Instruction Manual

Windows 95/98/2000/NT
MacOS

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MacOS

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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.

Warning: The connection of a non-shielded equipment interface cable to this equipment will invalidate the FCC certification of this device and may cause interference levels that exceed FCC limits. It is the responsibility of the user to obtain and use proper equipment and cables.

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The camera unit, PCI interface board and handswitch bear the CE marking because they comply with the requirements of the directive 89/336/EEC concerning electromagnetic compatibility.

1) Getting Ready

1. The camera system uses precision components. Handle it with care, and avoid subjecting it to a sudden or severe impact.

2. The image displayed on the display monitor may be affected when used near equipment generating strong electromagnetic waves. This is not a malfunction and will not affect the actual image being recorded. To avoid interference during operation, keep the unit far from any source of electromagnetic waves.

3. Do not use the camera in areas where it may be subject to direct sunlight, high temperature and humidity, dust, or vibrations. (For operating environment conditions, see section 8, “Specifications” on page 182.)

4. When not using the camera system, keep it covered with the dust cover provided with the microscope. Do not connect or disconnect the camera when the power of computer is on.

2) Maintenance and Storage

1. Be careful not to leave dirt or fingerprints on the lenses and other glass components. If a lens is dirty, wipe it gently with a piece of gauze. To remove fingerprints or oil smudges, wipe the lens with gauze slightly moistened with a mixture of ether (70%) and alcohol (30%) or pure alcohol.

   Since solvents such as ether and alcohol are highly flammable, they must be handled carefully. Be sure to keep these chemicals away from open flames or potential sources of electrical sparks -- for example, electrical equipment that is being switched on or off. Also remember to use these chemicals only in a well-ventilated room.

2. Parts other than the glass components should be cleaned by wiping with a clean cloth. Do not use organic solvents to remove major stains. Use a soft cloth slightly moistened with a neutral detergent solution.

3. To avoid any degradation in performance, do not attempt to disassemble or modify any part of the system.

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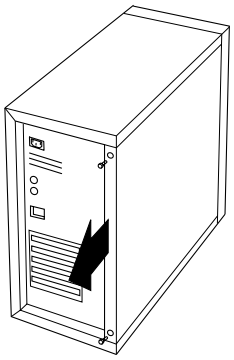
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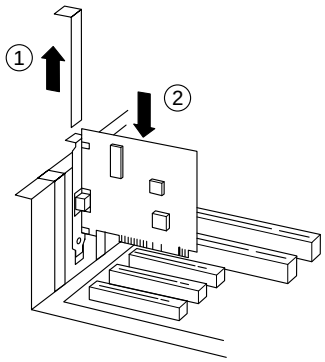
1. Installing the Hardware

PCI Interface Card Installation

1) **Turn off the computer** and all peripherals before beginning the hardware installation process.



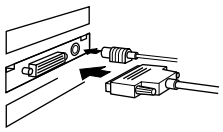
2) Remove the computer's cover and then proceed to install your PCI interface card. Most computers have a combination of PCI and other expansion slot types (i.e. AGP, ISA). Your computer manual should identify the location of the PCI slots.



3) Carefully pull out the metal access cover behind an empty expansion slot.

4) Remove the PCI interface card from its anti-static bag. Hold the card by its edges to avoid touching its circuitry.

5) Align the connector end of the PCI card over the empty PCI slot. Push the card down gently but firmly until it fits in the slot.



6) Secure the PCI card and replace the cover to your computer.

7) Connect the camera to the interface card using the included PCI interface cable. If you have the external handswitch (optional), insert the plug into the proper connector on the card.

Warning: Never connect or disconnect your camera if your computer power is turned on.

To avoid damaging your computer or the PCI interface card, do not attempt to install the PCI card without first checking the documentation for your computer.

Before touching the internal parts of your computer or installing any components, discharge potential static electricity by placing your hand on any unpainted metal surface in the computer.

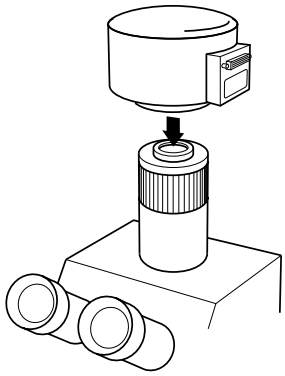
1. Installing the Hardware (cont.)

8) Turn the computer on.

Be sure that the camera is properly connected to the PCI interface card *before* you turn the power back on.

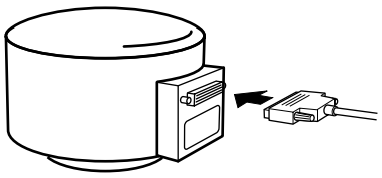
Mounting the Camera

A proper C-mount adapter is necessary to be able to attach your camera to your microscope. In general, to optimize image quality and field of view, an adapter designed for use with a ½" CCD with an appropriate magnification/reduction factor is recommended. Please contact your microscope equipment supplier for specific details regarding adapters.



Most microscopes that accept camera attachments are trinocular in design, allowing the camera to be attached to the center tube. If your microscope is not trinocular, it may still accept a camera if one of the two eyepieces allows for C-mount conversion. Refer to the documentation for your particular microscope.

1) Fit the C-mount adapter on your microscope. Be sure that your coupler has parfocalizing capability, allowing you to synchronize the binocular image with the camera's viewfinder image.



Disconnect the cable from the camera before attempting to attach it to a microscope. Excessive stress on the connector may cause damage to the camera or the cable.

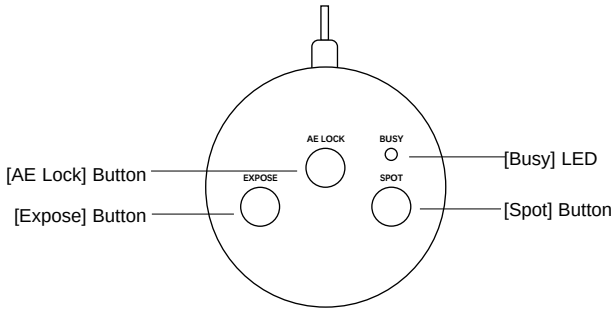
2) Thread the camera onto the coupler and attach the interface cable to the camera. **Caution: DO NOT overtighten the camera to the coupler.** Doing so may damage the camera.

Other Applications

Some digital camera models feature a standard tripod screw mount which allows you to connect the camera to standard desktop copystands or camera tripods.

External Handswitch (Optional)

The optional external handswitch (see figure below) provides an alternative control interface to the camera, duplicating several basic functions of the Viewfinder Lite application.



External Handswitch

[Expose] Button

The [Expose] button duplicates the Capture function of the Viewfinder Lite application by instructing the camera to capture a still image of the current camera subject to the Studio Lite application, applying the defined Viewfinder Lite capture settings (i.e. capture resolution, exposure, etc.) and image processing options (i.e. white/black balance, color balance, etc.).

1. Installing the Hardware (cont.)

[AE Lock] Button

The [AE Lock] button duplicates the AE Lock function of the Viewfinder Lite application by toggling between the activation and deactivation of the auto exposure lock feature of the Viewfinder Lite application. When the AE Lock feature is enabled, the [AE Lock] button in the [Capture] toolbar is automatically activated, fixing the exposure time and gain at their current settings, temporarily disabling the auto exposure function. When AE Lock is off, the automatic exposure feature is re-enabled.

