

OrangeLink[®]+

USB 2.0 / FireWire[®] PCI

Operators Manual

USB 2.0 / FireWire PCI Card

For Macintosh and PC

About this manual

The information in this manual is subject to change without notice. We welcome your comments on any area of Orange Micro products or services. Please send your comments to:

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Package Contents

The OrangeLink OrangeLink+ USB 2.0 / FireWire PCI card package contains the following items:

- FireWire/USB2 PCI card
- Manual and Software CD-ROM
- One 6 foot (1.82 meter) 4-pin to 6-pin FireWire cable to connect the OrangeLink card to a digital camcorder or other FireWire/IEEE 1394 devices that do not require power from the FireWire bus.
- Quickstart card



Software Included

- Apple QuickTime for Macintosh
- BTV Pro for the Macintosh
- Apple QuickTime for Windows
- Ulead VideoStudio for Windows

System Requirements

Hardware

- Any desktop computer with an available 7" or 12" PCI slot
- 64 MB System RAM
- 200 MB free hard drive space
- CD-ROM drive (for software installation)

Operating System

- **Windows 98 SE, Me, 2000 or XP** come with all drivers necessary to support **USB2/FireWire PCI card** for FireWire and USB 1.1. The USB 2.0 Hi-Speed drivers are provided by Orange Micro.
- **Mac OS X:** Mac OS 10.1 or newer is required to work properly with the **USB2/FireWire PCI card**. Mac OS 10.1 comes with all drivers necessary to support the **USB2/FireWire PCI card for FireWire and USB 1.1**. The USB 2.0 Hi-Speed drivers are provided by Orange Micro.
- **Mac OS 8.6:** The **USB2/FireWire PCI card** will operate as a fully compliant 1394 OHCI host controller under Mac OS 8.6 after installing Apple FireWire Software v2.3.3. The **USB2/FireWire PCI card** will operate as a fully compliant USB 1.1 host controller under Mac OS 8.6 and Mac OS 9.0.x after installing Apple USB Adapter Card Support.
- **Mac OS 9.0.x:** The **USB2/FireWire PCI card** will operate as a fully compliant 1394 OHCI host controller under Mac OS 9.0.x after installing Apple FireWire Software v2.5 or newer. The **USB2/FireWire PCI card** will operate as a fully compliant USB 1.1 host controller under Mac OS 8.6 and Mac OS 9.0.x after installing Apple USB Adapter Card Support.
- **Mac OS 9.x:** Mac OS 9.1 or newer pre-install all drivers necessary to the support **USB2/FireWire PCI card for FireWire and USB 1.1 support**.

Power Consumption

- Depending upon the number of devices connected, the **USB2/FireWire PCI card** can consume up to 9 watts of power from the internal power supply

Minimum System Requirements for DV editing (Mac)

- Power Macintosh G3 233 MHz or faster
- Hard drive with sustained write speed of 7.5 MB/s
- Total System RAM of 80MB or more
- Mac OS 9.04 or later
- QuickTime 4.1.2 or later
- Apple FireWire 2.4 or later

Minimum System Requirements for DV editing (PC)

- Intel Pentium III or compatible 500Mhz or faster
- Dedicated large capacity 7200 RPM UDMA 66 IDE or SCSI hard disk or disk array
- 128MB or more of system RAM
- Microsoft DirectX compatible video display adapter
- Sound card capable of 16-bit stereo or higher

Chapter 1

Introduction

What is OrangeLink?

The OrangeLink FireWire® host adapters add FireWire support to PCI or CardBus-based Mac's or PC's. It is ideal for older Power Macintosh desktop computers or PowerBook G3 Series as well as PCs that need the advanced technology offered by FireWire® (also known as IEEE-1394 or iLink).

What is FireWire?

FireWire supports the IEEE-1394 High Performance Serial Bus standard. FireWire high-speed serial I/O technology is particularly great for use with multimedia peripherals such as digital video (DV) camcorders and tape decks. The OrangeLink supports other FireWire peripherals such as disk drives, ultra high-resolution scanners, printers and digital still cameras.

OrangeLink Features

The OrangeLink products function at the maximum IEEE-1394 rated speed of 400 megabits/second (50 megabytes/sec). The OrangeLink allows up to 63 devices to be connected in a chain through its standard 6 pin ports. The OrangeLink can be used with third party video editing software to capture and export full size, full motion DV video at 720 by 480 pixels at 30 frames per second.

The Benefits of OrangeLink FireWire

The major benefit for OrangeLink FireWire technology is its ease of use. Imagine automatic configuration, no device IDs or terminators, simple to use cables, and of course, "hot plug" connectivity. Consider a FireWire disk drive for example. You can disconnect it from one computer and connect it to another; no need to power down or restart. You can move whole databases around your workgroup "live"! Or, when the office day is done, pop it into your shirt pocket and hot plug it to your home computer.

The fastest growing use for FireWire consists of digital video (DV) camcorders. The digital format of these devices provides precise audio and video capabilities in an original digital format that is more directly compatible with a computer than the current analog video cameras. This means that the OrangeLink is ideal for computer based home video editing as well as for more professional applications, e.g. Adobe® Premiere® and Apple Final Cut Pro™.

What is USB 2.0 Hi-Speed?

USB 2.0 Hi-Speed host adapters add USB 2.0 Hi-Speed support to PCI or CardBus-based G3 Mac's or PC's. They are ideal for desktop computers or laptops that need the advanced technology offered by USB 2.0 Hi-Speed. USB stands for "Universal Serial Bus." It allows you to attach multiple USB peripheral devices simultaneously with automatic device detection and installation. USB 2.0 Hi-Speed has a higher bandwidth and is ideal for high-speed devices such as the next generation scanners, printers and fast storage devices.

USB 2.0 Hi-Speed Features

USB 2.0 Hi-Speed has a dramatic performance increase over the standard USB. OrangeUSB 2.0 Hi-Speed products function at a rated speed of 480 megabits/second. That's 40 times faster than older USB 1.1 standards. The OrangeUSB 2.0 Hi-Speed allows up to 127 devices to be connected. USB 2.0 Hi-Speed is also "backward compatible" which means the user can plug in their USB 1.1 and USB 2.0 Hi-Speed devices simultaneously! High transmission speed is negotiated on a device-by-device basis. If the higher speed is not supported by a peripheral, the link operates at a lower speed of 12Mb/s or 1.5Mb/s as determined by the peripheral.

USB 2.0 Hi-Speed Ready

The OrangeLink+ FireWire/USB 2.0 Hi-Speed card will operate out of the box as a fully compliant USB 1.1 host controller under Mac OS 8.6- 9.x, Mac OS X, Windows 98 Second Edition, Windows Me, Windows 2000 and Windows XP. Once OrangeUSB 2.0 drivers are installed, users can connect USB 1.1 and USB 2.0 Hi-Speed peripherals to a USB 2.0 Hi-Speed port and get a data transfer rate of up to 480 Mb/s (Hi-Speed). Current USB 1.1 peripherals will continue to have a data transfer rate of 12Mb/s (Full-Speed) and 1.5Mb/s (Low-Speed).

Chapter 2

How to install an OrangeLink in your Macintosh

In order to ensure proper operation of your OrangeLink product, please follow the instructions below in the order they appear. These instructions document the installation process for all Orange Micro OrangeLink products inside PCI-based Power Macintosh systems.

Step 1 – Installing your OrangeLink hardware



USB 2.0/FireWire PCI Card

NOTES: Refer to your computer's manual for instructions on how to open your computer and install a PCI card.

The USB2/FireWire PCI card gets the power it supplies to the FireWire bus from the PCI slot.

IMPORTANT: Before Handling the PCI card or touching anything in the computer, ground yourself by touching the power supply for a couple of seconds. Failure to do this may damage the card and/or your computer.

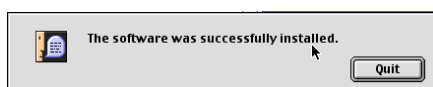
- With your computer off, open your computer case.
- Locate an open PCI slot. If there is a faceplate covering the opening to the back panel, remove it.
- Locate the USB2/FireWire PCI card and insert it into the free slot. Once inserted, screw the card in securely.
- Connect your internal devices as needed.
- Close computer.

Step 2 – Installing OrangeLink Drivers in the Mac OS

- Insert the OrangeLink FireWire Manual and Software CD. The window pictured on the right should pop up on your Macintosh desktop.
- No OrangeLink drivers are required for Mac OS X. If you have Mac OS 9, double-click on the OrangeLink Installer icon located in the Mac OS 9 folder.
- Once the OrangeLink Installer has opened, click "Install." The OrangeLink Installer copies all necessary Orange Micro drivers to the Mac OS 9 extensions folder. Additional utilities and shortcuts to important Apple software download web sites are copied to a folder named "Orange Micro Updates" on your Macintosh startup drive.
- Click on "Quit" after the OrangeLink Installer has successfully completed the install.



