FlexCam® iCam

Digital User Manual

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Introduction

The FlexCam® iCam Digital is a user-friendly presentation camera that features S-Video and USB digital capabilities for enhanced flexibility in a wide variety of classroom applications. This innovative camera is perfect for presenting objects, images, text or microscopic images to a classroom. Using the USB connection and powerful software, students and teachers can easily capture video, create video presentations and edit for special effects.

Important safeguards

Before operating the FlexCam® iCam Digital camera, please read the entire manual thoroughly. The FlexCam iCam Digital was designed, built and tested for use indoors. Using a power supply other than the one provided or using the camera outside could damage the camera or peripheral equipment and/or create a potentially unsafe operating condition.

- Do not operate the camera if the power cord is damaged or if the camera has been dropped or damaged. A qualified service technician must examine the camera before operating.
- Position the cord so that it will not be tripped over, pulled on or come into contact with hot surfaces
- Always unplug the camera from the electrical outlet before cleaning or servicing.
- To reduce the risk of electric shock, do not immerse in water or other liquids.

Handling the camera

- All cameras are for indoor use only.
- Do not use the cameras next to food or beverages. Cameras have been tested and approved for use in chemistry labs. However, be careful not to spill liquid or dry chemicals or solvents on the camera.
- Do not use cameras right next to working TVs, radios, motors, transformers or magnetic fields.
- Avoid touching the lens. To clear any dust, blow pressurized air onto the lens. Clean smears or smudges by wiping with a lens cleaning cloth.
- Clean exterior of camera by wiping with a clean, damp cloth; do not use any abrasive chemicals.
- Use both hands whenever adjusting the neck of the camera; this will avoid any unnecessary strain on the camera base and will keep the camera from tipping over.
- Do not attempt to take the camera apart. There are no user-serviceable components inside.
- Do not direct the lens of the camera toward the sun. This may damage the camera.
- Do not store or operate the camera under the following conditions:
  - Outdoors or connected to outdoor or auxiliary power sources
  - In environments with high humidity.
  - In inclement weather.
  - Under severe vibration

Unpacking

Carefully remove the FlexCam® iCam Digital, cables and power supply from the packaging. Ensure that you received the following items:


FlexCam iCam Digital


6' USB Cable


12' S-video


Plug


FlexCam iCam Digital Manual


Microscope Couplers 26mm, 28mm and 34mm


S-Video to Composite Adapter


12 VDC Power


Applied Vision Software and Driver Disk

Figure 1. FlexCam iCam Digital and accessories

not responsible for product damage incurred during shipment. You must make claims directly with the carrier. Inspect your shipment carefully for obvious signs of damage. If the shipment appears damaged, retain the original boxes and packing material for inspection by the carrier. Contact your carrier immediately.

System requirements

FlexCam iCam Digital

- Windows 2000, XP or Vista
- Mac OS 10.2+
- USB 2.0

Product overview

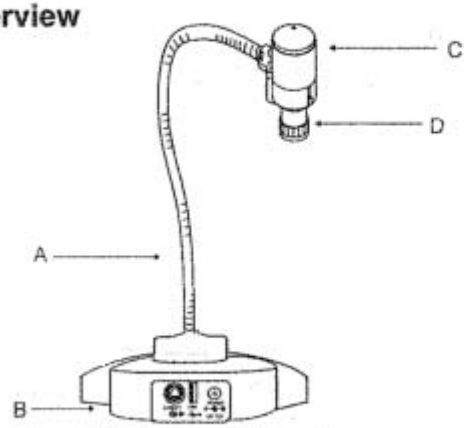


Figure 2. FlexCam® iCam Digital overview

A. **Gooseneck.** The gooseneck allows you to adjust the camera head/camera lens over the object to be viewed. Do not bend the gooseneck more than 90° in any direction or attempt to tie it in a knot. Do not attempt to repair any cracks in the vinyl coating. The gooseneck is non-removable

B. **Camera base.** The camera base has power, USB and S-video connections.

C. **Camera head.** The head of the camera unit contains the camera lens, lens holder, focus ring attachments, connections to gooseneck and all cables.

