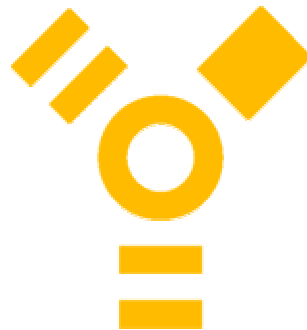


Digital X Bus FireWire Card



User Guide

Version 1.00
August 4th, 2005

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Introduction

Thank you for purchasing the Digital X Bus FireWire Card! The following is a brief tutorial that will walk you through installing the card, connecting it to your computer, and sending audio streams back and forth through FireWire.

The purpose of this User Guide is to illustrate the steps and procedures required to use the FireWire Card with your Mac or PC. We recommend referring to the Digital X Bus Owner's Manual for general information on using the I/O Option Cards with the mixer. You can download the Owner's Manual from the following link:

http://www.mackie.com/products/digitalxbus/pdfs/X200_OM_Ver1_0_4.pdf

Hardware Installation

By now you should have read the *ReadMe.txt* file that is on this CD to learn how to install the FireWire Card into your Digital X Bus. This process is done exactly the same way as any other Digital X Bus option card. However, because the FireWire Card supports up to twenty-four inputs and outputs, it should be installed into the first Slot of either Buckets "A", "B", or "C" as designated by the labels above the I/O Card Cage. You can insert it into any mixer Slot if you use it as an eight-channel input/output card only.

For Version 1.0, we strongly recommend that you install the FireWire Card into mixer Slot #1 ...that is, the card slot all the way to the right-hand side of the rear panel.

Once your FireWire Card is installed, boot up your console and verify that you can see the FireWire Card in the I/O Configuration Panel (Windows>I/O Configuration).

Minimum System Requirements

The following system requirements are needed to support the standard 8x8 Host Mode configuration of the FireWire Card at 44.1 kHz and 48 kHz sampling rates. System resource requirements may vary with higher sampling rates and different Host Modes.

Mac:

- G4-class CPU or faster
- 256MB RAM (512MB+ recommended)
- OS 10.3.5 or higher
- OS X Core Audio supported application(s)

PC:

- Windows XP
- 800MHz CPU or faster
- 256MB RAM (512MB+ recommended)
- IEEE 1394 compatible interface
- ASIO or WDM supported application(s)

Mac OS X Users (10.3.5 or higher)

This section is intended for Mac OS X operating system users only. All Windows XP users should refer to the [Windows XP Users](#) section on page 5 of this Guide.

I. Connecting to OS X

The good news for Mac OS X users is that the Digital X Bus FireWire Card is already an OS X Core Audio class compliant device. That means all you need to do is connect the FireWire Card to your Mac using a standard FireWire cable and launch the Audio MIDI Setup Window (Applications>Utilities>Audio MIDI Setup) to verify it is connected and running. You do not need to install any device drivers.

Within about five seconds of connecting the FireWire Card to the Mac, the FireWire Card appears as “**DXBFire (0000)**” in the device pull-down menus of the Audio Devices panel. To view the current DXBFire operating mode and available inputs and outputs, select **DXBFire (0000)** from the `Properties For` pull-down menu. To make DXBFire the default driver for your Core Audio applications, select **DXBFire (0000)** from both the `Default Input` and `Default Output` pull-down menus.

Note: Sometimes the FireWire Card will register in the Audio MIDI Setup Window as “**Unknown Device.**” Simply re-select **Unknown Device** in the `Default Input` menu and it will change to **DXBFire (0000)**.

II. Streaming Audio

Each Digital X Bus FireWire Card input and output that appears in the Audio MIDI Setup Window becomes immediately available as a patch point for your Core Audio supported applications. To stream audio between the Digital X Bus and your Core Audio supported applications, select **DXBFire (0000)** as the master driver in the application’s device or driver setup window. Then patch the individual DXBFire input and output channels to your application’s tracks, busses, mixer channels and/or I/O channels.

