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# ***Kodak Digital Science™***

## **DVC323 Digital Video camera**



## **Camera User's Guide**

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# Getting Started

Congratulations on purchasing your new *Kodak Digital Science™* DVC323 Digital Video camera (DVC323 camera). Using your new DVC323 camera and the right software, you can easily:

- ✓ Capture still pictures or record video clips with sound using PictureWorks Live software
- ✓ Send multimedia greeting cards to friends and family using *Kodak Digital Science* Picture Easy or PictureWorks Live software
- ✓ Hold a videoconference using Microsoft NetMeeting by Microsoft Corporation or CU-SeeMe by White Pine Software, Inc. You can communicate with one or more people and send video, audio, text, or graphics as you participate in a class, a business meeting, or a chat with friends or family.
- ✓ Capture, catalog, and share still images over the Kodak Picture Network using *Kodak Digital Science* Picture Easy software
- ✓ Add annotations and diagrams to an image using Imaging for Windows by Eastman Software
- ✓ Capture time-based still pictures for Web pages or area security
- ✓ Distort images using Kai's Power GOO SE by MetaTools
- ✓ Import still images into photo imaging software using the TWAIN Acquire Module
- ✓ Edit videos using your favorite video editing software and the device driver for Microsoft Video For Windows software

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## Package Contents

The DVC323 package contains the following items:

- ✓ DVC323 camera with integrated Universal Serial Bus (USB) cable and detachable base
- ✓ This Camera User's Guide
- ✓ Quick setup card
- ✓ Registration/warranty card



If you purchased the DVC323 camera by itself—and not as part of a computer system—the DVC323 package should also include the following items:

- ✓ DVC323 Software CD
- ✓ Software User's Guide

# Your DVC323 Camera



## 1 Getting Started

| Camera Part                  | Description   |
|------------------------------|---|
| Shutter Button               | Use your mouse and the software application, or the shutter button, to take pictures and record videos.   |
| LED<br>(Red indicator light) | <p>When you plug the camera into your computer, the LED blinks until the computer turns the camera on. When you take a picture, the LED blinks. When you record a video, the LED stays on until you stop recording.</p> <p>If the LED blinks continuously, the computer is not communicating with the camera. See the troubleshooting section of this manual for help.</p>                          |
| Focus Wheel                  | <p>Use the focus wheel to adjust the lens and sharpen the image you are capturing from 5" (12.7cm) to infinity.</p> <p>Move the wheel toward  to focus on a close image, or toward  to focus on an image at a distance.</p> |
| Detachable Base              | Remove the base for hand-held or tripod camera operation.   |
| Tripod Mount                 | Attach the camera to a tripod for added stability.  |

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## Camera Specifications

| Specification       |                                | Description   |
|---------------------|--------------------------------|---|
| Imaging Electronics | Image Sensor                   | Kodak manufactured 640(H) x 480 (V) pixels, interline transfer, progressive scan color CCD with square pixels         |
|                     | Photo Resolution               | 640(H) x 480(V) 24-bit color, 16.7 million colors   |
|                     | Picture Resolution             | Stills: 320 x 240, 640 x 480 pixels (24-bit color)<br>Video: 160 x 120, 320 x 240, 352 x 288 (CIF), 176 x 144 (QCIF)  |
|                     | Video Frame Rate*              | Telephoto: 10 to 30 frames per second<br>Normal: 10 to 30 frames per second<br>Wide Angle: 12 to 28 frames per second |
|                     | Signal-to-Noise Ratio          | 53 db before A/D conversion   |
|                     | Video Output Gamma             | 0.45  |
|                     | Video Color Format             | YUV, 9 bits or 12 bits per pixel  |
|                     | Still Color Format             | RGB, 24 bits per pixel  |
|                     | White Balance and Exposure     | Automatic, with a software option to adjust manually  |
| Optics              | Lens                           | Kodak manufactured 3 element, 6.2mm focal length lens with f/2.5 aperture   |
|                     | Digital Zoom and Field of View | Telephoto: 20°<br>Normal: 30°<br>Wide Angle: 42°  |
|                     | Focus (Manual)                 | 5" (12.7cm) to infinity   |
|                     | Electronic Shutter             | Variable speed between 1/500 and 1/10 second with stop action and normal settings                                     |
| Interface           | Computer Interface and Cable   | Universal Serial Bus (USB) interface (Version 1.0) with 9.8' (3m) cable   |
|                     | Power                          | USB interface supplies power (<500mA @ 5V supplied through USB cable)   |
| Dimensions          | Height                         | 2.5" (6.35cm)   |
|                     | Width                          | 2.0" (5.1cm)  |
|                     | Depth                          | 5" (12.7cm)   |
| Weight              | Without the base               | 7 oz. (227 g)   |
|                     | With the base                  | 10 oz. (284 g)  |



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| Specification  |             | Description   |
|--|-------------|---|
| Operating Environment  | Temperature | 40 to 104° F (4.4° C to 40° C)  |
|  | Humidity    | Cold: 40° F @ 15% +/- 5% RH<br>Hot: 104° F @ 76% +/- 5% RH  |
|  | Altitude    | Low Temperature: 8,000 ft. at 49° F @ 15 +/- 5% RH<br>High Temperature: 8,000 ft. at 86° F @ 20 +/- 5% RH |
| * The frame rates apply when 6Mbit/second USB bandwidth is available. Frame rates may be lower if other Isochronous USB devices are operating through the bus. |             |   |

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## System Requirements

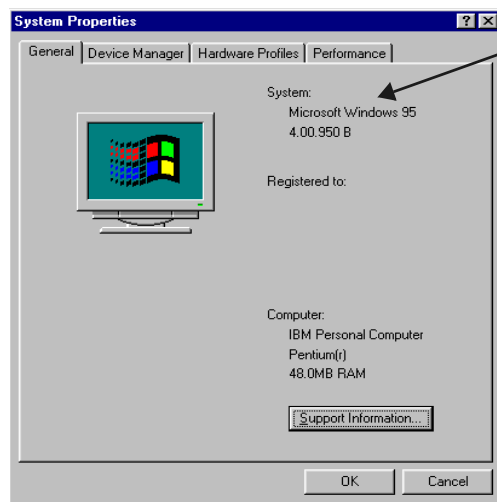
### Minimum System Requirements

Your computer must be equipped with the following components in order to use the DVC323 camera:

