. ASIO, Sound Manager, etc.). Be sure to check the version of your application as some software developers are changing from the Sound Manager interface to ASIO.

The following is a sample of Lucid drivers/extensions used with popular digital audio production applications. A current list can be obtained via the internet at: <http://lucidtechnology.com>.

1. **PCI24 Driver** is the regular Sound Manager driver, replacing the Built-In I/O, and installed in your System's Extensions folder.
2. **PCI24 ASIO Extension** is the Extension required for use with applications such as Cubase VST that use the ASIO format. The PCI24 Driver must first be disabled in the Extensions Manager before using this driver.
3. **ASIO Lucid PCI24** is the Cubase VST ASIO driver for the PCI24, and goes in your Cubase->ASIO Drivers folder.
4. **PCI24 Deck Driver** is a version of our Sound Manager driver designed to work with Deck II. When using this driver, other PCI24 drivers/extensions in the Extensions folder must first be disabled.
5. **PCI24 Startup** may be used to manually register the PCI24 to the Sound Manager. Normally it should not be necessary but some systems may not automatically initialize the

driver, and this application, when placed in your Startup Items folder, provides a workaround.

6. **PCI24 AES Driver** is a version of our Sound Manager driver designed to work with AES I/Os.

Software Installation (Sound Manager Drivers)

1. Place the Lucid PCI24 extension in the Extensions Folder, which is in the Systems Folder. Any other Lucid drivers or extensions should be disabled using the Extensions Manager (or by manually removing them).
2. Shut down and Restart the Mac.
3. Once the computer has rebooted, open the Sound Control Panel. Select SOUND IN from the menu and click on the Lucid PCI24 icon. Now open SOUND OUT and select Lucid PCI24. This time you will have a few options. The card should be set for the desired output rate, with 16, 20 or 24 bit samples and in stereo. To use the PCI24 as a sound output device, the PCI24 must be selected as the input device.
4. Refer to your digital audio software User's Guide to set the preferences and select the Lucid PCI24 audio card as the sound in/out device.

Note: The PCI24 should be selected as the computer's I/O device from the Sound control panel and not the Monitors and Sound control panel. With system 8.0 and up the sound control panel can be found in the Apple Extras folder rather than the Control Panels folder.

Software Installation (ASIO Drivers)

1. Place PCI24 ASIO Extension in the Extensions folder, which is in the Systems Folder. Any other PCI24 drivers or extensions should be disabled using the Extensions Manager (or by manually removing them).
2. Place ASIO Lucid PCI24 in the ASIO Drivers folder, which is usually located in your software's application folder.
3. Shut Down and Reboot the Mac.
4. Refer to your digital audio software User's Guide to set the preferences and select the Lucid PCI24 audio card as the sound in/out device.

Sample Rates

The PCI24 supports a range of input and output sample rates. The PCI24's input will lock to AES/EBU or S/PDIF rates of 48kHz, 44.1kHz, or 32kHz. The output rate can be selected via the Sound Out control panel. Output rates are the same as input: 48kHz, 44.1 kHz or 32kHz.

Back up Your Files

Whenever you are operating in the demanding music recording software environment, *please* back up material a minimum of once a day if not *after each session*.

Setup Notes

Symptom: Computer doesn't startup, monitor remains blank.

Probable Cause: PCI24 incorrectly installed or faulty.

Solution: Reinstall and try again.

Symptom: Computer starts, but freezes midway through startup process.

Probable Cause: PCI24 incorrectly installed or faulty.

Solution: Reinstall and try again.

What to do if Your Application Freezes or Crashes During a Recording

It is not uncommon, in the demanding environment of music recording software, for "freezes" to occur during recording. Often the simple solution is to reboot, and continue. However, this "simple" solution may not be enough. We have encountered customers whose hard drives were corrupted by audio that was continuing to be written, even after the program froze up. The simple reboot proved not to be enough, and material was permanently lost.

Here is the procedure that we recommend in order to avoid this situation:

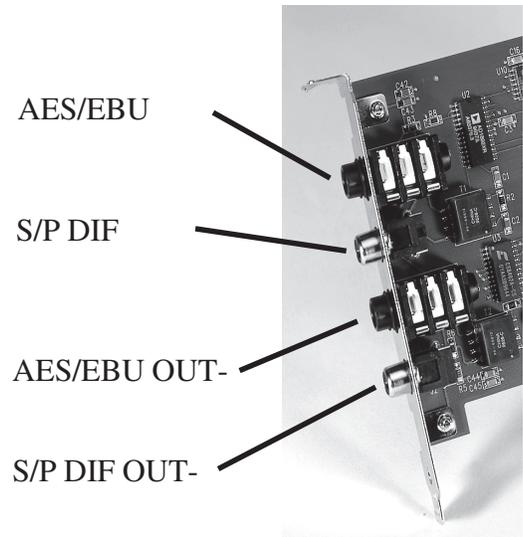
If the program crashes, IMMEDIATELY cold reboot and run Disk Doctor (Norton). Otherwise, the next time you use Cubase, you may destroy your system files.

