

Connectix QuickCam

Grayscale and Color

For Macintosh and
Power Macintosh



August 1996
Connectix Corporation

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FCC Statement

This equipment 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 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 communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio and television reception, which can be determined by turning the equipment on and off, 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 the 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.

Shielded cables and I/O cards must be used for this equipment to comply with the relevant FCC regulations. Changes or modifications not expressly approved in writing by Connectix Corporation may void the user's authority to operate this equipment.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

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1 ABOUT CONNECTIX QUICKCAM

What is Connectix QuickCam?

Connectix QuickCam is a digital camera that plugs right into your computer. You don't need any other hardware! There are both Grayscale and Color models. Both come with software you can use to take pictures and record movies and sound.

What does your QuickCam do?

Adds live video input to your computer

Your QuickCam is an inexpensive way to add live video to your Macintosh. QuickCam's software allows you to capture and edit QuickTime movies conveniently. The Color QuickCam has VIDEOTM (Video Digitally Enhanced Compression) built into the camera head to give even faster video frame rates in larger frame sizes.

For an affordable videoconferencing solution, use your QuickCam with Connectix Videophone software.

Adds a digital still camera to your Macintosh

Share your life with a friend or family member. Use QuickCam to digitize photos, a favorite cartoon, or take your own picture to send over the Internet. QuickCam's software includes the ability to take photos in PICT, TIFF or JPEG format. Use QuickCam to quickly prototype stills, do "for position only" comps, or to add laser-printer quality graphics to your newsletters or documents.

You can use QuickCam with Connectix PhotoMate to take and enhance pictures and create and play custom slide shows.

Makes your Macintosh fun again!

QuickCam works with any software that works with QuickTime or standard Macintosh PICTs. For personalized multimedia greetings, use QuickCam with Connectix QuickCards. Don't just send a card next holiday season — send a QuickCard with a QuickTime movie of the whole family!

What is VIDE^C?

VIDECTM (Video Digitally Enhanced Compression) was created by Connectix to compress video data inside the Color QuickCam, *before* the data reaches your computer. VIDE^C yields higher video frame rates while you are recording, and results in smaller file sizes when you save video. You don't need any additional video hardware to get the benefits of VIDE^C.

Who should use QuickCam?

- *People Who Want to Keep Updated Images on Their Web Page*
Use QuickCam's Auto-Capture feature, described on page 5-9, to see how you can use your Color QuickCam to automatically update the images on your Web page.
- *Presentation Makers Looking to "Jazz Up" Their Creations*
Good presentations use graphics. QuickCam can quickly produce both QuickTime movies and PICT, TIFF or JPEG graphics.
- *Videoconferencing Users Looking for a Low-Cost Camera*
QuickCam's low price and ease of use makes it simple to get started with video conferencing. QuickCam's QuickTime-standard software means that it will work with virtually any videoconferencing software, such as Connectix VideoPhone.
- *Multimedia Producers Who Need to Quickly Prototype*
QuickCam allows you to produce prototype-quality visuals without the setup hassle normally associated with alternative equipment.
- *Your Idea Here!*
Since QuickCam is a standard QuickTime input device, it works with any QuickTime capable software! Here are some ideas to get you started:
 - Make a multimedia greeting card with Connectix QuickCards Limited
 - Mail a floppy video
 - E-mail a picture from your vacation to a friend
 - Star in your screen saver
 - Watch a flower bloom
 - Make a photo collage
 - Dress up your desktop
 - Verify inventory
 - Add pictures to your holiday letters
 - Guard your office
 - Watch over things while you're away
 - Create a family tree using pictures
 - Make training movies
 - Add pictures to your contact database
 - Punch up your newsletter
 - Sell your house or car
 - Create moving videos of models instead of using 3D software

If you do something unique or creative with QuickCam, we'd like to hear about it. Send email comments to quickcam@connectix.com.

2 GETTING STARTED

What's in the box

- Grayscale or Color QuickCam
- Triangular base
- 2 Installation disks
- This manual
- Registration card

System Requirements

Make sure that your system meets the following minimum requirements. For best results, you should have a system that meets the recommended configuration (the items in the right-hand column).

Grayscale QuickCam

	Minimum Configuration	Recommended Configuration
CPU	68020 processor	68040 Macintosh or faster
System	System 7.1	System 7.5 or later
RAM	4 MB	8 MB
Hard Disk	2 MB hard disk space required for QuickCam software; additional 5 MB disk space needed to create movies.	Same as minimum
Serial Port	One free serial port	Same as minimum
Display	Grayscale or color monitor	Same as minimum

Color QuickCam

	Minimum Configuration	Recommended Configuration
CPU	68040 processor	Power Macintosh
System	System 7.1	System 7.5 or later
RAM	8 MB	Same as minimum
Hard Disk	2 MB hard disk space required for QuickCam software; additional 5 MB disk space needed to create movies.	Same as minimum
Serial Port	One free serial port	Same as minimum
ADB Port	One ADB port required	Same as minimum
Display	Monitor capable of displaying 256 colors	Monitor capable of displaying thousands of colors
Audio	External microphone for recording, speakers for audio playback	Same as minimum

NOTE: If you have a Color QuickCam, you will need an external microphone if you want to record sound with your movies. If you do not have a microphone, you can still record movies, but they will not have audio. (The Grayscale QuickCam has a built-in microphone.)

Compatibility

Grayscale QuickCam

The following Macintosh models are not compatible with Connectix Grayscale QuickCam: Mac Plus, Mac SE, PowerBook 100.

Color QuickCam

The following Macintosh models are not compatible with Connectix Color QuickCam: Mac Classic, Mac Plus, Mac SE, PowerBook 100, PowerBook 150, and Mac Portable.

Installing your QuickCam

Grayscale QuickCam

1. Shut down your Mac.
2. Remove the camera from the box and plug the cable to a serial port on your Mac. The camera is designed to sit on the supplied triangular base. Place the base on your desktop, atop your monitor, or any other convenient position, then place the camera on the base.

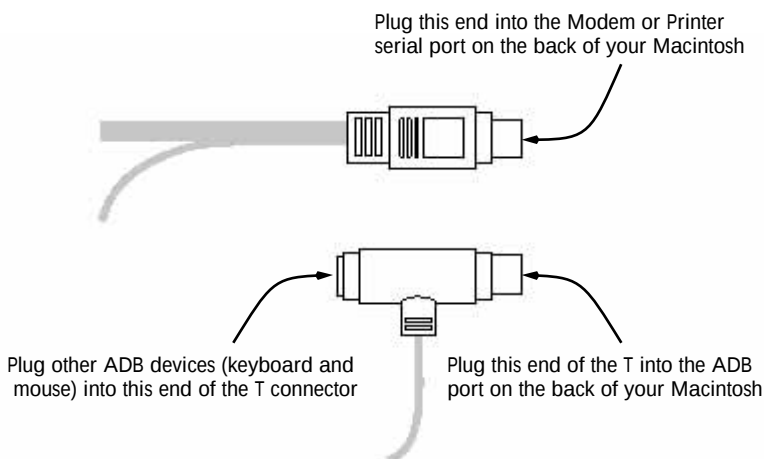
- 3 . Restart your Macintosh and hold down the Shift key to disable all extensions such as virus protection.
- 4 . Follow the instructions on page 2-4 for installing QuickCam's software.

Color QuickCam

- 1 . Shut down your Mac.

WARNING: You will need to plug your Color QuickCam into your Macintosh's ADB port. You should **NEVER** change any connection to the ADB port unless the power to your Macintosh is switched **OFF**, otherwise you may damage your computer's logic board. **DO NOT** unplug your mouse or keyboard from the ADB port until you have switched the power off.

- 2 . Remove the camera from the box.
- 3 . Your Color QuickCam has two plugs, as shown in the figure on the next page. The "T" plug attached to the small cable is the power plug, and will attach to the ADB (Apple Desktop Bus, for a keyboard or mouse) port of your Macintosh.



- 4 . Unplug your keyboard or mouse and insert the Color QuickCam T plug into the ADB port on your Macintosh. Now plug your keyboard or mouse into the back of the Color QuickCam ADB connector.
- 5 . The plug with the two cables coming out of it will carry the video from the camera to your Macintosh. Insert it into either your printer or modem serial port.

- 6 . The camera is designed to sit on the supplied triangular base. Place the base on your desktop, atop your monitor, or any other convenient position, then place the camera on the base.
- 7 . Turn on your Macintosh and hold down the Shift key to disable all extensions such as virus protection.
- 8 . Follow the instructions below for installing QuickCam's software.

Installing QuickCam's software

- 1 . Insert the QuickCam installation disk #1 and double-click the QuickCam Installer icon.



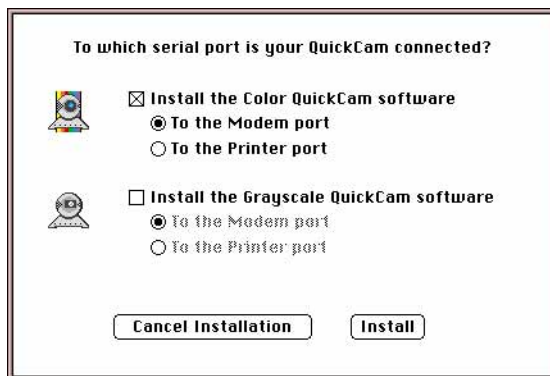
- 2 . This brings up the QuickCam Installer dialog, shown below. You can choose Easy Install for the basic installation, or Custom Install for more control over which files are installed.

Easy Install



- 3 . Choose Easy Install from the menu at the top. Click Install to continue.

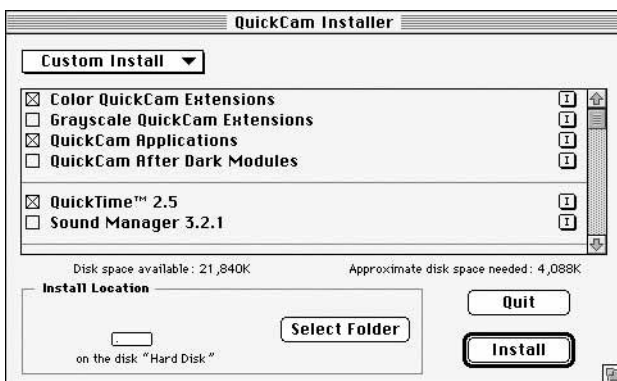
4. In the dialog shown below, select the Color or Grayscale QuickCam (or both) and click the serial port to which each is attached.



5. Click Install to continue. You will need to restart your Mac after the installation.

Custom Install

1. Choose Custom Install from the menu at the top of the dialog.



2. Click in the check box to the left of an item to install it. Click on the **I** button to the right of an item to find out more about it.
3. Next, choose the folder in which you want to install QuickCam software with the Select Folder button. The installer tells you how much space is available on the drive and how much space is needed by the QuickCam software you've chosen to install.
4. If you have chosen to install the Grayscale or Color QuickCam Extensions, select the Color or Grayscale QuickCam (or both) in the dialog that appears, and click the serial port to which each is attached.

- 5 . Click the Install button. QuickCam will prompt you to insert the second installation disk.
- 6 . If you use one port and you get an error message, try moving the camera to the other port.

NOTE: Port Busy? Some communications software packages register a port as being busy even when it is not active. Unfortunately, QuickCam's software has no way of telling whether a "port busy" message is accurate or not. If the installation software says that you have a port in use, you'll either need to install to the other port or find the software that is active on that port and de-activate it. For technical support information, see Appendix D.

If your QuickCam is installed on a PowerBook with one serial port and an internal modem, set the modem to *Compatible* mode. This option is located in the PowerBook Setup control panel. AppleTalk needs to be inactive on the serial port in order to make the port available for QuickCam. However AppleTalk can be active on another physical port, such as an Ethernet port.