D. **Camera lens and lens holder.** The camera lens is held in place by the lens holder. If you remove the lens, take care not to cross thread the lens when replacing it.

Application examples

With simple S-Video and USB connections, the FlexCam® iCam Digital is the perfect addition to any classroom. You can connect to a PC or a Mac using the USB connection to add still images or movie clips to web sites, reports, and presentations. The S-video connection allows you to display images and objects as well as share documents on a TV or LCD projector. You can also use the camera with a microscope to capture lab experiments.

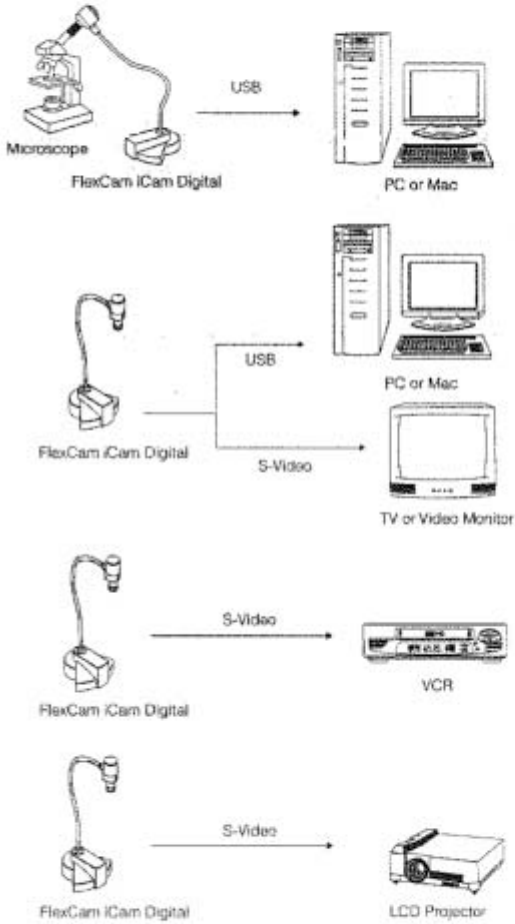


Figure 3. Applications

Getting Started

Connections

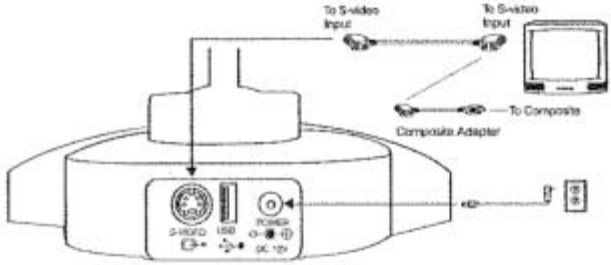
You can connect the FlexCam® iCam Digital to a TV, a VCR or an LCD projector using the included 12' S-Video cable. If your video display device requires a composite signal, use the provided S-Video to composite adapter.

To connect to a TV, VCR or projector

1. Connect the S-Video cable of the FlexCam iCam Digital to the video input on the display device.

Note: If needed, use the S-Video to composite video adapter

2. Attach the power plug to the power jack o the back of the camera and plug the power adapter into the wall.



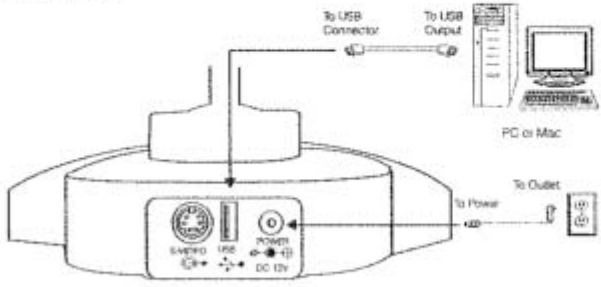
FlexCam iCam Digital

Figure 4. Connection to an S-Video display device.