- ✓ Personal computer with a Universal Serial Bus (USB) and a Pentium (or equivalent) Processor.
- ✓ Windows 95 system software, Version 4.00.950B or later. (Most Pentium MMX Computers are shipped with Version 4.00.950B or later.) If you have a non-MMX Pentium Computer, check the system properties to determine which version of Windows 95 you are running:

**1** Right-click on the **My Computer** icon.

**2** Click on **Properties**.



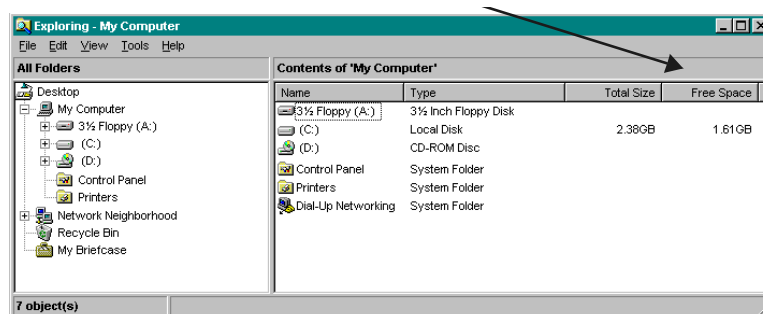
**3** View the **System** field to determine the version of Windows 95.

- ✓ CD-ROM drive
- ✓ Minimum of 16 MB of available RAM

- ✓ 13 MB of available hard disk space for the required software:
  - 10 MB for PictureWorks Live
  - 3 MB for drivers (DVC323 Device Driver, OCX, and the TWAIN Acquire Module)

To determine the amount of free space on your hard disk:

- 1 Right-click on the **My Computer** icon.
- 2 Click on **Explore**.
- 3 View the **Free Space** for your hard disk.



- ✓ Additional hard disk space for the software applications you choose to install:
  - 6 MB for Kai's Power GOO SE
  - 18 MB for Picture Easy
  - 5 MB for Microsoft NetMeeting
- ✓ 256 color VGA display (800 x 600 resolution, 16-bit color (or better) is recommended)

### Additional Requirements for Recording Audio

If you are going to use the DVC323 camera for recording video clips with sound, your computer system must also contain the following components:

- ✓ Microphone
- ✓ 16-bit sound system
- ✓ Speakers or headphones

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## Additional Requirements for Videoconferencing

If you are going to use the DVC323 camera for videoconferencing, your computer system must also contain the following components:

- ✓ Microphone
- ✓ 16-bit sound system
- ✓ Speakers or headphones
- ✓ Network connection (for H.323 network-type conferencing)
  - TCP/IP (winsock-compliant), network connection
  - 28.8 Kbps (or better) modem, Ethernet, or ISDN connection
- ✓ Telephone connection (for H.324 dialup-type conferencing)
  - H.324-compliant software and recommended modem

## Installing Your DVC323 Camera

*If you purchased your DVC323 camera by itself*—not bundled with a computer system—you **must install the software** from the DVC323 Software CD **before connecting the camera** to your personal computer. Follow the instructions for “Installing the Software” in the next chapter before connecting the camera to your personal computer.

*If you purchased your DVC323 camera as part of a computer system*, software for using the camera should already be installed on your new personal computer. Follow the instructions in Chapter 3 for “Connecting Your DVC 323 Camera” to your personal computer.

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# Installing the Software

If you purchased your *Kodak Digital Science* DVC323 Digital Video camera (DVC323 camera) by itself—not bundled with a computer system—you must install the software that is on the DVC323 Software CD onto your personal computer before you connect the camera.

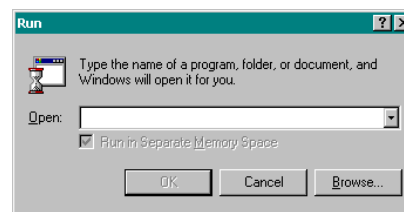
- 1 Close all applications that may be running on your personal computer.
- 2 Place the DVC323 Software CD into your CD-ROM drive.

☞ **If Auto Run is turned on** in Windows 95, the first install window automatically appears within a few seconds. Go to step 6.



- 3 Click on the **Start** button on your computer taskbar.
- 4 Click on **Run** to display the “Run” window.
- 5 In the **Open** field, type the letter of the drive that contains the CD and then type `:\setup`


*For example: d:\setup*



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6 Click **OK** to display the “DVC323 Digital Video camera” screen.

7 Click on **Install** to display the “Software Install Options” screen.

 Click on **Show Me Goodies** to view information about the demo software (such as CU-SeeMe) included in the “Goodies” folder on the Software CD.



8 Click on **Install DVC323 Software** and follow the instructions that are displayed on the screen.



9 Remove the DVC323 Software CD from your CD-ROM drive.

The following software applications are installed with the **DVC323 Software**:

- ✓ Kai's Power GOO SE
- ✓ PictureWorks Live
- ✓ TWAIN

You must repeat the installation procedure and select a different installation option in Step 8, to install Microsoft NetMeeting or Picture Easy.

Once you have installed the **DVC323 Software**, follow the instructions in the next chapter for “Connecting Your DVC323 Camera” to your personal computer. For instructions on using the software with your DVC323 camera (or un-installing the software), refer to the *DVC323 Software User's Guide*.

