For the following Products:

- Osprey-210
- Osprey-220

Osprey-210/220 Capture Driver User's Guide

For Windows 95/98 and Windows Millennium Edition (Windows ME)

Releases 1.37 and later.

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FCC Notice

This device has been tested and found to comply with the limits for 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 device 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 communications. However, there is no guarantee that interference will not occur in a particular installation. If this device does cause harmful interference to radio or television reception, the user is encouraged to try correcting the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the computer and the receiver.
- Connect the computer 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.

Shielded Cables

Connections between this device and peripherals must be made using shielded cables in order to maintain compliance with FCC radio emission limits.

Modifications

Modifications to this device not approved by Osprey Technologies, Inc. could void the authority granted to the user by the FCC to operate the device.

Note to CATV Installer

This reminder is provided to call to the CATV installer's attention Section 820-40 of the NEC, which provides guidelines for proper grounding and, in particular, specifies that the cable ground shall be connected to the grounding system of the building, as close to the point of cable entry as practical.

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Chapter 1 - Getting to Know the Osprey-210 and Osprey-220 Capture Cards

The Osprey-210/220 Capture Driver User's Guide provides practical information for installing and configuring the hardware and software for the Osprey-210 and Osprey-220 devices. This guide has been designed with the needs of the end user in mind, particularly first-timers and those working with existing applications.

- Symbols
- Introduction
- Osprey-210 and Osprey-220
- Features
- Software Included
- Compatible Third-Party Applications
- Getting Help

Symbols

This symbol denotes an important note or warning.

This shortcut icon points more experienced users to sections or chapters that summarize step-by-step instructions.

Introduction

Osprey Multimedia Capture Cards provide economical solutions for capturing video images in an uncompressed digital format. All formatting and scaling of images are processed within the hardware, allowing for maximum system efficiency and speed. The Osprey-200 series also provides on-board audio capture capability.

This Users' Guide covers two main models of Osprey Multimedia Capture Cards:

Osprey-210 – Basic audio and video capture

Osprey-220 – Audio and video capture with professional audio inputs

These products consist of a PCI board (based on the Conexant Bt878A single-chip video capture device) and Video for Windows compliant software drivers for Windows Millennium Edition (Windows ME), Windows 2000, Windows NT 4.0, and Windows 95/98 platforms.

The drivers for Windows NT and 2000 are separate drivers with corresponding Users' Guides. All information in this Users' Guide refers solely to the Windows 95/98 and Windows ME drivers.

Osprey-210 and Osprey-220

The Osprey-210 and Osprey-220 are both audio and video capture cards. Both cards support NTSC and PAL video capture in standard RGB and YUV formats. They also support video scaling. For audio processing, they sample at 32kHz, 44.1kHz, and 48kHz. The Osprey-220 also includes a breakout box for the audio and video connectors, XLR connectors, and balanced audio.

Features

The driver supports all Video for Windows capture driver capabilities that are available to the Bt878A hardware device. It is compatible with software video compressors, sound boards, video editing applications, and videoconferencing applications.

The Windows 95/98/ME driver works with only one board at a time installed in the system. It ignores any additional Bt848, Bt878, or Ct878A-based boards, such as an Osprey-50 PCI or Osprey-100. The Osprey-210/220 dirvers for Windows NT and windows 2000 support multiple Osprey-210/220 boards.

Audio/Video Specifications

Video Frame Rates and Performance

Audio/Video Specifications

Video Input

- NTSC/PAL[1]
- Composite (BNC)
- S-Video

Audio Input

- Unbalanced stereo (RCA connectors on Osprey-220, 3.5mm stereo connector on Osprey-210)
- Osprey-220 ONLY: Balanced stereo (XLR connectors)

Audio Output

- Hardware loopback for monitoring of audio input (3.5mm stereo connector)

Audio Processing

- Auto sample rate selection for analog inputs (32 kHz/44.1 kHz/48 kHz)
- Audio sample rate down conversion based on application requirements

Computing Platforms

- Windows 95/98
- Windows Millennium Edition (Windows ME)

Hardware System

- 32-bit/5-volt PCI card
- Full PCI Rev. 2.1 compliance
- Multi-board support

Video Frame Rates and Performance

The Osprey-210/220 can deliver to the host 30 frames per second (fps) full resolution NTSC (720x480) as well as 25 fps full resolution PAL (720x576). The Osprey-210/220 uses Direct Memory Access (DMA) to efficiently perform this delivery of both video and audio data to the host. Once the data is in host memory, performance is directly affected by how the data is processed.

It should be noted that uncompressed video bandwidth is very large. Video at 640x480 with a 16bit color format at 30fps results in more than 18Mbytes/sec of data transfer across the PCI bus. Thus PCI bandwidth issues, which may result due to other high bandwidth demanding devices on the PCI bus, can limit performance. For example, having PCI based SCSI controllers may consume large amounts of PCI bandwidth if there is a large amount of SCSI disk activity.

Software Included

The products for Windows 95/98/ME include:

- A Video for Windows compatible video capture driver
- An audio Mixer and an audio Wave (capture) driver
- VidCap32 – An audio/video capture application from Microsoft
- Ligos Technolgy's Indeo package of software based audio/video codecs and compressors

Compatible Third-Party Applications

The Osprey-210/220 will work with any Video for Windows compatible application. For the latest product news, please continue to visit our ViewCast.com web site http://www.viewcast.com/ for the Osprey-210/220.

Getting Help

Before contacting support, please do the following:

- Work through the section of Chapter 3 entitled Testing the Installation
- Read through Chapter 6 - Troubleshooting.
- Visit our web site at http://www.viewcast.com/ and read the Osprey-210/220 FAQs by selecting **Support** > **Osprey Product Line** > **FAQs**.

If you should continue to experience problems contact the Osprey Support Group at:

Voice, toll free	(888) 684-6622
Voice	(919) 319-9200
Fax	(919) 319-9814
Email	support@viewcast.com

When you contact support, especially if it is by email, please include the following information:

- Which product you have – Osprey-210 or Osprey-220.
- Which operating system you are using. Certain minor aspects of the Osprey drivers vary depending on the operating system in use.
- Which version of the Osprey driver you are using. The version information is on the title bar of the driver's Control Dialog, as well as in the first message of the installation program.
- The type of audio and video sources being used (for example: S-video video and composite audio) and the type of equipment being used as the source (for example: a DVD player).
- Any additional details about your system configuration would be helpful – for example, the system speed, processor type, motherboard chipset, whether you have a SCSI or IDE hard drive, whether you have a network adapter card, and the type of display adapter card.
- A detailed description of the problem.

Chapter 2- Osprey-210/220 Hardware

The Osprey-210/220 Capture Cards are 32-bit, 5-Volt PCI cards. They are compliant with version 2.1 of the PCI hardware specification.

- System Requirements
- Installing the Card
- Connecting Cables

System Requirements

For x86 PCs, the minimum system requirements are as follows:

- 120 MHz Pentium processor or higher for the hardware. A 300MHz processor or better, with 128MB RAM or more, is recommended.
- One available PCI slot
- Windows 95/98 or Windows ME
- Approximately 1 megabyte of storage for system files

For optimum performance, we recommend at least the following additional features.

- Video display adapter with:
  - 2MBytes memory minimum (4 Mbytes or more recommended)

Installing the Card

	All computer cards are sensitive to electrostatic discharge. Slight discharges from clothing or even from the normal work environment can adversely affect these cards. By following these simple guidelines, however, you can minimize the chance of damaging your Osprey card. To be used only with UL Listed computers that include instructions for user installed accessories. • Handle cards only by the non-conducting edges. • Do not touch the card components or any other metal parts. • Wear a grounding strap while handling the cards (especially when located in a high static area). • Provide a continuous ground path by leaving the power cord plugged into a grounded power outlet. • Ensure that the workstation is powered OFF before installing any components.
	If you are not familiar with how to install a PCI bus card, refer to your system's documentation for more complete, step-by-step instructions.

Use the following steps to install the Osprey card:

1. Power down the computer. Make sure that the computer's power switch is turned OFF. Read caution note above for grounding precautions.
2. Remove the computer's cover.
3. Locate an empty PCI slot.
4. Remove the slot-cover screw from the empty PCI slot's cover, set the screw aside, and remove the slot cover.
5. Remove the card from its anti-static bag.
6. Install the Osprey card into the empty slot and make sure that it is seated evenly in the slot.
7. Secure the backpanel of the card with the slot's cover screw.
8. Replace the computer cover.
9. Connect video and audio cables to the Osprey card. Refer to Connecting Cables for details of the card's backpanel connector.
10. Turn the computer on.