[Spot] Button

The [Spot] button allows you to select the size of the spot meter. The sizes are specified as an area percentage of the capture area. As the button is depressed, the spot size cycles through each of the available spot sizes in the following order: 30%, 1%, and 0.1%. Under automatic exposure mode, the exposure time is calculated based on the image data present within the region defined by the spot meter. This control is enabled only under automatic exposure (AE) mode and is disabled under the AE Lock and manual exposure modes.

[Busy] LED

The [Busy] LED indicates the status of the capture process. When the LED is on, the camera is either capturing an image or processing image data, and new commands or camera functions are not accepted. When the LED is off, the camera is idle and awaiting user input.

2. Installing the Software on Windows

Installing the Device Drivers

Windows 95/98 PCI Device Driver Installation

1) Before you turn your computer on, be sure the PCI interface card is properly installed and that your camera is connected.

2) Turn your computer on. As Windows loads, your computer will display a New Hardware Found dialog box and detect the PCI interface card as "PCI Multimedia Device." Press the “Next” button to continue with the installation.

3) At the following screen, choose the bottom option and press “Next”.



4) Choose “Other devices” from the list of devices, and press “Next”.

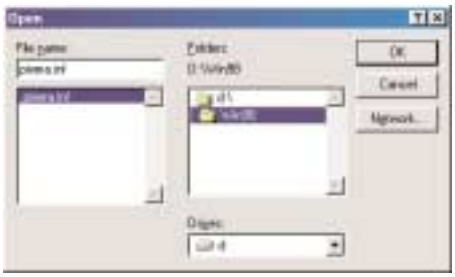


2. Installing the Software on Windows (cont.)

5) Press the “Have Disk...” button.

6) Press the “Browse...” button.

7) Insert the CD-ROM into your CD-ROM drive. The device driver files are located in the folder “Win98” for Windows98 or in the folder “Win95” for Windows95. Specify the correct location of the files by selecting your CD-ROM drive and choosing the “Win98” or ”Win95” folder. When the filename “pixera.inf” is displayed, press “OK”.



8) Ensure that the proper directory for the driver is displayed in the field “Copy manufaturer’s files from:”. If the proper directory is not displayed, press the “Browse” button and specify the correct directory for the driver. Press “OK”.

9) Press “Next”.

10) Windows will ask you if you are sure you want to use this driver. Press Yes.

11) Follow the on-screen prompts to complete the installation.

Windows NT PCI Device Driver Installation

1) Before you turn your computer on, be sure the PCI interface card is properly installed and that your camera is connected.

2) Turn your computer on and log on to Windows NT. You must have full administrative privileges in order to successfully install the drivers.

2. Installing the Software on Windows (cont.)

3) Insert the CD-ROM into your CD-ROM drive.

4) Start the “setup.exe” program in the NT folder. Follow the on-screen instructions to complete the installation.

5) Restart the computer.

Windows 2000 PCI Device Driver Installation

1) Before you turn your computer on, be sure the PCI interface card is properly installed and that your camera is connected.

2) Turn your computer on. As Windows loads, your computer will display a “Digital Signature Not Found” dialog box. Press the “Yes” button to continue with the installation.



3)At the following screen, press the “Browse...” button.



4)Insert the CD-ROM into your CD-ROM drive. The device driver files are located in the folder “Win2k” under “driver” folder for Windows 2000. Specify the correct location of the files by selecting your CD-ROM drive and choosing the “Win 2k” folder under “driver” folder.
When the file name “penguin.sys” is displayed, press the “Open” button.

5)Press the “OK” button.

Installing the Application

The camera software should be installed after the successful installation of the camera hardware and device drivers.

To install the software applications for the camera:

1) Insert the application CD-ROM disc into your CD-ROM drive.

2) Double-click the setup.exe file located on the root level of the CD-ROM. This will start the installer program (Figure 1).

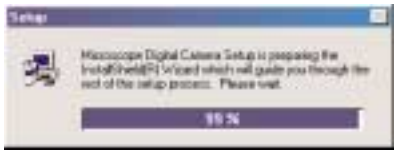


Figure 1: Launch Installer Program

3) You will be prompted to close all currently running programs before continuing with the installation process (Figure 2). Verify that no other programs are running and click the Next button to continue.

2. Installing the Software on Windows (cont.)



Figure 2: Close All Active Program and Click the Next Button

4) The Install Selection dialog box will appear (Figure 3). Select the components which you would like installed from the following choices: (Both installations are selectable at the same time.)

Viewfinder Lite and Studio Lite: This option will install both the Viewfinder Lite and Studio Lite software applications.

TWAIN Module: This option will install the TWAIN driver, allowing for direct image capture to most TWAIN-compliant applications.



Figure 3: Install Selection

5) The Choose Destination Location dialog box will be presented (Figure 4). Accept the default destination path or click the Browse button to manually select a custom path. When you are finished, click the Next button.



Figure 4: Choose Destination Location

6) The Select Program Folder dialog box will appear (Figure 5). Accept the default program folder name, or specify a different folder by entering a custom folder name or by selecting an existing folder. Click the Next button to begin the program installation process.



Figure 5: Select Program Folder

2. Installing the Software on Windows (cont.)

Each camera is shipped with a floppy diskette containing custom characteristics data generated by that particualar camera unit.

This data allows for the calibration of capture settings for maximum performance.

7) You will be presented with the Characteristics Data Installation dialog box (Figure 6). Select from one of the two installation options and click the Next button to complete the software installation process:

Install Custom Characteristics Data: The recommended choice, this option will prompt you for the floppy disk supplied with your camera containing characteristics data which was generated specifically for your specific camera unit.

Install Default Characteristics Data from the CD-ROM: This option will install a non-specific standard set of characteristics data. Select this option if you do not have access to the original floppy diskette supplied with your camera.



3. Installing the Software on Macintosh

The Studio Lite software should be installed after the successful installation of the camera hardware. Turn on your computer, and follow the instructions outlined below to install the Studio Lite software and device driver extension under the MacOS operating system. The software package is available on the Setup CD-ROM. (the Studio Lite software and device driver extension will be installed at the same time.)

Using the Installer

1. Insert the Setup CD-ROM disk into your CD-ROM drive.

2. Double-click the CD-ROM “Install CD” icon that appears on your desktop to view its contents.

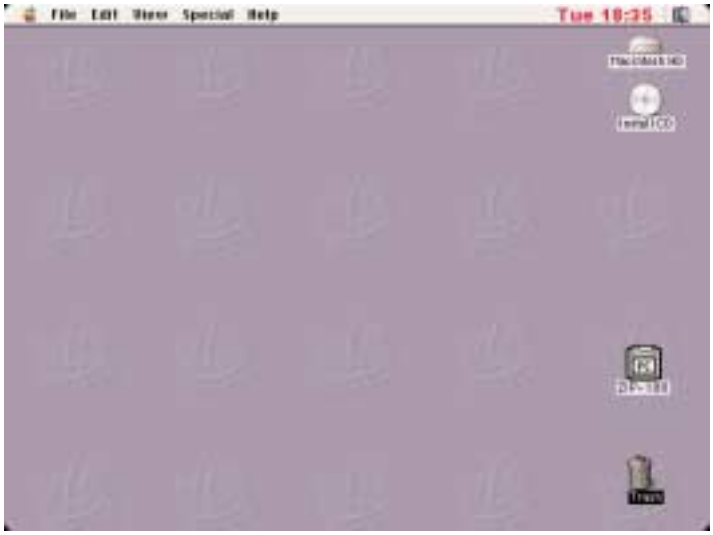


Figure A-1: Double-Click the CD-ROM Icon

3. Installing the Software on Macintosh (cont.)

3. Inside the CD-ROM's Finder window, double-click the Studio Lite Installer icon. This will launch the Studio Lite installation program.