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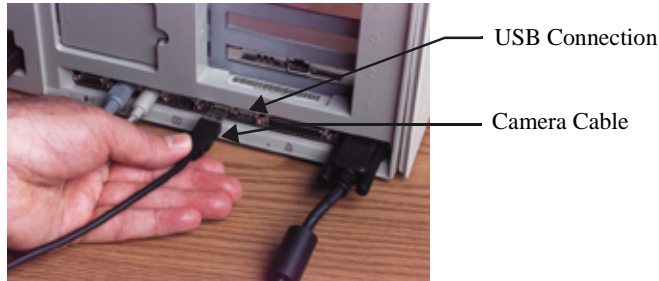
# Connecting Your DVC323 Camera

Once software for using the *Kodak Digital Science* DVC323 Digital Video camera (DVC323 camera) is installed on your personal computer, you are ready to connect your DVC323 camera to your computer.

## Universal Serial Bus (USB) Connection

Follow these steps to connect your DVC323 camera to your computer:

- 1 Connect the camera cable from the camera to the USB connection on your computer.



- 2 View the message "Unknown device.... Searching for file." (Windows 95 automatically displays this message when it detects the camera.)
- 3 Wait until Windows 95 loads the necessary drivers and the "Unknown device..." message disappears.

After you connect the camera to your computer, the camera will be in video mode.

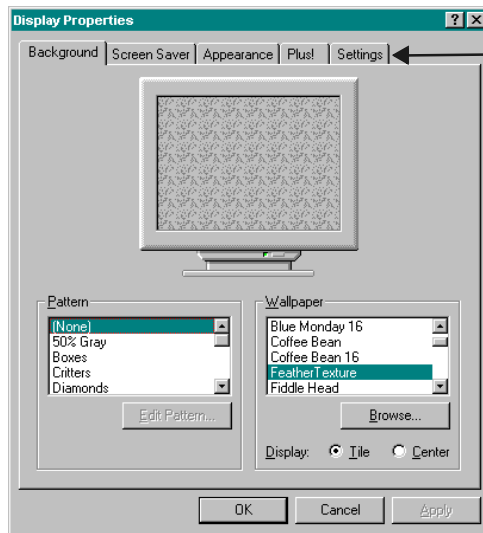
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## Monitor Adjustment

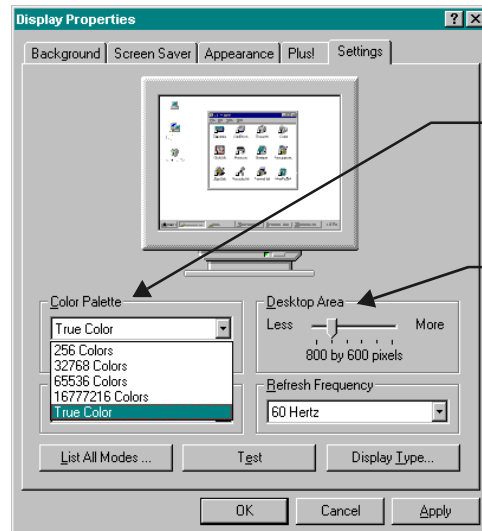
You may need to adjust the display settings for your monitor to view pictures from the DVC323 camera.

- 1 Double-click on the **My Computer** icon.
- 2 Double-click on the **Control Panel** icon.
- 3 Double-click on the **Display** icon to view the “Display Properties” window.



- 4 Click on the **Settings** tab.





- 5 In the **Color Palette** field, select 16-bit (65536 Colors) or 24-bit (True Color or 16777216 Colors).
- 6 In the **Desktop Area** field, select 800 by 600 pixels (or greater).
- 7 Click on the **OK** button.

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# *Capturing Pictures and Videos*

Your *Kodak Digital Science* DVC323 Digital Video camera (DVC323 camera) will take good pictures in your home or office just by connecting it to your computer. You can take even better pictures by following some simple hints for:

- ✓ Composition
- ✓ Lighting
- ✓ Color balance
- ✓ Auto white balance
- ✓ Exposure
- ✓ Shutter speed
- ✓ Videoconference camera adjustment

## **Composition**

- ✓ Hold the camera steady in your hand, place it on a stable surface, or use a tripod.
- ✓ Position the subject in the center of the image area.

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## Lighting

Follow these lighting hints to capture quality pictures and videos:

- ✓ Use plenty of light

Since lighting conditions vary depending on wall color, the use of lamp shades, and many other factors, refer to the following table for some guidelines.

| Light Type  | Good<br>(100 lux) | Very Good<br>(200 lux) | Excellent<br>(400 lux) |
|---|-------------------|------------------------|------------------------|
| 100W incandescent   | 7 ft.*            | 4 ft.*                 | 3 ft.*                 |
| 40W incandescent  | 3 ft.*            | 2 ft.*                 | --                     |
| 34W Cool White Deluxe Fluorescent   | 8 ft.*            | 5 ft.*                 | 3 ft.*                 |
| *This is the recommended distance when pointing a desk lamp (with a reflector and no shade) at the subject. If you use another type of lamp, move it closer to the subject. |                   |                        |                        |

- ✓ Place the lights behind and near the camera so they shine toward the subject
- ✓ Do not mix light types (for example, fluorescent and incandescent, or incandescent and daylight)
- ✓ Avoid aiming the camera at bright lights or windows

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## Adjusting Your Camera Settings

You can adjust the following image quality settings for your camera to achieve the most pleasing video image:

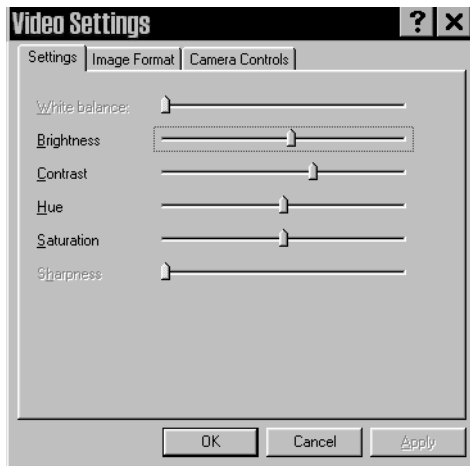
- ✓ Color Balance
- ✓ Auto White Balance
- ✓ Exposure
- ✓ Shutter Speed