On some PowerBooks (such as the 500 series and Duos), only one physical connector supports two logical ports (modem and printer). On a docked Duo, when you are asked to select the port to which your QuickCam is connected, choose the modem port. On a PowerBook 500 series Macintosh, the QuickCam installer will automatically select the modem port.

If you are using a Mac IIfx, Quadra 900, or a Quadra 950, the Serial Switch Control Panel must be set to *compatible* (not *faster*). If it is not present, the Serial Switch Control Panel will be installed for you.

- 7 . Follow the on-screen prompts until the dialog box tells you QuickCam has been installed and asks you to restart your Macintosh. Click OK. You are now ready to use your camera.

Important: You will need to restart your computer to make sure QuickTime and the QuickCam software are active.

What QuickCam copies to your hard disk

QuickCam folder

QuickMovie and QuickPICT applications.

System folder

- The ~QuickCam Mic extension (Grayscale QuickCam)
- The ~QuickCam Video extension (Grayscale QuickCam)
- The ~Color QuickCam system extension (Color QuickCam)

- The VIDECTM compression decoder, called “VIDEC” (Color QuickCam)
- A QuickSaver module is added to your AfterDark Files folder if you have one; otherwise it is placed in the QuickCam folder.
- The QuickTime 2.5 extension is placed in your Extensions folder if it wasn’t already there or if the installer found an older version.
- If you have a Power Macintosh, the Power Macintosh addition to QuickTime, called QuickTime PowerPlug, is also added to your Extensions folder.
- Sound Manager 3.2.1
- If you have a Mac IIfx, a Quadra 900, or a Quadra 950, the Serial Switch Control Panel is added if it is not already present.
- An alias of the QuickPICT application is also added to the Apple Menu.

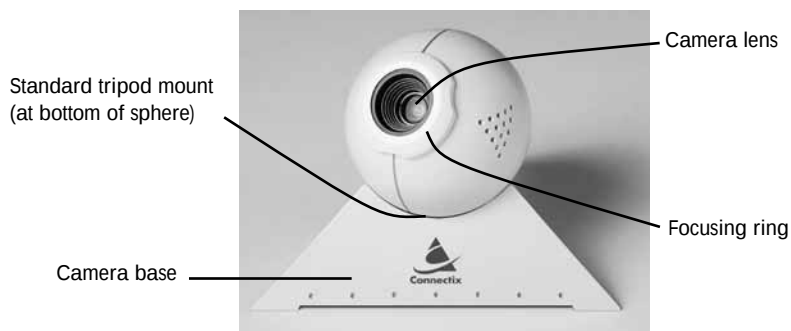
3 USING YOUR QUICKCAM

The parts of your Connectix QuickCam

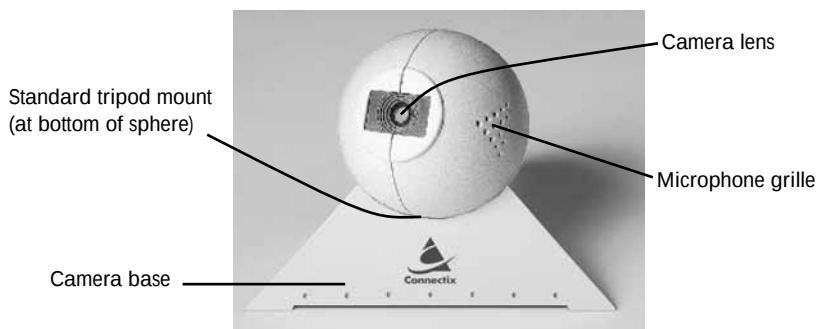
The Connectix QuickCam is a simple device that has no user-serviceable parts. Both Color and Grayscale models are available. There are several differences between the two models:

- The Grayscale QuickCam has a microphone; the Color QuickCam does not.
- The Color QuickCam has a focusing ring; the Grayscale QuickCam has a fixed focus.

If you have a Color QuickCam, it will look like the one in the picture below.



If you have a Grayscale QuickCam, it will look like the picture below.



Put the camera base in a convenient spot on your desk or monitor, and then adjust the direction in which the camera is pointing. If the camera moves unexpectedly in the base, make sure there is no tension on the cable.

You can also mount QuickCam on any standard camera tripod mount. Connectix sells a small desktop tripod that works well with QuickCam; camera stores should also have small tripods that fit your QuickCam.

How to focus your QuickCam

The Grayscale QuickCam has a fixed focus from eighteen inches to infinity. You can adjust the focus on your Color QuickCam from one inch to infinity by turning the focusing ring on the outside of the lens until the image is sharp.

Using Grayscale and Color QuickCams at the same time

You can have both color and Grayscale QuickCams attached at the same time, as long as you have two open serial ports. You can easily switch between them at any time.

- To switch to the Grayscale QuickCam, choose Connectix QuickCam from the Settings menu, then choose Modem or Printer port, depending on the port to which the camera attached.
- To switch to the Color QuickCam, choose Connectix Color QuickCam from the Settings menu, then choose Modem or Printer port, depending on the port to which the camera attached.

About Connectix QuickCam's software

When you install your Connectix QuickCam, it copies two applications to your hard disk:

- QuickPICT is an application for capturing still images, and is described in chapter 5.
- QuickMovie is an application for capturing QuickTime video, and is described in chapter 6.

You also get the QuickSaver utility for using the image from your QuickCam as a screen-saver. To use QuickSaver, you must have After Dark or Darkside installed. QuickSaver is described in chapter 7.

4

GETTING THE BEST IMAGE AND FRAME RATE

There are two steps to getting the best image for QuickPICT and QuickMovie. First, make sure that you have enough light on the scene. Once you have enough light, adjust QuickCam's image settings to fine-tune your image.

Making sure there is enough light

To get the best image from your QuickCam, first make sure that you have adequate lighting. All of the other image adjustments depend on the presence of an adequate amount of light. As a rule of thumb, if the lighting is such that you would use a flash with a normal 35mm camera, you need to add more light for your QuickCam. This is probably true in most home environments where illumination is provided by a single light.

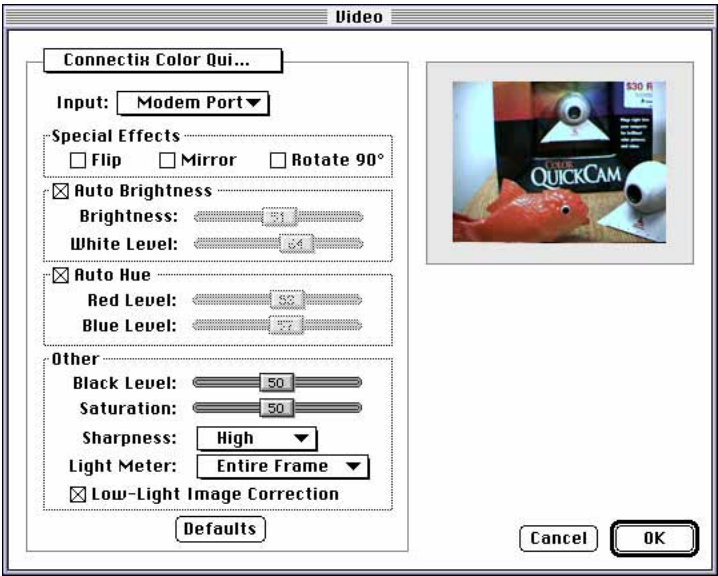
Adjusting the image settings

To adjust the image, choose Camera Settings from the Image menu, then choose QuickCam from the pull-right menu. The video settings dialog will appear, as shown on the next page. The appearance of the dialog is different for the Color and Grayscale QuickCams.

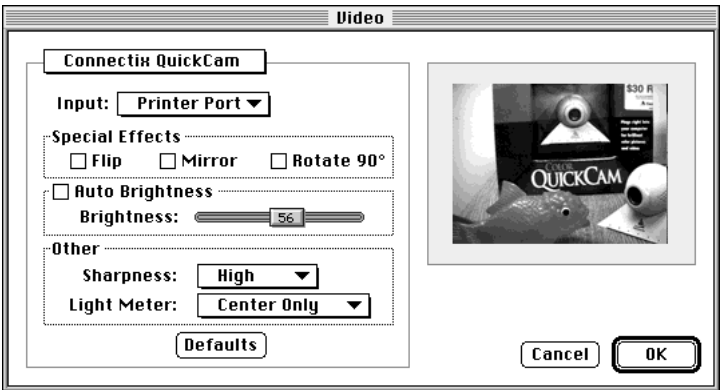
- If you make changes in the video dialog and you want to start over, click the Defaults button to restore default settings.
- When you are done adjusting settings, click OK to accept your choices and dismiss the dialog.

NOTE: You do not need to choose Video Other from the Camera Settings menu unless you are using an NTSC Camera with an AV Macintosh.

If you are using a color QuickCam, the settings dialog will appear as shown below.



If you are using a Grayscale QuickCam, the dialog will appear as shown below.



NOTE: Some items in the video settings dialog are present for both the Color and Grayscale QuickCam; others are present *only* for the Color QuickCam. In the descriptions below, items are marked as follows:

- Items common to both Grayscale and Color QuickCam: **(Grayscale, Color)**
- Items found *only* in the Color QuickCam dialog: **(Color Only)**

Choosing the correct serial port (Grayscale, Color)

Use the Input pull-down menu to set the serial port to which your QuickCam is connected.

Adding special effects (Grayscale, Color)

- To flip the image upside-down, click the Flip checkbox. The image at the right of the dialog will be flipped. This is useful if you want to turn your QuickCam upside down.
- To create a mirror image, click Mirror. The image at the right will be mirrored.
- To rotate the image 90 degrees (from Landscape to Portrait orientation), click Rotate 90 degrees. This change will only take effect after you quit and re-start QuickPICT or QuickMovie.

Adjusting the brightness of the image (Grayscale, Color)

To adjust the brightness of the image, use the Brightness and White Level sliders. If you choose Auto Brightness, QuickCam will adjust both of these values automatically, and their respective sliders will be grayed-out.

- The Brightness slider determines the shutter speed.
 - If the picture you see looks washed out or entirely white, move the slider to the left to lower the amount of light reaching the camera.
 - If the picture you see looks dark or is almost entirely black, move the slider to the right to let more light into the camera.
 - If there is not enough light to take a picture, the Light Meter symbol will flash every second at the bottom of the window.



This symbol will appear
if there is not enough light

You can also change the brightness in smaller increments by clicking the left or right arrow keys.

- If you see lots of colored pixels, the picture is too dark. You need to increase the lighting level in the room and make sure the Low-Light Image Correction is turned on. See page 4-6 for more information.
- If you select Auto Brightness, you will not need to make any changes with the slider.

TIP: When you first start QuickPICT or QuickMovie, choose Camera Settings from the Image menu, then choose QuickCam. In the dialog that appears, choose Auto Brightness. This lets QuickCam find the best setting for your picture. Since this value probably won't change much, you can then de-select Auto Brightness to allow you to fine-tune the Brightness value.

- **White Level.** This sets the value of white in your picture. To adjust it manually, take a white item such as a piece of paper and hold it in front of the camera. Begin with the White Level slider all the way to the left, and move it to the right until the white item just begins to appear white.

Choosing a Light Meter (Grayscale, Color)

Use the Light Meter pull-down menu to choose how QuickCam measures light when it is automatically setting the brightness.