Figure 1. The Installation Window

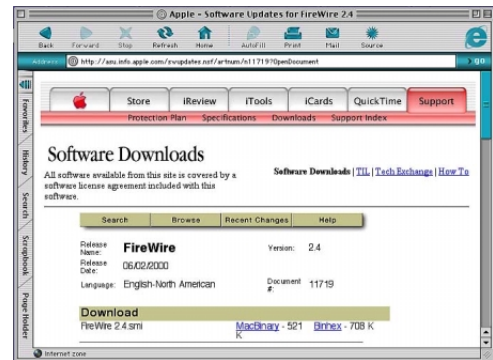


Installing FireWire Drivers

Once you have finished installing the OrangeLink software, you need to download the most current release of FireWire support from Apple Computer. To download FireWire support, follow these instructions:

NOTE: Mac OS 9.1 and Mac OS X come with FireWire support preinstalled and it is not necessary to download and install FireWire drivers. Mac OS 8.6 users should download Apple FireWire 2.3.3.

- Connect to the Internet in the manner recommended by your Internet Service Provider. A connection to the Internet is vital to the installation of your OrangeLink card, because Apple requires that FireWire support be downloaded directly from its web site (www.apple.com/support).
- Locate the "Download Apple FireWire" AppleScript. This script can be found in the "Orange Micro Updates" folder that was created on your Macintosh startup drive by the OrangeLink Installer.
- Double-click "Download Apple FireWire." If you are connected to the Internet, click "Continue" to connect to Apple's FireWire download section on their web site. If you are not connected to the Internet, you may select "Later" to download Apple FireWire support at a later time.
- Once you have selected "Continue" your web browser will automatically start and download Apple's FireWire Support from their web site.
- Follow the instructions on Apple's web site to download the FireWire Support installer to your Macintosh hard drive.
- Run the Apple FireWire Support installer, following all on-screen instructions. When FireWire support has been installed, you will be prompted to restart your Macintosh. Click "Restart."



Congratulations! You have set up your FireWire support on your Macintosh. If you are installing an OrangeLink USB2/ FireWire PCI card, you may continue on to Step 3 - Installing BTV Pro on your Macintosh.

NOTE: A file called FireWire Support may be in a folder titled FireWire in the Apple Extras folder on your Macintosh. Do not move this older extension to your Extensions folder; it may interfere with the operation of the new Apple FireWire software.

It is recommended that you follow the instructions for downloading USB Drivers below before running the Apple FireWire Installer. Doing so will decrease installation time, since you will not have to re-connect to the Internet to download Apple USB Adapter Card Support.

Installing USB Drivers

NOTE: USB 2.0 Hi-Speed support is available on MAC OS X. When running on the OS X system, USB 2.0 Hi-Speed will have a data transfer rate of 480 Mbits/s. When running on the OS 8.6 and OS 9 USB will have data transfer rate of up to 12 Mbits/s.

Users can connect USB and USB 2.0 Hi-Speed peripherals to a USB 2.0 Hi-Speed port. The current USB peripherals will continue to have a data transfer rate of 12 Mbits/s while USB 2.0 Hi-Speed peripherals will have a data transfer rate of 480 Mbits/s if Mac OS X is currently running.



To download USB Support follow these instructions:

NOTE: Mac OS 9.1 and Mac OS X come with USB 1.1 support preinstalled. It is not necessary to download and install Apple USB drivers.

Mac OS 8.6 and 9.0.x users

- Connect to the Internet in the manner recommended by your Internet Service Provider. A connection to the Internet is vital to the installation of your OrangeLink+ USB 2.0/FireWire PCI card.
- Locate the “Check for OrangeUSB Updates” AppleScript. This script can be found on the OrangeLink FireWire Manual and Software CD or in the “Orange Micro Updates” folder that was created on your Macintosh startup drive by the OrangeLink Installer.
- Double-click “Check for OrangeUSB Updates”. If you are connected to the Internet, click “Continue” to connect to Software Updates OrangeUSB Mac Product page of the Orange Micro web site. If you are not connected to the Internet, you may select “Later” to download USB support at a later time.
- Follow the instructions on the Software Updates OrangeUSB Mac Product page of the Orange Micro web site to download the appropriate USB Support software.

Mac OS X users

After the OrangeLink+ USB 2.0/FireWire PCI card is installed, log into Mac OS X with a username and password that has administrative access.

- Insert the OrangeLink FireWire Manual and Software CD. The window pictured on the right should pop up on your Macintosh desktop.
- The OrangeLink FireWire Manual and Software CD contains an installer for Mac OS 10.1.x and 10.2.x (Jaguar) inside the OrangeUSB Mac OS X Support folder. Open the folder that represents your version of Mac OS X (Fig. 1).
- Double click on OrangeUSB.pkg icon
- If the installer displays the message “Administrative access is required to continue”, click on the Lock icon.
- You will then be prompted to enter the administrator password. If the account you are using does not have administrative access, you must enter the username and password for an account that does or you will NOT be able to install OrangeUSB EHCI support!



Figure 1. The Installation Window

- If you have administrative access, the “Welcome to the OrangeUSB Drivers Installer” window will appear. Click on the Continue button.
- The “Select a Destination” dialog (Fig. 2) will appear. Select the active Mac OS X system drive, then click “Continue”.

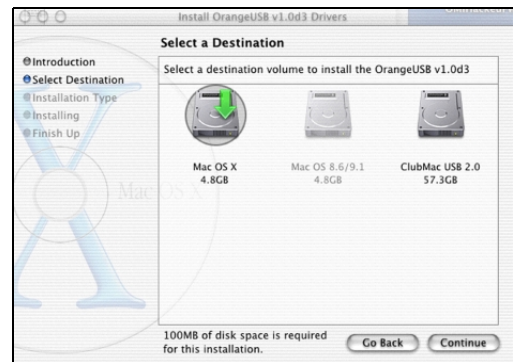


Figure 2

- The “Easy Install” dialog will appear. Click on the “Install” button to install OrangeUSB Drivers.
- Click on the “Restart” button to finish the installation, when prompted.

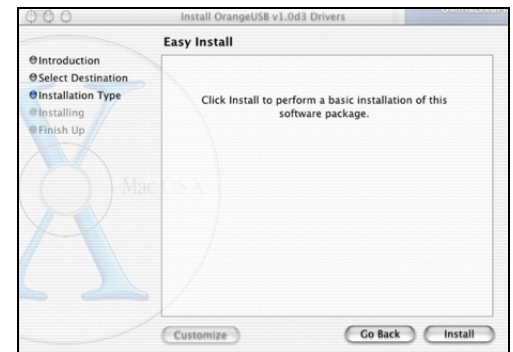


Figure 3

USB 2.0 Hi-Speed products that use an NEC chipset have 3 USB host controller engines on board. Two of the host controller engines handle USB 1.1 transactions. One of the host controllers engines handle, USB 2.0 transactions.

USB data traffic is automatically routed to the proper host controller engine depending on the speed of the device that is plugged into the USB port. This essentially creates 3 concurrent USB buses. These USB buses allow devices to run in a less congested traffic environment. This helps devices such as color printers, scanners, video cameras and mass storage devices, which require a high bandwidth, to work well together.

The NEC PCI to USB Enhanced Host Controller driver handles USB 2.0 Hi-Speed (480 Mb/s) traffic. The two NEC PCI to USB Open Host Controllers handle Full-Speed (12 Mb/s) and Low-Speed (1.5 Mb/s) traffic.

Confirm proper installation of USB 2.0 Hi-Speed driver:

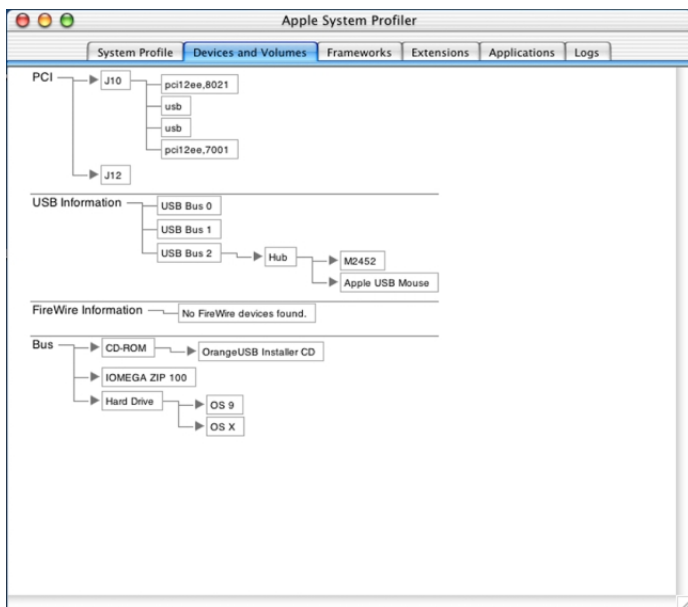
Verify the “OMI_EHCI.kext” Extension is located in the Mac OS X /System/Library/Extensions/ directory.