### Viewing the “Video Settings” Window

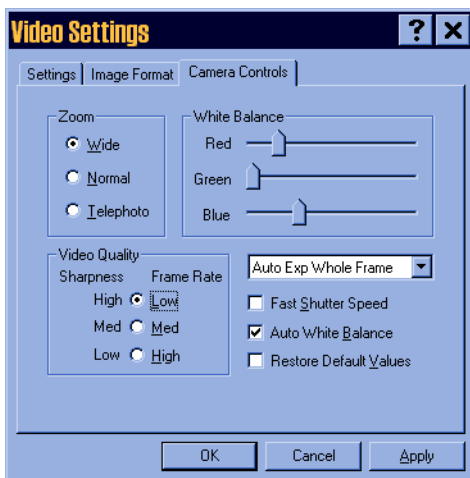
Follow these steps to view the “Video Settings” window. Then follow the recommendations for adjusting the color balance, auto white balance, exposure, and shutter speed in the following sections. (You can also adjust the settings when using some software applications, like PictureWorks Live.)

 There is no preview window to show the effect of your changes to the current settings. You must restart your software application to verify the adjustments.

- 1 Click on the **Start** button on your computer taskbar.
- 2 Select **Programs**.
- 3 Select **KODAK DVC323**.
- 4 Select **DVC323 Video Setup** to view the “Video Settings” window.



- 5 Click on the **Settings** tab to adjust the Color Balance attributes.



- 6 Click on the **Camera Controls** tab to:
- ✓ Turn Auto White Balance on or off
  - ✓ Turn Auto Exposure on or off
  - ✓ Select the Shutter Speed

- 7 Adjust the settings according to the recommendations in the following sections.
- 8 Click on the **OK** button to save all your adjustments on the “Video Settings” window.
- 9 Restart your software application to activate the camera adjustments you just made.

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## Color Balance

The software has automatic and manual color balance options. When Auto White Balance is selected on the “Video Settings” window, the software automatically adjusts the colors for the current lighting conditions. If the resulting color is not satisfactory, you can manually adjust the color balance in two ways.

- ✓ If the light source is consistent, move the hue slider on the “Video Settings” window until the image looks correct.
- ✓ If the light source is changing, select one of the preset color balance settings for the common light sources (incandescent, fluorescent, or daylight). Then adjust the hue slider until the image looks correct. (Refer to Chapter 2 in the *DVC323 Software User’s Guide* for information about adjusting the camera settings while using PictureWorks Live.)

If your light source is unusual, the hue slider and preset values may not be correct. Follow the procedure for adjusting the Auto White Balance in the next section.

## Auto White Balance

If the Auto White Balance control has trouble selecting the correct balance for a scene, complete the following procedure:

- 1** Place a plain white sheet of paper in front of the camera so that the paper is the only object in the scene. Make sure the light on the paper is the same as the light on the scene.
- 2** Turn off Auto White Balance on the “Video Settings” window and select one of the predefined lighting situations.
- 3** Turn Auto White Balance on again.

This procedure re-initializes Auto White Balance with a neutral scene. The white balance should remain the same when the white paper is removed.

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## Exposure

The software has automatic and manual exposure control options. When Auto Exposure is selected on the “Video Settings” window, the software adjusts the brightness. You can use the manual mode to adjust the brightness. If you adjust the brightness manually, you will have to adjust the brightness each time the lighting conditions change.

## Shutter Speed

The shutter speed is determined by your software’s video setting. Use the information in the following table to select the best frame rate for your particular need. For example, for low light conditions, select a slower shutter speed range (set **Zoom** at Wide and **Quality** at High) on the “Video Settings” window.

| Zoom Setting   | Quality Setting | Max. Frame Rate* (Frames Per Sec.) | Shutter Speed Range |
|--|-----------------|------------------------------------|---------------------|
| Wide<br>42°  | High (Best)     | 12                                 | 1/120 - 1/12 sec.   |
|  | Medium (Better) | 20                                 | 1/120 - 1/20 sec.   |
|  | Low (Good)      | 28                                 | 1/120 - 1/28 sec.   |
| Normal<br>30°  | High (Best)     | 10                                 | 1/120 - 1/10 sec.   |
|  | Medium (Better) | 20                                 | 1/120 - 1/20 sec.   |
|  | Low (Good)      | 30                                 | 1/120 - 1/30 sec.   |
| Telephoto<br>20°   | High (Best)     | 10                                 | 1/120 - 1/10 sec.   |
|  | Medium (Better) | 20                                 | 1/120 - 1/20 sec.   |
|  | Low (Good)      | 30                                 | 1/120 - 1/30 sec.   |
| * The maximum frame rates apply when 6Mbit/second USB bandwidth is available. Frame rates may be lower if other USB devices are attached to the bus. |                 |                                    |                     |

When taking pictures of moving objects, select **Stop Action** to limit the shutter speed to 1/40 second (maximum) and reduce motion blur.

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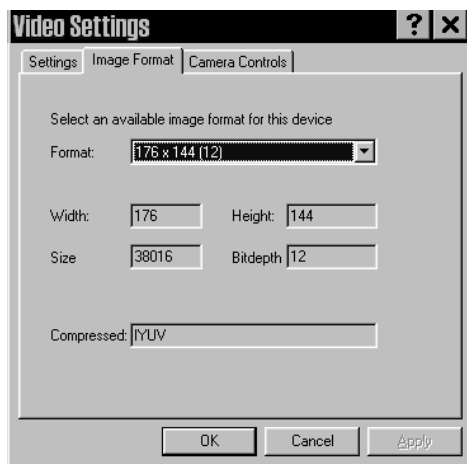
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## Adjusting Your Camera for Videoconferencing

Several videoconferencing software applications do not allow you to enhance the video image settings directly. As shown in the previous section, you can adjust the image quality attributes (brightness, zoom, hue, etc.) for your camera on Kodak's "Video Settings" window.