✓ Entire Frame Center Weighted Center Only
--

- If you choose Entire Frame, QuickCam will sample the entire image to determine the best average brightness setting. If the background is very much lighter than the center of the image, you may not get best results with this setting. For example, if you are using your QuickCam to videoconference and you are sitting near a bright window, your face may be washed out.
- If you choose Center Weighted, the Light Meter will assign more weight to the brightness at the center of the image. This means that a bright area on the periphery will not overwhelm the area at the center.
- If you choose Center Only, the Light Meter will sample the center only, and will ignore the areas at the periphery. If you are videoconferencing, this will probably yield the best results.

If you are using a Color QuickCam, you will also begin to see random colored pixels (Holiday lights). If this happens, you need to increase the amount of light and select Low-light image correction, described on page 4-6.

Adjusting the Sharpness (Grayscale, Color)

Use the pull-down menu to choose a Sharpness level.

- If you choose **High** sharpness, the picture will look crisp and edges will be well-defined, but frame rates will be lower. Choose this for the best quality images.
- If you choose **Medium** sharpness, QuickCam will use 2:1 decimation, which means that it will send every other pixel from the camera. The picture will not be as sharp, but frame rates will increase somewhat. This is a good setting for videoconferencing, but you will get better frame rates by choosing **Low** sharpness.
- If you choose **Low** sharpness, QuickCam will use 4:1 decimation, which means that it will send every other pixel and every other horizontal line from the camera. The picture will appear somewhat blurry or pixellated, but frame rates will be highest. This is probably the best setting if you are using your QuickCam for videoconferencing, especially if you are using a 28.8 modem.

Adjusting the hue of the image (Color Only)

To adjust the hue of the image, use the **Red Level** and **Blue Level** sliders. If you choose **Auto Hue**, QuickCam will set both of these values automatically, and their sliders will be grayed-out.

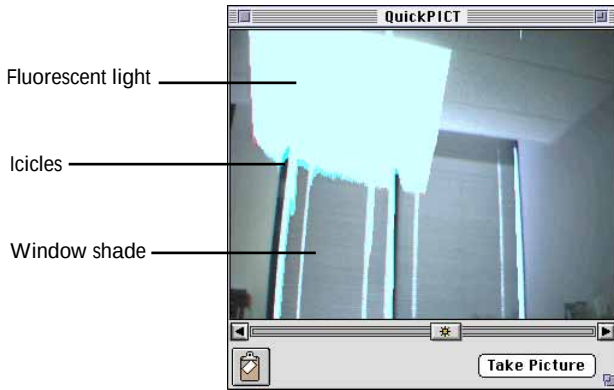
- **Red Level.** This adjusts the level of red in your image. If there is too much red, move the slider to the left. If there is not enough red, move the slider to the right.
- **Blue Level.** This sets the level of blue in your image. If there is too much blue, move the slider to the left. If there is not enough blue, move the slider to the right.

The amount of green is fixed, and can be increased by lowering the relative amounts of red and blue.

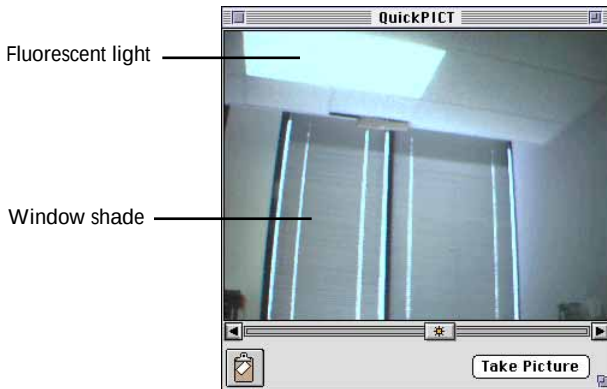
TIP: If you move your QuickCam from a setting with fluorescent lights to one with incandescent lights, try using the **Auto-Hue** setting or decreasing the **Red Level** for incandescent light. If you move your QuickCam back to a setting with fluorescent lights, increase the **Red Level**.

Adjusting the Black Level and Saturation (Color Only)

- **Black Level.** This sets the value of black in your picture. Take a black item and hold it in front of the camera. Begin with the **Black Level** slider all the way to the left, and move it to the right until the black item just begins to appear black.
- **Saturation.** This determines how intense the color is. The further to the left, the more washed-out the colors will appear. If a light source in the picture shows a blurring or icicle effect, decrease the **Saturation**. An example of blurring and the appearance of icicles is shown on the next page.



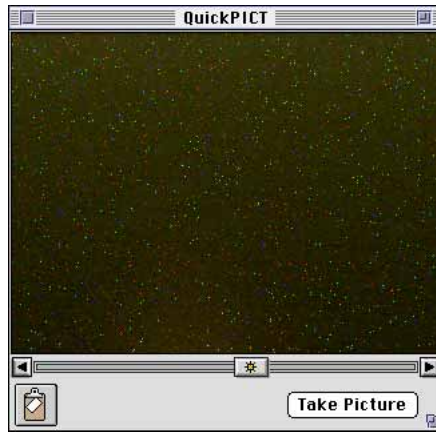
Here is the same picture with a reduced Saturation level. Note how the icicles and blurring have disappeared.



Low-Light Image Correction (Color Only)

This box should be checked to prevent the random appearance of colored pixels at low light levels. In order to capture images at low light levels, your QuickCam, like any camera, requires longer exposures. One side-effect of this situation is known as *dark current*, where the CCD in the QuickCam picks up random charges during a long exposure. These charges build up and cause some pixels to display color (Holiday lights). The longer the exposure, the more this effect will be apparent.

If you turn off this checkbox, you will see the colored pixels at low light levels. An extreme example is shown on the next page.



How to get the best frame rate in QuickMovie

Maximizing the frame rate is important in many situations, especially if you are using your QuickCam for videoconferencing. Here are some tips for increasing the frame rate:

- One of the most important factor in getting the highest possible frame rate is having enough illumination. The less light there is, the longer the shutter will have to stay open to capture each frame, and subsequently the lower the frame rate. Simply by increasing the light level, you can decrease the necessary shutter speed (the Brightness setting) and increase the frame rate.
- Make sure that your monitor is set to display the same number of colors or grays as the QuickCam is capturing. For example, if you capture video at thousands of colors , make sure your monitor is set to display thousands of colors. If your monitor displays 16 grays, capture video at 16 grays. If the QuickCam has to dither the image to match your display, frame rates will decrease.
 - If you are using a Grayscale QuickCam, you will probably get the best frame rates at 16 grays or less (16 grays is the default setting).
 - If you are using a Color QuickCam, use thousands of colors (the default setting). In this mode, Color QuickCam implements VIDE^C™ (Video Enhanced Digital Compression), which will increase frame rates.
 - If you need to change the color depth, choose Camera Settings from the Image menu, then choose Video other. In the dialog that appears, choose Compression from the popup menu. Choose a compressor and use the Depth menu to select the color depth. (NOTE: VIDE^C only operates at thousands of colors.)
- If there is enough light, you may get increased frame rates if you turn off the Low-Light Image Correction checkbox in the Camera Settings dialog.
- If you do not need the maximum amount of detail in each frame, choose a reduced Sharpness level. If you choose the middle or the lowest value for Sharpness, you will get

higher frame rates than if you choose the highest Sharpness value. See page 4-5 for more information about setting the Sharpness level.

- Choose a smaller image size. Capturing a smaller image size results in faster frame rates.
- Turn 32-bit addressing on. Most newer Mac models are always in 32-bit addressing mode. Older Mac models have 32-bit addressing as an option in the Memory Control Panel. If your Memory Control Panel lacks a 32-bit addressing option, one of the following three cases applies:
 - It is a newer Macintosh model, such as a Quadra 630 or Power Mac, which is always in 32-bit addressing mode.
 - It is a Mac II, IIfx, IIfx or SE/30 which needs to use Connectix MODE32 7.5 to run 32-bit addressing. MODE32 is available at the online locations listed in Appendix D.
 - It is a 68000-based Macintosh that is not capable of 32-bit addressing.
- Use QuickTime 2.5 instead of earlier versions. Use QuickTime PowerPlug on Power Macintosh models.
- Don't move the mouse while recording a movie.
- Turn off all software INITs or extensions that might interrupt the movie recording process. Disable AppleTalk or any network connection, turn off Virtual Memory, turn off Fax and Modem software, and use an Extensions manager to turn off any other extension that might cause periodic background processing to occur, including screen savers and security applications. Make certain that there is nothing periodically sending information to the serial port to which your QuickCam is attached.
- Make sure you're running only QuickMovie. Close any other application, control panel, or desk accessory you might have open.
- Put a disk in the floppy disk drive (if no disk is present, your Mac checks periodically to see if you have inserted one). If you have a CD-ROM drive, insert a disk or disable the drive by removing its INIT and restarting.
- Make sure you're using your highest performance hard disk and have disabled any idle drives in the SCSI chain. It also helps if you keep your hard disk defragmented by running an optimization program on it prior to capturing video. Alternatively, record to a RAM disk, which provides a faster storage medium than a hard disk.

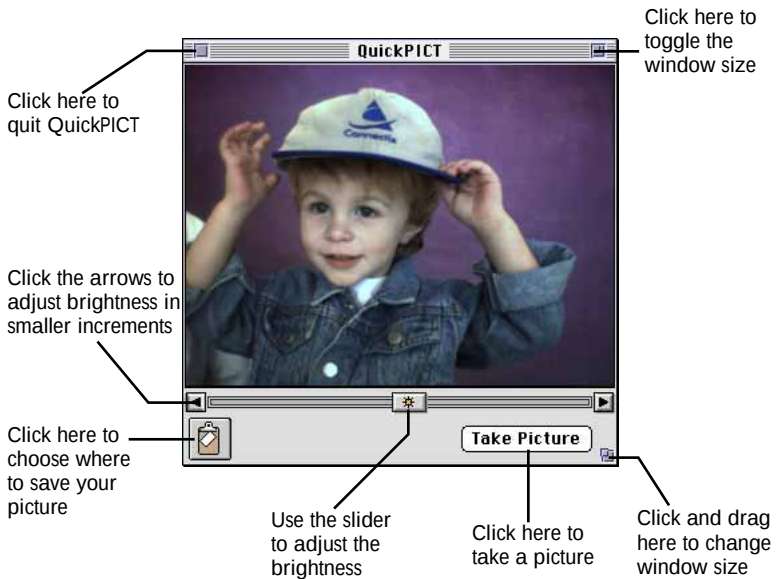
5 TAKING PICTURES WITH QUICKPICT

About QuickPICT

Use QuickPICT to capture still color images and save them in JPEG, TIFF, or PICT format. To start QuickPICT, double-click its icon.



The QuickPICT window will appear as shown below.



This window shows what the camera is currently seeing, just like the viewfinder of a regular camera.

Taking a picture - basic steps

- 1 . Make sure you have enough light. See Chapter 4 for a complete discussion of how to adjust the brightness and other settings to get the best quality image.
- 2 . If you are using a Color QuickCam, use the focus ring to focus your picture.
- 3 . Smile!

Taking the picture

To take a picture, click the Take Picture button. QuickPICT will grab the current image and convert it into a PICT file. If the button at the bottom left is a clipboard, the picture will be copied to the clipboard; if the button is a disk, a dialog will appear where you can choose where to save the file; if the button is a Film Roll, the picture(s) will appear in the Film Roll.

For more control over how QuickPICT takes pictures, see *Picture-taking options* beginning on page 5-5.

Using the Viewer

The Viewer is a separate window in which QuickPICT displays a picture. It displays the most recent picture you have taken, no matter where you are saving the picture. It will also show a picture you have double-clicked in the Film Roll (see page 5-4). To show or hide the Viewer, choose Show Viewer or Hide Viewer in the Window menu.

You can also save or copy the image in the Viewer.

- To save the image, select the Viewer by clicking it, then choose Save As from the file menu. Enter a name in the Save dialog, choose a file format, and click Save. The Save dialog is described on page 5-3.
- To copy the image in the Viewer, select the Viewer by clicking it, then choose Copy from the Edit menu. You can then paste the image into another application.