To connect the camera to a computer

1. Connect the USB cable of the FlexCam® iCam Digital to the USB input on the back of the computer.

2. Attach the power plug to the power jack on the back of the camera and plug the power adapter into the wall.



FlexCam iCam Digital

Figure 5. Connection to computer

Using the Camera

General usage

To view images on a TV

1. Connect the camera to a TV.
2. Switch the TV to video mode by pressing the button the TV front panel or remote control (consult your owner's manual for further instructions).

Note: Not all TVs have video inputs. If your TV only has an antenna input, you will need a modulator or a VCR with video inputs.

3. Turn camera on using the on/off switch located at the base or the gooseneck. You should see an image on the television screen.
4. Position the camera.
5. Turn the focus ring to the left for close-up or to the right for distance.

To record images on a VCR

1. Connect the camera to a VCR using the S-Video cable or composite adapter.
2. Switch the VCR to the video-in mode (consult your owner's manual for instructions).
3. Turn camera on using the on/off switch located at the base of the gooseneck.
4. Turn the VCR/TV switch to VCR and the TV to either channel 3 or 4
5. Position the camera.
6. Turn the focus ring to the left for close-up or to the right for distance.
7. Press Record on the VCR.

To view images on a LCD projector

1. Connect the camera to a projector using the S-video cable or composite adapter.
2. Turn the projector on (consult your owner's manual for further instructions).
3. Turn camera on using the on/off switch located at the base of the gooseneck.
4. Position the camera
5. Turn the focus ring to the left for close-up or to the right for distance.

To use the microscope couplers

1. Slide the microscope coupler (26, 28 or 34mm depending on the size of the microscope) over the microscope eyepiece.
2. Adjust the camera to fit the camera lens into the coupler on the microscope.

Troubleshooting.

I've installed the FlexCam iCam Digital, but the picture doesn't appear.

Connect the FlexCam iCam Digital to the computer using the supplied USB cable. Check to see that the video source (S-video or composite) is set correctly. Ensure that the USB port is enabled in your computer's BIOS and in the Windows Control Panel/System Device Manager.

How do I know the driver for the FlexCam iCam Digital has been properly installed?

Right-click the My Computer icon on the desktop. Choose Properties. Click the Hardware tab, then Device Manager. Click the plus sign next to the icon labeled Imaging. If the Imaging folder is missing, you need to reinstall the drivers.

If you are experiencing other problems with your camera,

- Ensure all camera adapter/cable connections and electrical connections are done correctly and completely.
- Check all equipment for faulty operation
- Check all settings on your camera and adjust them for viewing conditions in the presentation room.

Applied Vision™ 4 Software

Instruction Manual

If you require an Applied Vision installation disk,
call us toll free at 1-800-627-1953.

Table of Contents

Thank you for your purchase.

This guide provides basic information about installing and using Applied Vision™ 4 Software.

Introduction to Applied Vision™ Software

Applied Vision enables users to connect their USB to their computer, allowing capturing, viewing, and manipulation of both video and still images. Applied Vision 4 is optimized for utilization in a classroom setting while remaining widely applicable for any environment in which digital imaging is required.

Here are a few of the features built into Applied Vision:

- Cross-platform support for Windows, Mac, and Linux
- Full screen viewing
- Video recording
- Still image capture
- Multiple camera support
- Advanced image editing and analysis
- Time lapse recording
- Video rotation
- Digital zoom
- Numerous science applications including calibrated measurement

Installation

Minimum Requirements

- Windows XP SP2 or higher
- Mac OS X 10.6.8 or higher
- 512MB RAM
- USB 2.0
- Current version of Java. Available from **www.java.com**.

Windows Installation Instructions

1. Go to **www.ken-a-vision.com/support/software-downloads.**
2. Click **Download Applied Vision 4 for Windows** to begin downloading Applied Vision.
3. When the download is complete, click the **av4.msi** file to launch the installer.
4. Click **Run** and follow the on screen instructions to complete the installation.