Verify the USB 2.0 Host Controller is detected:

Open the Apple System Profiler located in the Mac OS X /Applications/Utilities folder. Then click on the “Devices and Volumes” tab.

This information looks different in every version of Mac OS X. In the example below PCI slot J10 contains two “USB” entries and one “pci12ee, 7001” entry. The “USB” entries represent the two NEC PCI to USB Open Host Controllers and the “pci12ee, 7001” represents the one NEC PCI to USB Enhanced Host Controller.

If all three appear, the USB 2.0 Host Controller has been detected.



Mac OS 10.2.3 (Jaguar)

Troubleshooting

Problem:

I plug in a USB device and the Mac OS X system freezes.

Solution:

On beige G3 Macintosh computers, Mac OS X may attempt to load the built-in USB OHCI drivers for the EHCI controller. Orange Micro has worked out a patch to solve this problem. It is located on the OrangeUSB Installer CD in the G3 USB 2.0 Patch folder.

Congratulations! Your Macintosh is now ready to use your FireWire and USB devices. To install a specific FireWire or USB device, please consult your device manufacturer's documentation.

Step 3 – Installing BTV Pro on your Macintosh

BTV Pro is an application for the Macintosh that allows you to view, capture and edit video, create stop-motion animations, and also has advanced capture features such as frame averaging, time lapse and motion detection.

IMPORTANT: INSTALL THE FOLLOWING SOFTWARE IN THE ORDER LISTED!

Install QuickTime™

To install QuickTime, double-click on the "QuickTime Installer" icon located in the "Manual and Software" CD-ROM. Inside the QuickTime installer choose the "Full" option as your installation type. Make sure you are not working with a beta version of QuickTime.

Install BTV Pro on your Macintosh

Double-click the "Install BTV Pro" icon on the "Manual and Software" CD-ROM in the folder of your operating system of choice. A folder named "BTV Pro 5.x folder" will be created on your Macintosh hard drive.

Adobe Acrobat® Reader

You can install the Adobe Acrobat Reader software by double-clicking the "Reader Installer" icon on the "Manual and Software" CD-ROM in the Acrobat Reader folder. Much of the documentation included on this CD-ROM is provided in the Adobe Acrobat portable document format (PDF). You may view and print these PDF files with the Adobe Acrobat Reader.

The "BTV Pro 5 manual.pdf" is in Acrobat PDF format. It is installed in the "BTV Pro 5.x folder" on your Macintosh hard drive.

Chapter 3

How to install an OrangeLink in your PC

In order to ensure proper operation of your OrangeLink product, please follow the instructions below in the order they appear. These instructions document the installation process for all Orange Micro OrangeLink products inside your Windows PC.

Step 1 – Installing OrangeLink Drivers in Windows

NOTE: Do not install OrangeLink+ USB 2.0/FireWire PCI card before installing OrangeLink and OrangeUSB drivers in Windows.

Orange Micro OrangeLink FireWire products may be used on any Intel Pentium or compatible system running Microsoft Windows 98 Second Edition, Windows Me, Windows 2000 or Windows XP. OrangeLink products are not compatible with any previous versions of Windows. Once the OrangeLink PCI card is installed the FireWire drivers provided by Microsoft will automatically be installed. Windows 98SE will require the Microsoft Windows 98 SE CD-ROM.

NOTE: Microsoft refers to FireWire as IEEE-1394; the two are synonymous.

- Insert the OrangeLink Installer CD. Once inserted, the OrangeLink Installer will automatically start and display the menu to the right.
- Click on "Install OrangeLink Drivers"
- The OrangeLink drivers will be copied to:
C:\windows\drivers\OrngLink\
or
C:\winnt\drivers\OrngLink\
Depending on the version of Windows.
- If you have an OrangeLink+ USB 2.0/FireWire PCI card, Click on "Install OrangeUSB Drivers".
- The OrangeUSB 2.0 drivers will be copied to:
C:\windows\drivers\ousb2\
or
C:\winnt\drivers\ousb2\
Depending on the version of Windows.
- Follow the onscreen instructions.
- When prompted, shutdown your computer.

NOTE: Microsoft Windows 98SE, Me, 2000, XP have USB 1.1 support built-in. You can connect USB 1.1 and USB 2.0 Hi-Speed peripherals to a USB 2.0 Hi-Speed port. USB 1.1 peripherals will continue to have a data transfer rate of 12 Mbits/s while USB 2.0 Hi-Speed peripherals will have a data transfer rate of 480 Mbits/s once OrangeUSB 2.0 Hi-Speed drivers are installed.



Step 2 – Installing your OrangeLink hardware

Installing the OrangeLink USB 2.0/ FireWire PCI Card



USB 2.0 /FireWire PCI Card

NOTES: Refer to your computer's manual for instructions on how to open your computer and install a PCI card. The USB2/FireWire PCI card gets the power it supplies to the FireWire bus from the PCI slot.

IMPORTANT: Before Handling the PCI card or touching anything in the computer ground yourself by touching the power supply for a couple of seconds. Failure to do this may damage the card and/or your computer.

- With your computer off, open your computer case.
- Locate an open PCI slot. If there is a faceplate covering the opening to the back panel, remove it.
- Locate the USB2/FireWire PCI card and insert it into the free slot. Once securely inserted, screw the card in.
- Connect your internal devices as needed.
- Close computer.
- Turn the computer power on.
- **Insert the appropriate Microsoft Windows operating system CD-ROM**
- **As Windows boots the “Found New Hardware Wizard” dialog will appear**
Follow the on-screen instructions

Installing USB 2.0 Drivers for the first time in Windows XP.

Once the card is installed and the computer is restarted, Windows will detect the card and attempt to load the drivers for it.

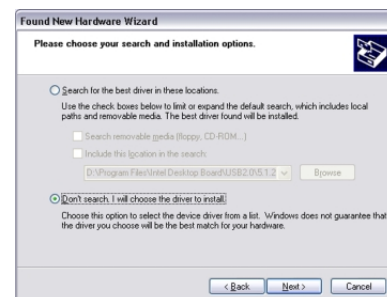
Note: If your computer has properly installed drivers for built-in USB ports you may not see some of the below dialogs.

Once the OrangeUSB card is installed and the computer is restarted,

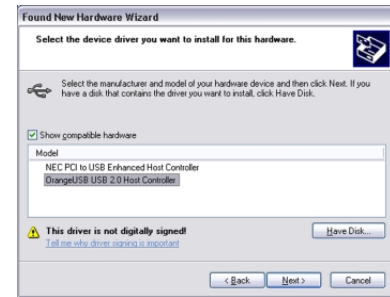
1. Windows will detect “Universal Serial Bus (USB) Controller”.
2. Select “Install from a list or specific location”
3. Click Next to continue.



- The Windows “choose you search and installation options” dialog will appear.
- Select “Don't search, I will choose the driver to install”.
- Click Next to continue.



- The Windows “Select the device driver you want to install” dialog will appear.
- Select “OrangeUSB USB 2.0 Host Controller”.
- Click Next to continue



- The Windows “wizard has finished installing the software” dialog will appear.
- Click “Finish” to continue



- Windows will detect “USB 2.0 Root Hub Device”.
- Select “Install the software automatically”
- Click “Next” to continue



- The Windows “wizard has finished installing the software” dialog appears.
- Click “Finish” to continue



Proceed to Step 3 – Verifying hardware settings.

Installing USB 2.0 Drivers for the first time in Windows 2000.

Once the card is installed and the computer is restarted, Windows will detect the card and attempt to load the drivers for it.

Note: If your computer has properly installed drivers for built-in USB ports you may not see some of the below dialogs.

- The “Welcome to the Found New Hardware Wizard” dialog will appear.
- Click “Next.”



Figure 1

- The “Install New Hardware Device Drivers” dialog will appear. Click the “Search for suitable driver for my device” button. Then, click “Next.”
- The Locate Driver Files dialog will appear. Click the “Specify Location” button.
- Type in the following path under “Specify a Location”:
“x:\winnt\drivers\ousb2\
(x = the drive letter for your boot hard drive
- The next dialog will let you know the driver has completed loading. Click “Finish” to finalize the installation.
- The “System Settings Change” dialog may appear, suggesting you “restart your computer now.”

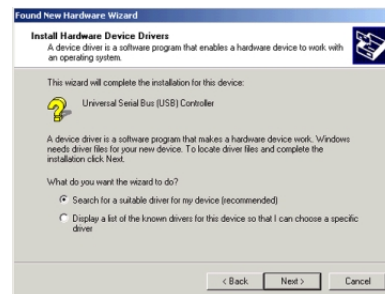


Figure 2



Figure 3

Proceed to Step 3 – Verifying hardware settings.

Installing USB 2.0 Drivers for the first time in Windows Me.