Consult your application’s product documentation for specific information on configuring Core Audio devices.

III. Terminating / Resetting OS X Connection

Follow these steps either when terminating the connection between OS X and the FireWire Card, or when changing the Host Mode or Clock Settings of the Digital X Bus. Failure to follow these procedures may result in improper operation of the FireWire interface:

- Quit all OS X Core Audio applications.
- Remove the FireWire Cable.
- Allow fifteen seconds to pass for OS X Core Audio and the Digital X Bus FireWire Card to reset.

- Make any needed adjustments to the Digital X Bus (Host Mode, Sample Rate, Sample Clock, etc.).
- Wait another fifteen seconds for the Digital X Bus to re-configure its clock and internal settings.
- Reconnect the FireWire Cable and wait until OS X Core Audio sees **DXBFire (0000)** as an available device.
- Re-launch your OS X Core Audio supported application and get back to work.

Windows XP Users

The Digital X Bus FireWire Card is supported by any ASIO or WDM compatible audio application that runs on the Windows XP operating system. You must install ASIO/WDM drivers from the enclosed CD in order to use the FireWire Card with your Windows XP audio applications.

I. Driver & Software Installation

- Insert the enclosed CD into your computer's CD or drive.
- Open the directory of the CD on your desktop.
- Double-click on the "Windows XP Drivers" folder.
- Double-click on the *Setup.exe* file.
- Click <Next> at all prompts.
- Click <Continue Anyway> when prompted by the Windows Logo Testing screen.
- When prompted, connect the Digital X Bus FireWire Card to your computer using a standard 6-pin FireWire (IEEE 1394) cable, then click <Next>.
 - Note: Some laptop PCs use a "mini" 4-pin FireWire jack (commonly used for DV camcorders) that is smaller than the standard 6-pin jacks on the FireWire Card. With such laptops you must use a 4-pin to 6-pin FireWire cable, commonly available at most computer retailers.
- Windows will automatically load the drivers and confirm the actions with pop-up balloons from the System Tray.
- When you see "Your new hardware is installed and ready to use", click the <X> to close the balloon.

II. The Digital X Bus Control Panel

Once you have installed the Digital X Bus Windows XP FireWire drivers, you can launch the Digital X Bus Control Panel by going to:

Start>All Programs>Sanewave>Digital X Bus Firewire Control from your desktop. This will open the interface that communicates with the FireWire Card, as shown at the top of the following page:



The following displays and controls are included in the Control Panel GUI:

ASIO Buffer Depth → Allows control over the ASIO driver buffer size, which directly controls the round-trip latency of the ASIO PC FireWire interface. Set this control to the smallest value possible without causing audio artifacts or disk buffer underruns in your ASIO-supported application.

WDM Buffer Depth → Allows control over the WDM driver buffer size, which directly controls the round-trip latency of the WDM PC FireWire interface. Set this control to the smallest value possible without causing audio artifacts or disk buffer underruns in your WDM-supported application.

Device Name → Displays the firmware version of the FireWire Card.

Serial Number → Displays the serial number of the FireWire Card. This is currently not used.

Streaming State → Displays the active connection state between your PC and the FireWire Card.

Sample Rate → Displays the current Sample Rate of the Digital X Bus; this number should always match the Sample Rate setting in the Digital X Bus Clock dialog.

ASIO Drop-outs → Indicates if the driver has detected any data drop outs in the communication between your PC and the FireWire Card. If field displays a non-zero value that continues to increase several seconds after the connection registers in the

Control Panel, then disconnect the FireWire card from your PC and reset the connection. Remember to use the Windows “Safely Remove Hardware” method for disconnecting the FireWire Card from your PC (see page 9 of this Guide).

Enable WDM → Enables the WDM driver (Windows Driver Model) for any WDM-supported audio applications. ASIO is always active, so there is no corresponding ASIO checkbox.