Choosing where to save your picture

You can save your picture to a file, to the clipboard, or to the film roll. To toggle between these locations, click the button at the bottom left of the window. The button will change to show where the picture will be saved. The buttons are shown below.



The picture will be saved to the clipboard



The picture will be saved to a disk file



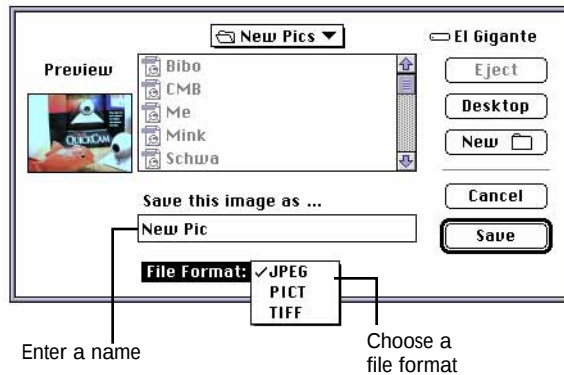
The picture will be saved to the Film Roll

Saving the picture to the clipboard

When you save your picture to the clipboard, you can open another application and paste the picture. Each time you take a picture, the previous picture on the clipboard is lost, so make sure you paste a picture and save it before taking another.

Saving the picture to a file

If you are saving your picture to a disk, you can save PICT, TIFF, or JPEG formats from the pop-up menu at the bottom of the Save dialog.



Enter a name for your picture, select a file format, and click Save.

- If you will be using the file with another Macintosh graphics program, choose PICT. Virtually all Macintosh applications that support graphics can read PICT files.
- If you will be sending the file to someone who uses a PC, choose TIFF.
- If you will be sending the file to someone using an application that requires JPEG format, or if you will be using the file for a Web page, choose JPEG.

This dialog will also appear if you select a picture in the Film Roll or the Viewer and choose Save As from the File menu. See page 5-2 for more information about the Viewer, and page 5-4 for more information about the Film Roll.

Saving the picture to the Film Roll

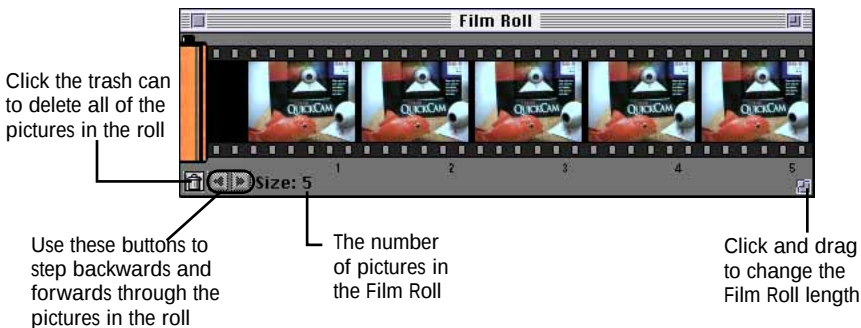
Save your pictures to the Film Roll if you want to view up to thirty-six pictures at a time. (QuickPICT *always* saves pictures to the Film Roll when you take multiple exposures. See page 5-11 for more information.)

When you select the Film Roll as the destination for your pictures, a thumbnail of each picture you take is added to the end (right side) of the Film Roll, *and* the picture itself is stored in the Film Roll folder (described on page 5-5). The first picture in the Film Roll is stored as a file name *d Picture 1*; the second as *Picture 2*; and so on.

If the Film Roll is full (contains 36 pictures) and you click Take Picture, QuickPICT will warn you that you must delete one or more pictures before you can add new pictures.

When you delete a thumbnail of a picture from the Film Roll, the picture itself is deleted from the Film Roll folder.

The Film Roll is shown below.



- To show or hide the Film Roll, choose Show Film Roll or Hide Film Roll from the Window menu.
- To move backwards and forwards through the Film Roll, use the arrows at the bottom left.
- To see more or fewer pictures, click and hold the grow box at the bottom right, then drag it to a new size.
- To delete a picture from the Film Roll (and from the Film Roll folder), click the picture to select it and press the Delete key.
- To delete *all* of the pictures in the Film Roll (and from the Film Roll folder), click the trash can. A dialog will appear in which you will be prompted for confirmation. (To disable this warning, click Don't show me this message again.)
- To copy a picture, select it and choose Copy from the Edit menu. You can then paste it into another application.
- To cut a picture, select it and choose Cut from the Edit menu

- To save a picture in the Film Roll, select it by clicking, then choose **Save As** from the **File** menu. The **Save** dialog will appear, as described on page 5-3.
- To view a picture in the Viewer, double-click the picture in the Film Roll. (To activate the Viewer, choose **Show Viewer** from the **Window** menu. See page 5-2 for more information about using the Viewer.)

NOTE: The file names in the Film Roll folder may change when you delete one or more pictures. For example, if there are five pictures in the Film Roll and you delete Picture 1, Picture 2 is renamed Picture 1; Picture 3 is renamed Picture 2; and so on. If you want to save a picture in the Film Roll, double-click it to display it in the Viewer, then choose **Save As** from the **File** menu. The **Save** dialog will appear, as described on page 5-3. (You can also cut or copy the file from the Film Roll and paste it into another application.)

Changing the location of the Film Roll files

QuickPICT stores the pictures in the Film Roll in a special folder named *Film Roll Files*. By default, your Film Roll folder is located in the same directory as the QuickPICT application. To change the location of the Film Roll files, choose **Film Roll Location** from the **Settings** menu. Select a new location and click **OK**.

NOTE: The Film Roll can require a great deal of space. For example, if you take 36 images at 640 x 480 using millions of colors, the Film Roll files may take up to 36 MB.

If you wish, you can open another application and open the pictures in the Film Roll folder directly; QuickPICT does not need to be running.

The file *FilmRollData* is used by QuickPICT to keep track of the images — do not delete or move this file.

Picture-taking options

QuickPICT gives you many options when taking pictures. Experiment and have fun!

Selecting an image area

If you don't want to capture the entire image, you can select a portion of it before you take a picture. This saves you the time and effort of taking a picture, importing it into a graphics application, cropping it, and saving it again.

- 1 . To select an area to capture, move the mouse pointer to the image window, where the pointer will change to a cross-hair.
- 2 . Click and hold the mouse button as you drag the pointer to enclose the area you want to capture.
- 3 . Release the mouse to show only that area in the image window.

You can move the selected area by clicking and holding the mouse inside it. As you move the mouse, the selected area will show the part of the picture underneath it.

If you want to start over, click the mouse outside the area that you selected, and the full image will be restored. The full image is also restored when you resize the picture, or when you double-click an image.

Changing the size of a picture

To change the size of the picture, choose Sizes from the Image menu. In the sizes menu,

- choose Full for a 640 x 480 (Color) or 320 x 240 (Grayscale) picture
- choose Half for a 320 x 240 (Color) or 160 x 120 (Grayscale) picture
- choose Quarter for 160 x 120 (Color) or 80 x 60 (Grayscale) picture
- Choose Other size for any size up to a maximum of 640 x 480 (Color) or 320 x 240 (Grayscale)
- You can also drag the grow icon in the lower right corner of the window. As you drag, a box will appear in the top center of the picture area displaying the size (in pixels) of the image you can take at that window size.
- To toggle between the default window size and the previous window size, click the zoom box in the upper right corner of the window. For example, if you drag the window to show an 80 x 60 frame, clicking on the zoom box toggles between 80 x 60 and 320 x 240.

TIP: If you are using a Color QuickCam and choose Full (640 x 480), and your monitor is using a resolution of 640 x 480, the image will occupy the entire screen, and a dialog will appear warning you that QuickPICT's menus will not appear. To use the menus in this case, simply move the mouse to the top of the window. After a slight pause, the menus will appear.

No matter which size you choose, the *entire* image is displayed. If you want to take a picture of a smaller portion of the image, see *Selecting an image area* on page 5-5.

Changing the picture depth

To change the number of colors used, select Picture Depth from the Image menu. From the menu that appears, choose one of the following:

- Black and White for a black and white image
- 4 Grays for a picture with 4 levels of gray
- 4 Colors for a picture with 4 colors
- 16 Grays for a picture with 16 levels of gray
- 16 Colors for a picture with 16 colors

- 256 Grays for a picture with 256 levels of gray
- 256 Colors for a picture with 256 colors
- Thousands for a picture with thousands of colors (Color Only)
- Millions for a picture with millions of colors (Color Only)

NOTE: If you are using a Grayscale QuickCam, you will see all of the choices above except for Thousands and Millions. The 4 Colors and 256 Colors selections will use a color palette, but will still create a grayscale image.

For best quality snapshots, you will usually choose Millions (Color) or 256 Grays (Grayscale).

TIP: If you are taking pictures in millions of colors, you may need to increase the amount of memory available to QuickPICT. Before you start QuickPICT, click its icon and choose Get Info from the File menu. Increase memory in the *Preferred size* box to 5000K for best performance. Don't change the *Minimum size*!

Zooming the image

To zoom the camera, choose Angle of View from the Image menu, then choose Zoomed. This zooms into the center of the picture, and the area on the periphery will not be displayed. You can also select an area and then zoom. To return to a normal picture, choose Constant.

Zooming has no effect if you are viewing a picture at a size of 640 x 480 (Color) or 320 x 240 (Grayscale).

Changing the shutter mode

QuickCam has a regular shutter, a bulb shutter which stays open until you shut it, and a timed-exposure shutter which stays open for a specified time period.

- To use a bulb shutter, choose Shutter Mode from the Settings menu, then choose Bulb. The Take Picture button will change to Open Shutter. Use a bulb shutter when you want to take long-exposure pictures.

Click Open Shutter to open up the shutter. The button will change to Close Shutter.

When you are done with your picture, click Close Shutter.

NOTE: If you select Bulb shutter, the Auto Capture feature will not be available, nor will multiple exposures. Auto Capture is described beginning on page 5-9; multiple exposures are described on page 5-11.

- To use a timed-exposure shutter, choose Shutter Mode from the Settings menu, then choose Timed Exposure. Enter an exposure duration in the dialog that appears.

- To return to a normal shutter, choose Shutter Mode from the Settings menu, then choose Normal.

Using the self-timer

To set the self-timer so that you can click Take Picture and still have a few seconds to select a great pose before the shutter opens, choose Self Timer from the Settings menu. In the menu that appears:

- Choose Off to take a picture immediately after you click on Take Picture. This is the default setting.
- Choose Two Seconds to have a two-second delay between the time you click Take Picture and the time the shutter opens.
- Choose Five Seconds to have a five-second delay between the time you click Take Picture and the time the shutter opens.
- Choose Other to enter a different time interval.

When the self-timer is active, a timer will appear on the QuickPICT window, as shown on the next page.



When the self-timer is active, a timer will show the number of seconds remaining

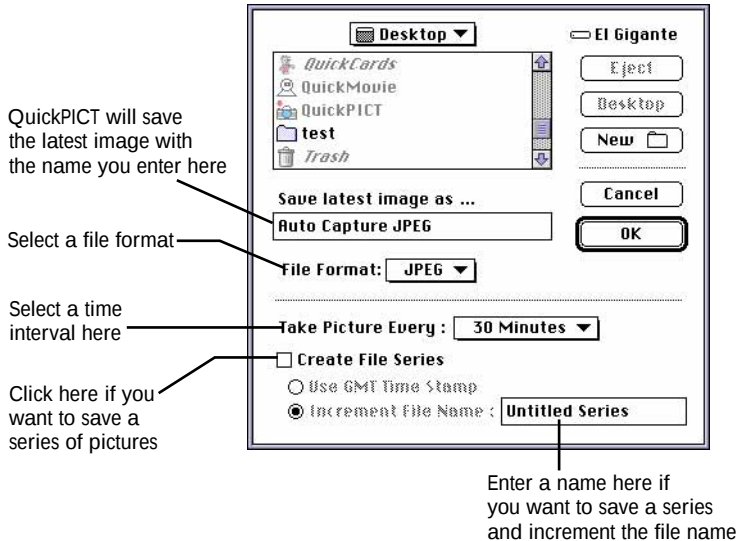
When you click Take Picture, QuickPICT will display the number of seconds remaining before it takes a picture. When three seconds remain, QuickPICT will play an alert sound. Remember to smile!