Figure A-2: Double-Click the Studio Lite Installer Icon

4. The Studio Lite informational screen will be displayed. Click Continue to proceed with the installation process.



Figure A-3: Studio Lite Informational Screen

3. Installing the Software on Macintosh (cont.)

5. In order to use the Digital Microscopy Camera System from within Adobe Photoshop (or compatible) application, you must select “Studio Lite with Photoshop Plugin” instead of the default “Studio Lite” when the Install Selection window is showing. This will instruct the installer to copy the file “Viewfinder” into the Photoshop folder.

If you are not planning to use the camera with Photoshop, select “Studio Lite”.



Figure A-4a: Install Selection Window

6. A dialog box will appear, prompting you to select the folder into which you would like to install the application files. You may choose to accept the default name and location for the Studio Lite folder or to specify a custom path. When you are finished, click Install.



Figure A-5: Destination Folder

3. Installing the Software on Macintosh (cont.)

Each camera is shipped with a CD-ROM labeled “Camera Data” containing custom characteristics data generated by that particular camera unit.

This data allows for the calibration of capture settings for maximum performance.

7. You will be presented with the Characteristics Data Installation dialog box. Select from one of the two installation options in the Figure A-6 and click the Next button to complete the software installation process.

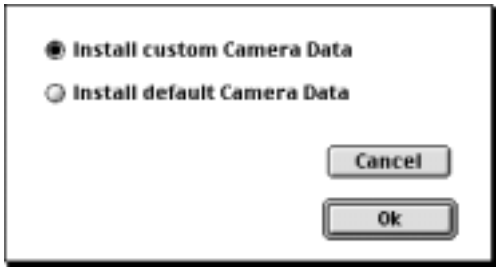


Figure A-6: Camera Data Installation Window

Install Custom Characteristics Data: The recommended choice, this option will prompt you for the CD-ROM supplied with your camera containing characteristics data which was generated specifically for your specific camera unit. Insert CD-ROM labeled “Camera Data” into the CD-ROM Drive. Then click the OK button.

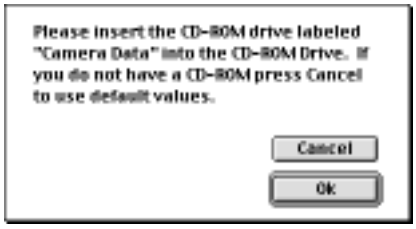


Figure A-7: Camera Data Select Confirmation Window

Install Default Characteristics Data from the CD-ROM: This option will install a non-specific standard set of characteristics data. Select this option if you do not have access to the original “Camera Data” CD-ROM supplied with your camera. Click the OK button following the instruction in the display window.

3. Installing the Software on Macintosh (cont.)

8. If the Studio Lite with Photoshop Plug-in was selected in section 5, you will be presented Figure A-8. Proceed to the next step pushing the install button. The installation will not be completed if Quit button was selected. Repeat from section 1. to complete the installation.



Figure A-8: Start Window for the Plugin Installation

9. You will be presented Figure A-9. Select the folder where the Photoshop Plug-in will be set up into. Then click the Install into "Plug-ins" button. ("Plug-ins" portion may be different depending on the selected folder name.)



Figure A-9: Folder Select Window for the Plug-in Installation

3. Installing the Software on Macintosh (cont.)

10. After the installation of the Studio Lite software and driver is completed, you will be prompted to restart your computer. Click Restart to apply all changes to your system.

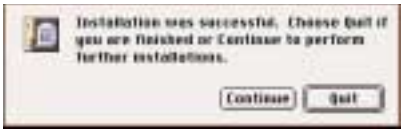


Figure A-10: Installation Completed

11. When you have restarted your computer system, the Studio Lite files will be located in the “Digital Microscopy Camera” folder on your desktop (default location), unless you specified a different location during the installation process.

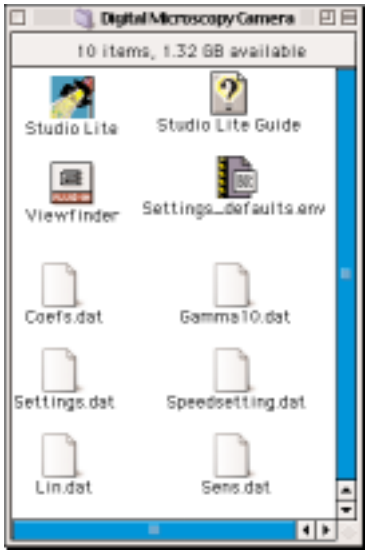
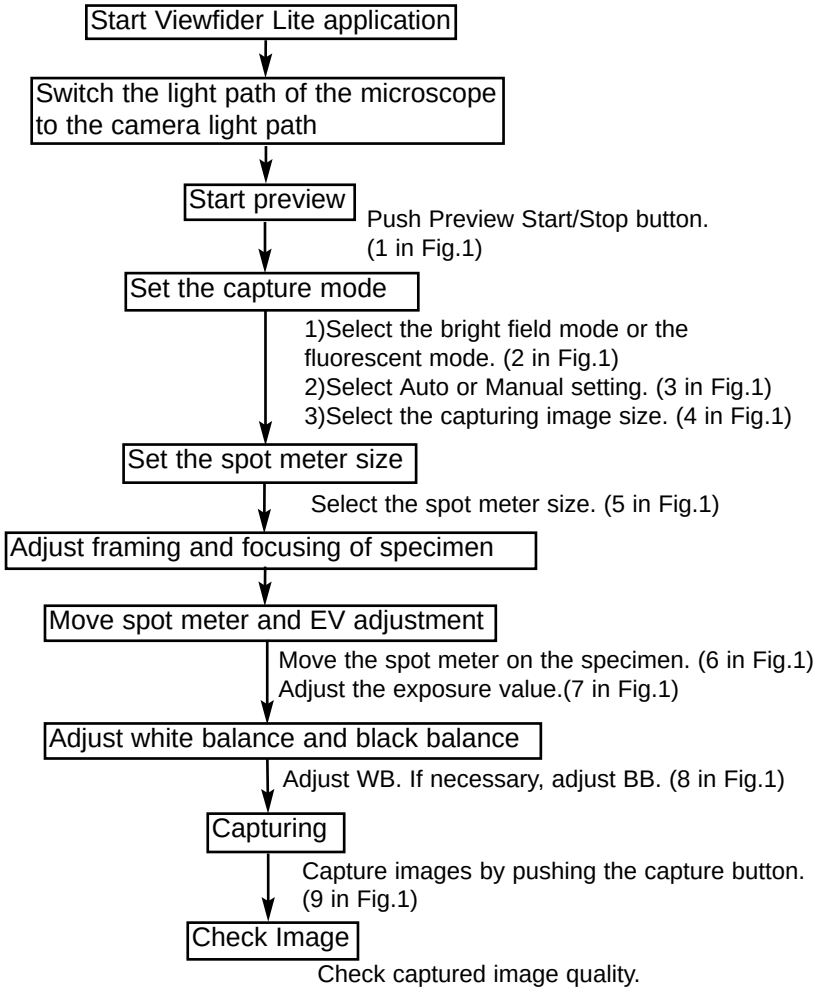


Figure A-11: The Studio Lite Files

4. Capturing Procedure

Capturing Procedure

1) Perform all necessary optical adjustments on the microscope.
2) Insert an LBD color temperature conversion filter in the light path if a bright field is observed. Then adjust the light voltage to the photograph reference voltage. (Although the camera will perform the WB adjustment, better quality images will be provided.)