If you experience video display problems with your videoconferencing software application, your software may only support one image size or format. You can select the image format that is supported by your videoconferencing application by following these steps:

- 1 Click on the **Start** button on your computer taskbar.
- 2 Select **Programs**.
- 3 Select **KODAK DVC323**.
- 4 Select **DVC323 Video Setup** to view the "Video Settings" window.



- 5 Click on the **Image Format** tab.
- 6 If your videoconferencing software only supports one image size or format, select the **Format** from the list of available formats.

- 7 Click on **OK** to save your adjustments on the "Video Settings" window.
- 8 Restart the videoconferencing software application to activate your video camera adjustments.



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## Printing Your Pictures

When printing your captured pictures, we recommend using Kodak Inkjet Snapshot paper. Snapshot Paper is designed to work with most inkjet printers to produce clearer, crisper, and more detailed images.



The 4 x 6 in. Snapshot Paper is only available for inkjet printers. Do not use Snapshot Paper with laser printers.

Before you print with Snapshot Paper, you may need to:


- ✓ Rotate the picture so it is in portrait layout.
- ✓ Resize the picture so the image is smaller than the Snapshot paper. For example, when the image is in portrait layout, try setting the image to 4.5 inches tall and 3.4 inches wide.
- ✓ Adjust your printer as directed on the *Kodak Inkjet Snapshot Paper Getting Started sheet*. This will produce the best quality prints.

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# Troubleshooting Problems

## General Maintenance and Safety

- ✓ To keep from damaging your *Kodak Digital Science* DVC323 Digital Video camera (DVC323 camera), avoid exposing it to moisture and extreme temperatures.
- ✓ Never touch the lens with your finger.
- ✓ Clean the outside of the DVC323 camera by wiping it with a clean, dry cloth.
-  Never use harsh or abrasive cleaners or organic solvents on the camera or any of its parts.
- ✓ Never disassemble or touch the inside of the DVC323 camera. This will void your warranty and could result in electrical shock.

## Cleaning the Lens

- 1 Blow gently on the lens to remove dust and dirt.
  - 2 Moisten the lens by breathing lightly on it.
  - 3 Wipe the lens gently with a soft, lint-free cloth or an untreated lens-cleaning tissue.
-  Do not use cleaning solutions unless they are designed specifically for camera lenses. Do not wipe the camera lens with chemically treated eyeglass lens tissue because it may scratch the lens.

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## Running Diagnostics

If you are having problems with your DVC323 camera, run the diagnostic software to determine if there is a Kodak driver problem.

- 1** Close all applications that may be running on your computer.
- 2** Click on the **Start** button on your computer taskbar.
- 3** Click on **Programs**.
- 4** Click on **KODAK DVC323**.
- 5** Click on **DVC323 Diagnostic**.
- 6** Wait until the diagnostic software finishes and displays one of the following two symbols:
  - ✓ Green smiling face—the diagnostics ran successfully and did not find any errors.
  - ✓ Frowning face and an error code—refer to the following table for a possible solution to the problem:

| Error Code | Description of Error | Cause                                | Solution  |
|------------|----------------------|--------------------------------------|---|
| -1         | Camera Open Failure  | The camera is not connected.         | Check the camera connection to the USB port on your computer. |
|            |                      | The camera driver is not installed.  | Unplug the camera and re-install the DVC323 software.         |
|            |                      | The USB driver is not installed.     | Unplug the camera and re-install the DVC323 software.         |
|            |                      | A USB hardware malfunction occurred. | Contact your computer vendor for help.                        |

| Error Code | Description of Error          | Cause   | Solution   |
|------------|-------------------------------|---|--|
| -2         | Out of Memory                 | The computer doesn't meet the minimum RAM requirements.       | Add RAM to your computer.  |
|            |                               | There are too many applications running.                      | Close some software applications or application windows.   |
|            |                               | Other   | Restart your computer and check for viruses. Run SCANDISK to check for corrupted files.                |
| -3         | Unknown Error                 | The operating system and drivers are not properly configured. | If the camera was previously operating properly, unplug the camera and re-install the DVC323 software. |
|            |                               | There is a hardware problem with the USB.                     | Contact your computer vendor for help.   |
| -4         | OCX not Registered or Missing | The OCX is not registered or cannot be found.                 | Unplug the camera and re-install the DVC323 software.  |

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## Solving Camera Problems

If you are having problems with your camera, or are having trouble viewing images from your camera, refer to the information in the following table for possible solutions.

| Problem           | Cause  | Solution  |
|-------------------|--|---|
| LED blinks slowly | Computer does not detect the camera  | <ul style="list-style-type: none"><li>✓ Unplug the camera and plug it in again.</li><li>✓ Reboot the computer with the camera plugged in.</li></ul>   |
|                   | Wrong USB driver software is installed on your computer  | Run the DVC 323 installer, which will tell you if you need a different version of the USB driver software on your computer.   |
|                   | USB port is not enabled  | Refer to the manual for your specific computer. Enter the CMOS Setup for your computer immediately after a restart and make sure the USB port is enabled.   |
|                   | USB port may be conflicting with other interfaces. For example, an interrupt level conflict with a sound, network, or graphics card. | <ol style="list-style-type: none"><li>1 Double-click on the <b>System</b> icon in the control panel.</li><li>2 Click on the <b>Device Manager</b> tab and make sure “Universal Serial Bus Controller” is listed.</li><li>3 If the controller is not listed, the USB port is not enabled in the CMOS Setup. Refer to the manual for your specific computer.</li><li>4 If the controller is listed with a !, there is a problem with the USB port. Select <b>Properties</b> to see what the problem is and then contact your computer vendor.</li></ol> |
| LED never lights  | No power to USB port   | Refer to the manual for your specific computer. Enter the CMOS Setup for your computer immediately after a restart and make sure the USB port is enabled.   |