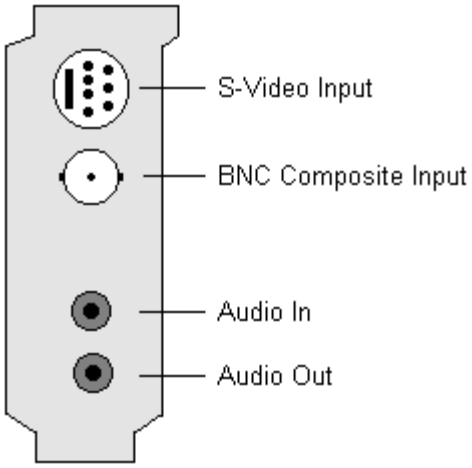
Connecting Cables

Connecting a Composite Source

Connecting an S-Video Source

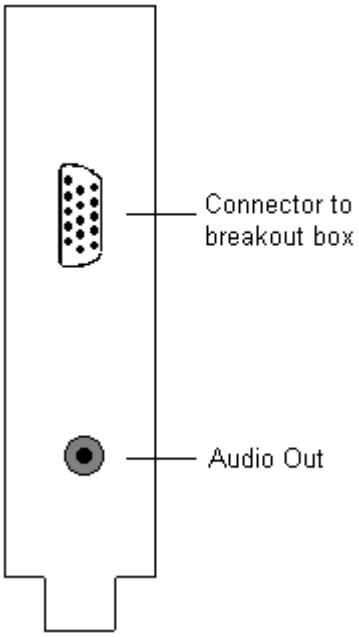
Connecting Audio Source with the Osprey-210/220

The Osprey-210 and 220 boards now have the same connectors on the backplate for audio and video. The Osprey-210 board has has been redesigned to incorporate improvements. The previous model of Osprey-210 has been renamed the Osprey-210 Classic, and has four connectors on the back plate for audio and video:



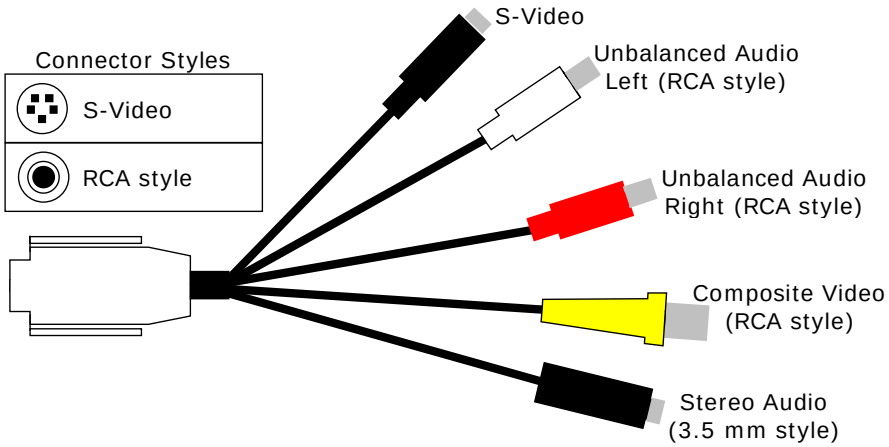
The Osprey-210 Classic Backplate.

The Osprey-220 and the redesigned Osprey-210 boards have an audio out for monitoring captured audio and a 15-pin connector to the input breakout cable. The Osprey-210 and Osprey-220 have different breakout cables.



The Osprey-210 and Osprey-220 backplate.

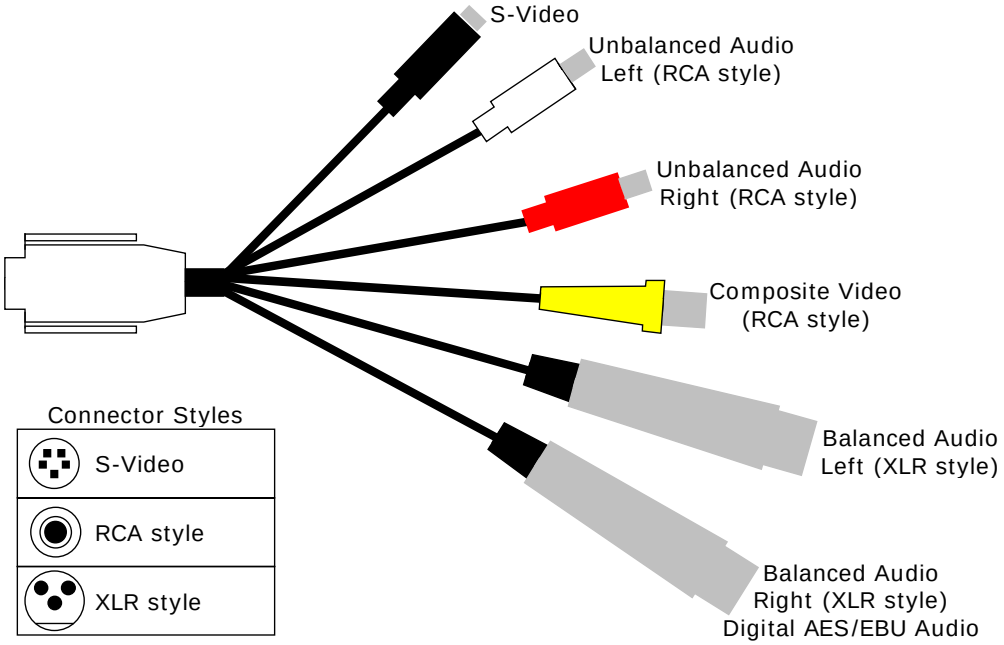
Osprey-210 Input Breakout Cable



The breakout connector has inputs for composite video, S-Video and unbalanced audio.

The input breakout cable is ViewCast Part Number 34-05010-01.

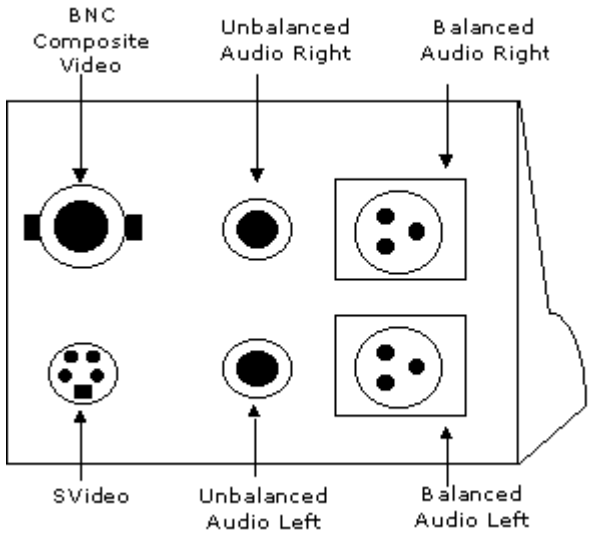
Osprey-220 Input Breakout Cable



The breakout connector has inputs for composite video, S-Video, balanced and unbalanced audio, and professional digital audio. The breakout cable has a set (L/R) of unbalanced RCA style audio connectors and a set (L/R) of balanced (XLR) audio connectors. Additionally, the right XLR balanced input also is used as the professional digital audio input.

The input breakout cable is ViewCast Part Number 34-05009-01.

The Osprey-220 previously shipped with a breakout box, drawn below. The breakout box has been replaced with a more convenient breakout cable.



The Osprey-220's legacy breakout box.

	Exact connector layouts are subject to change.

Connecting a Composite Source

If your video source provides only composite video, connect the source's output cable to the Composite Video In connector.

Connecting an S-Video Source

If your video source supports S-Video, connect the source's output cable to the S-Video In connector. Compared to composite signals, S-Video provides a sharper image with better color separation. S-Video uses a four-pin mini-DIN connector that provides separate Y (luminance) and C (chrominance) signals. Refer to Chapter 4 - Osprey-210/220 Video Control Dialog for instructions on configuring the driver for S-Video.

Connecting Audio with the Osprey-210/220

The Osprey-210/220 audio connectors are made for line level audio stereo equipment, such as VCR or DVD outputs and can also take headphone level outputs when the volume is adjusted midway between high and low settings. It should be noted that if you are using a camcorder or VCR with only a single audio output, the volume needs a slight adjustment.

The redesigned Osprey-210 offers both 3.5mm stereo connector, and left/right RCA connectors for a line level input. The Osprey-220 uses left and right RCA connectors for line level input. The Osprey-210 Classic uses a 3.5mm stereo connector. The standard microphone shipped with most soundcards is usually not suitable for line level input. You will need to use a powered microphone with 1-volt peak to peak output. You may need to use an adapter for the microphone's connector to use with the Osprey-210 or 220 line level inputs.

The Osprey-220 also has XLR balanced audio inputs on the breakout cable.

Note that although the Osprey-210 includes 3 connectors for audio-in**, you should not simultaneously connect live signals** to the single 3.5 mm stereo connector and the 2 RCA connectors. You should connect a stereo signal to **either** the 3.5mm stereo input, or to the left and right RCA inputs.

The selection of audio input to capture is independent of the video input selection.

Chapter 3 - Installing the Software

Please note:

- Before installing software, check the ViewCast.com support website or the ftp site for the any driver update releases subsequent to the software shipped on your CD. For the ViewCast.com support website, go to http://www.viewcast.com/ > Support > Osprey Product Lines > Driver Downloads > Osprey 200. To reach the ViewCast.com ftp site, go to ftp://ftp.viewcast.com/pub/OSP-200/win9x/latest. It's a good idea to check these sites periodically for update releases.
- The screens used to illustrate the installation steps may not be exactly what appear on your computer screen. In some cases, version numbers and other minor differences may appear in the installation you are running.