Once the card is installed and the computer is restarted, Windows will detect the card and attempt to load the drivers for it.

Note: If your computer has properly installed drivers for built-in USB ports you may not see some of the below dialogs.

- Windows will find a “PCI Universal Serial Bus”. Select “Specify the location of the driver”. Click “Next.”
- You should now see a window that resembles Figure 1. Put a check mark in the box next to “Specify Location.”
- Type in the following path under “Specify a Location”:
“x:\Windows\drivers\ousb2\”
(x = the drive letter for your boot hard drive)
- The driver will be “OrangeUSB 2.0 Host Controller” When you see the screen in Figure 2, click “Next.”



Figure 1



Figure 2

- The next dialog will let you know the driver has finished installing. Click “Finish” to finalize the installation.
- The “System Settings Change” dialog may appear, suggesting you “restart your computer now.”



Figure 3

Proceed to Step 3 – Verifying hardware settings.

Installing USB 2.0 Drivers for the first time in Windows 98 SE.

Once the OrangeUSB USB 2.0 card is installed and the computer is started, Windows will detect the card and attempt to load the drivers for it.

Note: If your computer has properly installed drivers for built-in USB ports you may not see some of the below dialogs.

- Windows will detect a “NEC USB Open Host Controller”. (Make sure the Win98 CD-ROM is in the CD-ROM bay.) Click “Next.”
- Select “Search for the best driver for your device.” Click “Next.”
- Uncheck all boxes in Figure 1. Click “Next.”
- Windows will find an updated driver for this device. Click “Next.” Then Click “Next” again.
- The “Window has finished installing the software that your new hardware device requires” dialog appears as in Figure 2. Click “Finish.”
- Repeat the above process for the second NEC USB Open Host Controller.



Figure 1



Figure 2

- After you have installed the two NEC USB Open Host Controllers, Windows will find a “PCI Universal Serial Bus” device as in Figure 3. Click “Next.” To continue.
- Another dialog will appear. Select “Search”. Click “Next.”



Figure 3

- Check “Specify a Location”.
- Type in the following path under “Specify a Location”:
“x:\Windows\drivers\ousb2\
(x = the drive letter for your boot hard drive
- A dialog will appear with “OrangeUSB 2.0 Host Controller” as in Figure 4, click “Next” to continue.



Figure 4

- The “Windows driver file search for the device” dialog will appear with the location of the driver. Click “Next” to continue.
- The “Add New Hardware Wizard” dialog will appear. Click “Finish.”
- Restart Windows.



Figure 5

Proceed to Step 3 – Verifying hardware settings.

Step 3 – Verifying hardware settings

Verifying USB 2.0 Hi-Speed hardware settings

USB 2.0 Hi-Speed products that use an NEC chipset have 3 USB host controller engines on card. Two of the host controller engines handle USB 1.1 transactions. One of the host controllers engines handle USB 2.0 transactions.

USB data traffic is automatically routed to the proper host controller engine depending on the speed of the device that is plugged into the USB 2.0 port. This essentially creates 3 concurrent USB buses. These USB buses allow devices to run in a less congested traffic environment. This helps devices such as color printers, scanners, video cameras and mass storage devices, which require a high bandwidth, to work well together.

The OrangeUSB 2.0 Host Controller driver handles USB 2.0 Hi-Speed (480 Mbits/s) traffic. The two NEC PCI to USB Open Host Controllers handle Full-Speed (12 Mb/s) and Low-Speed (1.5 Mb/s) traffic.

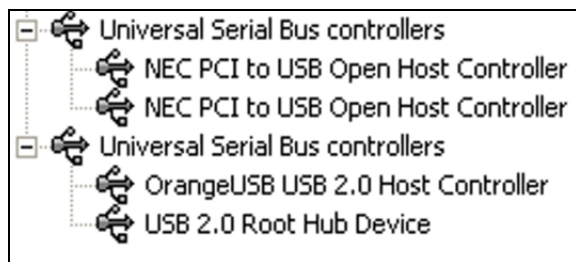
Check your Windows System/Device Manager to confirm proper installation of USB 2.0 Hi-Speed drivers:

Right click on the “My Computer” icon. Select **Properties** from the pop up menu, click on the “Hardware” tab then click on the Device Manager button. Scroll down to the “Universal Serial Bus controllers” category and click on the plus sign next to it. There may be additional devices in the list being displayed, but all of the below devices should appear.

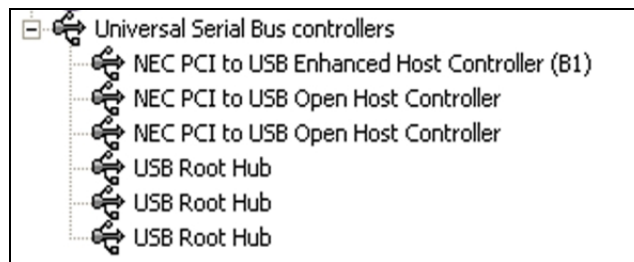
Note: Under Windows XP, the “My Computer” icon may appear on the Windows XP Start menu

An X through a device's icon means the device as been disabled. A circled exclamation point through the device's icon means the device has a problem. The type of problem will appear in the **Properties** dialog box for the device. To view the Properties dialog box for a device, double click on it.

If the Windows 2000 or Windows XP Device Manager “Universal Serial Bus controllers” category does not look the same as the Orange Micro supplied USB 2.0 drivers below, Windows 2000 or XP may have installed the Microsoft supplied USB 2.0 drivers “NEC PCI to USB Enhanced Host Controller” instead of the “OrangeUSB USB 2.0 Host Controller”.



Orange Micro supplied USB 2.0 drivers



Microsoft supplied USB 2.0 drivers

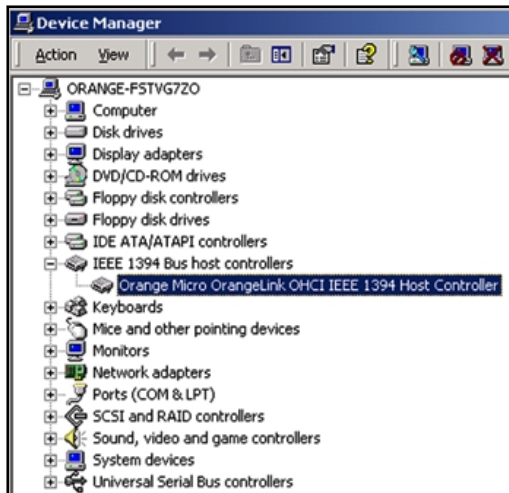
If you prefer to use the Orange Micro supplied USB 2.0 drivers instead of the Microsoft supplied USB 2.0 drivers under Windows 2000 or Windows XP, double click on the “NEC PCI to USB Enhanced Host Controller” driver in the Windows Device Manager. Click on the Driver tab, then the Update Driver button. Go back to the above section “Installing USB 2.0 Drivers for the first time in ...” (for Windows 2000 or Windows XP) and follow the instructions.

Verifying FireWire hardware settings

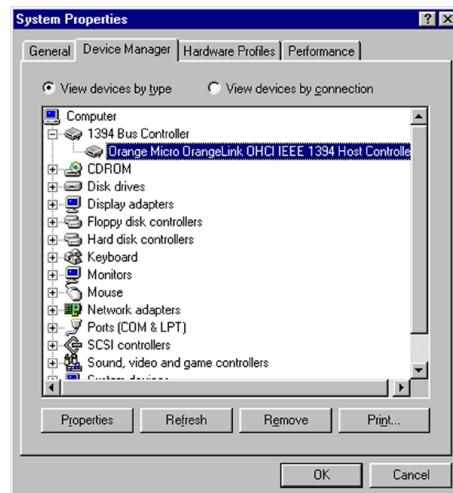
Check your Windows System/Device Manager to confirm proper installation of FireWire drivers:

IEEE 1394 Bus host controllers

-Orange Micro OrangeLink OHCI IEEE 1394 Host Controller



Windows 2000/ Windows XP



Windows 98 SE/ Windows Me

Your hardware is ready for use, and you may continue on to Step 4 – Installing Ulead VideoStudio on your PC

Step 4 – Installing Ulead VideoStudio DV SE on your PC

To install Ulead Video Studio, insert the OrangeLink “Manual and Software” CD-ROM into your CD-ROM drive. When the OrangeLink Installer loads the OrangeLink Setup Menu, select “Install Ulead VideoStudio 4.0.”

The Ulead VideoStudio software installation instructions are on the OrangeLink “Manual and Software” CD in the Adobe Acrobat portable document format (PDF). Click on the box next to “Browse This CD” and double click on vstudio.pdf. If Adobe Acrobat Reader is installed on your system, Acrobat Reader should automatically open vstudio.pdf.

Once the file is open, scroll down to the contents page (3). There you will see 7: Installation. Click on 7 and you will see the installation instructions for VideoStudio DV SE. Follow these instructions to install the Ulead software.