NOTE: If you are taking multiple exposures, QuickPICT will take all of the exposures after the self-timer interval. See page 5-11 for more information about multiple exposures.

Taking pictures automatically

You can use QuickPICT's Auto-Capture feature to automatically take pictures separated by a specified time interval. This is especially useful for keeping an updated picture on a Web page. To use Auto-Capture, choose Capture Mode from the Settings menu, then choose Auto-Capture.

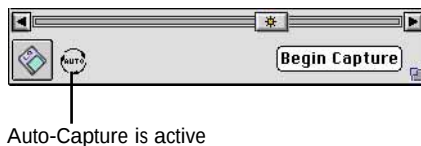
The Auto-Capture dialog is shown below.



You can either write over the file each time you save it, or you can create a series of files with different names or time stamps.

NOTE: Auto-Capture always saves the image to a file; you cannot choose another destination.

When Auto-Capture is active, QuickPICT will display the Auto-Capture icon, shown below.



NOTE: Auto-capture is not available if you have selected Bulb from the Shutter Mode menu or Multiple Exposure from the Settings menu.

Auto-Capture — Saving to the same file

Use this option if you are updating a picture on your Web page.

- 1 . Enter the name of the file in which to save the image in the **Save latest image as...** field.
- 2 . Choose a file format from the drop-down list (JPEG, TIFF, or PICT). If you are updating your Web page, choose JPEG.
- 3 . Choose a value (10 Seconds, 1 Minute, 30 Minutes, or 1 Hour) from the **Take Picture Every:** drop-down list.
- 4 . For more options, choose **Other** from the drop-down list. This brings up the Auto-Capture Options dialog, shown on page 5-10.
- 5 . Click OK.
- 6 . The **Take Picture** button will change to **Begin Capture**. When you click it, the auto-capture will begin. **Begin Capture** will change to **End Capture**.
- 7 . To stop Auto-Capture, click **End Capture**.

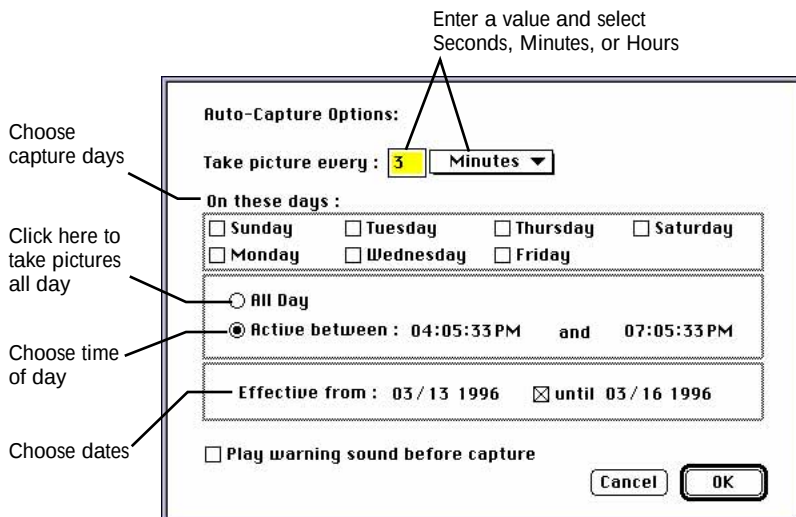
Auto-Capture — Saving a file series

- 1 . To save a file series, click the **Create File Series** checkbox.
- 2 . Choose a file format from the drop-down list (JPEG, TIFF, or PICT).
- 3 . To use the time of capture as the file name (measured in Greenwich Mean Time), choose **Use GMT time stamp**. The name of each file will then be the time at which it was created. For example, if you take a picture on March 13, 1996 at 14:39:42 GMT, the file name will be 130396143942 (seconds will not appear if the interval is greater than one minute).
- 4 . To save a series and increment the file name, choose **Increment file name**. Enter a name in the box. When QuickPICT takes the series, it will number the picture using the file name you enter. For example, if you choose *mypicture*, QuickPICT will begin with *mypicture 1*, followed by *mypicture 2*, and so on.

NOTE: A copy of the latest picture taken will also be saved with the name entered in the **Save latest image as** field.

Auto-Capture — Advanced options

If you want more control over when your pictures will be taken, choose **Other** from the **Take Picture Every** drop-down list in the Auto-Capture dialog. This brings up the Auto-Capture Options dialog, shown on the next page. You can use this dialog to control the days and dates on which pictures are taken, as well as the time of day during which Auto-Capture will be active.



- 1 . Enter a value in the Take picture every box, and choose Seconds, Minutes, or Hours from the drop-down list.
- 2 . If you want Auto-Capture to continue for more than one day, you can choose the days of the week on which it will be active by clicking the checkbox next to each day.
- 3 . To restrict Auto-Capture to certain times of day, use the Active between settings. To change a value, click on it and use the arrows to adjust the value. For example, if you want pictures to be taken only at night, begin at 8p.m. and end at 6 a.m.
- 4 . To restrict the calendar days on which Auto-Capture is active, use the Effective From settings. To change a value, click on it and use the arrows to adjust the value.
- 5 . If you want a warning sound to play before each picture is taken, click the Play warning sound before capture checkbox.

Taking multiple exposures

To take multiple sequential exposures, choose Multiple Exposure from the Settings menu. The pictures will appear on the Film Roll, described beginning on page 5-4.

- Choose Two or Five from the Multiple Exposure menu to take two or five images when you click Take Picture. The new pictures will be added to the end of the Film Roll.
- Choose Other... from the Multiple Exposure menu to take another number of pictures, up to a maximum of thirty-six. The new pictures will be added to the end of the Film Roll.

The Film Roll can hold thirty-six images. If the number of exposures you choose is higher than the remaining space on the Film Roll, QuickPICT will fill the Film Roll and then warn you that the Film Roll is full and stop taking pictures. For example, if there are two open spaces on the Film Roll and you select Five from the Multiple Exposure menu, QuickPICT

will only add two pictures to the Film Roll. If you want to add more pictures to the Film Roll, you must delete one or more pictures. QuickPICT will also warn you when your disk becomes full. See page 5-4 for information about working with the Film Roll.

NOTE: If you are taking more than one exposure, you will not be able to switch destinations; the pictures will automatically be added to the Film Roll. To switch destinations, choose **One** from the **Multiple Exposure** menu. You can then choose any of the available destinations.

Switching between cameras

You can connect both Grayscale and Color QuickCams to your Macintosh at the same time, as long as both the Printer and Modem serial ports are free, or you have an A/B switch box installed.

- To switch to the Grayscale QuickCam, choose **Connectix QuickCam** from the **Image** menu and select the serial port to which it is connected.
- To switch to the Color QuickCam, choose **Connectix Color QuickCam** from the **Image** menu and select the serial port to which it is connected.

You do not need to exit QuickPICT or QuickMovie to switch between cameras.

6 RECORDING MOVIES WITH QUICKMOVIE

About QuickMovie

You can use QuickMovie to capture, edit, and save video, including time-lapse and stop-action animation.

Starting QuickMovie

- 1 . To start QuickMovie double-click its icon.



- 2 . QuickMovie will start in *Record* mode. Enter a name for your new movie.
- 3 . Choose a location in which to save it,
- 4 . Click OK.
- 5 . You are ready to record. See page 6-5 for information on recording a video.

Switching between Record and Edit modes

When you start QuickMovie by double-clicking its icon, it starts in *Record* mode, which you use to capture new video. QuickMovie also has an *Edit* mode, which you use to view and edit video.

- When QuickMovie is in Record mode, the button at the bottom left of its window will look like this:



- When QuickMovie is in Edit mode, the button at the bottom left will look like this:



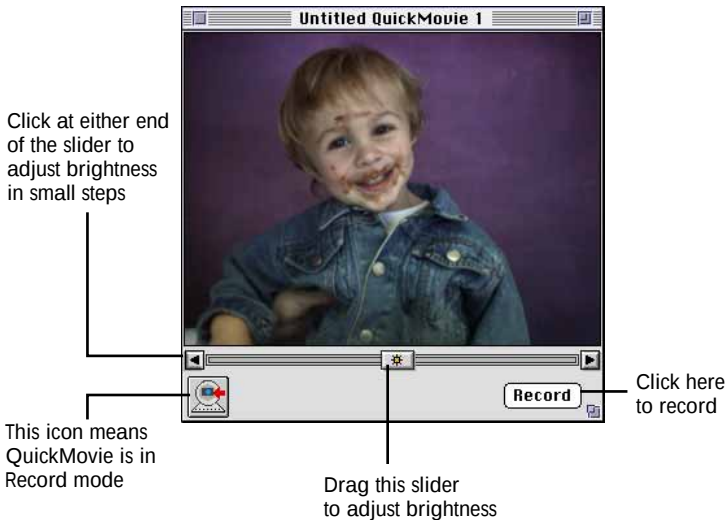
To toggle from one mode to the other, click the button.

QuickMovie's Controls

QuickMovie has different sets of controls for editing (when in Edit mode) and recording (when in Record mode). Both sets of controls are described below.

Controls for recording

The Record window is shown below.



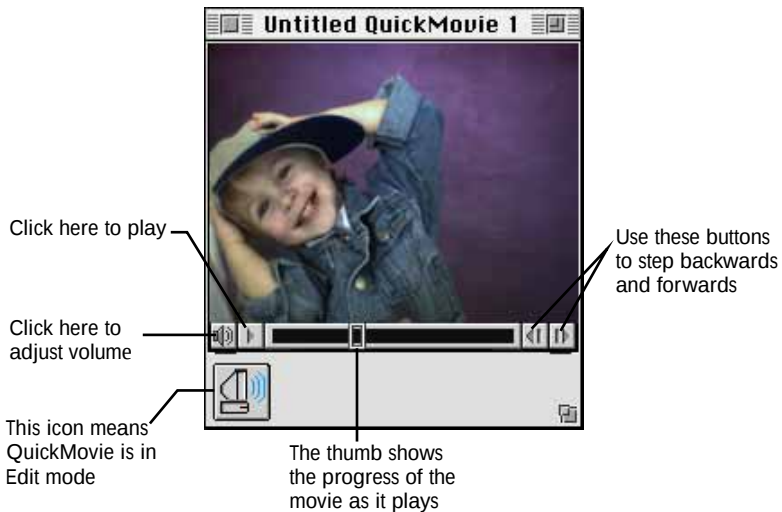
- **Record Button.** Click this button to start recording. While recording, the button changes to Stop. Click it again to stop recording.
- **Brightness Slider.** This adjusts the amount of time the CCD sensor array is active for each frame.

Notes about setting brightness

For best results, it is very important to have enough light. See Chapter 4 for tips on setting the brightness so that you get the best possible image.

Controls for editing

In Edit mode, QuickMovie uses the standard QuickTime Play Bar and Slider. The Edit window is shown on the next page.