Basics: Installing From CD

Basics: Downloading and Installing Updated Drivers

Testing the Installation

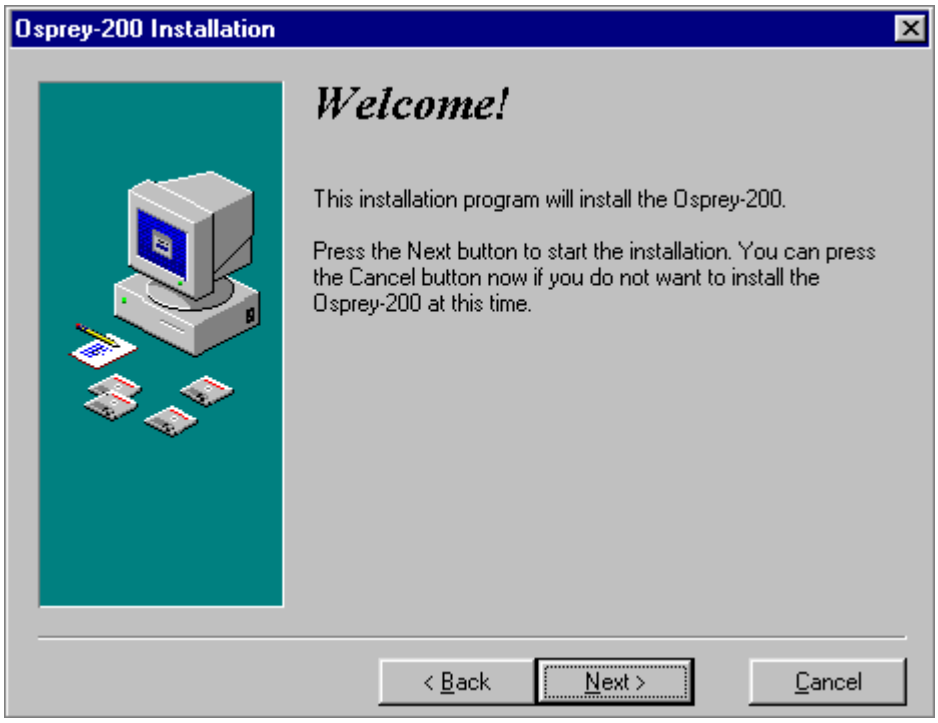
Uninstalling the Software

Basics: Installing From CD

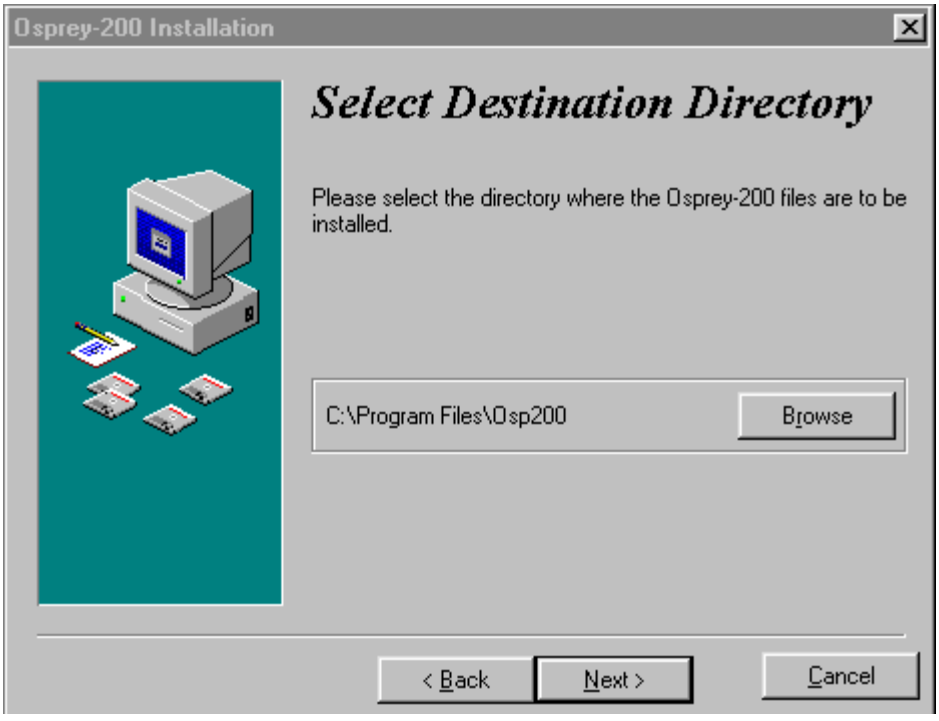
If necessary, follow the directions in Chapter 2 - Osprey-220 Hardware to install the Osprey card. This software installation procedure works properly only if the card is already installed. The procedure is the same for Windows 95, Windows 98, and Windows ME.

1. Turn on the machine and start Windows
2. The Add New Hardware Wizard will begin and prompt you to insert the Osprey-220 Driver CD into your CDROM drive. Insert the CD and click OK. You may have to browse to point to the file *otio200.inf*, which is in D:\Win-95-98 on the CD. (The installation instructions assume this is the D: drive. During the installation procedure it may be necessary to substitute the proper drive as it appears on your system.)
3. The Wizard will install the requisite files that automatically run the Osprey's installation program

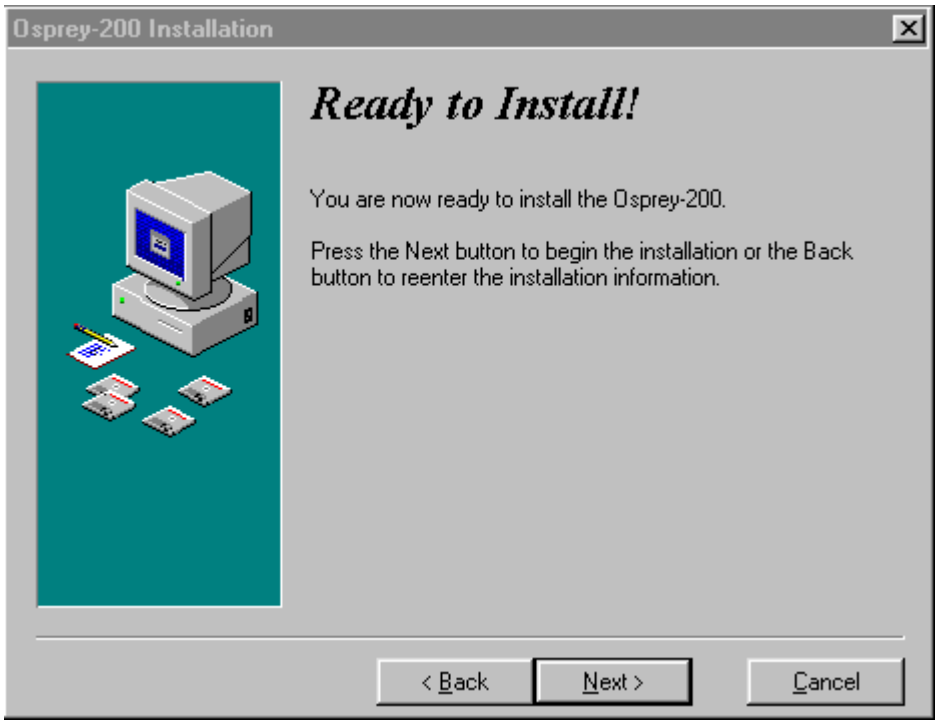
4. When the installation program begins a welcome screen will appear, click next to continue the installation or cancel to quit and install the drivers and applications later.



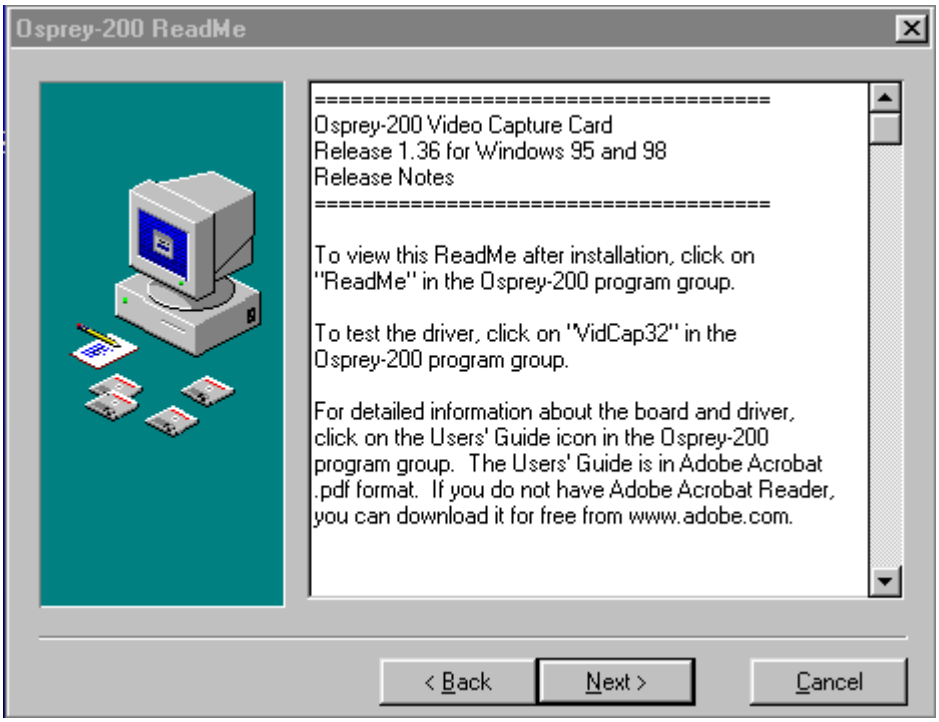
5. Click Next to accept the default destination folder where the application will reside on the hard driver or click Browse to choose another folder for installation.