Chapter 4

Guidelines for Connecting FireWire Devices

FireWire devices can be connected in any combination of branching and chaining, as long as no loops are formed. A FireWire bus can support up to 16 consecutive cable hops of 4.5 meters (14.76 feet) each. There are no SCSI-style ID numbers to set and no termination requirements.

The OrangeLink+ FireWire PCI products are designed to keep the FireWire network operating even if the computer is shut down. Loss of power to the computer will not affect the operation of a FireWire card as long as it can draw power from other devices on the FireWire bus. The OrangeLink FireWire PCI card draws its power from the PCI bus.

To connect a DV camera, plug the 6-pin connector on the supplied FireWire cable to the OrangeLink PCI FireWire card and the 4-pin connector to the camera's IEEE 1394 (DV IN/OUT, iLink) port. Both connectors snap into place when properly engaged. If you wish to connect two computers together (or if your device has a 6-pin FireWire port), you can obtain a 6-pin to 6-pin cable through an AV equipment retailer, electronics store or directly from Orange Micro.

The OrangeLink USB2/FireWire PCI card has three FireWire ports, two external ports and one internal port.



USB 2.0/FireWire PCI

- Do not connect more than 63 (including the computers) devices at one time
- Do not connect devices in such a way that any two devices have more than 16 cables directly connected between them.
- Unused FireWire connections should be left empty. There are no terminators for FireWire connections.
- Connect devices that require power from FireWire directly to the computer.
- Do not unplug a FireWire device while it is being used. For example, do not unplug a FireWire disk while copying files onto it.
- If you have problems with digital video transfers make certain that no other FireWire devices are being used at the same time.

Chapter 5

Guidelines for Connecting USB 2.0 Hi-Speed Devices

The OrangeLink+ USB 2.0 /FireWire PCI card also provides four easy-to-use USB 2.0 Hi-Speed ports. New USB 2.0 Hi-Speed devices are available including hard drives, removable media and scanners. Just plug them in when you need them. It's that simple. No configuration is necessary.

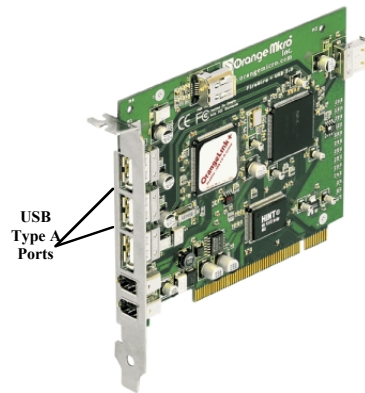
The OrangeLink USB 2.0 Hi-Speed supports up to 127 devices simultaneously. USB 2.0 Hi-Speed technology is "backward compatible" meaning users can plug in their older USB 1.1 peripherals and their USB 2.0 Hi-Speed peripherals simultaneously! Peripheral connections may be up to five meters in length.

Built-in +5-volt power distribution eliminates the need for AC power supplies for low/bus-powered devices. Much like FireWire, there are no SCSI-style ID numbers to set, and no termination requirements make installation quick and easy.

The OrangeLink USB 2.0 Hi-Speed performance operates at up to 480 Megabits per second—that's 40 times faster than USB 1.1. Simply "hot-plug" or "hot-unplug" any USB 1.1 or 2.0 Hi-Speed peripheral or any other USB 1.1 or 2.0 Hi-Speed compliant device and it is ready to use.

The OrangeLink+ USB 2.0/FireWire PCI card has three external and one internal USB 2.0 Hi-Speed ports, as shown in the photo on the right.

The maximum length for USB 2.0 Hi-Speed is five meters. Cables with shielding and two twisted-pair connectors are considered "fully rated" to transfer data at the maximum 480 megabits per second. Non-shielded cables with non-twisted conductors are allowed, but are used when they are soldered to a device that will transmit only at the lower 1.5-megabit-per-second transfer rate. Low-speed cables can be a maximum of 3 meters in length.



USB 2.0 Hi-Speed cables are called "A to B" cables, because they have two standard USB 2.0 Hi-Speed connectors, known as Type A and Type B. The Type A connectors are small and rectangular, and are used to plug into the back of your computer. Type B connectors are square, and are used to attach a USB 2.0 Hi-Speed cable to a USB 1.1 or 2.0 Hi-Speed device (printer, modem, hub, etc.). Having two dissimilar connector types prevents wrong connections.

The USB 2.0 Hi-Speed specification requires that power be provided on the bus for use by low-power devices. Hubs can use this power for operation, and are thus referred to as "bus-powered" hubs (allowed under the USB 1.1 specification).

Hubs may also include an AC adapter that provides external power to the hub. Such hubs are referred to as "self-powered" hubs. USB 2.0 Hi-Speed hubs by specification require "self-powered" hubs. OrangeLink USB 2.0 Hi-Speed support gives you access to many easy-to-use plug and play devices designed to make your computing experience as simple as possible.

Appendix A

Optional Hardware

The following optional OrangeLink hardware accessories are available from Orange Micro:

IBOT2 USB 2.0 Web Cam Without USB 2.0 PCI Card	Part# 70USB90050
IBOT2 USB 2.0 Web Cam With USB 2.0 PCI Card	Part# 70USB90051
IBOTpro FireWire Web Cam BTV Pro for Macintosh, ArcSoft Video Impression, ArcSoft Photo Impression, iSpQ VideoChat and head set microphone.	Part# 70HTL00100
IBOT FireWire Web Cam BTV pro for Macintosh Trial, iVisit video conferencing	Part# 70HTL00101
FireWire cable 4.5 meter (15 feet) 6-pin to 6-pin	Part# 70CAB13942
FireWire cable 4.5 meter (15 feet) 6-pin to 4-pin	Part# 70CAB13943
FireWire cable 4.5 meter (15 feet) 4-pin to 4-pin	Part# 70CAB13945
FireWire cable 0.6 meter (6 feet) 4-pin to 6-pin	Part# 70CAB13946
FireWire cable 0.6 meter (6 feet) 4-pin to 4-pin	Part# 70CAB13947
FireWire cable 0.6 meter (6 feet) 6-pin to 6-pin	Part# 70CAB13948
USB 2.0 Certified cable 0.6 meter (6 feet)	Part# 70CAB90032
USB 2.0 Certified cable 4.5 meter (15 feet)	Part# 70CAB90033
FireWire Repeater Allows an additional 4.5 meter extension for FireWire devices. Includes a 4.5 meter (15 foot) 6-pin to 6-pin cable.	Part# 70HTL00020
FireWire Hub Connects up to 8 devices. Also provides an additional 4.5 meter extension, and an enhanced 12 volts of power for FireWire peripherals.	Part# 70HTL00030
USB 2.0 Hub Connects up to 4 devices. Also provides an additional 4.5 meter extension.	Part# 70USB90030
FireWire PCI Board Add 3 FireWire ports to your PCI based Mac or PC.	Part# 70HTL13943
USB 2.0 Hi-Speed PCI Board Add 5 USB 2.0 Hi-Speed ports to your PCI based Mac or PC.	Part# 70USB90010
FireWire PC Card Add 2 FireWire ports to your Mac or PC Laptop.	Part# 70HTL00040
USB 2.0 Hi-Speed PC Card Add 4 USB 2.0 Hi-Speed ports to your Mac or PC Laptop.	Part# 70USB90020
USB 2.0 FireWire PCI Board Add 3 FireWire and 4 USB 2.0 Hi-Speed port to your PCI based Mac or PC.	Part# 70HTL00110
FireWire/Ethernet PCI Board Add 2 FireWire ports and Ethernet support to your PCI based PC Only.	Part# 70HTL00090
Optional OrangeLink FireWire PC Card Power Supply Avoid buying a FireWire Hub for the purpose of supplying power to the FireWire Bus. Available from: http://www.1394firestation.com/	

Information about the IEEE 1394 Trade Association and many other FireWire products can be found at these addresses:
<http://www.1394ta.org> <http://www.1394showcase.com> <http://www.apple.com/firewire/firewireproducts.html>

Appendix B

Using BTV Pro on the Macintosh

BTV Pro – QuickStart

What Extensions and Control Panels are needed for working with DV in BTV Pro?

When working with DV and BTV Pro, it is recommended that you set up a custom extension set. The following sample extension set includes the required BTV Pro and System files. Extension versions and their existence in your system may vary depending on which OS you use and what you have installed. Pay special attention to the underlined extensions. Make sure they are enabled before moving on to the next step.