III. Control Panel Menus

In the toolbar of the Control Panel you will notice a **Tools** menu and a **Help** Menu, as shown below:



The following selections are available under the **Tools** menu:

Update Firmware on Card → Updates the FireWire Card firmware through the FireWire connection.

Note: As of August 2005 the current version of firmware is v.1.00a1. Please check the Mackie website for periodic firmware updates and instructions on how to update the FireWire Card firmware: <http://www.mackie.com/products/digitalxbus/software.html>

Reset All Cards → Resets the connection between the FireWire Card and your PC. This is a useful tool if the current connection is experiencing dropouts, errors, or any

other anomalies. When you select <Reset All Cards>, the PC disconnects from, then automatically re-connects to the Digital X Bus FireWire Card.

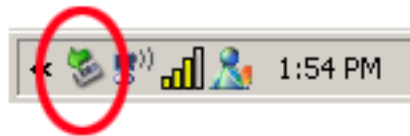
The following selection is available under the Help menu:

About Digital X Bus Firewire → Displays the version number of the Digital X Bus Control Panel application.

IV. Windows XP Connection Status

Windows XP uses the Safely Remove Hardware dialog in the System Tray to display active connections between your PC and peripheral devices. The System Tray can be found in the lower right hand corner of the Taskbar.

The image below shows the Safely Remove Hardware icon in the System Tray:



When this icon appears in the System Tray after connecting the FireWire Card to your PC, Windows has successfully “seen” the FireWire Card and is actively communicating with it. Even though the Digital X Bus Control Panel also displays this information, you can also use this icon to quickly determine connection status.

V. Streaming Audio

Once the FireWire Card is connected to your PC and an active connection is displayed in the Digital X Bus Control Panel (or System Tray), the Digital X Bus FireWire inputs and outputs become immediately available as patch points for your ASIO- and WDM-supported applications. To stream audio between the Digital X Bus and your ASIO-supported applications, select **ASIO DXBFire** as the master driver in the application’s device or driver setup window. Then patch the individual **ASIO DXBFire** input and output channels to your application’s tracks, busses, mixer channels and/or I/O channels.

To stream audio between the Digital X Bus and your WDM-supported applications, first select the “Enable WDM” checkbox in the Digital X Bus Control Panel. Then select the desired **DXBFire Stereo In** and **DXBFire Stereo Out** channels from the WDM device list in the application’s device or input/output setup window. In WDM applications the Digital X Bus inputs and outputs appear only as numbered stereo pairs (e.g. **DXBFire Stereo In 1** represents FireWire Channels 1&2, etc.), and cannot be accessed or assigned as individual channels.

Consult your application’s product documentation for specific information on configuring ASIO and WDM devices.

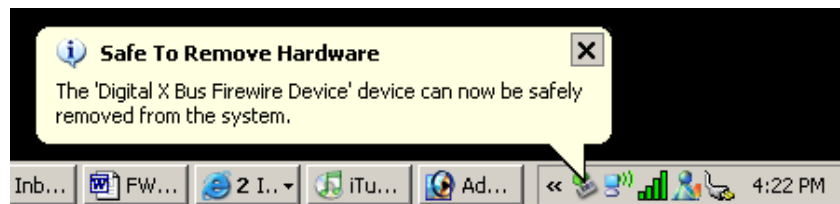
VI. Terminating / Resetting Windows XP Connection

Follow these steps either when terminating the connection between Windows and your FireWire Card, or when changing the Host Mode or Clock Settings of the Digital X Bus. Failure to follow these procedures may result in improper operation of the FireWire interface:

- Close all ASIO and WDM audio applications.
- Click once on the Safely Remove Hardware icon in the System Tray to reveal the two options shown below:



- Select <Safely Remove Digital X Bus FireWire Device>.
- After a few seconds, you will see a pop-up balloon over the Safely Remove Hardware icon informing you that it is safe to remove the FireWire cable:



- Click on the <x> to close the balloon.
- Remove the FireWire Cable.
- Make any needed adjustments to the Digital X Bus (Host Mode, Sample Rate, Sample Clock, ASIO/WDM buffer depth, etc.)
- Allow fifteen seconds to pass for the Digital X Bus to re-configure itself.
- Reconnect the FireWire Cable and wait another ten or fifteen seconds for Windows to recognize the FireWire Card.
- Re-launch your ASIO/WDM application and get back to work.