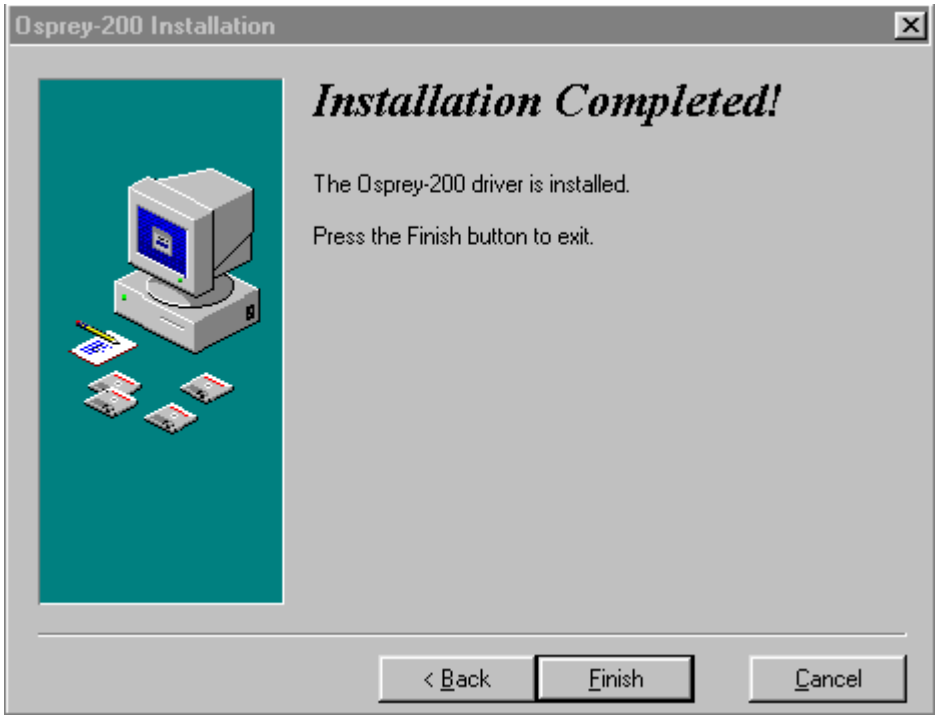
6. The installation program is ready to install the necessary files for the drivers and applications, click next to continue with the designated setting or back to enter new settings.



7. After you have read the release notes and license agreement click Next to continue the installation.



8. Installation is complete. The driver and demo program are ready for use as soon as the installation program completes and you have rebooted the system. We suggest that you test the driver immediately. Please refer to Testing the Installation.



Basics: Downloading and Installing Updated Drivers

1. The latest software drivers for Osprey-220 Capture Cards are available via FTP (file transfer protocol) at the following location:

   ftp://ftp.viewcast.com/pub/OSP-200/win9x/latest

   The same driver is used for the Osprey-200/210/220, so these links point to the same download file. There are also links to the drivers from our web site at http://www.viewcast.com. When installing an updated Osprey-220 driver, first uninstall the existing driver and reboot the computer.

2. Use your web browser, such as Microsoft Internet Explorer or Netscape Navigator, to find our FTP site and download the file. Type the FTP address shown above into the address box at the top of your browser window. You may find it simpler to type just the first part of the address - **ftp://ftp.viewcast.com/pub/** - and then click on the list of directories that appear until you reach the **win9x/latest** location. Refer to your browser's help files for more specific and detailed assistance.

3. Download the web package file in **win9x/latest** to your hard disk.

4. Run the web package program:
   a. Click the **Start** button.
   b. Click **Run**.
   c. Enter <*pathname*> in the dialog box, where <*pathname*> is the location and name of the file that you have downloaded.
   d. Click **OK**.
   e. The program prompts for a temporary location for unpacking the install files.
5. Run the setup program, 95setup.exe from the temporary location. The installation procedure for this is outlined in the previous section, Installing from CD.

The files that are written to a temporary location for unpacking the install files are not automatically deleted after setup has run. This feature exists to offer the option of performing the manual Plug and Play install later. If you want to conserve disk space, make a note of where these files are being unpacked, and delete them after the install.

Testing the Installation

1. Verify that the hardware installation is complete according to the directions in Chapter 2 - Osprey-220 Hardware.
2. Connect a video signal source to one of the Osprey-220 connectors (Composite/S-video).
3. Open the Osprey-220 group in the Start menu.
4. Click the **VidCap32** icon
5. If your input is composite video, the screen displays a still video frame from the Osprey-220 board. Click the **Overlay** button. The screen should display moving video frames. If your input choice is not composite video, select the **Video Source** option under the **Options** menu. This brings up the Osprey-220's video capture driver configuration box where you can select your video input.
6. If the video area does not contain video, it could be for one of the following reasons:
   a. The driver is looking for video on the wrong input connector. You can either move the video cable to another connector or reconfigure the driver using its Control Dialog. Refer to Chapter 4 - Osprey-220 Video Control Dialog.
   b. The video source is not turned on or activated.
7. If the video area is scrambled or has bad color, the signal format of your video source may be different from the signal format selected in the driver software. Since the driver defaults to NTSC-M signal format, users of PAL

equipment always need to change the driver's signal format the first time they run the driver. Refer to Chapter 4 - Osprey-220 Video Control Dialog for more information.

Uninstalling the Software

If you need to remove the Osprey driver from your system:

1. Open the Control Panel.
2. Double-click **Add/Remove Programs**.
3. Click to select **Change or Remove Programs**.
4. Highlight the **Osprey –200** entry.
5. Click **Change/Remove in the Osprey** entry.
6. The uninstall program begins.
7. Click **Yes** to proceed.
8. Click **OK** when the process is complete.
9. Please reboot your computer to finish removing the driver.

You have the option of deactivating the Osprey drivers without permanently uninstalling them. For example, this option allows you to use another device as your primary video capture device. Refer to Appendix D - Using the Osprey Video Capture Driver with Other Drivers for more information.

Chapter 4 - Osprey-210/220 Video Control Dialog

Accessing the Dialog

The easiest way to become familiar with the video capabilities of the Osprey-210/220 cards is to run the included video viewing application, VidCap32, and look at its menus and dialogs. VidCap32 is also useful for testing the installation. Examples in this chapter refer to VidCap32 when accessing the Osprey driver Control Dialog for configuration.

Accessing the Dialog

The normal way to access the dialog is through a menu entry or control button belonging to the application program. For example, The menu selections **Options / Video Source** and **Options / Video Format** access the Control Dialog when using VidCap32.

The areas of the dialog are:

Video Connector
Standard
Color
Image Size
The Config Button
Image Format
The OK Button
The Cancel Button
The Default Button

Video Connector

The Video Connector buttons allow selection of one of the board's Composite or the S-Video inputs. If Preview or Overlay mode is enabled in your application, you will be able to see the results of your selection immediately, without exiting the dialog. Otherwise, changes take effect after you exit the dialog.

Standard

You can select either NTSC- or PAL-standard video. If you are a North American user, select NTSC, the North American broadcast standard, unless you are specifically working with PAL equipment. PAL is used in Europe and in many countries elsewhere in the world.

The standard frame sizes are different for NTSC and PAL. For example, the half-frame size in pixels is 320x240 for NTSC, and 384x288 for PAL. If you have selected a standard frame size (Full, 1/2, 3/8, or 1/4), the driver automatically adjusts the frame size to correspond to the standard. If you have created a custom size, it does not change when you switch between NTSC and PAL/SECAM.

The NTSC/PAL setting is visible immediately if preview or overlay video is running.

Color

Four scroll bars control Brightness, Contrast, Hue, and Saturation. The four edit boxes beside the scroll bars can be used to enter specific numeric values, though the effects of these changes will not take place until exiting the dialog.

NOTE: When using these controls, be sure that Preview mode or Overlay mode is enabled, so that you can immediately see your changes.

When PAL video is used, the Hue setting is not adjustable and the Hue control is grayed out.

Image Size

The drop list allows you to select from the three standard image sizes listed below, or to select a custom size. The width and height shown are in pixels for the North American NTSC-M video standard.