- ATI 3D Accelerator 4.9.7 (Note 1)
- ATI Driver Update 1.5.3 (Note 1)
- ATI Graphics Accelerator 4.9.4 (Note 1)
- ATI MPP Manager 1.1.2f1 (Note 1)
- ATI Rage 128 3D Accelerator 5.8.1 (Note 1)
- ATI Resource Manager 2.4.8 (Note 1)
- ATI Video Accelerator 4.2.2 (Note 1)
- ATI Video Accelerator Update 1.0.2 (Note 1)
- FireWire Enabler (2.4 or newer)
- FireWire OrangeLink PC Card 1.1.4 (PC Card Only)
- FireWire Support (2.4 or newer)
- Open TransportLib 2.0.3
- OpenTptInternetLib 2.0.3
- OpenTptAppleTalkLib 2.0.3
- Open Transport Library 2.0.3
- Open Tpt Internet Library 2.0.3
- Open Tpt AppleTalk Library 2.0.3
- QuickTime Extensions folder
- QuickTime Authoring 4.1.1
- QuickTime Capture 4.1.2
- QuickTime Effects 4.1.1
- QuickTime Image 4.1.1
- QuickTime Internet Extras 4.1.1
- QuickTime Music 4.1.1
- QuickTime Player Extras 4.1.1
- QuickTime Streaming 4.1.1
- QuickTime Streaming Authoring 4.1.1
- QuickTime Streaming Extras 4.1.1
- QuickTime Web Helper 4.1.2
- QuickTime FireWire DV Enabler (2.2 or newer)
- QuickTime FireWire DV Support (2.2 or newer)
- QuickTime™ 4.1.2
- QuickTime™ MPEG Extension 1.1.2
- QuickTime™ Musical Instruments 4.1.1
- QuickTime™ PowerPlug 4.1.2
- QuickTime™ VR 2.3
- Shared Library Manager PPC 2.0.2
- Shared Library Manager 2.0.2
- Sound Manager 3.6.5

Note 1- G3 models with an ATI RAGE 128 graphic accelerator card or ATI RAGE Pro graphic accelerator chip.

Note 2- Remove any other DV or FireWire files except those underlined above.

Capturing Video

At this point you should have already installed the OrangeLink software and BTV Pro software. The FireWire drivers will not recognize most camcorders if the camcorder, Macintosh, and BTV Pro software are not started in the right order. Performing the following procedures in order will quickly get you started capturing DV video.

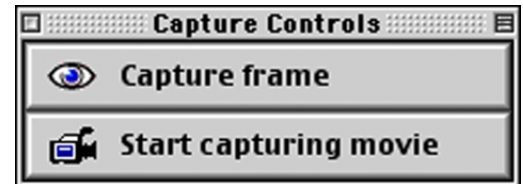
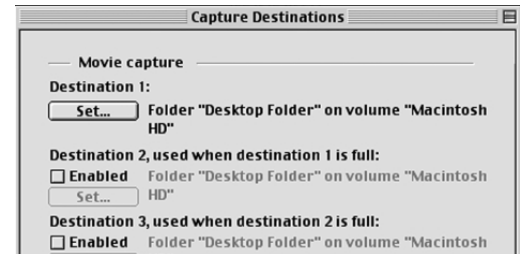
- Be sure that the Macintosh is OFF, the camcorder power is OFF and the FireWire cable is connected securely to the camcorder DV port and the OrangeLink FireWire port.
- Start your Macintosh.

Note: For optimal performance; Set the Monitor Control Panel to “Thousands” of colors. Set the Memory Control Panel to Virtual Memory OFF and Disk Cache to 128k.

- When the Macintosh has completely started, configure the camcorder to Camera mode (some camcorder manufacturers refer to this as Recording mode) and turn ON the power to the camcorder.
- Listen to your Macintosh hard disk. When the camcorder is detected, the FireWire software will load and you will hear a burst of disk access while the FireWire drivers load.
- Set the capture scratch disk and folder: Pull down the Settings “Preferences...” menu. Click on the “Frame Capture” tab. Click on the “Capture destinations...” button to set which hard drive is your capture drive. Drives that are too slow, fragmented or full will not work well.

Note: Set BTV Pro capture scratch disk and folder to an AV/DV rated drive (DV requires a sustained transfer rate of 3.6 MB/second) with ample amounts of free space.

- Pull down the Apple / Control Panels/ AppleTalk menu. Under the Options button select Make AppleTalk Inactive. Capturing DV works best when AppleTalk is inactive.
- Pull down the BTV Pro Windows menu and select “Capture Controls”. Now, when you wish to capture video click on the “Start Capturing Movie” button. The same button will represent the “Stop Capturing Movie” button.



Output Video to FireWire

To output your edited movie from BTV Pro back to your DV Camera or Deck you will need to perform the following steps.

- Make sure your DV Camcorder is in VTR/VCR mode on standby. BTV Pro will take control of the camera and switch it to record mode as it exports.
Note: DV cameras have two kinds of record buttons (one for VTR/VCR and one for live camera mode).
- Open the movie you wish to export.
- Pull down the BTV Pro Movie menu and select “Output to FireWire”.
- Click on the BTV Pro Play button to send your movie to the DV camcorder.
- Once BTV Pro is done exporting video, it will stop the camera and place it back into standby mode. At this point you can go to your camera and playback the exported video.

If your audio plays clipped during a Output to FireWire, you may not have a fast enough hard drive for DV output or you may be running out of disk space. Set BTV Pro capture scratch disk and folder to an AV/DV rated drive (DV requires a sustained transfer rate of 3.6 MB/second) with ample amounts of free space. You will get better performance if your movies are on a separate drive from your Mac System drive. G3's with SCSI drives should be capable of handling DV. Macs with IDE drives may require a faster drive to output to DV. You can check what kind of hard drive you have by using the Apple System Profiler under the Apple Menu. You should use disk-defragmenting utilities like Norton Utilities' Speed Disk to optimize AV/DV rated drives for best performance.

For additional Mac troubleshooting tips refer to Appendix D.

Additional FireWire Workflow Recommendations and Known Issues:

- Editing DV is a CPU and hard drive intensive task. You may need to minimize your extension sets (via the Extensions Manager and optimize your hard drives (using a Mac disk defragmentation utility like Norton Speed Disk) to get the best possible performance out of your computer.
- Do not expect full screen overlay of video to play well on the computer monitor since the CPU is handling it. Use BTV Pro to assemble your video, then export it back to your DV camcorder, which is capable of playing the movie back to the TV monitor at full screen.
- There is a QuickDraw 3D compatibility problem, which causes ATI overlay problems. You may experience your markers being overdrawn by the clip overlay. To avoid this, you may disable QuickDraw 3D by creating a custom extension set.
- It is recommended that no other operations be attempted while Capturing or Outputting Video to FireWire.
- The current Apple FireWire 2.4 extensions allow for multiple devices, but they share the same FireWire channel for sending/receiving DV data. This might lead to difficulties selecting between multiple device. It is recommended that you only work with one device at a time and turn off the other devices when not in use.
- Since DV transfers video and audio across a single stream, it is not recommended to attempt audio- or video-only captures.
- With the current ATI Video Software Update 1.0, you will experience a frame redraw artifact during Play Edit in Trim Mode.

For more detailed information regarding the operation of BTV Pro refer to the BTV Pro OM manual.pdf located in the “BTV Pro OM Folder” on your hard drive.

Appendix C

Using Ulead VideoStudio on Windows

Ulead VideoStudio – QuickStart

Capturing Video

At this point you should have already installed the OrangeLink software and VideoStudio DV SE software. The FireWire drivers will not recognize most camcorders if the camcorder, the PC, and the VideoStudio software are not started in the right order. Performing the following procedures in order will quickly get you started capturing DV video.

- Be sure that the PC is OFF, the camcorder power is OFF and the FireWire cable is connected securely to the camcorder DV port and the OrangeLink FireWire port.
- Start your PC.
- When the PC has completely booted, configure the camcorder to Camera mode (Some camcorder manufacturers refer to this as Recording mode.) and turn ON the power to the camcorder. Listen to your PC hard disk. When the camcorder is detected the FireWire Software will load and you will hear a burst of disk access while the FireWire drivers load. If you are presented with the following “Version Conflict” dialog, click yes.



- Check the Windows System/Device Manager for the following devices:

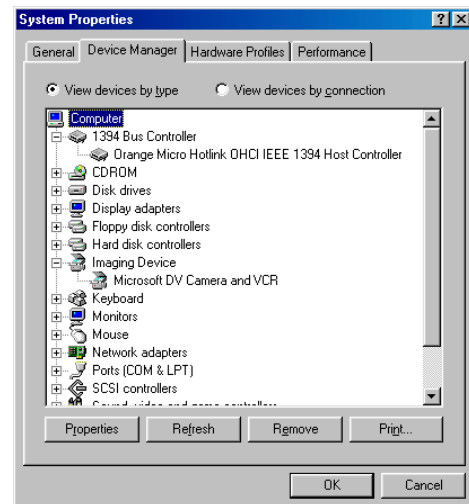
1394 Bus Controller:

-Orange Micro OrangeLink OHCI IEEE 1394 Host Controller

Imaging Device:


-Microsoft DV Camera and VCR

Note: The Imaging Device will only appear if Windows detects the camera. If the above devices do not appear as shown, highlight the device that appears under 1394 Bus Controller and click on the **Remove** button at the bottom of the Device Manager Window. Then insert the “OrangeLink Manual and Software CD” and select the “Install OrangeLink Drivers” option. Restart Windows then compare the above devices to ensure they appear as shown.