4. Capturing Procedure (cont.)

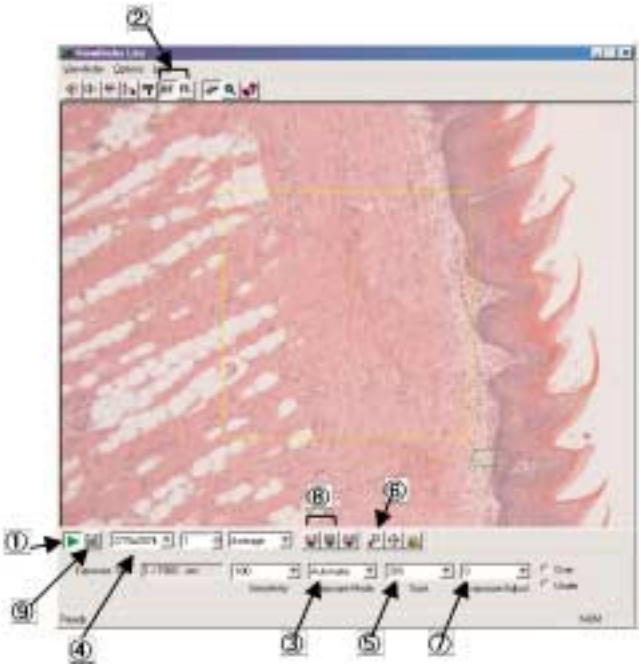


Figure 1: Viewfinder Lite

5. Viewfinder Lite (Windows) / Studio Lite (Macintosh)



Running the Viewfinder Lite Application (Windows)

Taskbar

The Taskbar is the bar on the Windows desktop that includes the Start button. Buttons representing programs currently running on your computer appear on this bar.

The Viewfinder Lite application is the first step in acquiring images with the digital camera system.

To run the Viewfinder Lite application:

1) Click on the Start button located on the Windows taskbar.

2) Point to Programs. The Programs menu will appear.

3) Click on Viewfinder Lite.

The Viewfinder Lite application appears with the logo displayed in the image window.

Running the Studio Lite Application (Macintosh)

Launching the Studio Lite application is the first step in acquiring images with the digital camera system.

To run the Studio Lite application on Macintosh:

1) Find the folder where you had the Installer place the Studio Lite files.

2) Double-click on the application icon ("Studio Lite").

The Studio Lite application appears with the logo displayed in the preview window.

Viewing the Preview

Much like the optical viewfinder found on most standard film cameras, the Viewfinder Lite application presents a live "through-the-lens" view of the camera's subject. This allows for the framing and focusing of a subject before capturing the final image.

To start the preview:

Method A

1) Click on the [Viewfinder] menu.

2) Select the [Start Preview] command.

Method B

Windows. Use the following keyboard shortcut: Alt + S.

Macintosh. Use the following keyboard equivalent: Cmd + J.

Method C

Click the [Preview On/Off] button located in the [Capture] toolbar.

To stop the preview:

Method A

1) Click on the [Viewfinder] menu.

2) De-select the [Start Preview] command.

Method B

Windows. Use the following keyboard shortcut: Alt + S.

Macintosh. Use the following keyboard equivalent: Cmd + J.

Viewing the Preview (cont.)

Method C

Click the [Preview On/Off] button located in the [Capture] toolbar.

Disabling the preview covers the preview image with the splash screen but does not discontinue power to the camera.

Capturing Images

The primary function of the Viewfinder Lite application is to allow for the capture of high-resolution still images with the camera system.

To capture a still image:

Method A

1) Click on the [Viewfinder] menu.

2) Select the [Capture] command.

Method B

Windows. Use the following keyboard shortcut: Alt + C.

Macintosh. Use the following keyboard equivalent: Cmd + K.

Method C

Click on the [Capture] button located in the [Capture] toolbar.

Method D

Press the [Expose] button on the external handswitch (optional).

Current Viewfinder Lite settings are automatically applied to the captured image. Upon capture, the image is automatically sent to the Studio Lite image editing application for post-capture processing.

On the Macintosh the Viewfinder and Studio Lite functionality is integrated into the single Studio Lite application, so that in what follows in this manual the Macintosh user can ignore references to Viewfinder and Studio being separate. On the Mac there is only one applicatin involved. Thus when the user captures an image using the Viewfinder window, the still image is immediately seen in a new window right in the same application.

Capturing Images (cont.)

If the user wishes to preserve any still image, he/she should save it in Studio Lite. (Windows only: If more than 20 images are displayed at once by Studio Lite, Windows OS operations may to become unstable and you will not able to save any images.)

Selecting the Viewfinder Mode

Frame Rate

Frame rate, or refresh rate, refers to the speed at which the preview image within the Viewfinder Lite image window is updated (measured in frames drawn per second). In standard US NTSC television broadcasts, 30 frames are drawn on the TV screen per second. The more frames drawn per second, the more fluid the motion shown on the screen.

The Viewfinder Lite offers three selectable preview modes-Fast, Zoom, and Full-presented within the live Viewfinder Lite image window at a size of 640x480 pixels.

Fast - The default selection, the Fast mode provides a view of the entire camera image area. This mode is suitable for positioning the subject, rapid focusing, and determining optimum brightness levels. In Fast mode, the previewed effect of the camera exposure time setting is limited to 1/4 second. While the effect of slower speeds will be reflected in the captured image, the effect in the preview image is simulated in the Viewfinder Lite software by intensifying the brightness level. The Viewfinder Lite preview image may appear of substantially lower quality than the final captured image at exposure time settings slower than 1/4 second.

Zoom - The Zoom mode provides a view which is zoomed on the center 25% of the camera image area. This portion of the image is displayed at the full CCD resolution (640x480 portion of 1392x1040), providing the highest level of detail of all of the Viewfinder Lite modes. The effect of the Sharpness setting (located under the [Options] menu) is previewed only in the Zoom mode and may assist in the focusing process. The frame rate of the preview image is slower than Fast mode (same as Full mode) and is limited by the exposure time setting.

Full - The Full mode provides a view of the entire camera image area by scaling the CCD-resolution image into the 640x480 pixel preview area, providing increased resolution over Fast mode, but decreased detail over Zoom mode. The frame rate of the preview image is slower than Fast mode (same as Zoom mode) and is limited by the exposure time setting.

To select the Viewfinder Lite mode:

Method A

1) Click on the [Viewfinder] menu.

2) Select the [Viewfinder Mode] menu item.

Selecting the Viewfinder Mode (cont.)

3) Select the desired Viewfinder Lite mode from the pull-down menu.

Method B

Click on the button representing the desired Viewfinder Lite mode (Fast, Zoom, or Full) in the [Options] toolbar.

While these three preview modes allow for varying degrees of resolution, image detail, and frame rate, the resultant final captured image will be identical regardless of the Viewfinder Lite mode used to preview the image.