Using FireWire in the Digital X Bus

In general, the FireWire Card operates the same way as every other Digital X Bus I/O Option Card. The inputs can be assigned to channels, which can then be routed to other outputs, busses, etc. Additionally, audio signals can be patched to any of the FireWire outputs to go to your Mac or PC.

Since the FireWire Card is can handle more inputs and outputs than all other I/O Option Cards, you will need to understand the following sections to know how to use these expanded capabilities.

I. Setting the Host Mode

The Fire Wire Card supports 8x8, 16x16, and 24x24 (input x output) operation at 44.1 and 48 kHz, and 8x8 at 96kHz. Version 1.0 of the FireWire Card does not support operation at 176.4 kHz or 192 kHz sampling rates. The Host Mode setting, which controls this number of I/O channels, is accessed from the Host Mode pull-down menu in the FireWire Card I/O Panel (Windows>IO Configuration>FireWire Card.) This menu will display only the Host Mode options available for the Sample Rate you are currently using. The default Host Mode setting is 8x8.

When the Host Mode is set to 16x16 or 24x24, the inputs from card(s) immediately adjacent to the FireWire card (in the same Bucket) are disabled. For example, selecting 16x16 Host Mode disables the inputs of card in the second slot of that bucket. Likewise, selecting 24x24 Host Mode disables the inputs of the cards in both the second and third slots of that bucket. This occurs because the Digital X Bus has only 24 input and output paths available to each Bucket, so increasing the channel inputs on the FireWire cards must be done at the expense of disabling those channel inputs from the adjacent cards.

When you adjust the Host Mode, additional output patch points show up in the FireWire Card I/O Panel. Also, the additional inputs and outputs will be reflected in the various input and output assignment menus throughout the console, so your audio source(s) and destination(s) are consistent with the other UI elements of the Digital X Bus.

II. Adjusting Sample Clock or Host Mode Settings

Before changing the FireWire Host Mode or any of the Digital X Bus Clock Settings (such as Sample Rate, Sample Clock Source, etc.) you MUST first terminate the connection between the FireWire card and your computer. This is because the FireWire Card needs to be reset to accommodate these changes, and resetting the card with an active FireWire connection may cause interface lockups or communication problems when the card comes out of reset.

You'll need to do the following:

- Close all Mac or PC applications using the Digital X Bus FireWire driver.
- Terminate the FireWire connection (as explained in previous sections) between your Mac/PC and the FireWire Card.
- Remove the FireWire Cable.
- Make any necessary adjustments to the FireWire Host Mode and/or Clock Settings on the Digital X Bus.
- Remove the FireWire Cable.

- Make any needed adjustments to the Digital X Bus (Host Mode, Sample Rate, Sample Clock, ASIO/WDM buffer depth, etc.)
- Allow fifteen seconds to pass for the Digital X Bus to re-configure itself.
- Reconnect the FireWire Cable and wait another ten or fifteen seconds for Windows to recognize the FireWire Card.
- Re-launch your application and get back to work.

When you choose to change any of these settings with a FireWire card installed, you will notice a “Reconnect” message pop up reminding you to disconnect the card from your Mac or PC.

Note: The Digital X Bus FireWire Card has no control over how third party audio applications handle changes to the clock settings and/or hardware inputs/outputs. Please consult your audio application’s product documentation for more information.

III. Patching Inputs/Outputs

Input/Output patching is done exactly the same way as it is with all other I/O Option Cards. FireWire Inputs and outputs have the designation of “FW” next to the numbered input or output they represent.