- Double-click the Ulead VideoStudio icon on your desktop. Follow the onscreen instructions to begin capturing video. For any help on capturing video with VideoStudio, insert the “OrangeLink Manual and Software CD”. It should Auto Start. Click on the box next to “Browse This CD” double click on vstudio.pdf. You are now ready to start capturing video!

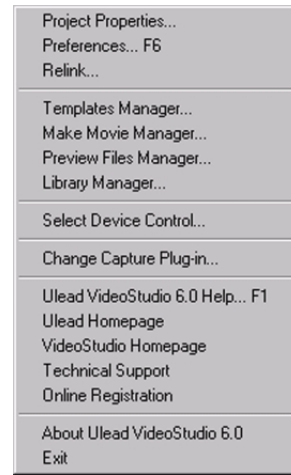


- Verify VideoStudio settings. Point and click on the  (Settings and Commands icon). The Settings and Commands menu to the right will appear:

Verify the following Settings:

Select Device Control... = MS 1394 Device Control

Change Capture Plug-in... = Ulead DirectShow Capture plug-in



Additional FireWire Workflow Recommendations and Known Issues:

Optimize your System

If you do not optimize your system you may get dropped audio or video frames. This can cause choppy sound or video that does not appear smooth.

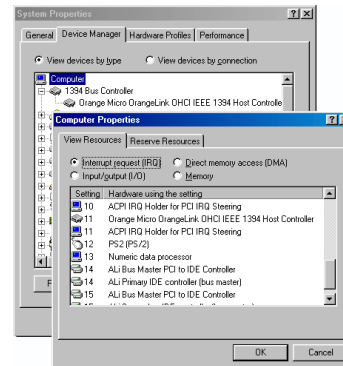
Run Disk Defragmenter on your hard disk. With all applications closed, click on the Windows Start menu and select Start / Programs / Accessories / Systems Tools / Disk Defragmenter.

Enable DMA for IDE hard disks. In the Windows System/Device Manager double click on Disk Drives. Then double click on the icon labeled Generic IDE Disk. Select the Settings tab and click on the DMA box. Close all windows and restart the Windows operating system. Not all hard drives support DMA. If any problems result due to this procedure, restart Windows in safe mode and remove the check on the DMA box.

Interrupt Conflicts

Interrupt sharing conflicts can cause dropped frames; device not found errors and general protection faults (GPF). To resolve these interrupt sharing conflicts, view your system resources by right clicking on My Computer on your Windows desktop and selecting "properties." Double-click on the Computer icon at the top of the System/Device Manager. This will bring up a window listing your device IRQ's.

The OrangeLink PCI FireWire card works best when occupying an IRQ value of 9, 10, 11, 12, 14, or 15 by itself or with no additional devices (IRQ holder for PCI Steering and other ACPI items refer to resource designations and may be ignored).



To isolate the USB2/FireWire PCI card on an IRQ by itself, it may be necessary to move the OrangeLink PCI to different PCI slots. While performing this operation, remove all non-essential PCI cards. Once you can capture video properly reinstall non-essential PCI cards in your system.

Note: Some systems are particular about which slots contain active PCI cards. Put the OrangeLink PCI card in the slot closest to the power supply. Try putting SCSI, Ethernet, Sound or VDD cards in slots below the OrangeLink PCI card. If you have enough open slots, leave slots empty between the OrangeLink PCI card and other PCI cards.

For additional troubleshooting tips go to our web site.

<http://www.orangemicro.com/fagolwin.html>

Appendix D

Macintosh Troubleshooting

Problem – Can I boot from a FireWire hard drive?

Suggestion:

Yes. Booting from FireWire devices is enabled on certain newer model Macintosh computers. Refer to the following URL:
<http://til.info.apple.com/techinfo.nsf/artnum/n58606>

I have a Macintosh 6500, 5500, or Twentieth Anniversary Macintosh and my OrangeLink+ FireWire/USB card does not work.

Suggestion:

The OrangeLink+ USB 2.0/FireWire PCI card is not compatible with these systems due to a bug in the firmware of these systems.

Problem – What are the minimum system requirements to use the OrangeLink?

Suggestion:

The PCI based card can be used on any PCI based Macintosh except the Power Macintosh 6500, 5500, or Twentieth Anniversary Macintosh. The devices that can be used are FireWire hard drives, CD-R's, printers, cameras etc.... DV editing has more stringent requirements and may not be possible on some older systems.

Problem – Apple FireWire will not install in my MacOS 8.6 system. What should I do?

Suggestion:

Apple recommends FireWire software version 2.3.3 for systems with MacOS 8.6 installed.
http://download.info.apple.com/Apple_Support_Area/Apple_Software_Updates/

Problem – My OrangeLink appears to be dead

Suggestion:

- Ensure the OrangeLink is secure in its slot.
- Go to the Mac System/Extensions Folder and trash all FireWire extensions.
- Reinstall OrangeLink Software. Refer to Chapter 2.

Problem – I have installed the card and the OrangeLink Software and now my Mac will not boot.

Suggestion:

- Try moving the card to a different PCI Slot. If you have other PCI cards as well, try switching the order the cards are installed in the computer. The Macintosh can be particular about PCI hierarchy. Move the OrangeLink card into the first PCI slot if possible.

Problem – I can capture video, but when I export I get blocky video back to the camera.

Suggestion:

If you have a processor upgrade card installed, confirm that the G3 upgrade card has the proper bus speed settings to match your system. If you have a 50 MHz bus on your system and your upgrade card is running at 48.5, the timing difference will cause the kind of problem you currently have. If your system has a 50mhz-bus speed, and your upgrade card has your system running at 345hz, then your card will need to be adjusted.

Other recommendations:

1. You should optimize your hard drive by defragmenting it. Install all the most current software updates from our web site, Apple's web site, and Adobe's web site.
2. Run your system with an extremely bare extension set. Save an extension set specifically for FireWire editing. Your video editing software and camera will be the only things you are using, so you can disable many extensions to speed up the system.
3. Disable "FireWire OrangeLink CardBus Enabler" if not using PC Card.
4. Disable QuickTime VR, and QuickTime Musical Instruments.
5. Disable the Desktop picture (Appearance Control Panel).
6. Disable all USB extensions, SerialShimLib, and HID Library.
7. Disable any extensions from current software programs such as MS OFFICE.
8. Disable Printer extensions, and other device extensions not FireWire.
9. Remove all old extensions from software and printers no longer being used.
10. When running your camera, run it from the AC Adapter. Run no other devices or programs. These steps should greatly reduce or eliminate the problems you are having with video editing.

For additional troubleshooting tips go to our web site.

<http://www.orangemicro.com/faqolmac.html>

PC Troubleshooting

Problem – I run Windows 98SE and after plugging in my DV camcorder it shows up in the Windows Device Manager under the "Sound, video and game controllers" section instead of under the "Imaging Device" section.

Suggestion:

- Open then Windows Device Manager, expand the "Sound, video and game controller" section then remove the device driver for your camcorder. After closing the Device Manager, Windows will prompt you to restart. Select "No".
- From the Start menu button select Find\Files or Folders. The Find dialog will now appear. Enter "dvcam.*" under the "Named" section and click the "Find Now" button. Windows should find three files which match the aforementioned criteria. Delete all three of these files.
- Insert your Windows 98 Second Edition CD into your CD-ROM drive then restart Windows. As Windows restarts, the camcorder will be detected. When prompted point the Hardware Installation Wizard to the Win98 folder on the Windows 98SE CD to install the appropriate drivers for your camcorder.

Problem – I have installed the OrangeLink drivers and OrangeLink card, but when I turn on my camera, Windows asks me to load the camera driver.

Suggestion:

If your system is asking for camera drivers, then you will need to upgrade your Windows to Windows 98 Second Edition. If you right click on the My Computer icon, and choose properties, your system properties box will open. This box will display the version of windows you currently have. If the date for Windows is 4/10/1998 and does not say Second Edition, you will need to purchase the updated version of the operating system

Problem – I cannot get disk media to work properly in Windows 98 Second Edition What can I do?

Suggestion:

An update to Windows 98SE is available that corrects problems with mass storage devices. Use the link below to go to the Microsoft web page and download the update.

http://www.microsoft.com/Windows98/downloads/contents/WURecommended/S_WUFeatured/1394/Default.asp

Problem – Are there any recommended updates for DV editing?

Suggestion:

Microsoft recommends users of Digital Video equipment install DV Updater for DirectX 8.0

<http://www.microsoft.com/downloads/release.asp?ReleaseID=28377>

Problem – How to prepare a FireWire disk for use under Windows 98SE or Windows Me?