If you still have problems with audio playback/recording, contact Lucid support.

Hardware Installation

The PCI24 has been designed to the physical specifications for short PCI cards and should be physically compatible with most brands of PCI bus computers. Start by powering down the computer and removing the cover to expose the motherboard and PCI slots. (This is often easier said than done. Depending on the computer, you may have our sympathy!) Insert the PCI24 into any vacant slot and screw the PCI24's mounting bracket to the computer's card bracket rail. Replace the computer's cover panel and power up.

As viewed from the top of the mounting bracket (the end that is farthest from the motherboard) the connectors are from top to bottom: AES/EBU input, S/PDIF input, AES/EBU output, and S/PDIF output. Connect either (**but not both**) of the card's input connectors to the digital output of a DAT machine, CD player or A/D converter. Connect either (**but not both**) of the card's outputs to a DAT machine or D/A converter.



Software Installation Notes

New Install:

1. The card appears to Windows as a "PCI Multimedia device". Let Windows find it, and tell it to look into the appropriate directory to find the lucid.inf and driver files.
2. Alternatively, use "Add New Hardware" to locate the device.

Older driver already installed:

1. In the System Devices control panel, select the "Lucid PCI24" and hit "Remove".
2. Shutdown, then startup your computer.
3. Let Windows detect the hardware, and tell it to look into the appropriate directory to find the lucid.inf and driver files.
4. Alternatively, use "Add New Hardware" to locate the device.

Operation

1. Select the device as the default input and output device in the Multimedia>Audio control panel.
2. To switch on loopback/playthru/monitoring mode, for use when recording only, or to change the output format, go into the System control panel, select Device Manager, select Sound, video and games controllers, then highlight "Lucid PCI24 Digital Audio I/O card", and hit properties.

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3. Go into the Settings panel, select the desired output format, and whether or not you want to enable audio loopback. Then hit “OK”.

Warning: In audio loopback mode, you cannot play anything else out of the PCI24.

4. Refer to your digital audio software user’s guide to begin using your new Lucid PCI24 digital audio card.

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The PCI24 supports a range of input and output sample rates. The PCI24’s input will lock to AES/EBU or S/PDIF rates of 48kHz, 44.1kHz, or 32kHz. The output rate can be selected via the Sound Out control panel. Output rates are the same as input: 48kHz, 44.1 kHz or 32kHz.

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Setup Notes

Symptom: Computer doesn’t startup, monitor remains blank.

Probable Cause: PCI24 incorrectly installed or faulty.

Solution: Reinstall and try again.

Symptom: Computer starts, but freezes midway through startup process.

Probable Cause: PCI24 incorrectly installed or faulty.

Solution: Reinstall and try again.

Symptom: PCI24 appears to be installed, but no sound can be played or recorded (counter is frozen).

Probable Cause: IRQ9 conflict.

Solution: Check assigned resources in the System Control Panel (under Device Manager, click on “Computer”, and view resources by IRQ). If IRQ9 is allocated to the PCI24, you will need to reserve IRQ9 (click on “Reserve Resources”, then hit “Add” and enter a value of “09”). Shutdown and restart the computer, then check another IRQ has been assigned to the PCI24. Audio I/O should now function correctly.

What to do if Your Application Freezes or Crashes During a Recording

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If the program crashes, IMMEDIATELY cold reboot and run Disk Doctor (Norton). Otherwise, the next time you use Cubase, you may destroy your system files.

If you still have problems with audio playback/recording, contact Lucid support.

SERVICE

How to contact Lucid Tech Support

US callers should phone:	(425) 778-7728
International callers should phone:	(01) 425-778-7728
Phone hours:	8:00am to 4:30pm, Pacific Time
Fax:	(425) 778-7727
E-mail:	tech@lucidtechaudio.com
Web site:	www.lucidaudio.com

Declaration of Conformity

We, **Lucid**, 6408 216th St. SW, Mountlake Terrace, WA 98043 USA,
declare under our sole responsibility that the product:

PCI24 Digital I/O Card

to which this declaration relates, is in conformity with the following standards:

EN 50081-1
Electromagnetic compatibility - Generic emission standard
Part 1: Residential, commercial, and light industry.

The technical construction file is maintained at:

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Mountlake Terrace, WA, 98043
USA

The authorized representative located within the European Community is:

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Date of issue: 1 May 1997

Place of issue: Lynnwood, Washington, USA

Authorized signature:



Dane Butcher, President, Lucid

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