Size	**Width x Height**	Also known as:
Full	640 x 480	
1/2	320 x 240	CIF
1/4	160 x 120	QCIF

The two custom edit boxes allow you to specify a custom height and width for the image (some color formats, such as YUV9, are not compatible with custom sizes – with this in mind you will need to experiment to see which color format works best with the desired image size).

Standard image sizes vary depending on whether the video source is NTSC or PAL – for example, half-sized NTSC video is 320 x 240 pixels, while half-sized PAL video is 384 x 288.

If you have selected a standard size in the drop list, when you switch between NTSC and PAL your image size will automatically adjust – for example from 320 x 240 to 384 x 288. If you want to keep the current image size, set the drop list to "custom" before making the switch between NTSC and PAL.

For example, if you want PAL video at 320 x 240, first click the NTSC button, then select "320 x 240" from the drop list. At this point the custom width and height boxes will say 320 and 240. Then select "custom" from the drop list. Then click the PAL button.

You do not have to select "custom" in the drop list before setting a custom size. The drop list will change as soon as you complete your change to the custom height or width box.

The custom width edit box rounds off the width to the nearest smaller four-pixel boundary. The custom height edit box rounds off the height to the nearest smaller two-pixel boundary.

You can see the effects of your changes to the image size only after you exit the dialog.

Image Format

Image format refers to the way the image's color and intensity information is encoded. It is the arrangement of data bits representing the colors of each pixel. For example, in the RGB15 format, each pixel of data is stored as 5 bits of red, 5 bits of green, and 5 bits of blue color information. The image format drop list contains eight possible selections.

Note that the preferred format depends upon the application, and upon whether image quality or maximum compression rate is most important. The following information may aid in selection of the best format to use for a particular application.

- For maximum quality, at the expense of larger storage requirements, use 24 bit RGB.
- For general purpose uncompressed video capture, use 15 bit RGB.
- For maximum compactness, at a slight cost in image quality, try YUV9. To use YUV9 you have to have installed on your system a video codec that understands this format. Ligos Technology's Indeo Video Interactive package, available for free from Ligos Technology's website, is an example of a suitable codec and is described in detail below.

Video delivered by the Osprey board to the system is in uncompressed format. It is possible to compress the video at a subsequent stage of processing. However, this dialog field refers specifically to the uncompressed raw video that the board delivers to the system.

The color format you choose applies to Captured video and to Preview video. It does not apply to Overlay video. Overlay video is always matched to the display adapter's current screen format - except when greyscale mode is selected. Overlay video is therefore as fast and efficient as possible, but the color rendering may differ very slightly from what you capture. Preview mode renders colors exactly, but it is slower and consumes more system resources.

Changes to Color Format take effect only after you exit the dialog.

For a more detailed description of the color modes available, refer to Appendix B - Color Modes.

The OK Button

This button closes the dialog and implements the settings you have chosen. The settings you have chosen will remain in effect for the current application session and for future sessions.

The Cancel Button

This button closes the dialog and restores the settings to the way they were previously.

The Defaults Button

The **Defaults** button restores brightness, contrast, hue, and saturation to convenient default. It does not affect any of the other dialog controls.

The Config… Button

The **Config…** button in the main setup dialog brings up a small subdialog that allows you to control the details of how Direct Draw and video overlays work:

If you check the **Preview Only** checkbox, Overlay mode will be disabled. In VidCap32, the Overlay button will be grayed and will not work, and similar effects will be seen with other applications. Use the **Preview Only** option if you are repeatedly getting the message *Bt848/878: No suitable DirectDraw provider - Overlay channel is disabled* every time the driver starts - it will prevent this message from appearing.

Check the **Force Primary** checkbox if you cannot see Overlay video or the video is incorrect. The “Force Primary” option makes the driver use an alternate DirectDraw method that works better with some display cards and display drivers.

Changes you make to **Preview Only** and **Force Primary** are actually registered when you click the **OK** button on the sub-dialog. They are ignored if you click the **Cancel** button on the sub-dialog. You have to restart the application in order for these changes to take effect.

The **Primary Desktop Redraw** field allows you to enter a millisecond delay factor that is used in Primary Direct Draw. The default value is 100 milliseconds, which should work well for most systems. If you enter a value less than 40 milliseconds the driver will use a value of 40 milliseconds. If the delay is too short, there may be video artifacts left on the screen after the window layout changes. If the delay is long, there will be a delay between when the screen layout changes and when the desktop is redrawn that you may find visually disruptive. Changes you make to **Primary Desktop Redraw** take effect immediately after you click the **OK** button on the sub-dialog.

The **Defaults** button restores the defaults for this dialog – **Preview Only** unchecked, **Force Primary** checked, and redraw delay factor 100.

Chapter 5 - Capturing Audio

Setup and control for audio are much simpler than for video. The basic steps are covered in the following topics:

Select the Audio Source and Input Volume

Audio Formats

Missing Digital Audio Sources

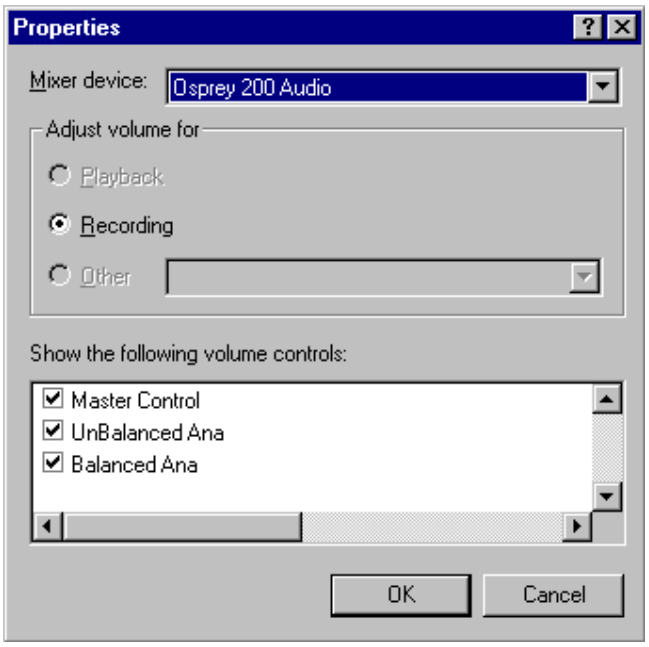
Audio Playback

Selecting the Audio Source and Input Volume

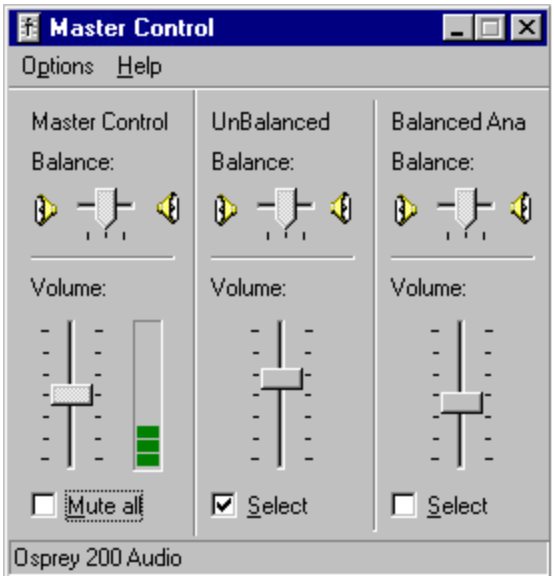
The audio source is set using the Osprey-210/220's mixer driver interface. Most applications, including the Windows Media Encoder applications, interface to the mixer driver directly and expose the look and feel specific to that application. However, the default Windows interface to the mixer driver can also be used. There are two simple methods for getting to the mixer source and volume control dialog box.

1. The easiest method for accessing this interface is to right click the **speaker symbol** on your taskbar (typically on the bottom right-hand side of your screen). Then select the **Open Volume Controls** option.
2. If you do not see the speaker symbol, click the **Start** button on the Start Menu, select **Programs**->**Accessories**->**Entertainment (or Multimedia)** and select **Volume Control**.

Either of these two methods opens the audio mixer interface for the audio playback device. To get to the Osprey-210/220 audio capture (recording) device, select **Properties** under the **Options menu**. This pops up a dialog to select the **Mixer device.** Do not select the Recording option within the **Adjust Volume for** section; this option is selected automatically when you select the Osprey-210/220 for the mixer device. Click on the dropdown list for **Mixer device** to see the list of audio input and output devices, including the Osprey-210/220.



Once an Osprey-210/220 device has been chosen, select **OK** in the *Properties* dialog box and the Osprey-210/220 Master Control panel appears.



The Osprey-210/220 device is not a mixer in that it does not allow for mixing the various audio sources. Therefore, when one audio input is selected, any other input

previously selected becomes unselected. The **Select** checkbox at the bottom of each source sets which source is actually being used.

The Osprey-210/220 has a hardware gain control feature that defaults to unity gain. To control the hardware gain for the Osprey-210/220 use the volume slider in the mixer applet.