- **Volume Control.** Clicking on the speaker icon pops up a slider that allows you to set the current sound playback level (the record levels are set by choosing Other on the Audio Settings menu when in Record mode).
- **Slider.** The *thumb* on the slider indicates the current position in the movie. Drag the thumb to move backwards or forwards in the movie. To select a section of the movie, hold down the Shift key while dragging the thumb.
- **Play button.** The Play button plays the movie in the display window starting from the current thumb position. While the movie is playing the play icon changes into a pause icon, which allows you to temporarily halt playback of the movie.
- **Backwards step button.** Steps you backwards through the movie (moves the thumb to the left).
- **Forward step button.** Steps you forward through the movie (moves the thumb to the right).

Audio-recording options

Choosing a microphone

Use the Audio menu to select an audio source. If you have more than one microphone attached to your Mac, you can switch between them in the Audio menu.

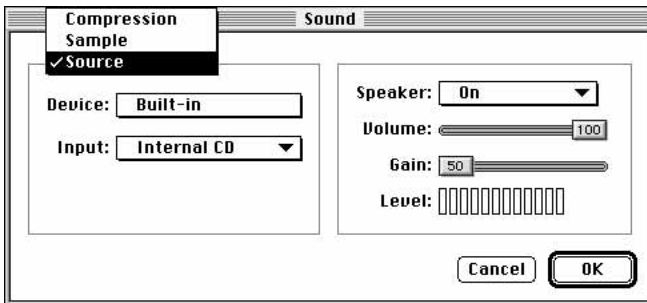
NOTE: The Grayscale QuickCam has an internal microphone. If you are using a Color QuickCam and want to record sound with your movie, you will need an external microphone. If you do not have a microphone, you can still record movies, but they will not have audio.

Choosing a sampling rate

There will also be choices to determine the audio sampling rate, which may be different for different audio sources. Typical choices are:

- 44kHz — Choose this for the best audio sampling rate, about equivalent to what you get with most VCRs.
- 22kHz — This is about equivalent to an excellent AM radio.
- 11kHz — This is telephone quality.

To bring up the standard Macintosh Sound dialog, choose **Audio other**. Use the Sound dialog (shown below) to make all of the above changes in addition to choosing audio compression.



Select **Source** to choose an audio source, **Sample** to choose a sampling rate, or **Compression** to choose audio compression.

Turning off audio recording

To turn off audio recording, choose **No Audio** from the Audio menu.

Video-recording options

You can change the video settings only when QuickMovie is in Record mode. Use the Video menu to record a normal, time-lapse, or stop-action movie. You can also choose to turn off video recording.

Normal recording

To record a normal movie, choose Video from the Settings menu, then choose Normal. This is the default setting.

Stop-action recording

To record a stop-action movie, choose Video from the Settings menu, then choose One Frame at a Time. Each time you click Record, QuickMovie will capture a single frame.

Time-lapse recording

To take time-lapse movies, choose Video from the Settings menu, then choose Time-lapse. In the dialog that appears, enter a time interval in seconds, minutes, or hours. When you click Record, QuickMovie will capture frames separated by the time interval you chose. To stop recording, click Stop.

Turning off video recording

To turn off video recording, choose Video from the Settings menu, then choose No Video. If audio recording is enabled, you can record sound when you click Record. The words *No Video* will appear in the QuickMovie window.

Recording a movie

- 1 . To record a movie, make sure QuickMovie is in Record mode (the button at the lower left is a camera. If it is not, click the button once).
- 2 . Make sure your QuickCam is pointing at what you want to record.
- 3 . Adjust the brightness control until you get the best looking picture (if you have not chosen Auto Brightness - see page 4-3 for more information).
- 4 . Adjust the color to suit the lighting and background (see Chapter 4).
- 5 . If you want to set a specific frame rate or change the compression scheme used, choose Camera Settings from the Video menu, then choose Video Other. The dialog that appears is shown on page 6-10.
- 6 . Drag the window to the size of the movie you want. Larger frames will record fewer frames per second, producing less fluid-looking video.
- 7 . Click the Record button. Once recording has begun, the Record button changes to a Stop button. To pause or stop the recording, click the Stop button.

Viewing a movie

To review your movie, switch to Edit mode by clicking the QuickCam button at the lower left corner. Use the QuickTime Play Bar (described beginning on page 6-2) to play your movie.

Saving a movie

To save your movie, select Save from the File menu. When you save a movie, QuickMovie uses the video compression the digitizer used when recording the movie. If you want to save the movie so that other people can view it, you must use the Compress Movie item from the File menu. For more information about compressing and saving movies, see page 6-11.

IMPORTANT NOTE: If you are using a Color QuickCam and used VIDECom compression while recording, other people without a Color QuickCam will *not* be able to view the movie unless you use the Compress Movie option or give them a copy of the VIDECom decompressor. See page 6-10 for more information.

Opening a movie you have saved

To open and edit a movie you have previously saved, close the active movie, then select Open from the File menu. Use the dialog that appears to find the movie you wish to open. You can also double-click the icon of any movie you have previously saved using QuickMovie. Once you have opened the movie, you can edit or add to it and save it again.

Editing a movie

You can add video to the end of an existing movie, or insert new video in the middle of the movie. You can also delete, cut, copy, or paste sections of video. You must first switch to Edit mode to edit a video. If you open an existing movie file, QuickMovie automatically starts in Edit mode.

Adding video into a movie

You can append or insert video to a movie you have just recorded, or to one you recorded previously and saved.

1. To add a new scene to a movie you have just recorded, or which you have opened, make sure QuickMovie is in Edit mode.
2. Move the thumb on the slider to where you want to start recording the new scene (the standard QuickTime play bar and slider is described beginning on page 5-2). To append to the end of an existing movie, the thumb should be at the far right.
3. Click the icon at the lower left to change to Record mode.
4. Adjust the image to suit the lighting and background (see Chapter 4 for more information).

- 5 . Click the Record button. Once recording has begun, the Record button changes to a Stop button.
- 6 . To pause or stop the recording, click the Stop button.
- 7 . To review your movie, click the icon in the lower left corner to Edit mode. Press the Play button or move the Slider thumb manually through the movie.

Selecting a section of video

If you want to replace, move, or delete a section of video, you must first *select* it. To select a section, hold down the Shift key while dragging the slider. The selected area will be highlighted in the Play bar.

Replacing video in an existing movie

Once you have captured a movie, you can replace any section of video.

- 1 . Make sure QuickMovie is in Edit mode.
- 2 . Select the area you wish to replace.
- 3 . To replace the selected section with new video, switch to Record mode by clicking the icon at the lower left.
- 4 . Adjust the image to suit the lighting and background (see Chapter 4 for more information).
- 5 . Click the Record button. Once recording has begun, the Record button changes to a Stop button.
- 6 . To pause or stop the recording, click the Stop button.
- 7 . To review your movie, click the icon in the lower left corner to switch to Edit mode. Click the Play button or move the Slider thumb manually through the movie.

Deleting part of an existing movie

You can delete portions of an existing movie. If you like, you can also replace the deleted portions with new video.

- 1 . Make sure QuickMovie is in Edit mode.
- 2 . Select the area you wish to delete.
- 3 . Press the Delete key to delete the selection, press Command-X to cut the section and copy it to the clipboard, or choose Cut from the File menu.
- 4 . To review your movie, click the icon in the lower left corner to switch to Edit mode. Press the Play button or move the Slider thumb manually through the movie.
- 5 . Save your new movie.

Duplicating a section within a movie

Sometimes a section is so good, you want to see it twice!

- 1 . Make sure QuickMovie is in Edit mode.
- 2 . Select the area you wish to duplicate.
- 3 . Press Command-C or choose Copy from the Edit menu.
- 4 . Move the slider to the position where you want to place the scene.
- 5 . Press Command-V or choose Paste from the Edit menu.
- 6 . To review your movie, click the icon in the lower left corner to switch Edit mode. Press the Play button or move the Slider thumb manually through the movie.
- 7 . Save your new movie.

Moving a section within a movie

If you don't like the sequence of sections in your movie, you can rearrange them to your heart's content.

- 1 . Make sure QuickMovie is in Edit mode.
- 2 . Select the area you wish to move.
- 3 . Press Command-X or choose Cut from the Edit menu.
- 4 . Move the slider to the position where you want to place the scene.
- 5 . Press Command-V or choose Paste from the Edit menu.
- 6 . To review your movie, click the icon in the lower left corner to switch to Edit mode. Press the Play button or move the Slider thumb manually through the movie.
- 7 . Save your new movie.

Copying video from one movie to another

QuickMovie currently only allows you to have one movie open at a time, so you will have to open the source movie, cut or copy a section, close the first movie, open the destination movie, and paste the new section.

- 1 . Open the movie that will be the source.
- 2 . Make sure QuickMovie is in Edit mode.
- 3 . Select the area you wish to move.
- 4 . Press Command-C or choose Copy from the Edit menu.
- 5 . Close the source movie by choosing Close from the File menu.
- 6 . Open the movie into which the video will be pasted.
- 7 . Move the slider to the point where you want to insert the video.
- 8 . Press Command-V or choose Paste from the Edit menu.

- 9 . To review your movie, click the icon in the lower left corner to switch to Edit mode. Press the Play button or move the Slider thumb manually through the movie.
- 10 . Save your new movie.

A note about display size

The window resizing control allows you to change the image size of the QuickMovie you're recording. As you drag this control a small window pops up at the top of the record window showing you the window size; this size changes as you drag so that you can create a record window of exactly the size you need.

Interesting things can happen when you attempt to record a window of one size into an existing movie of a different size. For example, if you had a movie that was 320 x 240 pixels and recorded new video at 160 x 120, you would have two choices at the end of the recording session:

- 1 . QuickMovie can scale the smaller window up to the larger window size, which may result in "fat pixels," but provides you with a movie that always has the same size window, and that window is always filled, or
- 2 . QuickMovie will place the smaller size recording into the larger size window, leaving white space around the right and bottom edges.

QuickMovie will always ask you which method you want it to use when you record movie clips with different window sizes or aspect ratios.

About frame rates

See **How to get the best frame rate in QuickMovie** on page 4-7 for detailed instructions on how to maximize the frame rate.

About video compression

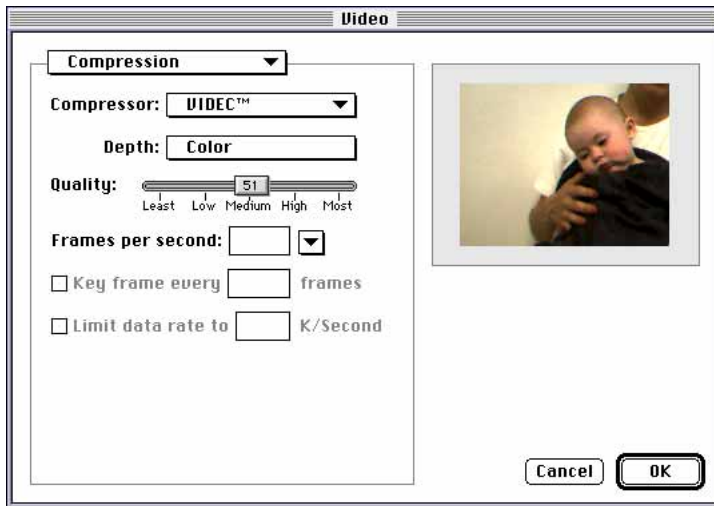
Video compression comes into play when you record a new video and when you flatten and compress a video so that other people can view it.

Compressing a video while recording

When you record video, QuickMovie compresses the image. QuickTime movies are always compressed in some format as they arrive from a digitizer such as a Connectix QuickCam. In fact, when you choose None in the Compression dialog, QuickTime still compresses the movie, albeit not as much as when you choose other compression options.