| Problem                                    | Cause   | Solution  |
|--|---|---|
| LED stays lit                              | Camera is not working properly  | <ul style="list-style-type: none"> <li>✓ Unplug the camera and then plug it in again.</li> <li>✓ Reboot your computer with the camera plugged in.</li> </ul>  |
| “Unable to connect camera” message appears | Camera driver file is missing or corrupted  | <ul style="list-style-type: none"> <li>✓ Unplug the camera and then plug it in again.</li> <li>✓ Reboot your computer with the camera connected.</li> <li>✓ Un-install the DVC323 software and then re-install it.</li> </ul>   |
| Still pictures are blurry                  | The subject is moving too fast for the shutter speed, the camera is being moved while taking the picture, or the manual focus is set incorrectly. | <ul style="list-style-type: none"> <li>✓ Rotate the focus wheel on the camera until the image is sharp. To see more detail, select High in the <b>Quality</b> field on the “Video Settings” window (see Chapter 4).</li> <li>✓ If in low light, place the camera in its base and on a stable surface. Start recording the video by using the mouse and the software application instead of pressing the shutter button on the camera. Make sure the subject is not moving rapidly.</li> <li>✓ If in normal or bright light, select Fast shutter speed on the “Video Settings” window. This will limit the shutter speed to a stop action setting to allow you to capture moving subjects with less motion blur, and allow hand-held use of the camera and use of the shutter button with much less camera shake.</li> </ul> |

| Problem                       | Cause   | Solution   |
|-------------------------------|---|--|
| Pictures/Videos are dark      | There is not enough light or the auto exposure is keying on a bright area of the scene                  | <ul style="list-style-type: none"> <li>✓ Increase the light on the subject.</li> <li>✓ Remove any bright light sources from the scene.</li> <li>✓ Select a High sharpness (low frame rate) video mode on the “Video Settings” window. Select Wide in the Zoom field for the slowest shutter speed.</li> <li>✓ If using the “Center Weighted” exposure setting, make sure the subject is in the center of the display window. If a bright object is in the center of the window, the rest of the scene will be darkened when the camera attempts to expose the bright object properly.</li> </ul> |
| Pictures/Videos are too light | Camera is set improperly for use in bright light or auto exposure is keying on a dark area of the scene | <ul style="list-style-type: none"> <li>✓ Decrease the amount of light in the scene.</li> <li>✓ Select Fast shutter speed on the “Video Settings” window to take pictures and videos in bright outdoor light.</li> <li>✓ If using the “Center Weighted” exposure setting, make sure the subject is in the center of the display window. If a dark object is in the center of the window, the rest of the scene will be lightened when the camera attempts to expose the dark object properly.</li> </ul>  |

| Problem                                   | Cause   | Solution   |
|---|---|--|
| Pictures/Videos are noisy or grainy       | Not enough light  | <ul style="list-style-type: none"> <li>✓ Increase the light on the subject.</li> <li>✓ Select a High sharpness (low frame rate) on the “Video Settings” window.</li> <li>✓ On the PictureWorks Live “Camera Setup” window, set the Shutter Speed to Normal to allow for slower shutter speeds for taking pictures and videos indoors.</li> <li>✓ Select a Finished Size for the pictures or videos which is smaller than the maximum available.</li> </ul>   |
| Viewfinder image has a strange coloring   | In extreme low light or bright light, or changing lighting conditions, the Auto White Balance can fail to provide the best results. | <ul style="list-style-type: none"> <li>✓ If the Auto White Balance does not correct itself within 30 seconds, adjust the Hue slider on the “Video Settings” window to correct the colors.</li> <li>✓ Click on <b>Restore Defaults</b> on the PictureWorks Live “Camera Setup” window (Exposure and Color tab). This will reset the color balance settings.</li> <li>✓ Select one of the preset color balance settings (incandescent, fluorescent, or daylight).</li> <li>✓ Adjust the Hue slider to provide the best color.</li> </ul> |
| Viewfinder image is too light or too dark | When moving the camera between extreme low light and extreme bright light, the Auto Exposure may fail to provide the best results.  | If the Auto Exposure does not correct itself within 30 seconds, adjust the exposure manually by adjusting the brightness slider on the “Video Settings” window. (To return to Auto Exposure mode, click on the Auto Exposure check box.)   |



| Problem  | Cause   | Solution   |
|--|---|--|
| When using a third-party video application, the video frame rate appears slower than with the Kodak TWAIN driver or PictureWorks Live                | Your DVC323 Camera is compatible with software that uses the Video for Windows (VFW) interface for video devices. | The Kodak TWAIN and PictureWorks Live software have been optimized to work best with your DVC323 Camera. The available frame rates using the camera as a standard VFW device with other software will be reduced due to an effect of the VFW interface.  |
| When using a third-party video application, Auto Exposure or Auto White Balance appear slower than with the Kodak TWAIN driver or PictureWorks Live. | Your DVC323 Camera is compatible with software that uses the Video for Windows (VFW) interface for video devices. | The Kodak TWAIN and PictureWorks Live software have been optimized to work best with your DVC323 Camera. Since frame rates drop when operating in VFW mode, Auto Exposure and Auto White Balance operate more slowly.  |
| Video viewfinder has no image or the image is just a mix of colors   | Not enough band-width available for USB bus to transfer video data without errors.                                | <ol style="list-style-type: none"> <li>1 Double-click on the <b>System</b> icon on the Control Panel.</li> <li>2 Click on the <b>Performance</b> tab.</li> <li>3 Click on the <b>Graphics</b> button.</li> <li>4 Move the <b>Hardware Acceleration</b> slider to the left to reduce the amount of acceleration.</li> <li>5 Reboot your computer and try your camera again.</li> </ol> <p>You may also want to contact your PCI card manufacturer to make sure you have the latest driver for the card and that the card is fully Windows 95 compliant.</p> |