Macintosh Installation Instructions

1. Go to **www.ken-a-vision.com/support/software-downloads.**
2. Click **Download Applied Vision 4 for Mac** to begin downloading Applied Vision.
3. When the download is complete, click the **av4.zip** file to open and uncompress the downloaded file.
4. Drag the Applied Vision application file to your Applications Folder, Desktop or Doc to complete the installation.
5. You may be prompted to install X11 or XQuartz. Follow the on screen instructions or visit **www.xquartz.macosforge.org** to get the latest version.

If you require an Applied Vision installation disk, call us toll free at 1-800-627-1953.

Automatic Updates

Applied Vision™ 4 Software has an automatic update feature that will query Ken-A-Vision® for newer versions of the software. You can adjust the settings or operate this update checker manually with options in the Help menu.

Interface Description

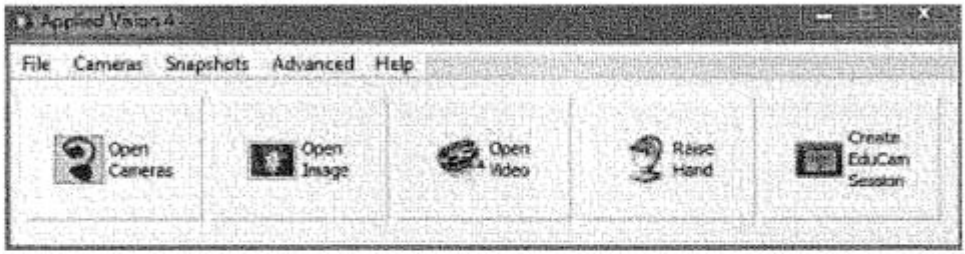
Applied Vision 4 creates a unique window for each active video device and each captured image or movie.

There are three styles of windows:

Camera Window - Live streaming video from the USB camera device.
Image Window - A still image captured from the video stream or loaded from a saved file.
Video Window - A movie captured from the camera or loaded from a saved file.

When Applied Vision launches, the primary window opens, and then camera windows are opened for any available imaging devices.

Main Applied Vision Window



The main Applied Vision™ window is the parent window for the application. If you close this window, it will close all Applied Vision windows and the application.

At the top of the window is a menu bar:

- **File**
  - **Properties** - Set various program properties such as the localized language of choice
  - **Exit** - Exit the Applied Vision application
- **Cameras**
  - A dynamically populated list of all available imaging devices on your system
  - **Refresh Device List**
- **Snapshots**
  - A list of all captured snapshot images, which can be clicked on to save to disc
- **Advanced**
  - **Image Comparison** - Open the Image Comparison window which allows the user to layer one image over another
- **Help**
  - **Help Topics** - the help file for Applied Vision 4
  - **Update Options** - Configure automatic software updates
  - **Check for Updates** - checks the Internet for updates to Applied Vision 4 and, with the user's permission, installs updates
  - **About** - Applied Vision 4 information
  - **Connect AV4Net**- Only available with *Applied Vision 4 Net* software. To learn more, contact Ken-A-Vision sales.
  - **Get EduCam App** - Link to information about the EduCam app
  - **Show IP Address** - Display your computer's IP address

Below the title bar are 4-5 buttons depending on your configuration:

- **Open Cameras** - Launches a seperate window for each connected camera
- **Open Image** - Open a still image previously saved on the computer
- **Open Video** - Open a video file previously saved on the computer
- **Raise Hand** - Only available with *Applied Vision 4 Net* software. To learn more, contact Ken-A-Vision sales.
- **Create EduCam Session** - Generate a Session ID and begin streaming images to the EduCam app

Camera Window

The Camera Window displays the real-time live video stream being transmitted by the connected video device. It may be resized, moved, maximized, minimized, or closed.