When you choose a digitizer, QuickMovie will automatically select the optimal compression setting for recording. In the case of the Color QuickCam, this is VIDEQ. (If you choose another compression option, the size of the movie file may increase.) The video data is then written directly to disk using this setting (that is why you choose a file name before you start recording). If you change the compression setting, you may not get the best frame rate when you record a movie. If you will not be sending the video to another person, simply choose Save from the File menu to save your movie without any further compression.

If you do need to change the compression that QuickMovie will use during recording, choose Camera Settings from the Settings menu, then choose Video other. In the Video Other dialog, choose Compression from the pop-up menu. The Compression dialog is shown below.



Use the Compressor: pop-up menu to choose a compressor.

Compressing a color movie so that other people can view it

If you record a color movie using VIDEC (the default), and you want to send it to another person, they will not be able to view the movie if they do not have the Color QuickCam software installed. In that case, you should do one of two things;

- Give them the installable VIDEC decompressor, available from Connectix.
- Save the movie using a different compression scheme. To use a different compression scheme, choose Compress Movie from the File menu (described on page 6-11). The Compress Movie option will both compress and *flatten* your movie. Flattening is important if you have edited the movie, and is described below.

About flattening QuickTime movies

Flattening a movie makes sure that the movie is self-contained, and removes references to external resources. If you don't flatten the movie, it cannot be viewed on any other machine, for example on another Mac, or on a Windows or UNIX system.

Why is flattening necessary? When you edit a QuickTime movie, for example by moving or deleting a section, the movie is not physically changed. Instead, all QuickTime applications store special *aliases* that allow them to locate the original information without actually moving or deleting it. For example, if you cut a section from one movie and paste it into another, only a reference to the data is transferred, not the data itself. This is a handy feature that allows you to create and edit movies without using up all of your disk space.

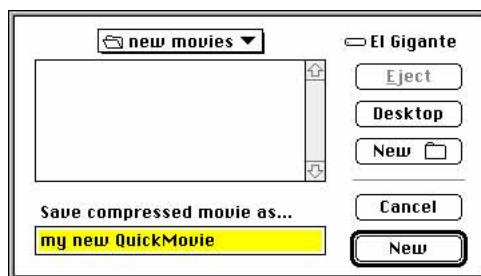
However if you transfer the movie to another system, the alias information is moved, but the original data is not. As a result, QuickTime may not be able to find the original video data, and you will not be able to play the movie. Flattening a movie makes sure that all of the original data is stored in the file, so that you can freely transfer and play it on any other system.

The Compress Movie menu item *always* produces a flattened movie, in addition to compressing the audio and video.

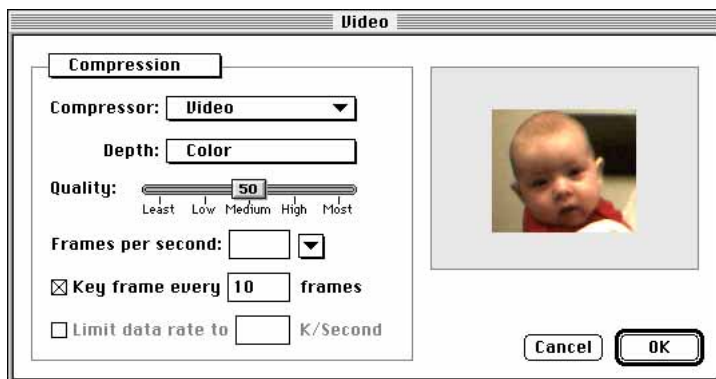
Using Compress Movie to create a compressed and flattened movie

Choose Compress Movie from the File menu to compress video and to flatten the movie so that it can be viewed on other systems.

- 1 . When you choose Compress Movie, a dialog will appear asking if you want to save any changes to the original movie (the original will be saved but not flattened). Click Save to continue.
- 2 . In the next dialog, enter the name of the new compressed and flattened movie, and click New. This dialog is shown below.



- 3 . Next, the Video compression dialog will appear, as shown below.



- 4 . Choose a compression option. If you are using a Color QuickCam and do not use VIDEDEC, or you are using a Grayscale QuickCam, we recommend either Cinepak, Motion JPEG, or Video. Cinepak offers the option of using 256 or millions of colors, while Video offers only thousands of colors. Keep in mind that the more colors you choose, the larger the resulting video file.

NOTE: The VIDEDEC item in this dialog is for recording with a Color QuickCam only; you cannot choose it for compressing and flattening.

- 5 . You can also choose how often key (reference) frames are saved. The fewer key frames you save, the smaller the movie. However, the more key frames you save, the better the quality of the movie. A good rule of thumb is to omit key frames, or to provide one key frame per second.
- 6 . Click OK to compress, flatten, and save your file.

7

USING THE QUICKSAVER UTILITY

QuickSaver is a screen saver module that works with After Dark™ and After Dark compatible applications such as DarkSide. DarkSide is a freeware application written by Tom Dowdy and is available in the Connectix forum of the following commercial online services:

- Internet: www.connectix.com
- America Online: Keyword: Connectix
- CompuServe: Go Connectix

To use QuickSaver if you currently have After Dark loaded on your machine:

- 1 .** Choose Control Panels from the Apple menu.
- 2 .** Open After Dark.
- 3 .** Select QuickSaver to display the image from your QuickCam and periodically move it around the screen.
 - Use the slider at the top to choose how often to move the image.
 - Click Fade between moves to dissolve the image before moving it.
 - To preview QuickSaver, click Demo. Click Stop to end the demo.
 - When you are finished, close After Dark.
- 4 .** Select Full-Screen QuickSaver to display the QuickCam image on the entire screen.
 - To preview the full-screen QuickSaver, click Demo. Click Stop to end the demo.
 - When you are finished, close After Dark.

APPENDICES

A CAMERA SPECIFICATIONS

Grayscale QuickCam

Grayscale QuickCam's specifications:

- Up to 320 x 240 pixel recording.
- 4-bit gray scale (16 shades of gray).
- Sound recorded at 5Khz sampling when using QuickCam's internal microphone.
- Frame rates of up to 15 fps (varies by window size being recorded and the Macintosh model).
- Powered from serial port of computer, draws less than 200 milliwatts of current.
- Field of view is approximately 65° (equivalent to a 38mm lens on a 35mm camera).
- Focus is fixed from 18 inches to infinity.
- Maximum lens speed is f/1.9.

Color QuickCam

Color QuickCam's specifications:

- Up to 640 x 480 pixels recording at 24-bit color.
- Frame rates of up to 30 fps (varies by window size being recorded and the Macintosh model).
- Powered from ADB port of computer, draws less than 2 watts of power.
- Field of view is approximately 48° (equivalent to a 50mm lens on a 35mm camera).
- Focus is adjustable from 1 inch to infinity.
- Maximum lens speed is f/1.6.

B IMPORTANT INFORMATION ABOUT THE APPLE DESKTOP BUS (ADB)

What is the Apple Desktop Bus?

The Apple Desktop Bus, or ADB, is a standard for input devices connecting to the Apple IIGS and later Macintosh computers. The ADB also supplies power to each device attached to it.

The Apple Desktop Bus is an intelligent connection, so you can have many devices of different types connected in a chain. Normally you will connect your keyboard and mouse to the ADB, but you can also install devices such as joysticks or trackballs. Apple does not recommend connecting more than 3 ADB devices at any time.

How do I connect devices to the ADB?

WARNING: You will need to plug your QuickCam into your Macintosh's ADB port. You should **NEVER** change any connection to the ADB port unless the power to your Macintosh is switched **OFF**, otherwise you may damage your computer's logic board. **DO NOT** unplug your mouse or keyboard from the ADB port until you have switched the power off.

1. To safely connect or disconnect ADB devices, make sure the power to your Macintosh is off. (If you have a PowerBook, place it into sleep mode — see *PowerBooks, Sleep Mode, and the ADB* on the next page.)

- 2 . Insert or remove devices from the ADB chain. The mouse is always the last device in the chain, as it has only a single connection. Other devices may be placed anywhere between the mouse and the computer.
- 3 . Turn the power back on (or bring your PowerBook out of Sleep Mode).

PowerBooks, Sleep Mode, and the ADB

When a PowerBook is in *Sleep Mode*, all ADB devices are automatically disabled. This prevents them from drawing power from the PowerBook and draining the battery. This also means that an external ADB device cannot be used to wake up your PowerBook.

To safely connect your Connectix QuickCam to your PowerBook, simply put your PowerBook in Sleep Mode by closing the cover, connect the ADB cable, then re-open the cover to resume working.

In general, you can make changes to any cable connection while your PowerBook is in sleep mode. This includes serial and SCSI devices, although you will have to re-start your PowerBook before it will correctly recognize SCSI devices connected in this manner.

How long can the ADB cable be?

Apple recommends a maximum cable length of 5 meters (the total length of the cable connecting all devices to the ADB).

How does Connectix QuickCam use the ADB?

Your Connectix QuickCam draws its power from the ADB (make sure that your Macintosh is off before connecting it). The video signal from your Connectix QuickCam is sent to one of your Macintosh's serial ports.

C

FREQUENTLY ASKED QUESTIONS

Q *How does QuickCam work?*

A QuickCam uses a CCD (Charge Coupled Device imager) to capture the image from the lens. The image is accumulated and then transmitted through a serial port to the computer, where a Connectix-written 'vdig' (software video digitizer) for QuickTime converts the bits into an image.

Q *Can I use my QuickCam and my modem on the same serial port?*

A No, if you have a Grayscale QuickCam. If you have a Color QuickCam, you can use version 3.4 or later of Port Juggler by Momentum. Otherwise you have two hardware options:

- Unplug the modem and plug in the QuickCam when needed
- Purchase an approved A/B serial port switch-box from Connectix or a computer reseller. There are many brands, but make sure that your A/B switch-box switches all 8 pins simultaneously, and the cable must be 'pass-through' rather than 'modem' cabling (modem cables switch pins 1 & 2 with pins 7 & 8).

Q *Does my QuickCam use the ADB port?*

A The Grayscale QuickCam does not; the Color QuickCam draws its power from the ADB port. You can plug other ADB devices, such as your keyboard and mouse, into the ADB connector on Color QuickCam. For more information about the Apple Desktop Bus (ADB), see Appendix B.

Q *Will the ADB connector on my Color QuickCam affect my other ADB devices?*

A No, the ADB connector on the Color QuickCam should not affect other devices.

Q *Does my QuickCam work with the built-in digitizer, or can I use a third-party card?*

A Both the Color and Grayscale QuickCams are themselves digital devices and do not need a built-in digitizer or a third-party digitizer card.

Q *Is there a limit to how long QuickCam can be extended from the CPU?*

A Yes. Color QuickCam can be extended up to 18 ft from the CPU with extension cables available from Connectix or computer stores.

Q *Will Connectix QuickCam work with serial ports from a NuBus card?*

A No, Connectix QuickCam will only work if it is plugged into a serial port on the Macintosh motherboard. If you have a Color QuickCam, you can also use a Port Juggler.

Q *Do I need a microphone to record sound?*

- A** The Grayscale QuickCam has a built-in microphone; the Color QuickCam requires an external microphone.