Selecting the Capture Resolution

Resolution

The degree of sharpness of a captured digital image. A measure of the density of pixels on a screen, resolution is measured by a matrix of two numbers, which represent the number of pixels available across and down the screen (e.g. 640x480). For example, the VGA resolution of 640x480 means 640 dots (pixels) across each of the 480 lines. The image file size is directly related to capture resolution; the higher the resolution, the larger the file. For example, an uncompressed 24-bit color image captured at VGA resolution will have a file size of approximately 900 kilobytes. An uncompressed 24-bit color image captured at the maximum resolution of 2776x2074 will have a file size of approximately 16.3 megabytes.

The Viewfinder Lite application offers three user-selectable capture resolutions (sizes): 640x480, 1392x1040, and 2776x2074 pixels. Available capture resolutions are dependent upon the model of camera being used.

To select the capture resolution:

Method A

1) Click on the [Viewfinder] menu.

2) Click on the Capture [Size] command.

3) Select the desired capture size from the pull-down menu.

Method B

Windows: Click on the [Capture Size] pull-down list located in the [Capture] toolbar. Highlight one of the three predefined image capture resolutions.

Macintosh: Locate the Capture Size popup menu located in the controls below the image pane and select the desired image capture resolution.

Each capture resolution setting offers varying levels of photographic detail and image file size. In general, higher resolution images offer increased detail in a larger file size. Uncompressed images captured at resolutions of 640x480, 1392x1040, and 2776x2074 pixels have file sizes of approximately 900KB, 4.15MB, and 16.2MB, respectively.

The resultant effect of the capture resolution selection is not reflected by the live image displayed in the Viewfinder Lite image window.

Quitting the Viewfinder Lite Application

To close the Viewfinder Lite application:

For Windows users.

Method A

1) Click on the [Viewfinder] menu.

2) Select the [Exit] command.

Method B

Click once on the x button located at the far right of the Viewfinder Lite application window's title bar.

Method C

Double-click the Control Menu icon located at the far left of the Viewfinder Lite application window's title bar.

Method D

1) Click once on Control Menu icon located at the far left of the Viewfinder Lite application window's title bar.

2) Select the [Close] command.

Method E

Use the following keyboard shortcut: Alt + F4.

For Macintosh users.

Method A

Select "Quit" in the File menu.

Quitting the Viewfinder Lite Application (cont.)

Method B

Use the keyboard equivalent Cmd-Q.

Working Within the Viewfinder Lite Application Window

Viewfinder Lite allows for the customization of the viewing properties of the Viewfinder Lite application window.

For Windows users.

To display or hide the [Capture] toolbar:

1) Click the [Options] menu.

2) To display the [Capture] toolbar, place a checkmark next to the [Capture] Toolbar option. To hide the [Capture] toolbar, remove the checkmark.

To display or hide the [Options] toolbar:

1) Click the [Options] menu.

2) To display the [Options] toolbar, place a checkmark next to the [Options] Toolbar option. To hide the [Options] toolbar, remove the checkmark.

To display or hide the [Focus] toolbar:

1) Click the [Options] menu.

2) To display the [Focus] toolbar, place a checkmark next to the [Focus] Toolbar option. To hide the [Focus] toolbar, remove the checkmark.

To display or hide the Status Bar:

1) Click the [Options] menu.

2) To display the Status Bar, place a checkmark next to the [Status Bar] option. To hide the Status Bar, remove the checkmark.

Working Within the Viewfinder Lite Application Window (cont.)

To display or hide the [Exposure] toolbar:

1) Click the [Options] menu.

2) To display the [Exposure] toolbar, place a checkmark next to the [Exposure] Toolbar option. To hide the [Exposure] toolbar, remove the checkmark.

For Macintosh users.

The various buttons and menus are fixed on the Macintosh Viewfinder window and not separated into different toolbars. The Macintosh version does not have a Status Bar.

Manipulating Images

The Viewfinder Lite application offers a variety of controls for manipulating the orientation and display of the preview and captured images.

To capture images in grayscale:

Method A

1) Click on the [Options] menu.

2) Select the [Grayscale] command.

Method B

Click the [Toggle Grayscale] button located in the [Options] toolbar.

To rotate the image:

Method A

1) Click on the [Options] menu.

2) Select the [Rotate 180] command.

Method B

Click the [Rotate 180] button located in the [Options] toolbar.

To flip the image horizontally, along the vertical axis:

Method A

1) Click on the [Options] menu.

2) Select the [Mirror] command.

Manipulating Images (cont.)

Method B

Click the [Mirror] button located in the [Options] toolbar.

To flip the image vertically, along the horizontal axis:

Method A

1) Click on the [Options] menu.

2) Select the Flip command.

Method B

Click the [Flip] button located in the [Options] toolbar.

To Sharpen the Image

1) Click on the [Options] menu

2) Select the Sharpness option.

3) Select the desired level of sharpness.

Four distinct settings of the sharpening filter are available: Off (no sharpening will be applied), Minimum, Medium, and Maximum, each one applying the sharpening filter to a different degree.

These manipulations are reflected in both the preview (the effect of Sharpening is previewed only in the Zoom Viewfinder Lite mode), as well as the final capture.

Adjusting the Color Balance

Viewfinder Lite offers a wide range of operations to optimize color reproduction and accuracy. These operations include white balance and black balance, as well as color correction.

To enable and calibrate One-Push White Balance:

Method A

1) Click on the [Options] menu.

2) Select the [Settings] command. This will bring up the [Settings] property sheet, or dialog box.

3) Click the [Color Balance] tab.

4) Point the camera at a white target (for microscopy applications, remove a slide, place a blank slide on the microscope or move the slide so that a blank or white region of the specimen is positioned into the field of view).

5) Select One-Push White Balance.

6) Click OK to close the property sheet or dialog.

Method B

1) Click on the [Settings] button located in the [Options] toolbar. This will bring up the [Settings] property sheet, or dialog box.

2) Repeat steps 3 through 6 above.

Method C

1) Point the camera at a white target (for microscopy applications, remove a slide, place a blank slide on the microscope or move the slide so that a blank or white region of the specimen is positioned into the field of view).

2) Click on the [Viewfinder] menu.

Adjusting the Color Balance (cont.)

3) Select the [White Balance] command and select One-Push.

Method D

1) Point the camera at a white target (for microscopy applications, remove a slide, place a blank slide on the microscope or move the slide so that a blank or white region of the specimen is positioned into the field of view).

2) Press the [One-Push White Balance] button located in the [Capture] toolbar

The One-Push White Balance will be calibrated according to the target white reference used.

To enable and calibrate Auto White Balance:

Method A

1) Click on the [Options] menu.

2) Select the [Settings] command. This will bring up the [Settings] property sheet, or dialog.

3) Click the [Color Balance] tab.

4) Select Auto White Balance.

5) Click OK to close the property sheet, or dialog box.

6) To specify a reference white area within the Viewfinder Lite image window, Click and hold the left-mouse button at the starting point of the selection.

7) Drag the mouse to encompass the desired region of interest.

8) Release the mouse button.

Method B

1) Click on the [Settings] button located in the [Options] toolbar. This will bring up the [Settings] property sheet, or dialog.

2) Repeat steps 3 through 8 above.

Method C

1) Click on the [Viewfinder] menu.

2) Select the [White Balance] command and select Auto.

3) Repeat steps 6 through 8 above.

Method D

1) Depress the [Auto White Balance] button located in the [Capture] toolbar.

2) Repeat steps 6 through 8 above.

The specified region of interest will be bordered by a rectangular frame, and the Auto White Balance will be calibrated according to the target white reference used.