| Problem   | Cause   | Solution   |
|---|---|--|
| Video display appears to be dropping frames   | The CPU in your computer is not powerful enough for the selected camera mode  | <ul style="list-style-type: none"> <li>✓ Change to a lower frame rate (High sharpness) on the “Video Settings” window.</li> <li>✓ On the PictureWorks Live “Camera” menu, change the window size to Small.</li> <li>✓ Close some software applications to free up memory and/or CPU power.</li> </ul>  |
| Captured videos appear slower than expected or are dropping frames                                  | <ul style="list-style-type: none"> <li>✓ The CPU in your computer is not powerful enough for the selected camera mode</li> <li>✓ The camera is set to a low frame rate</li> </ul> | <ul style="list-style-type: none"> <li>✓ Change to a lower frame rate (High sharpness) on the “Video Settings” window.</li> <li>✓ On the PictureWorks Live “Camera” menu, change the window size to Small.</li> <li>✓ On the “Camera Setup” window, set the Finished Size for videos to 160 x 120.</li> <li>✓ Exit PictureWorks Live so that you are not trying to play back a video while previewing live video from your camera. When you play back the recorded video without the camera running, the video should play back smoother.</li> </ul> |
| When switching between Video and Still mode in PictureWorks Live, the display image looks different | When using PictureWorks Live, the camera will always change to High Quality mode when switched from Video to Still mode   | Manually change the quality setting on the “Camera Setup” window.  |

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# Getting Help

Help with your *Kodak Digital Science* DVC323 Digital Video camera (DVC323 camera) is available from a number of resources.

- ✓ in *Troubleshooting Problems*, Chapter 5
- ✓ your place of purchase
- ✓ World Wide Web
- ✓ product information by fax from Kodak
- ✓ technical support

## Online Services

Contact Kodak via:

|                |   |
|----------------|---|
| World Wide Web | <a href="http://www.kodak.com/go/dvc">http://www.kodak.com/go/dvc</a> |
| America Online | (keyword) KODAK   |
| CompuServe     | GO KODAK  |

## Faxed Information

Kodak offers automated support for digital imaging products and services. Product information can be faxed to you by calling:

|        |                   |
|--------|-------------------|
| U.S.   | 1-800-508-1531    |
| Canada | 1-800-295-5531    |
| Europe | 44-131-458-6962   |
| U.K.   | 44-0-131-458-6962 |

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## Kodak Customer Support

If you have questions concerning the operation of the DVC323 camera, you may speak to a Kodak customer support representative. Have the DVC323 camera connected to your computer, its serial number ready, and be at your computer when you call.

**U.S. and Canada**—call toll free, 1-888-375-6325, between the hours of 9:00 a.m. and 8:00 p.m. (Eastern Standard Time) Monday through Friday.

**Outside the U.S. and Canada**—call the Kodak Digital Imaging Support Centre toll free number on the following pages that is associated with your location. In **Europe**, you can also call the U.K. toll line, 44-131-458-6714, between the hours of 09.00 and 17.00 (GMT/CET) Monday through Friday.

| Country            | Help number    | Fax             |
|--------------------|----------------|-----------------|
| Argentina          | 54-1-808-300   | 54-1-808-3328   |
| Australia          | 1-800-674-831  | 61-3-9353-2488  |
| Austria            | 0-660-7348     | 44-131-458-6962 |
| Belgium            | 0800-72247     | 44-131-458-6962 |
| Brazil             | 0-800-15-0000  | 55-12-331-8571  |
| Caribbean          | 78-7-757-5500  | 78-7-757-8760   |
| Chile              | 56-2-697-2000  | 56-2-697-0310   |
| China—Shanghai     | 8621-64720888  | 8621-64726582   |
| China—Beijing      | 8610-63471155  | 8610-63475641   |
| Colombia           | 57-1-629-0266  | 57-1-629-0673   |
| Denmark            | 80-01-09-24    | 44-131-458-6962 |
| Dominican Republic | 809-563-1252   | 809-563-1264    |
| Egypt              | 20-2-394-2205  | 20-2-393-1119   |
| France             | 0800-90-6281   | 44-131-458-6962 |
| Finland            | 0800-117056    | 44-131-458-6962 |
| Germany            | 0130-82-54-02  | 44-131-458-6962 |
| Greece             | 00800-44125605 | 44-131-458-6962 |
| Hong Kong          | 852-2564-9777  | 852-2564-9753   |
| Hungary            | 36-1-269-71-17 | 36-1-269-71-13  |
| India              | 91-22-617-5823 | 91-22-617-6004  |
| Ireland            | 1-800-409391   | 44-131-458-6962 |
| Italy              | 1678-72-996    | 44-131-458-6962 |

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| Country       | Help number     | Fax             |
|---------------|-----------------|-----------------|
| Japan         | 81-3-5488-2390  | 81-3-5488-4512  |
| Korea         | 82-2-708-5400   | 82-2-708-5500   |
| Latin America | 1-305-267-4700  | 1-305-267-4780  |
| Lebanon       | 961-1-883822    | 961-1-881726    |
| Malaysia      | 60-3-757-2722   | 60-3-755-5919   |
| Mexico        | 52-5-449-4300   | 52-5-449-4400   |
| Middle East   | 971-4-444-910   | 971-4-447-059   |
| Netherlands   | 06-0224428      | 44-131-458-6962 |
| New Zealand   | 0800-500-135    | 64-9-302-8637   |
| Norway        | 800-1-1848      | 44-131-458-6962 |
| Panama        | 52-3-678-6200   | 52-3-678-6210   |
| Peru          | 51-1-224-8610   | 51-1-224-8605   |
| Philippines   | 63-2-810-0331   | 63-2-816-6718   |
| Portugal      | 351-1-4149-500  | 351-14194-321   |
| Russia        | 7-095-929-9166  | 7-095-929-9170  |
| Singapore     | 65-470-9875     | 65-479-8397     |
| South Africa  | 27-11-804-2852  | 27-11-804-5013  |
| Spain         | 900-98-4485     | 44-131-458-6962 |
| Sweden        | 020-793169      | 44-131-458-6962 |
| Switzerland   | 0800-551034     | 44-131-458-6962 |
| Taiwan        | 886-2-893-8210  | 886-2-895-1069  |
| Thailand      | 66-2-271-3040   | 66-2-279-5073   |
| Turkey        | 90-216-342-3332 | 90-216-343-6743 |
| U.K.          | 0800-281487     | 44-131-458-6962 |
| Uruguay       | 59-2-92-0473    | 59-2-92-1796    |
| Venezuela     | 58-2-903-1111   | 58-2-943-2081   |

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# *Warranty & Regulatory Information*

## **Warranty Time Period**

Kodak warrants the *Kodak Digital Science* DVC323 Digital Video camera (DVC323 camera) to be free from malfunctions and defects in both materials and workmanship for one year from the date of purchase.