The quick-access volume control (left click on the speaker symbol) on the task bar controls playback volume and recording volume. To change record levels, go to Options, then Properties, and select Recording.

Audio Formats

The only Format that the Osprey-210/220 audio capture driver supports is PCM. The driver supports the following data rates:

- 8 kHz
- 11.025 kHz
- 16 kHz
- 22.05 kHz
- 32 kHz
- 44.1 kHz
- 48 kHz

These data rates are supported in 8-bit and 16-bit, mono and stereo formats. The actual Osprey-210/220 hardware supports sampling of analog audio at 32, 44.1 and 48 kHz. Depending on the requested audio format, the Osprey-210/220 driver automatically selects the most appropriate hardware sampling rate. For example, if 22.05 kHz audio is desired, the audio driver selects the 44.1 kHz audio rate and down samples it to 22.05 kHz.

It should be noted that the Osprey-220 does not currently dynamically readjust sampling rates while audio capture is in progress. Thus audio capture should be stopped and restarted whenever the audio input port changes.

For mono sources, the Osprey-220 uses only the left audio channel. Optionally, this can be configured to be the left channel or a mix of the left and right channels.

When a capture is started before the audio source is selected, the audio may not be sampled at the correct rate. Audio sampled at an incorrect rate will sound slower or faster than normal when it is played back. Should this occur, stop and restart capturing audio.

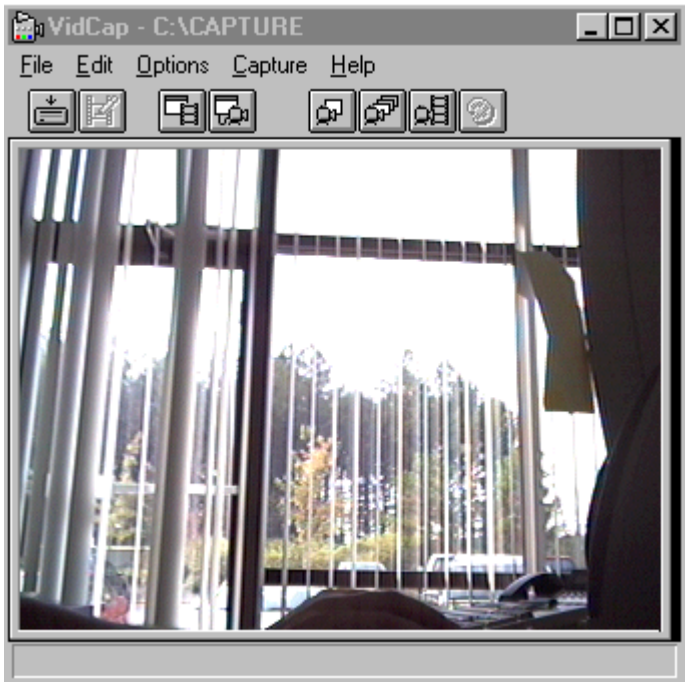
Audio Playback

The Osprey-210/220 provides audio capture only, not audio playback. Continue to play back captured audio using your system soundcard.

The Osprey-210/220 does provide a monitoring capability for the audio input. A 3.5mm stereo plug on the backplate provides a hardware loopback (post gain) signal. Connecting headphones or speakers to this plug will allow the user to monitor the audio input.

Chapter 6 – Using VidCap32

VidCap32 is a standard video capture applet that is included with the Osprey capture card. It is useful for testing the installation and for capturing video to file. The following instructions take you through the basic scenarios for using this applet. VidCap32 has additional capabilities and settings that are beyond the scope of a brief introduction. They are described in the applet's online help.



The VidCap32 Application window

Preview

The **Preview** button (third button from the left on the toolbar) toggles preview on and off. When preview is enabled, the video you see is updated constantly. What you see has the exact format and appearance that will be captured to file (an uncompressed video capture). If you are capturing compressed video, though the format and appearance are the same, the output that the compressor will write to file will be slightly different.

Overlay

The **Overlay** button (fourth button from the left on the toolbar) toggles overlay on and off. When overlay is enabled, the video you see is updated constantly. The difference from Preview is that the Osprey capture card's driver will use the fastest and most efficient drawing method it can. Performance varies greatly, but in the best case - with Direct Draw enabled and working - it can draw at the full frame rate (30

per second) without using much processor overhead. The downside of Overlay mode is that for quick drawing, the hardware has to match the format of your display adapter - which may not be the same as the format you are using for capturing video to file. You can see the difference if you select YUV9 as your capture format: Preview and Overlay appear distinctly different, because the Overlay mechanism is not using YUV9 format, which display adapters cannot display directly. The Preview function, on the other hand, is decoding and translating the YUV9 format before writing it to the screen.

Note that the Preview and Overlay buttons behave like radio buttons that cancel each other — you do not have to shut off Preview in order to start Overlay.

Configuring the Video Capture Driver

You can go through VidCap32 to access the Osprey capture card's configuration dialog, which is described in detail earlier in this document. The two menu selections: **Options/Video Format** and **Options/Video Source** both access the configuration dialog.

Compression

It is possible to compress video as it is captured to disk. Neither VidCap32 nor the Osprey capture card perform video compression themselves. However, VidCap32 may be connected to external compression modules.

When a compressor is enabled, video is passed from the Osprey capture card's driver to the compressor, which then writes it to file. The compression dialog, accessed by the **Options/Compression** menu item, allow you to select a compressor, or to select no compression. The information below for Intel's Indeo Video Interactive compressor gives a detailed example of how to perform this task.

Note that the list of available compressors is different for each video Color Format, as selected in the Osprey control dialog. You should therefore select the Color Format you will be using first, then select the compressor. Otherwise, you may get an error message when you try to begin video capture.

Setting the Capture File

The leftmost button on the toolbar (or the menu item **File.../Set Capture Fil**e) opens the Capture File dialog box.

Depending on a number of factors, you may experience a significant percentage of frames dropped. The percentage of frames dropped is a function of frame size, use of a compressor, and the speed of your system. Preallocating a capture file and defragmenting it can substantially improve performance.

"Preallocating" a file means that space has been reserved for it on your hard disk. The menu item **File.../Allocate Disk Space** brings up a dialog by which you can preallocate a file and reserve space large enough to hold the largest video clip that you are likely to capture. You can also preallocate multiple files to hold multiple video clips.

For preallocation to be useful, the hard drive should be defragmented afterwards. "Defragmenting" a drive reorganizes its physical sectors so that each file occupies contiguous sectors, rather than having different parts of the files scattered about the disk.

VidCap32 does not perform defragmentation. Windows 95/98 has a built-in defragmenter, located under *Start .../Programs/Accessories/System Tool/Disk Defragmente*r. Use VidCap32 to preallocate the files, then exit to run the defragmentation utility. **Note: Defragment after you allocate and size the capture files.**

After the hard disk has been defragmented, return to VidCap32. The file (or files) you preallocated will still exist, but will be located on contiguous areas of the hard drive. This arrangement will remain until the file is resized or deleted.

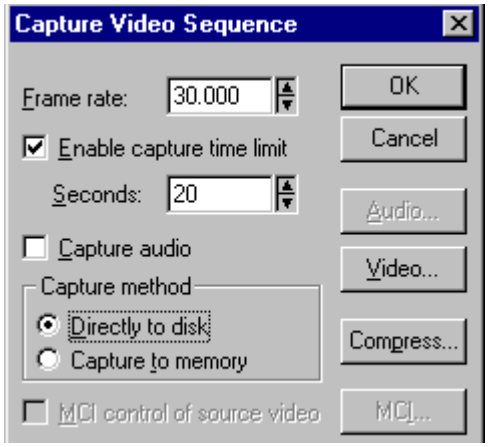
Plan accurately for the number and size of files you will need. Once a file has been defragmented, take care to not accidentally delete it. Also, don't overflow the file – the file will enlarge automatically but the added sectors may not be contiguous. Use defragmented files as work space rather than as permanent storage space - move your video clips to storage files after you have captured them.

An alternate technique that avoids the need for defragmenting is to set up a separate disk partition dedicated to video capture, containing a single capture file.

Defragmenting is a time-consuming procedure, but is well worth the trouble if you will have an ongoing need to capture high-quality video.

Capturing Audio and Video

The second button from the right opens the Video Capture Dialog. This can also be accessed by the **Capture / Video** menu item.



The Video Capture dialog

The dialog includes controls to set the number of frames per second, as well as an optional time limit (in seconds) for the sequence. Buttons are provided to access both the video capture driver's configuration dialog and the compression dialog. You can also access and configure the Osprey to capture audio by selecting “Capture audio” and clicking the Audio button. The dialog allows a choice between capturing data directly to disk, or capturing via memory. Note that capturing to memory may result in fewer dropped frames.

Once the proper configuration is confirmed, click **OK** to capture the video. To end capture, click the mouse anywhere in the VidCap32 window.

Playback

The simplest way to play back a video clip is to double-click on the Playback icon in My Computer. For more flexible viewing, run Media Player **(Start / Programs / Accessories / Multimedia / Media Player)**. Use Media Player’s **File / Open** dialog to select the file to play. The applet contains standard start, stop, and rewind buttons and is largely self-explanatory. Refer to Media Player's online help for more information.