To enable and calibrate Black Balance:

Method A

1) Click on the [Options] menu.

2) Select the [Settings] command. This will bring up the Settings property sheet, or dialog box.

3) Click the [Color Balance] tab.

4) Select the [Black Balance] checkbox.

Adjusting the Color Balance (cont.)

5) Click OK to close the property sheet, or dialog.

6) To specify a reference black area within the Viewfinder Lite image window, Click and hold the left-mouse button at the starting point of the selection.

7) Drag the mouse to encompass the desired region of interest.

8) Release the mouse button.

Method B

1) Click on the [Settings] button located in the [Options] toolbar. This will bring up the [Settings] property sheet, or dialog box.

2) Repeat steps 3 through 8 above.

Method C

1) Click on the [Viewfinder] menu.

2) Place a checkmark next to the [Black Balance On/Off] command.

3) Repeat steps 6 through 8 above.

Method D

1) Depress the Black Balance On/Off button located in the [Capture] toolbar.

2) Repeat steps 6 through 8 above.

The specified region of interest will be bordered by a rectangular frame, and the Black Balance will be calibrated according to the target black reference used.

To utilize the manual color correction feature:

Adjusting the Color Balance (cont.)

Method A

1) Click on the [Options] menu.

2) Select the [Settings] command. This will bring up the [Settings] property sheet, or dialog.

3) Click the [Color Balance] tab.

4) Select Manual Color Correction.

5) Adjust the color balance slider bars for each of the separate color channels (red, green, and blue) to specify the desired color balance levels.

6) Click the Apply button to apply the color correction settings.

7) Click OK to close the property sheet, or dialog box.

Method B

1) Click on the [Settings] button located in the [Options] toolbar. This will bring up the [Settings] property sheet, or dialog.

2) Repeat steps 3 through 7 above.

The preview image is updated to reflect the color balance settings.

To disable all white balance operations:

Method A

1) Click on the [Options] menu.

2) Select the [Settings] command. This will bring up the [Settings] property sheet, or dialog box.

3) Click the [Color Balance] tab.

Adjusting the Color Balance (cont.)

4) Select Off.

5) Click OK to close the property sheet and apply the changes.

Method B

1) Click on the [Settings] button located in the [Options] toolbar. This will bring up the [Settings] property sheet.

2) Repeat steps 3 through 5 above.

Method C

1) Click on the [Viewfinder] menu.

2) Select the [White Balance] command and select Off.

Adjusting Levels

The Viewfinder Lite application allows you to perform dynamic adjustments to the histogram of the preview displayed in the Viewfinder Lite image window.

To adjust the shadow value:

Method A

1) Click on the [Options] menu.

2) Select the [Settings] command. This will bring up the [Settings] property sheet, or dialog.

3) Click the [Level Adjustment] tab.

4) Click on the [Channel] pull-down list, or popup menu.

5) Select the color channel upon which you would like the adjustment performed. You may choose from the composite RGB channel or the individual color channels (Red, Green, and Blue).

6) Windows: Adjust the [Shadow] slider bar to specify the desired shadow level for the selected color channel.

Macintosh: Adjust the [Shadow] marker triangle (the left-hand marker) to specify the desired shadow level for the selected color channel.

7) Windows: Click the OK button to apply the level adjustment settings.

Macintosh: Level adjustments are automatically applied in real time to both the preview image and to the corresponding histogram. To freeze the histogram so that it does not change due to noise, to changes in the scene viewed by the camera, or to adjustments of the markers, check the Freeze checkbox.

Method B

1) Click on the [Settings] button located in the [Options] toolbar.

Adjusting Levels (cont.)

This will bring up the [Settings] property sheet, or dialog.

2) Repeat steps 3 through 7 above.

To adjust the gamma value:

Method A

1) Click on the [Options] menu.

2) Select the [Settings] command. This will bring up the [Settings] property sheet, or dialog box.

3) Click the [Level Adjustment] tab.

4) Click on the [Channel] pull-down list, or popup menu.

5) Select the color channel upon which you would like the adjustment performed. You may choose from the composite RGB channel or the individual color channels (Red, Green, and Blue).

6) Windows: Adjust the [Gamma] slider bar to specify the desired gamma level for the selected color channel.

Macintosh: Adjust the [Gamma] marker triangle (the middle marker) to specify the desired gamma level for the selected color channel.

7) Windows Click the OK button to apply the level adjustment settings.

Macintosh: Level adjustments are automatically applied in real time to both the preview image and to the corresponding histogram. To freeze the histogram so that it does not change due to noise, to changes in the scene viewed by the camera, or to adjustments of the markers, check the Freeze checkbox.

Method B

1) Click on the [Settings] button located in the [Options] toolbar.

This will bring up the [Settings] property sheet, or dialog box.

2) Repeat steps 3 through 7 above.

To adjust the highlight value:

Method A

1) Click on the [Options] menu.

2) Select the [Settings] command. This will bring up the [Settings] property sheet, or dialog.

3) Click the [Level Adjustment] tab.

4) Click on the [Channel] pull-down list, or popup menu.

5) Select the color channel upon which you would like the adjustment performed. You may choose from the composite RGB channel or the individual color channels (Red, Green, and Blue).

6) Windows: Adjust the [Highlight] slider bar to specify the desired highlight level for the selected color channel.

Macintosh: Adjust the [Highlight] marker triangle (the right-hand marker) to specify the desired highlight level for the selected color channel.

7) Click the OK button to apply the level adjustment settings and close the property sheet, or dialog box.\

Macintosh: Level adjustments are automatically applied in real time to both the preview image and to the corresponding histogram. To freeze the histogram so that it does not change due to noise, to changes in the scene viewed by the camera, or to adjustments of the markers, check the Freeze checkbox.

Method B

Adjusting Levels (cont.)

1) Click on the [Settings] button located in the [Options] toolbar. This will bring up the [Settings] property sheet, or dialog.

2) Repeat steps 3 through 8 above.

To reset level adjustment settings:

Method A

1) Click on the [Options] menu.

2) Select the [Settings] command. This will bring up the [Settings] property sheet, or dialog box.

3) Click the [Level Adjustment] tab.

4) Click the [Reset] button.

5) Level Adjustment level will be reset to the default settings.

6) Click OK to close the property sheet, or dialog.

Method B

1) Click on the [Settings] button located in the [Options] toolbar. This will bring up the [Settings] property sheet, or dialog box.

2) Repeat steps 3 through 6 above.

To save user preset settings:

Method A

1) Click on the [Options] menu.

2) Select the [Settings] command. This will bring up the [Settings] property sheet, or dialog.

3) Click the [User Preset] tab.

4) Press the [Save] button. This will bring upt he [Save Settings] dialog box.

5) Enter a filename, and select the location to which you would like the settings saved.

6) Click the [Save] button.

Method B

1) Click on the [Settings] button located in the [Options] toolbar. This will bring up the [Settings] property sheet, or dialog box.

2) Repeat steps 3 trhough 6 above.

To load previously saved User Preset settings:

Method A

1) Click on the [Options] menu.

2) Select the [Settings] command. This will bring up the [Settings] property sheet, or dialog.

3) Click the [User Preset] tab.

4) Press the [Load] button. This will bring up an [Open] dialog box.

5) Select the desired settings file.

6) Make your choice, and click the [Open] button.

Method B

1) Click on the [Settings] button located in the [Options] toolbar. This will bring up the [Settings] property sheet, or dialog box.