## **Warranty Repair Coverage**

This warranty will be honored within the geographical location that the product was purchased.

If the equipment does not function properly during the warranty period due to defects in either materials or workmanship, Kodak will, at its option, either repair or replace the equipment without charge, subject to the conditions and limitations stated herein. Such repair service will include all labor as well as any necessary adjustments and/or replacement parts.

If replacement parts are used in making repairs, these parts may be remanufactured, or may contain remanufactured materials. If it is necessary to replace the entire system, it may be replaced with a remanufactured system.

Kodak will also provide telephone assistance during the warranty period.

Warranty

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## **Limitations**

WARRANTY SERVICE WILL NOT BE PROVIDED WITHOUT DATED PROOF OF PURCHASE. PLEASE RETURN THE WARRANTY REGISTRATION CARD WITHIN 30 DAYS OF PURCHASE.

THIS WARRANTY BECOMES NULL AND VOID IF YOU FAIL TO PACK YOUR DVC323 CAMERA IN A MANNER CONSISTENT WITH THE ORIGINAL PRODUCT PACKAGING AND DAMAGE OCCURS DURING PRODUCT SHIPMENT.

THIS WARRANTY DOES NOT COVER: CIRCUMSTANCES BEYOND KODAK'S CONTROL; SERVICE OR PARTS TO CORRECT PROBLEMS RESULTING FROM THE USE OF ATTACHMENTS, ACCESSORIES OR ALTERATIONS NOT MARKED BY KODAK; SERVICE REQUIRED AS THE RESULT OF UNAUTHORIZED MODIFICATIONS OR SERVICE; MISUSE, ABUSE; FAILURE TO FOLLOW KODAK'S OPERATING, MAINTENANCE OR REPACKAGING INSTRUCTIONS; OR FAILURE TO USE ITEMS SUPPLIED BY KODAK (SUCH AS ADAPTERS AND CABLES).

KODAK MAKES NO OTHER WARRANTIES, EXPRESS, IMPLIED, OR OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE FOR THIS EQUIPMENT OR SOFTWARE.

REPAIR OR REPLACEMENT WITHOUT CHARGE ARE KODAK'S ONLY OBLIGATION UNDER THIS WARRANTY. KODAK WILL NOT BE RESPONSIBLE FOR ANY SPECIAL, CONSEQUENTIAL OR INCIDENTAL DAMAGES RESULTING FROM THE PURCHASE, USE, OR IMPROPER FUNCTIONING OF THIS EQUIPMENT REGARDLESS OF THE CAUSE. SUCH DAMAGES FOR WHICH KODAK WILL NOT BE RESPONSIBLE INCLUDE, BUT ARE NOT LIMITED TO, LOSS OF REVENUE OR PROFIT, DOWNTIME COSTS, LOSS OF USE OF THE EQUIPMENT, COST OF ANY SUBSTITUTE EQUIPMENT, FACILITIES OR SERVICES, OR CLAIMS OF YOUR CUSTOMERS FOR SUCH DAMAGES.

Depending on your geographical location, some limitations and exclusions may not apply.

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## Application Support

For application-specific support, contact your reseller, systems integrator, software manufacturer, or dealer.

## How to Obtain Service

Visit us on the Internet at <http://www.kodak.com>

Please refer to the Kodak Customer Support section in Chapter 6 of this user's guide for the support hotline designated to your location.

When returning a DVC323 camera for repair, the unit shall be packed in its original packing materials. A problem report should also be enclosed with the equipment. If the original packaging has been discarded or is not available, packing will be at the owner's expense.

The repaired or replaced unit will be shipped from Kodak within five business days from the date of the DVC323 camera receipt at the service center.

Unless a specific Kodak warranty is communicated to the purchaser in writing by a Kodak company, no other warranty or liability exists beyond the information contained above, even though defect, damage or loss may be caused by negligence or other act.

To obtain warranty repair service, contact your local Kodak representative at the phone numbers listed on pages 6-2 and 6-3 of this manual.



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## Regulatory Information

### FCC Compliance and Advisory

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.

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 or 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 or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures: 1) reorient or relocate the receiving antenna; 2) increase the separation between the equipment and the receiver; 3) connect the equipment to an outlet on a circuit different from that to which the receiver is connected; 4) consult the dealer or an experienced radio/TV technician for additional suggestions.

Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment. Where shielded interface cables have been provided with the product or specified additional components or accessories elsewhere defined to be used with the installation of the product, they must be used in order to ensure compliance with FCC regulation.

### Canadian DOC Statement

**DOC Class B Compliance**—This digital apparatus does not exceed the Class B limits for radio noise emissions from digital apparatus set out in the radio interference regulations of the Canadian Department of Communications.

**Observation des normes-Class B**—Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la Classe B prescrites dans les règlements sur le brouillage radioélectrique édictés par le Ministère des Communications du Canada.

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## Important Safety Instructions

When using your DVC323 camera, always follow these basic safety precautions:

- ✓ Read and understand all instructions before using your camera.
  - ✓ To reduce the risk of electric shock:
    - Do not immerse the digital video camera in water or any other liquid.
    - Do not disassemble the digital video camera. Take it to a qualified service person when service or repair work is required. Incorrect reassembly of the camera can cause electric shock when the camera is used later.
  - ✓ If you notice smoke or a strange smell coming from the digital video camera, immediately disconnect the USB cable from your computer.
- ☞ Use of controls, adjustments, or procedures other than those specified herein may result in exposure to shock or electrical/mechanical hazards.