Q *How much file space do I need for a still PICT file?*

- A** The actual file size for your PICT will vary with the color depth, file format, and image size. Here are some approximate values for the Color QuickCam:

Image Size (in pixels)	Format	Colors	File Size (KB)
640 x 480	JPEG	Millions	450 KB
640 x 480	PICT	Millions	750 KB
320 x 240	JPEG	Millions	140 KB
320 x 240	PICT	Millions	190 KB
640 x 480	JPEG	Thousands	440 KB
640 x 480	PICT	Thousands	440 KB
320 x 240	JPEG	Thousands	150 KB
320 x 240	PICT	Thousands	130 KB

Here are some approximate values for the Grayscale QuickCam:

Image Size (in pixels)	Format	Grays	File Size (KB)
320 x 240	JPEG	256	60 KB
320 x 240	PICT	256	60 KB
320 x 240	JPEG	16	60 KB
320 x 240	PICT	16	34 KB
160 x 120	JPEG	256	17 KB
160 x 120	PICT	256	17 KB
160 x 120	JPEG	16	17 KB
160 x 120	PICT	16	17 KB

Q *How much file space do I need for a 10-second video?*

- A** The actual file size for a 10-second video will vary with the color depth, file format, and image size. It will also depend on the frame rate, compression type, addition of audio, and CPU speed

- Here are some approximate values for the Grayscale QuickCam at 320 x 240:

– Each 10 seconds of video with audio (256 grays, compressed) ~ 750 KB - 1.5 MB

- Each 10 seconds of video with audio (256 grays, uncompressed) ~ 1.7 MB - 2.5 MB
- Here are some approximate values for the Color QuickCam at 640 x 480:
 - Each 10 seconds of video with audio (thousands of colors, VIDEDEC) ~ 2-5 MB
 - Each 10 seconds of video with audio (uncompressed) ~ 10 MB at 640x 480
- Q** *Can Connectix QuickCam take close-ups?*
 - A** The Grayscale QuickCam has a fixed focus from eighteen inches to infinity; the Color QuickCam uses a manually adjustable lens that can be focused from one inch to infinity.
- Q** *Is there a version of QuickCam for PCs?*
 - A** Yes. Connectix offers both Color and Grayscale QuickCams for Windows-based PCs. To find out more about QuickCam for Windows, check our Web page at <http://www.connectix.com>, or contact us at the addresses listed in Appendix D.
- Q** *Can the Macintosh QuickCam be used with a PC?*
 - A** No. Because of different system architectures, QuickCams for Macintoshes and PCs are completely different cameras and are not interchangeable.
- Q** *Does Connectix QuickCam work on non-US machines?*
 - A** Yes, because Connectix QuickCam uses direct-to-digital video instead of NTSC or PAL, it will work on all QuickTime-compatible Macintoshes. The Color QuickCam draws its power from the ADB port of the computer; you do not need special power adapters.
- Q** *Can the CCD get an image burned in by pointing it at the same subject for a long time?*
 - A** No.
- Q** *If a QuickCam is pointed at the computer screen, will the feedback damage the QuickCam?*
 - A** No.
- Q** *Why does my hard drive spin down when I use my QuickCam on a PowerBook?*
 - A** Apple designed PowerBooks so that the hard drive automatically spins down whenever the built-in microphone is activated. This prevents the noise from the hard drive from being recorded. You should use a microphone plugged into the microphone jack, not the built-in microphone.
- Q** *My PowerBook 5xx does not display a picture, or freezes. What is happening?*
 - A** Check the version of your Connectix QuickCam software. You should have version 1.0.3 or higher. To determine the version you have, select the QuickPICT application and then choose Get Info from the File menu. If you have an older version, updater software is available FREE online at the locations listed in Appendix D.
- Q** *Is there any compression going on inside the camera? What is VIDEDEC?*
 - A** The Connectix Color QuickCam uses a built-in compression technology called VIDEDEC (Video Digitally Enhanced Compression). This technology was developed by Connectix specifically for Color QuickCam. VIDEDEC (patent pending) yields faster frame rates, allows transmission of color digital data over a standard serial port without custom hardware, and produces smaller files on your hard disk.

- Q** *Does Connectix QuickCam require QuickTime?*
- A** Yes. Connectix includes QuickTime on the installation disks that come with every QuickCam.
- Q** *Can a Connectix QuickCam be used for videoconferencing?*
- A** Yes! Connectix QuickCam is a video input device that can be used with videoconferencing software. Connectix also offers VideoPhone, a complete, inexpensive videoconferencing solution that can be purchased from most computer mail-order houses. You can also buy a QuickCam and VideoPhone bundled together. Connectix QuickCam is also compatible with CU-SeeMe from White Pine Software, however Connectix does not offer support for CU-SeeMe.
- Q** *Why do I see menu items for colors in the Grayscale QuickCam picture depth menu?*
- A** Because the Grayscale QuickCam can generate an image using the grayscale values from a color palette.
- Q** *How many frames per second (fps) can QuickCam capture?*
- A** The frame rates achieved by Connectix Color QuickCam depend upon several factors, including the type and speed of CPU, lighting levels, and the level of compression and sharpness being used.
- The following table illustrate some sample frame rates for a Grayscale QuickCam at an image size of 160 x 120 pixels on a low-end PowerMac (values for Thousands of colors use a color palette, but are a grayscale image):

Mode	Frames/second (fps)
Thousands of colors*, high sharpness, Video compression	8 fps
Thousands of colors*, medium sharpness, Video compression	16 fps
Thousands of colors*, low sharpness, Video compression	18 fps
256 grays, high sharpness, no compression	8 fps
256 grays, medium sharpness, no compression	14 fps
256 grays, low sharpness, no compression	16 fps
16 grays, high sharpness, no compression	10 fps
16 grays, medium sharpness, no compression	26 fps
16 grays, low sharpness, no compression	28 fps

- The following table illustrate the effect of compression on frame rates for a Grayscale QuickCam for an image size of 320 x 240 pixels on a low-end PowerMac (values for Thousands of colors use a color palette, but are a grayscale image):

Mode	Frames/second (fps)
Thousands of colors*, high sharpness, Video compression	2 fps
Thousands of colors*, medium sharpness, Video compression	6 fps
Thousands of colors*, low sharpness, Video compression	8 fps
256 grays, high sharpness, no compression	2 fps
256 grays, medium sharpness, no compression	4 fps
256 grays, low sharpness, no compression	6 fps
16 grays, high sharpness, no compression	3 fps
16 grays, medium sharpness, no compression	10 fps
16 grays, low sharpness, no compression	20 fps

- The following table illustrate some sample frame rates for a Color QuickCam at an image size of 160 x 120 pixels on a low-end PowerMac:

Mode	Frames/second (fps)
Millions of colors (uncompressed)	4 fps
Thousands of colors (high sharpness)	8 fps
Thousands of colors (medium sharpness)	15 fps
Thousands of colors (low sharpness)	30 fps

- The following table illustrate the effect of compression on frame rates for a Color QuickCam for an image size of 320 x 240 pixels on a low-end PowerMac:

Mode	Frames/second (fps)
Millions of colors (uncompressed)	1 fps
Thousands of colors (high sharpness)	4 fps
Thousands of colors (medium sharpness)	6 fps
Thousands of colors (low sharpness)	9 fps

Keep in mind that these are sample *capture* rates. The rate at which movies can be recorded will be somewhat slower due to the overhead of writing to your disk drive.

- Q** *My playback speed doesn't seem to match your listed specifications. What's going on?*
- A** Bottlenecks to recording speed include the speed of the serial port, the speed of your hard disk, how much RAM you have, and the speed of your processor. The frame rates given in the specifications are the raw feed from the camera displayed live on screen
- Q** *With which other applications is Connectix QuickCam compatible?*
- A** Any application that supports QuickTime is compatible with QuickCam. PICT, TIFF or JPEG files captured with QuickCam's QuickPICT software can be used with any application that supports these file formats. QuickMovie saves movies in standard QuickTime format.
- Q** *Are there plug-ins for Adobe Photoshop and/or Premiere that will capture images and movies directly into those applications?*
- A** Yes. Most online services should have a third-party plug-in for Adobe Photoshop, however this has not yet been tested with Connectix Color QuickCam. Adobe Premiere does not require plug-ins, since it is already QuickTime-compatible and can capture video directly from QuickCam.
- Q** *How can I obtain the latest software updates from Connectix?*
- A** Connectix maintains a number of on-line venues for easy, 24-hour access to the latest Connectix software updates. Updates can be downloaded from any of the online sites listed in Appendix E. If you do not have online access, call our toll-free number (1-800-950-5858) and ask for the Update Department from 8 a.m. to 5 p.m. Pacific Time, Monday through Friday. Please have your credit card and QuickCam registration number ready. The update is free, however there is a \$9.95 shipping & handling charge.
- Q** *Is my Connectix QuickCam scriptable?*
- A** Yes, you can control QuickPICT using AppleScript.
- Q** *Is there a developer's program for the Connectix QuickCam?*
- A** Yes. More information about the developer's program can be obtained at <http://www.connectix.com>. You may contact also Connectix Developer Relations by sending email to developer@connectix.com.
- Q** *What accessories are available for QuickCam?*
- A** Connectix sells a Camera Tripod (7" high with tilt/swivel) for \$14.95. To order, or for more information, call Connectix at 1-800-950-5880 (North America only). Connectix also sells A/B switchers for your serial port as well as extension cables.

D SUPPORT AND SALES

Using QuickCam is easy and fun. In the unlikely event that you have a problem with the QuickCam hardware, or with the software supplied by Connectix, please read this section first.

Contacting Connectix Support

■ **If you have questions or problems with QuickCam, contact us by telephone, by fax, or via electronic mail. Try the following first:**

1. Read this manual. It may only take a few moments to get the answers you need. Also, check the “ReadMe” file. This has information on known problems and solutions.
2. Write down the events that lead to the problem. Have you changed anything in your computer recently?

Have the following available when you contact Technical Support:

- Registration number—on the Registration Card
- Software version number—on the installer
- Macintosh model—located in “About This Macintosh...”
- Apple System software version—in “About This Macintosh...”

Connectix Technical Support can be contacted at the following online services:

<u>Online Service</u>	<u>Mail Address</u>	<u>Forum Location</u>
■ America On-Line	Connectix	Keyword = Connectix
■ CompuServe	75300, 1546	Go CONNECTIX

You can also contact us on the World Wide Web, or by e-mail, fax, or phone:

- WWW: <http://www.connectix.com>
- E-mail: cqcmsupp@connectix.com (Color QuickCam)
cqcmsupp@connectix.com (Grayscale QuickCam)
- Phone: 415-571-5100 (Grayscale and Color QuickCam)
800-950-5858 (Color QuickCam)
800-950-5880 (Grayscale QuickCam)
- Fax: 415-571-5195

Contacting Connectix Sales

Contact Connectix Sales for more information about QuickCam volume sales (site license, 50-user, and 10-user), QuickCam for Windows, or other Connectix products.

- Internet: sales@connectix.com
- FAX: 415-571-0850
- Phone: 800-950-5880 or 415-571-5100 (Sales only)

Contacting Connectix Support in Europe

Country	Telephone Number
Germany	0130-823887 (toll-free)
France	05-917943 (toll-free)
Britain	0800-966199 (toll-free)
Holland	20-5814384

For all other European countries, dial +31-20-5814385. This number is in Holland, however information will be provided in English.

European Addresses

Mailing: SEI, Attn: Connectix, Orlyplein 85, 1043 DS Amsterdam, The Netherlands

FAX: Fax questions to: +31-20 581 4380

- **Internet:** For e-mail use the internet address: CONNECTIX@NL.SYKES.COM

E WARRANTY

The QuickCam hardware is warranted to be free from defects in materials and workmanship for a period of one year from the date of purchase. During the warranty period, Connectix will, at its option, either repair or replace products which prove to be defective. This warranty is void if the FCC label has been removed or if Connectix determines that the user has opened the camera's plastic case.

Should Connectix be unable to repair or replace the product within a reasonable amount of time, a refund of the purchase price may be given upon return of the product.

The warranty on your QuickCam hardware does not apply to defects or damage resulting from:

- Improper installation
- Unauthorized modification
- Removal of the FCC label
- Opening the case
- Misuse

Before returning a failed unit, you must obtain a Return Merchandise Authorization (RMA) from Connectix.

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