2) Repeat steps 3 through 6 above.

Using Automatic Exposure

The Viewfinder Lite application supports fully automatic exposure (AE) control. In this mode, the Viewfinder Lite calculates the appropriate exposure for the current scene based on the region specified by the spot meter.

To select the automatic exposure mode:

1) Click the [Exposure Mode] pull-down list, or popup menu, located in the [Exposure] toolbar.

2) Select Automatic. This will activate automatic exposure mode and enable the Spot and [Exposure Adjust] pull-down lists, or popup menus, as well as the AE Lock controls. The spot meter will be displayed in the center of the Viewfinder Lite image window as a square region defined by a yellow border.

There may be circumstances when a scene is under- or over-exposed, or you may wish to make slight adjustments to the exposure based on your preferences.

To incrementally adjust the automatic exposure:

1) Click the [Exposure Adjust] pull-down list, or popup menu, located in the [Exposure] toolbar.

2) Select an increment by which you wish to increase or decrease the exposure time.

Two indicators, Over and Under, provide feedback regarding whether the image is over-exposed or under-exposed.

To fix the exposure time at its current setting:

Method A

1) Click on the [Viewfinder] menu.

2) Select the AE Lock command.

Using Automatic Exposure (cont.)

Method B

Click on the AE lock button located in the [Capture] toolbar.

Method C

Press the [AE Lock] button on the external handswitch (optional).

With the AE Lock feature enabled, the exposure time is no longer updated automatically and is fixed at its current value.

The Viewfinder Lite application includes predefined settings for the automatic exposure mode optimized for the unique conditions presented by brightfield and fluorescence microscopy applications.

To optimize the automatic exposure mode for brightfield microscopy:

Click on the Brightfield (BF) button located in the [Options] toolbar.

To optimize the automatic exposure mode for fluorescence microscopy:

Click on the Fluorescence (FL) button located in the [Options] toolbar. The fluorescence mode can have a different target exposure than brightfield mode when the Viewfinder is set to automatic exposure mode.

Exposure settings are reflected in both the preview (all Viewfinder Lite modes) as well as the captured image. However, in Fast mode, the previewed image with a long exposure time may different from the captured image to keep the fast frame rate. While the effect of longer exposure settings will be reflected in the captured image, the effect in the Fast mode preview image is simulated in the Viewfinder Lite software by intensifying the brightness level and may not accurately reflect the final capture quality.

Using the Spot Meter

The spot meter works in conjunction with the automatic exposure feature of the Viewfinder Lite application to accurately compute the appropriate exposure time for a given scene. The spot meter may be repositioned within the Viewfinder Lite image window or adjusted in size to customize the region upon which the exposure is calculated.

To reposition the spot meter:

1) Click on the [Move Spot] button located in the [Capture] toolbar. This will allow you to reposition the spot meter.

2) Click with the mouse (Windows: left-mouse button) somewhere within the live image to cause the spot meter to be relocated and the exposure time automatically recalculated based on the new region within its borders.

Three pre-defined spot sizes are available: 30%, 1%, and 0.1%. Each size denotes the percentage of the area which the spot region occupies to the capturing image.

To re-center the spot meter:

Click on the [Center Spot] button located in the [Capture] toolbar.

To specify the spot size:

Method A

1) Click on the [Spot] pull-down list, or popup menu, located in the [Exposure] toolbar.

2) Highlight one of the three predefined spot sizes.

Method B

Press the [Spot] button on the external handswitch (optional) to cycle between the three predefined spot sizes.

Using Manual Exposure

The Viewfinder Lite application supports fully manual exposure control. In this mode, the Viewfinder Lite allows for user-defined exposure times ranging from a shortest time of 1/10000 second to a longest exposure time of 60 seconds.

To select the manual exposure mode:

1) Click the [Exposure Mode] pull-down list, or popup menu, located in the [Exposure] toolbar.

2) Select Manual. This will activate Exposure Time slider and disable the Spot and [Exposure Adjust] pull-down lists, or popup menus, as well as the AE Lock controls.

To select the exposure time:

Method A

Drag the Exposure time slider located in the [Exposure] toolbar. Dragging the slider to the left decreases the exposure time; dragging to the right increases it.

Method B

Click on the increment or decrement arrows located beside the Exposure Time slider. Clicking on the left arrow decreases the exposure time; clicking on the right arrow increases it.

Exposure settings are reflected in both the preview (all Viewfinder Lite modes) as well as the captured image. However, in Fast mode, the previewed effect of the exposure setting is limited to a maximum exposure time of 1/4 second. While the effect of longer exposure settings will be reflected in the captured image, the effect in the Fast mode preview image is simulated in the Viewfinder Lite software by intensifying the brightness level and may not accurately reflect the final capture quality.

Adjusting Camera Sensitivity

The Viewfinder Lite application allows you to control the sensitivity of the camera by adjusting its hardware gain control. Analogous to a standard film camera's ISO sensitivity ratings, these settings, 50/100/200/400, control the amplification of image data signals, resulting in varying sensitivity.

To adjust the sensitivity:

1) Click on the [Sensitivity] pull-down list, or popup menu, located in the [Exposure] toolbar.

2) Highlight one of the four predefined sensitivity settings.

High sensitivity settings may amplify unwanted noise in the image. In general, it is recommended that a sensitivity level of 100 be selected. If the ISO sensitivity value is increased, the noise level will also increase.

Using Online Help

Viewfinder Lite offers the help topic documentation in online help, including all of the information provided in this User's Manual.

To access online help:

1) Click on the [Help] menu.

2) Windows: Select the [Help Topics] command.

Macintosh: Select the [Studio Lite Help] menu item.

Online help is searchable by topic or keyword.

Using the Focusing Tool

The Viewfinder Lite application offers a focusing tool which is designed to assist you in the process of focusing on a stationary subject.

Windows. To view the [Focus] toolbar:

1) Click on the [Options] menu.

2) Place a checkmark next to the [Focus] Toolbar option.

Macintosh. The [Focus On/Off] and [Focus Reset] buttons are always visible.

To activate the Focus Indicator:

Method A

1) Click on the [Viewfinder] menu.

2) Select the [Focus On/Off] command.

Method B

Click on the [Focus On/Off] button located in the [Focus] toolbar.

To focus on a camera subject with the assistance of the focusing tool:

1) First try to achieve the highest level of focus manually to bring the camera into "rough" focus.

2) Click once using the left-mouse button on any region within the live image window to place the Focusing Target on the area that you wish to focus on. Selecting an area of high contrast (i.e. a distinct edge) will optimize the accuracy of the final focus.

Using the Focusing Tool (cont.)

3) Observe the Current Focus Level Indicator in the [Focus] toolbar. The Current Focus Level Indicator numerically or graphically displays the present level of focus quality for the region currently specified by the Focusing Target. Slowly turn the focusing knob of the microscope (or macro lens) in one direction until the Current Focus Level Indicator begins to steadily decline.

4) Slowly turn the focusing knob of the microscope (or macro lens) in the direction opposite to the one you chose in Step 3. You will notice that the Current Focus Level Indicator will begin to steadily increase. Continue turning until the Current Focus Level Indicator begins to steadily decline again. The Optimum Focus Level Indicator should now be at its maximum value. The Optimum Focus Level numerically or graphically indicates the highest level of focus quality achieved up to the present time for the region currently specified by the Focusing Target. The objective is to maximize the number which represents this level.