Ligos Technology's Indeo Video Interactive

Ligos Technology's Indeo Video Interactive is a software video compressor that works with the Osprey capture card. It allows you to capture video to disk using substantially less disk space, at the cost of only a slight lost of picture clarity. It is provided on the Osprey driver installation CD or is available for free at Ligos Technology's website:

http://www.ligos.com/indeo/downloads/

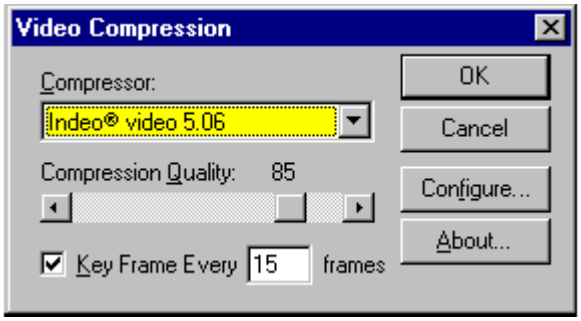
To test Indeo with the Osprey capture card, use the following steps:

1. Connect and adjust your video source.

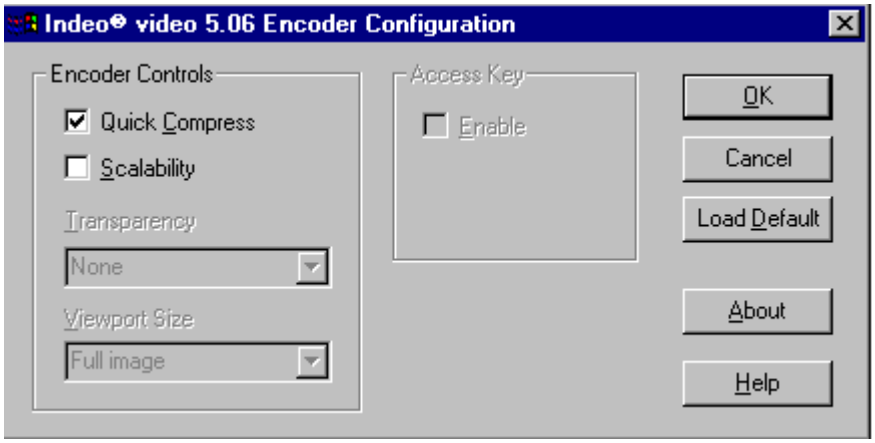
2. Start VidCap32.

3. Use the **Options/Format**... menu entry to bring up the Osprey capture card's configuration dialog. In the drop-down list in the Color Format field, select **RGB24**. Click **OK.**

4. Use the **Options/Compression**... menu entry to bring up the compression dialog. In the Compressor: field, select **Intel Indeo Video Interactive**.



5. Before leaving the compression dialog, click the **Configure**... button. Enable Quick Compress in the Encoder Controls field, and click **OK**. Click **OK** again to close the Video Compression dialog box.



6. Select **Set Capture File**.. under the File menu. Set the name that youwant for the file that will contain the captured video. Click Open.

7. Select **Capture / Video** and click **OK.** A confirmation dialog appears. Click **OK** again to start capturing video.

8. Click anywhere on VidCap32 to end capture. For test purposes, you'll want only a few seconds of video.

9. Double-click on **My Computer** and navigate to the icon of the file that you just captured. Double click on it and it will play back.

Chapter 7 - Troubleshooting

Blue/Black Video Screen

Black Preview Video Screen

Scrambled Video Image

Grainy, Dithered Image

Poor Video Quality at Large Frame Sizes

Interrupt Conflicts

Multiple Horizontal Lines Across Video Image

Blue/Black Video Screen

The currently selected video input is not receiving an active video signal. Different inputs may provide a different symptom when a video source is not supplied.

1. Check that the camera, VCR, or other video source is powered and that its output is connected to the Osprey card's input.
2. Check that the correct video input is selected in the Control Dialog's Source page.

Black Preview Video Screen

If you select a Color Format other than one of the RGBs, you may get a black preview screen. You may also get a message such as "Error: Unable to draw this data format". The problem is that Video for Windows does not know how to decode these more specialized formats. It must be able to locate a software video decompressor on your system that works with this format.

If you encounter this situation with a Color Format that you need or want to use, you have to obtain a suitable compressor. For example, if you install Ligos Technology's Indeo compressor you can preview the YVU9 format. To download from the Indeo compressor web site:

http://www.ligos.com/indeo/downloads/

The Indeo compressor is also located on the driver installation CD in the \indeo\ folder.

Scrambled Video Image

You may have set the wrong video signal format for the signal input you are using. For example, you may have told the driver to look for NTSC-M video but are using a PAL-BDGHI video source. Make sure you know what signal format your video source is generating. Go into the **Signal** field of the Control Dialog's Source page, and click the button for that signal format.

Grainy, Dithered Image

Check that you are using a display format with greater than 256 colors. If a 256 color format is used, the system can only approximate the actual colors, and does so with a loss of resolution and precision.

Poor Video Quality at Large Frame Sizes

Large frame sizes with the deep pixel depth (24- or 32-bit), or complex format (YVU9 or YUV12 planar), impose heavy demands on the PCI bus's data transfer capacity. Our experience is that some systems cannot handle these formats at full frame sizes.

Systems vary in their data transfer limits. The characteristics of the PCI bridge are often more important than processor speed. If you are having problems, we recommend that you:

- Use a smaller frame size (480 x 320 or less).
- Use a shallower color format (RGB15 or RGB24 instead of RGB32).
- Try an RGB format instead of a YVU format, and a packed format instead of a planar format.
- If you have a choice of PCs for video capture, try using another system with a different system board chipset.

Interrupt Conflicts

Failed network connections, failure of a device drive to initialize during start-up, or failure of the Osprey card and driver to operate properly are often traced to interrupt (IRQ) conflicts. In our experience, IRQ conflicts are most commonly seen when a PCI SCSI adapter, or possibly a PCI network adapter, is present in the system.

Conflicts Between PCI Cards

Conflicts of PCI Cards with ISA Cards

Conflicts Between PCI Cards

PCI cards and drivers do not choose which IRQs they use; rather, the operating system assigns IRQ lines to PCI cards. Windows determines the IRQ configuration for the Osprey card or cards, and the Osprey driver cannot change this configuration. However, you can cause the operating system to assign IRQs differently by rearranging cards or changing BIOS settings.

Multiple PCI cards are supposed to be able to share the same IRQ line. In practice, occasionally you may encounter a device driver that is not implemented correctly for interrupt sharing. If this problem arises, you have to rearrange the PCI cards so that the non-compliant card does not share its IRQ line with any other device.

Another problem is that some PCI device drivers expect to use a particular IRQ line. When a new card is added, it causes the system to assign IRQs differently. If the IRQ

assignment for a particular card is changed and its device driver does not detect the change, this causes the system to work incorrectly.

The simple answer to this problem is it can sometimes be solved by physically rearranging the PCI cards such that their arrangement in the PCI slots is different. When doing this, keep careful notes of the arrangements you have tried.

Another approach to PCI card conflicts is at the BIOS level. Depending on what kind of system BIOS you have, you may be able to change which IRQ lines are allocated to PCI devices versus ISA devices. You may be able to allocate more IRQ lines for PCI devices and thereby solve a PCI conflict.

If these approaches do not work, see Getting Help in Chapter 1.

Conflicts of PCI Cards with ISA Cards

A PCI card and an older-style ISA card can never share IRQ lines. Windows cannot detect with certainty what IRQ line an ISA card is using and cannot always prevent the conflict.

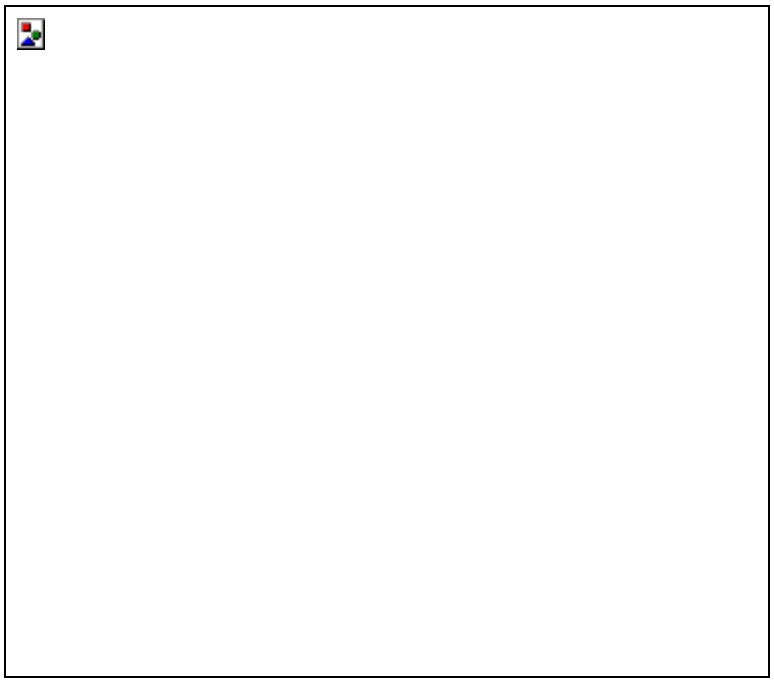
You can view the system's IRQ assignments by accessing the Device Manager (Control Panel > System > Device Manager). Look for devices which have an Exclamation (!) or Question Mark (?) symbol designation, select them then click the properties button. In the new properties window that opens click the resources tab to see the IRQ assignment.