At the bottom of the window is a tabbed toolbar. It has four tabs:

- Camera Options (default)
- Rotate
- Color Balance
- Zoom
- Focus (FlexCam 2 only)

Camera: Video Options Toolbar

This toolbar is the default toolbar setting of a Camera window. The following commonly used features are included:

- **Fullscreen** - Stretch the video stream to fill the entire screen. To exit this mode, click the "X" button in the upper right corner of the screen.
- **Take Snapshot** - Capture a still image frame from the video stream, and open the captured image up in a new Image window.
- **Record** - Select a location and filename to record to, and click Record to capture video to the selected file location. You may also select an audio source to record audio along with the video recording. Click the button again to stop the recording process.
- **Time-Lapse Record** - Enter a time value in seconds and then select a location to save the files. Applied Vision 4 will take a snapshot once every number of seconds specified by the user.
- **Document Orientation** - Flip and mirrors the current video. Useful when documents are placed under the camera and appear "upside down".
- **Camera Resolution** - Change the display resolution of the camera. High resolutions have superior image quality but lower frame rates. Lower resolutions have superior frame rates but lower image quality.
- **Set Window Title** - Chenge the window title. Useful for identifying cameras when using EduCam to stream multiple camera images
- **Refocus** (FlexCam 2 only)
- **Camera Light** - Turn LED lights on/off (FlexCam 2 only)
- **Microscope Mode**- Zoom in on microscope field of view when camera is attached to microscope eyepiece (FlexCam 2 only).

Camera: Rotate Toolbar

This toolbar offers several options for rotating and manipulating the video stream:

- Rotate Counterclockwise - Left
- Rotate Clockwise - Right
- Flip Horizontal
- Flip Vertical

Camera: Color Balance Toolbar

This toolbar allows adjustment of the following settings affecting the video stream:

- Brightness
- Contrast
- Saturation

To reset these to their original values, click **Reset Defaults**.

Camera: Zoom Toolbar

This toolbar allows digital zooming on the video stream. There are three modes:

- **Original Size** - Display video without scaling.
- **Fit to Window** - Scale the image to fit in the window size; this is the default.
- **Custom Zoom** - Allow for a manual configuration of digital zooming.

When **Custom Zoom** is enabled, the slider bar at right can be utilized to change the zoom factor. Note, that as digital zoom increases, the image will progressively pixelate. To return to normal settings, click **Fit to Window**.

Camera: Focus (FlexCam 2 only)

This toolbar allows adjustment of the camera focus.

- Refocus button auto adjusts focus
- Slider bars can be adjusted to focus and control the iris..

Image: Window

The image window displays a still image captured from a video device or opened from a file. It may be resized, moved, maximized, minimized, or closed. At the bottom of the window is a tabbed toolbar. It has five tabs:

- Drawing
- Measure
- Zoom
- Rotate
- Comparison

Image: Drawing Toolbar

This toolbar offers vector-based tools for annotating captured and saved images.

	Selection: Default mode that allows selection of an annotated object for moving, resizing, or modification.
	Paintbrush: A freehand painting tool.
	Text: Add a resizable, movable text object to the captured image.
	Rectangle: Add a resizable, movable hollow rectangle to the captured image.
	Filled Rectangle: Add a resizable, movable filled rectangle to the captured image.
	Straight Line: Add a single straight line object to the captured image.
	Line Width: Select from three preset line widths; this tool applies to line objects, rectangles, and paintbrush objects.
	Color: Select from 6 preset colors to apply to any annotation object.
	Save: Save the image with a specified filename and location.
	Open: Open a new image file from a saved location in a separate window.
	Print: Send the image to the default installed printer.
	Undo: Undo the last action.
	Redo: Redo the last undone action.
	Delete: Delete any selected annotation object.
	Clear: Remove all annotations from the image, returning to the original captured image.

Image: Measure Toolbar

This toolbar provides the following tools for measurement and analysis:

- Calibration - Create a new scale measurement standard.
- Select/Remove Scale
    - Select Saved Scales - Choose a saved scale with which to measure.
    - Remove Saved Scales - Remove a previously saved scale.
- Perform Measurement - Show the results of the current measurement relative to the selected scale.
- Write Last Measurement to Image
- Copy All Measurements to Clipboard - Add contents of the Measurement window to the clipboard for pasting into other programs.