Suggestion:

- Boot up your computer with the FireWire hard drive turned on and connected.
- From the Start\Programs menu select "MS DOS Prompt". The MS DOS Windows will now appear. From command prompt type "fdisk" and hit the enter key.
- When asked to enable Large Disk support press "Y".
- The Microsoft Fixed Disk Utility will open. Choose option 5 "Change current fixed disk drive" then hit the Enter key.
- Now select your FireWire drive from the list. Your main internal hard drive will be Disk 1. If you have only one hard drive in your computer then drive 2 will be your FireWire drive. If you are not sure which drive is your FireWire drive you should contact the manufacture of the drive for further instructions. After selecting your FireWire drive from the list hit the enter key to proceed.
- **WARNING: FAILING TO SELECT THE CORRECT DRIVE MAY CAUSE PERMANENT LOSS OF DATA!**
- You will now be presented the original menu of 5 items. Select option 1 "Create DOS partition or Logical DOS drive" and hit Enter.
- You will now be presented 3 menu items. Choose number 1 "Create Primary DOS Partition" then hit the Enter key.
- You will now see the question "Do you wish to use the maximum available size for the Primary DOS partition"? Answer yes.
- The partitioning is complete hit the Esc button twice. You will see a message that you must restart your computer. Hit the Esc button once more to exit the fdisk program. From the MS DOS command prompt type "exit" to close the MS DOS Prompt window.
- Disconnect the drive from the FireWire bus, wait about ten seconds, then reconnect the drive. After plugging the drive back in double click the "My Computer" icon to open the My Computer window. You should have a new drive icon for the FireWire drive. Right click on the drive icon for the FireWire drive. From the pop-up menu that appears select "Format". From the format dialog select "Full" under "Format Type, then click the Start. You will see a warning that all files will be destroyed. Click OK to proceed. This process may take several minutes. Once complete, click the Close buttons and you are done.

Problem – How do I prepare my FireWire Disk for use under Windows 2000?**Suggestion:**

- Plug the FireWire drive into any available FireWire port.
- The system should detect the drive and install a device driver for it. To verify the drive is properly detected right click on the "My Computer" icon. From the popup menu that appears click Properties. The System Properties dialog will appear. Click the Hardware tab then click on the Device Manager button. The Device Manager dialog will appear. Scroll down through the list of devices until you see the Disk Drives section. Expand this section. Under the Disk Drive section your FireWire drive should be listed. For information on how your drive will show up in the Device Manager please contact the manufacturer of your drive.
- After you have verified that your FireWire drive has been detected by Windows 2000 you will need to partition and format the drive before it will be usable. Open the Disk Management utility. To get there: Click on the Start/Settings/Control Panel menu. Double-click on Administrative Tools, and then double-click on the Computer Management icon. In the Storage sub-section, click Disk Management.
- The Write Signature and Upgrade Disk Wizard will start. Click Next to start the Wizard. Select your FireWire drive from the list using the checkbox. Click Next to continue. Click Finish to write the signature to the drive.
- The FireWire drive will be listed without a drive letter, and show as "unallocated".
- To create a partition, right click on the unallocated area of the drive. Then from the popup menu that will appear select Create Partition.
- The Create Partition Wizard will start. Click next to start the Wizard. Choose Primary partition then click next. Enter the amount of disk space to be used and then click next. Assign a drive letter or path, and then click next. Select a file system to use to format the disk, then click next. Verify all settings, and then click Finish to begin formatting the drive. Note: The formatting process could take several hours.
- When the formatting process has finished, your FireWire drive should then be available for use.

Problem – I followed the instructions, loaded the Driver software, but no 1394 Bus controller is listed in the Device Manager.**Suggestion:**

- Before the Orange Micro OrangeLink 1394 Host Controller will appear in the Device Manager, you must install the OrangeLink card in your computer. After installing the card and re-booting, Windows will prompt you to insert the Windows CD to finish installation. The "Orange Micro OrangeLink OHCI IEEE 1394 Host Controller" will now appear in the Device Manager.

Problem – I installed the software. I installed the card but when I look in my device manager there is a yellow exclamation point on "Orange Micro OrangeLink OHCI IEEE 1394 Host Controller."**Suggestion:**

This exclamation point usually means there is a resource conflict between the OrangeLink card and another card in your system.

- Shutdown your computer and move the OrangeLink to another open slot.
- If you do not have open slots, swap slots with another card in your system.
- Restart your computer. Windows will then re-configure itself and re-assign resources. Check your Device Manager again. If the exclamation point is still there then repeat the process until it no longer appears.

Problem – I get choppy sound or video that does not appear smooth.**Suggestion:**

- Check the amount of RAM in your system. The recommended amount is 128MB or higher, preferably 256MB or more.
- Check your hard drive for available space. Editing DV takes up large amounts of disk space. As your hard drive fills up the slower it performs.
- Try to free up space on your hard drive by deleting unneeded programs and files.
- Optimize your system.

Problem – Windows 98SE does not detect my camcorder.**Suggestion:**

- Some camcorders have problems being detected when they are not plugged into their power supply.

For additional troubleshooting tips go to our web site.

<http://www.orangemicro.com/faqolwin.html>

Appendix E

Specifications

Hardware Features

- PCI 2.1 Compliant

FireWire Ports

- IEEE-1394 OHCI compliant; 100 (12.5 MB/sec) Mbits/s; 200 Mbit/s (25 MB/sec); 400 Mbit/s (50 MB/sec)
- Connect up to 63 devices, internal or external
- All FireWire ports provide up to 12 V of power
- Supports Plug-and-Play Specification
- Hot Plug
- Complies with Standard for a IEEE-1394 High Performance Serial Bus/ iLink
- Up to 16 consecutive cable hops of 4.5 meters
- Support for digital video in full size, full motion video of 720 by 480 pixels at 30 frames per second
- Isochronous and Asynchronous data transfer
- Function Control Protocol (FCP)
- Connection Management Protocol (CMP)

USB 2.0 Hi-Speed Ports (USB 2.0/FireWire PCI card only)

- NEC single chip
- Fully compatible with USB UHCI, OHCI and EHCI specifications
- Data transfer rate up to 480 Mbits/second
- 1.5 Mbits/second option (UHCI) supports low-end devices such as keyboard and mouse
- Provides +5 volts for devices
- Supports Plug-and-Play Specification
- Hot Plug

Connectors

- Two external 6-pin FireWire ports
- One internal 6-pin FireWire port
- Three external Type A USB 2.0 Hi-Speed ports
- One internal Type A USB 2.0 Hi-Speed port

Appendix F

Warranty Information

LIMITED WARRANTY

Every Orange Micro product is fully tested and checked for quality prior to shipment. It is warranted to be free from defects in materials and workmanship for a period of one (1) year from date of purchase. During that time period, Orange Micro Inc. will, at no charge to the purchaser of record, repair or replace the defective unit returned to the Customer Service Department in accordance with the following instructions:

NOTE: DO NOT return the Orange Micro product to Orange Micro Inc. until you have received a Return Material Authorization (RMA) Number. Customers outside the United States should contact the Orange Micro distributor in that country and request service.

1. Phone the Orange Micro Customer Service Department at 714 779-2772. Customer Service hours of operation are between 8AM and 4PM PST. Customer Service lines are closed from 12PM to 1PM PST for lunch. Obtain a Return Material Authorization (RMA) number.
2. Provide Orange Micro, Inc. with Model, Serial Number, Proof of Purchase, Return Address, and preferred return shipping method. Enclose a clear description of the problem experienced and any sample printouts showing the problem, if possible.
3. Ship in the original carton or securely packed in a cardboard carton with at least two inches of cushioned packing material on all sides. Mark the package "FRAGILE" and ship via UPS, Parcel Post, or Air Freight, insured and prepaid.

NOTE: DO NOT SEND COLLECT - collect shipments will be refused and returned to sender.

Orange Micro, Inc. disclaims any liability to users of the Orange Micro product for consequential damages of any kind arising from or connected with the use of the Orange Micro product.

This warranty is void in cases of misuse, abuse, abnormal conditions of operations or attempts to alter or modify the function of a part or assembly.

This limited warranty is in lieu of all other warranties expressed or implied, and no representative or other person is authorized to represent or assume for Orange Micro, Inc. any warranty liability beyond that set forth herein.

This warranty gives you specific legal rights, and you may also have additional rights, which vary, from state to state. The warranty expressed herein applies to the Orange Micro product sold and used in the United States of America.

FCC Class B Information

This equipment has been tested and found to comply with the limits of a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected
- Consult the dealer or an experienced radio/TV technician for help.

Any changes or modifications not expressly approved by the manufacturer could void the user's authority to operate the equipment.

The user may find the following booklet prepared by the Federal Communications Commission helpful: "How to Identify and Resolve Radio/TV Interference Problems. This booklet is available from the US Government Printing Office, Washington, DC 20402. Stock No. 004-000-00345-4

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