If the list of cards shows an ISA card using the same IRQ as another device, the conflict should be resolved by changing the IRQ of the ISA card.

Unfortunately, if a device driver for an ISA card has failed to initialize because of an IRQ conflict, the card's IRQ does not appear in the list or may not have a exclamation or question mark symbolizing a conflict. To find the conflict, you many need to examine all your ISA cards using the method described herein to find out what IRQs they are trying to use.

Multiple Horizontal Lines Across Video Image

If there are multiple, regularly spaced, horizontal lines across your video image and your source material is copyrighted and copy-protected, you are seeing Macrovision ™ copy protection. It looks like this:



The lines can vary in color from yellow to blue to green. These lines are not present in every frame of video. There may also be a black band at the top of the frame.

The Osprey-210/220 cannot eliminate these video artifacts. These artifacts will only be present when you are using a copy-protected source, such as a high-quality DVD for testing a card.

Appendix A - Hardware Specifications

The Osprey-210/220 Capture Cards are triangular shaped with the following dimensions:

Table A-1 Physical Dimensions

Width	130 mm
Height	107 mm
Weight	85 grams

Table A-2 Environmental Specifications

Operating temperature range	0º to 40º C
Non-operating temperature range	-40º to +75º C (RH)
Operating humidity range	Between 5% and 80% (non-condensing) @ 40º C
Non-operating humidity range	95% RH (non-condensing); gradient 30% per hour
Operating altitude range	0 to 3,048 meters (10,000 feet)
Non-operating altitude range	0 to 15,240 meters (50,000 feet)

Appendix B - Color Modes

The Color Format field of the Control Dialog's Format page allows you to select the following video formats.

RGB32 - Each pixel has four bytes (32 bits) of data - one each for red, green, and blue, plus one byte of padding. The pixel has 256 shades of each of the three colors, for a total of 16.7 million colors. This is a "true color" mode.

RGB24 - Each pixel has three bytes (24 bits) of data - one each for red, green, and blue. This is another "true color" mode with 16.7 million colors, and is a recommended format for capturing images with the highest possible color accuracy.

RGB15 - Each pixel has two bytes (16 bits) of data. There are 5 bits each of red, green, and blue data; the sixteenth bit is unused. This is a "high color" mode, also known as "5:5:5."

4:2:2 packed - Also known as **YUY2**. This mode represents each pixel with a total of 2 bytes (16 bits) of data. The data is encoded as separate data for luminance (intensity) and chrominance (color). This mode is mainly used as an input to software compressors. See YUV Format Details.

YUV12 planar - Also known as **I420**. This is a complex format in which there are in the aggregate 12 bits of data per pixel. Each pixel has 8 bits of luminance data. Each group of 4 adjacent pixels shares two bytes of chrominance data. See YUB Format Details.

YVU9 planar - Similar to YUV12 planar, except that there are in the aggregate 9 bits of data per pixel, and each byte pair of chrominance data is shared by 16 adjacent pixels. See YUV Format Details.

YUV Format Details

4:2:2, YVU9, and YUV12 are YUV formats. In these formats, each pixel is defined by an intensity or luminance component, Y, and two-color or chrominance components, U and V. Since the human eye is less sensitive to color information than to intensity information, many video formats save storage space by having one luminance byte per pixel while sharing the chrominance byte among two or more pixels. YUV is also very similar to the color encoding used for analog color television broadcast signals.

4:2:2 packed mode consists of a single array of mixed Y, U, and V data. Each pixel has one Y (intensity) byte. Each pixels shares its U and V bytes with one of the pixels horizontally next to it:

Pixels 1 and 2:

byte 1 = y1	byte 1 intensity
byte 2 = u1/2	shared U color information for bytes 1 and 2
byte 3 = y2	byte 2 intensity
byte 4 = v1/2	shared V color information for bytes 1 and 2

Pixels 3 and 4:

byte 5 = y3

byte 6 = u3/4

byte 7 = y4

byte 8 = v3/4

4:2:2 packed mode uses the same number of aggregate bytes per pixel as RGB15, which is two. However, 4:2:2 is more efficient than RGB15 because it stores relatively more of the intensity information to which that the human eye is most sensitive.

YVU9 and **YVU12** are "planar" modes - the Y, U, and V components are in three separate arrays. It is easiest to explain the format with an example: Let's say you have a 320x240 YVU9 format. The buffer has 320x240 bytes of Y data, followed by 80x60 bytes of V data, followed by 80x60 bytes of U data. So each U and each V byte together contain the color information for a 4x4 block of pixels.

Similarly, a 320x240 YUV12 format has a 320x240 Y array, followed by a 160x120 U array, and then a 160x120 V array.

Note that in the I420 format used by Osprey, the order of the U and V arrays is reversed from the order in the YVU9 format.

Appendix C – Files and Registry Usage

Certain files are written and registry entries set when the Osprey-200 software is installed. Normally, to remove these components from the system you will want to use the uninstall procedure described in Chapter 3.

The information that follows concerning these files and registry entries will allow a technically proficient user to remove the Osprey-200 installation, even if the Uninstaller is deleted or damaged.

The information under Registry Variables describes registry settings that an advanced user might want to edit.

Deactivating the Driver

Entries are added in the multimedia and system portions of the registry. When manually removing the software, use the Control Panel to remove the Osprey-200 driver *before* deleting any files, as follows.

1. Open the Control Panel (From the Start Menu, click on Start -> Settings -> Control Panel).
2. In the *Control Panel* window, double click the System icon. The *System Properties* window will come up
3. Click the Device Manager tab at the top of the window..
4. If there is a [+] sign to the left of *Sound, video and game controllers*, click on it.
5. Click on *Osprey 200 Video Capture Device* to highlight it.
6. Click the Remove button at the bottom of the window.
7. In the *Confirm Device Removal* window, click OK.
8. Repeat these removal steps for the *Osprey-200 Audio Capture Device*
9. Click Close at the bottom of the *System Properties* window.
10. Close the *Control Panel* window.

Manually Deleting Osprey-200 Files and Registry Entries

> Use caution in carrying out the following steps! These instructions are for advanced users only! Be careful not to delete or alter any items other than the ones described here!

In the main *Windows../System* directory, the following files are used only by the Osprey-200 driver and may be deleted:

- bt848.drv
- btvvc32.drv
- bt848.vxd
- bt848ddi.dll
- bt848_16.dll
- bt848_32.dll
- bt84xcc.dll
- o100un.exe

- bt848dlg.dll
- btaud.dll
- btaud16.dll
- otio200.inf
- o200inst.exe
- bt848xcc.dll
- bt878dma.exe
- btpciaud.vxd
- btwavein.drv

The Osprey-200 directory and its contents may also be deleted. By default, this directory is *c:\Program Files\Osp200*, and contains the following files:

- VidCap32.exe
- VidCap.hlp

The installer creates a subdirectory named *95* within the Osprey-200 directory. This subdirectory, and the included files below, may be deleted.

- ReadMe.txt
- O100inst.dll
- O200guide9598.pdf
- O220guide9598.pdf

The installer creates an Osprey-200 Taskbar entry. You can delete it using the **Taskbar Properties … Start Menu Programs** function.

During installation, the following branches are added to the registry. These branches can be deleted using the system application RegEdit without affecting the rest of the system.

- HKEY_LOCAL_MACHINE\Software\Microsoft\Windows\CurrentVersion\Uninstall\Osprey-200
- HKEY_LOCAL_MACHINE\Software\Osprey\Osprey200
- HKEY_CLASSES_ROOT\Bt848

Editing Registry Variables

HKEY_CLASSES_ROOT\Bt848 contains most of the driver's working variables. There are cases where an advanced user may want to change certain of these variables using RegEdit. Note that three of these variables can be changed through the **Config…** button of the setup dialog as well as with RegEdit: *Force Primary, PreviewOnly,* and *RedrawDelay*.

HKEY_LOCAL_MACHINE\Software\Osprey\Osprey 200\DsoundOut controls whether you can listen to audio at the same time as recording it. If this key has a value of 1, you will hear the audio input. If the value is 0, then you will not hear the audio input.

> You may also edit the registry to enable audio out on the sound card while you are recording (audio in) on the Osprey-200 card. To do this, add the following line to the registry:
> HKEY_LOCAL_MACHINE\Software\Osprey\Osprey 200\DSoundOut
> When this key has value 1, you will hear the input audio
> When this key has value 0, you will not.