

<Product>

**USB/1394
Combo Controller**

User's Manual

Revision: 1.0

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Preliminary

USB/1394 Combo Controller

1. Introduction

The <Product> USB/1394 Combo Controller is a multi-function PCI controller board that provides two USB ports and three 1394 ports but takes up only a single PCI slot. It uses the standard drivers built into Windows 98; no additional drivers are needed.

1.1. Features

The following USB features are supported by the Combo Controller.

- Open Host Controller Interface (OHCI)
- USB 1.1 compliant
- Two USB ports (both externally accessible)
- Total available USB bandwidth of 12Mb/s.

The Combo Controller offers the following 1394 features.

- 1394 Host Controller
- IEEE1394-1995 compliant
- Three 1394 ports (two externally accessible, one accessible internal to system)
- Total available 1394 bandwidth of 400Mb/s.

In addition, the Combo Controller utilizes a high-performance PCI bridge with the following features.

- Handles both USB and 1394 activity using only a single PCI interrupt
- Incorporates buffers to improve throughput
- Offloads activity from the main system bus by allowing concurrent operation.

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1.2. System Requirements

The <Product> USB/1394 Combo Controller is designed for IBM PC compatible computers using the Windows 98 operating system. The following list details the minimum requirements for a system using this card.

Note: This device is designed specifically to operate under Windows 98 and (future) Windows 2000; it cannot be made to work under Windows 95 or Windows NT4.

- IBM-compatible PC with at least one available PCI slot
- Intel Pentium, Pentium II, or Pentium III CPU, or AMD K6, K6-2, K6-3, or K7 CPU
- At least 32MB of DRAM
- IRQ Steering capability (see below)
- Windows 98 operating system

IRQ Steering. The Combo Controller board operation requires that Windows be able to assign the PCI interrupt. This is known as “IRQ Steering”. The Windows IRQ Steering feature **must** be enabled in order for the Combo Controller card devices to be recognized. If the 1394 Controller and USB Controller are not properly recognized by Windows, it is likely that IRQ Steering has not been enabled. See the Troubleshooting section for additional information.

1.3. Quick Installation

Installation of the Combo Controller board is straightforward.

- Power down your computer and **remove the power cord**.
- Remove the computer cover.
- Locate an empty PCI expansion slot (short white connector as opposed to the long brown connector for ISA slots).
- Remove the screw holding on the dust cover plate; you can discard the plate but save the screw.

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- Plug in the Combo Controller board and secure it with the screw.
- Replace the computer cover and reconnect the power cord.
- Insert your Windows 98 CD into the CD ROM drive and power up the system.

Windows will detect the Plug and Play devices in the following sequence:

- PCI CardBus Bridge: OPTi 82C814 Docking Controller
Windows will find all the drivers on its own for this device.
- PCI Universal Serial Bus: OPTi 82C861 PCI to USB Open Host Controller
Windows will ask to search for drivers on this device; accept all the default selections until installation is finished. When Windows asks if you want to restart your computer, click **No**.
- PCI FireWire (IEEE 1394): Texas Instruments LYNX IEEE 1394 Host Controller
Windows will find all the drivers on its own for this device.

At this point, you will need to shut down your computer and restart it. All 1394 and USB ports should become operational.

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1.4. Troubleshooting

If you are having problems making the board function properly, and you are sure that your system is using Windows 98, the problem most likely involves IRQ Steering.

IRQ Steering. Proper operation of the Combo Controller board requires that Windows be able to directly assign the PCI interrupt for all system devices. This is known as “IRQ Steering”. The Windows IRQ Steering feature must be specifically enabled on some systems, especially older ones. Here is the procedure for enabling IRQ Steering.

1. On the Windows **Start** menu, select **Settings**, then **Control Panel**.
2. From the Control Panel double-click on **System**.
3. On the System Properties box that comes up, select the **Device Manager** tab.
4. Click the button that says **View Devices by Connection**.
5. On the list of devices, locate the **Plug and Play BIOS** entry, and

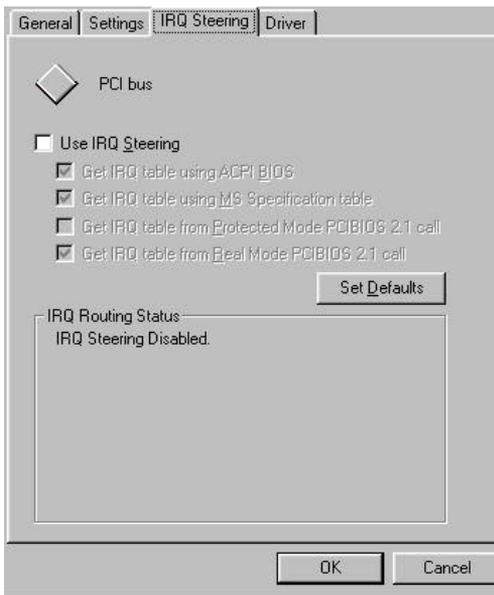


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click on its “+” symbol to open the list (there may be a “-“ next to the entry, which means that it is open already).

6. Locate the **PCI Bus** entry, and use the **right** mouse button to click on it, then select the **Properties** entry.
7. On the PCI bus Properties box that comes up, select the **IRQ Steering** tab.
8. If not already checked, click on the **Use IRQ Steering** checkbox.



9. There are four entries below the Use IRQ Steering checkbox. Make sure that all boxes except the third one (“Get IRQ table from Protected Mode PCIBIOS 2.1 call”) have checkmarks in them.
10. Click **OK** on this box, and again on **OK** for the main System Properties box.
11. Windows will ask to restart. Accept this and wait until the system restarts (or manually restart it if it fails to restart on its own).

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12. Start again from Step 1. This time, all the boxes should have remained checked as you originally set them. If not, your system BIOS does not allow IRQ Steering. Contact your system vendor for an updated BIOS.