Calibration

To calibrate a new scale, follow these instructions:

1. Click and drag to draw a line on the image to identify a known distance that can be used to calibrate a measurement scale. (The line will be orange if dragged correctly.)
2. Click Calibration.
3. Type a full name for the scale under "Name".
4. The Distance in Pixels should be preset according to the line drawn in step 1.
5. Type the amount of actual units measured by the line in Known Distance.
6. Enter an abbreviated unit name under "Unit of Length".
7. Click OK.

Now the new scale will be selected by default and new measurements will be computed using that scale.

Select / Remove Scale

Use this to change to a different measurement scale that you have specified or to remove a specified scale from the list.

Image: Zoom Toolbar

This toolbar allows manipulation of the image with the following tools:

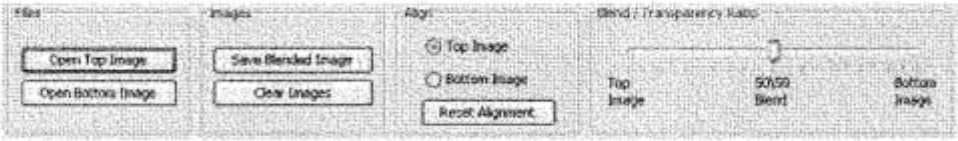
- Zoom In - Zoom in on the image by 10% increments.
- Zoom Out - Zoom out on the image by 10% increments.
- Display as Original Size - Display the image in its original size, without scaling, at a 1:1 pixel ratio.
- Fit Image to Window - Set the zoom ratio to scale the image to the window size.

Image: Rotate Toolbar

This toolbar allows manipulation of the image with the following tools:

- Rotate Counterclockwise - Rotate the image 90 degrees counterclockwise.
- Rotate Clockwise - Rotate the image 90 degrees clockwise.

Image: Comparison Toolbar



This toolbar opens the Image Comparison window and loads the selected image into either the top or bottom slot for variable opacity image blending and comparison.

Images can be loaded for comparison in two ways:

1. In the main Applied Vision 4 window, click on the **Advanced** menu and select **Image Comparison**. Click on either the **Open Top Image** or **Open Bottom Image** buttons to open existing images for comparison.
2. Select an open Camera Window. Click the **Take Snapshot** button. Click on the **Comparison tab**. Click on either **Set Top Image for Comparison** to add this image to the Comparison window in the top layer or **Set Bottom Image for Comparison** to add this image to the Comparison window in the bottom layer.

Aligning the Image:

Once images have been opened in the Image Comparison window, they may be aligned using the mouse. In the Align section of the Image Comparison window, select either the **Top Image** or **Bottom Image** and then click and drag with the mouse to move the image and thus changes its alignment relative to the other image in the window. Click the **Reset Alignment** button to align both images to the upper left hand corner of the window.

Setting the Opacity:

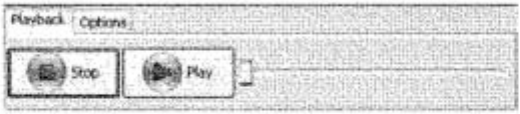
Move the slider bar under the **Blend / Transparency Ratio** section to determine the opacity or transparency of the top and bottom images.

Saving Output:

Click **Save Blended Image** if you want to save the current comparison to an image file.

Video: Window

The Video Window allows the user to playback recorded video and audio files created using Applied Vision 4. This window has two tabs that contain control buttons: **Playback** and **Options**.



The **Playback** tab has **Stop** and **Play / Pause buttons**.
These buttons control the basic playback of the recorded video file. There is also a slider control that allows the user to move to a specific section of the video by clicking or dragging the slider bar to a given location.

The **Options** tab has buttons that allow you to open another Video file, take the current video being played to fullscreen mode or Take A Snapshot from the movie that is currently being played back.