When the FireWire Host Mode is set to a higher channel count than 8x8, then the patch points for the additional outputs are accessed from a the same menu as the first eight channels. For example, if the FireWire Card is inserted into Slot #1 (A1) and the Host Mode is set to 24x24, then all the output patch points for the FireWire Card can be found under the “Card 1” heading in the output routing menus.

FireWire inputs and output can be used for the exact same purposes as all other patch points, including monitoring, floating inserts, etc.

IV. Multi-Card Support

Version 1.0 of the FireWire Card does not support multiple devices on the same FireWire communication bus (i.e., you cannot “daisy-chain” multiple Digital X Bus FireWire Cards to get more channels to a single Mac or PC FireWire port.)

However, you can have more than one FireWire Card installed in your Digital X Bus, and interface each one to a different computer at the same time. For example, you could have one FireWire Card installed in Slot #4 (B1) for use as a 24-channel interface to your G5, and have a second FireWire Card installed in Slot #7 (C1) as an 8-channel interface to your laptop PC.

Troubleshooting

The information in this section offers tips and advice on resolving communication issues between your computer and the Digital X Bus FireWire Card. Please see the Release Notes

(included on this CD) for information on known issues in the current release of Digital X Bus software and FireWire Card firmware and drivers.

I. Resetting the Connection

If you cannot get the Digital X Bus FireWire card to communicate with your computer after plugging in the FireWire cable, you may simply need to reset the connection. This is done in the exact same manner as changing the Host Mode or the Sample Clock settings, as explained on page 10 of this Guide. Repeat this process several times if necessary.

II. Rebooting

If you are still unsuccessful at establishing communication after several attempts at resetting the FireWire connection, then it is possible that the FireWire interface on either the Digital X Bus or host computer is frozen. When this happens, simply remove the FireWire cable and power cycle both the Digital X Bus and your computer. Reconnect the FireWire cable in normal fashion after both are back up and running.

III. Audio MIDI Setup Panel (OS X users only)

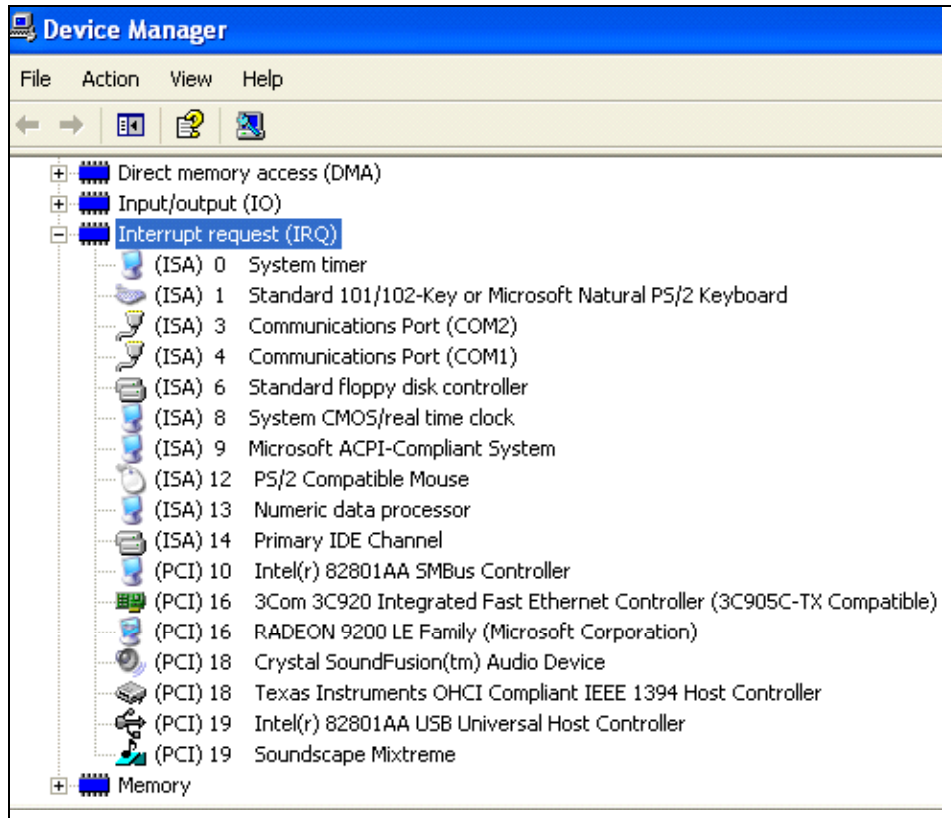
When making a connection between a Mac and your Digital X Bus FireWire Card for the first time, it is helpful to have the Audio MIDI Setup Device Panel (Applications>Utilities>Audio MIDI Setup) displayed on your desktop when you make the connection. This window will show you within several seconds whether or not the FireWire Card is communicating correctly with your Mac.

This could save you valuable troubleshooting time when the **DXBFire (0000)** driver is not visible in your Core Audio application's device driver setup dialog. The **DXBFire (0000)** driver must be listed in the Audio MIDI Setup window before any OS X Core Audio application can use it.

IV. IRQ Stacking (PC users only)

IRQ stacking occurs when two or more devices are assigned to one IRQ. In some cases, IRQ stacking may not affect performance at all. Chances are, however, that if you are reading this section, you may have encountered this conflict.

Ideally, the PC FireWire interface hardware should be assigned to its own, dedicated IRQ, and should not share its IRQ with any other device. To check for IRQ conflicts, go to the Windows XP Device Manager by clicking Start> Control Panel> System> Device Manager> View Resources By Connection, then select <IRQ> from the system tree shown below.



Notice that the 1394 Controller (labeled “Texas Instruments OHCI Compliant IEEE 1394 Host Controller”) is sharing IRQ 18 with another audio device labeled “Crystal SoundFusion™ Audio Device.” Hence, both these devices are “stacked” on the same IRQ setting (18). Often computers have multiple USB controllers, one of which may share an IRQ with the computer’s FireWire hardware. IRQ stacking problems like these can cause the FireWire hardware on your PC to malfunction, disrupting communication between FireWire Card in the Digital X Bus.

For situations such as this, we recommend one of the following steps to correct the problem:

Disable Device

The first course of action when attempting to resolve IRQ conflicts is to use the device Disable/Enable function within Device Manager to turn off the (potentially) offending device.

1. In Device Manager identify the device that is sharing an IRQ number with the FireWire controller device.
2. Right-click that FireWire controller device and select <Properties> from the pull-down menu.
3. Select <Resources> and take note of its IRQ Setting.

4. Disable all other USB controllers that are not in use. You do not need to remove them; simply right-click on the icon and select <Disable>. You may need to reboot your computer before these changes take effect.

NOTE: Since Devices in the Device Manager can be re-enabled at any time, you are not doing any long-term damage to your computer. Rather, you are eliminating potential conflicts between the controller and the device so your PC can use its FireWire hardware correctly.

If this section just does not make any sense to you, please contact us directly at the Technical Support phone numbers listed below and we can help you work it out.

Moving the FireWire PCI Card

Note: This option is only pertinent to users of PCI-based FireWire Cards.

If an IRQ stacking issue cannot be resolved by disabling devices in the Device Manager, try physically moving your PCI FireWire card to a different PCI slot in your computer until it appears with a unique IRQ setting in the Device Manager.

It may also help to remove other PCI cards that are not essential to your workflow. This can greatly simplify the controller-to-device relationship in your operating system and could improve the connection between your PC and the Digital X Bus FireWire Card.

V. Technical Support

When all else fails, you are welcome to contact our Technical Support Team at 1-800-258-6883 (toll free in the USA and Canada) or +1 425.487.4333 from anywhere in the world. We will be glad to assist you and make sure your FireWire Card is functioning properly.

For European users, you can also contact our Loud Technologies Europe office at +44 1268 570 808.

We hope you enjoy using your new FireWire Card!