5) Slowly turn the focusing knob of the microscope (or macro lens) in the direction opposite to the one you chose in Step 4 (or the same direction as Step 3). Continue turning until the Current Focus Level Indicator equals (or is close as possible to) the Optimum Focus Level. This indicates that the subject has reached the Optimum Focus Level and is in focus.

If you experience difficulty matching the Current Focus Level Indicator to the Optimum Focus Level, it may be necessary to reset the focusing tool and repeat the above steps.

To reset the focusing tool:

Method A

1) Click on the [Viewfinder] menu.

2) Select the [Focus Reset] command.

Using the Focusing Tool (cont.)

Method B

Click on the [Focus Reset] button located in the [Focus] toolbar.

To deactivate the Focus Indicator:

Method A

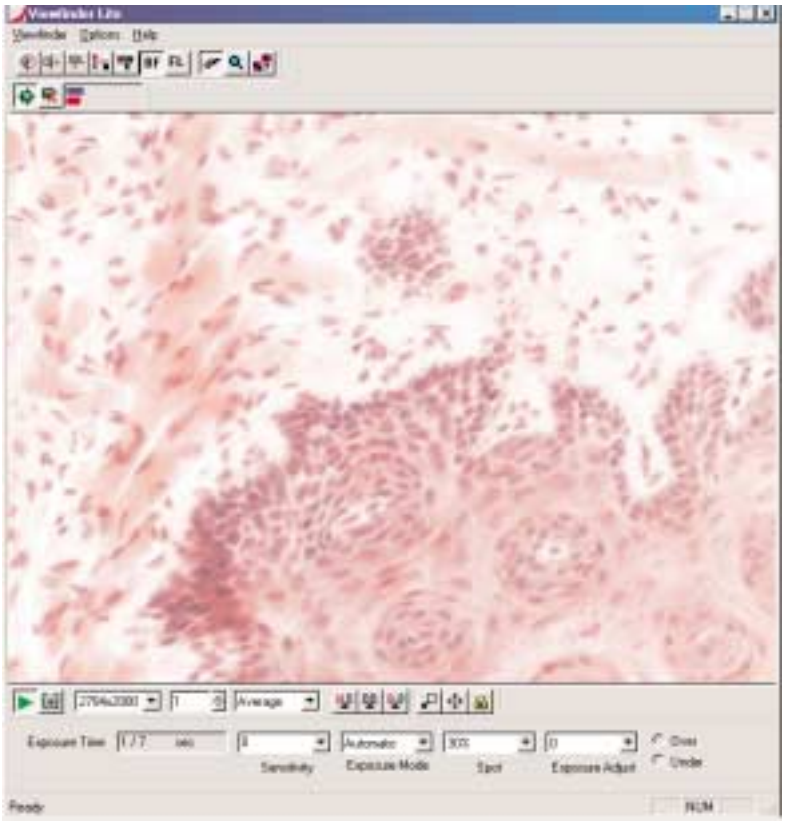
1) Click on the [Viewfinder] menu.

2) Select the [Focus On/Off] command.

Method B

Click on the [Focus On/Off] button located in the [Focus] toolbar.

5. Viewfinder Lite



Reference

Title Bar (Windows Only)

The strip across the top of the Viewfinder Lite application window is called the Title Bar (Figure 2). The Viewfinder Lite program name and icon are displayed along with buttons which represent functions and menus that contain commands.

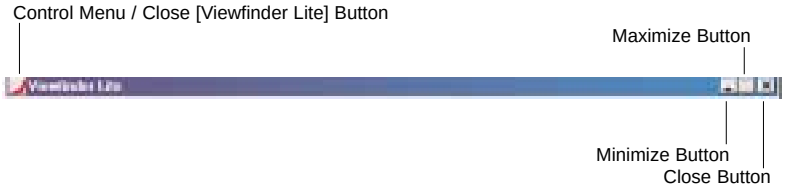


Figure 2: Title Bar

Control Menu / Close [Viewfinder Lite] Button

The Viewfinder Lite icon displayed at the upper left corner of the Viewfinder Lite application window represents the Control Menu / Close [Viewfinder Lite] button. A single mouse-click of this button displays the Control menu. Double-clicking this button closes the Viewfinder Lite application window and quits the program.

Minimize Button

Clicking once on the Minimize button reduces the Viewfinder Lite application window to an icon on the Windows taskbar.

Maximize Button

Clicking once on the Maximize button increases the size of the Viewfinder Lite application window to fill the entire Windows desktop.

Close Button

Clicking once on the Close button closes the Viewfinder Lite application window and quits the program.

Control Menu (Windows Only)

The Control menu (Figure 3) is comprised of six commands which control the physical aspects of the Viewfinder Lite application window: Restore, Move, Size, Minimize, Maximize, and Close.



Figure 3: Control Menu

[Restore] Command

The [Restore] command returns the Viewfinder Lite application window to its previous state.

[Move] Command

The [Move] command allows for the manual positioning of the Viewfinder Lite application window within the Windows desktop using the keyboard's directional arrow keys.

[Size] Command

The [Size] command allows for the manual sizing of the Viewfinder Lite application window using the keyboard's directional arrow keys.

[Minimize] Command

The Minimize command reduces the Viewfinder Lite Pro application window to an icon in the Windows taskbar.

[Maximize] Command

The [Maximize] command is not available within the Viewfinder Lite application.

Control Menu (cont.)

[Close] Command

The [Close] command closes the Viewfinder Lite application window and quits the program.

For Windows.

The strip below the Title Bar is called the Menu Bar (Figure 4). Control over the range of camera control tools offered by Viewfinder Lite is available through the three menu selections: Viewfinder, Options, and Help.



Figure 4: Menu Bar

For Macintosh.

The strip across the top of any window is called the Title Bar (Figure 2a). The left-hand box is the Close Box, which allows you to close the window without quitting the application. (To quit the program, use the File menu in the Menu Bar.) As long as the Studio Lite application is still running, you can always open the Viewfinder window again, or bring it to the top of any other open windows, by selecting "Viewfinder" in the [Window] menu. The box on the right side of the Title Bar is called the Collapse Box.



Figure 2a: Viewfinder Window Title Bar (Macintosh)

When Studio Lite is the current application, its menus appear in the Menu Bar of your computer (Figure 4a).



Figure 4a: Menu Bar (Macintosh)

[Viewfinder] Menu

The [Viewfinder] Menu (Figure 5) duplicates the features found in the [Capture] Toolbar, including Start Preview, Capture, Capture Size, White Balance On/Off, Black Balance, and AE Lock. In addition, this menu allows access to certain Focus and [Options] toolbar features, such as Viewfinder Mode, Focus On/Off, and Focus Reset.

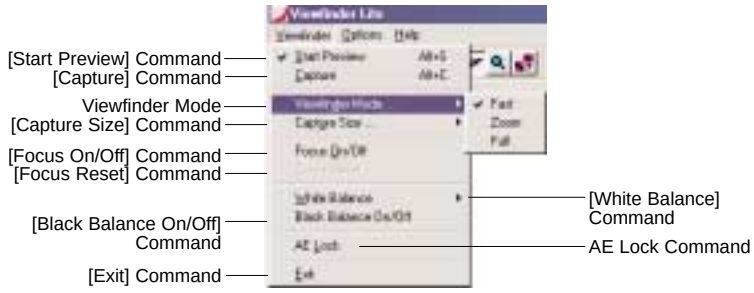


Figure 5: [Viewfinder] Menu

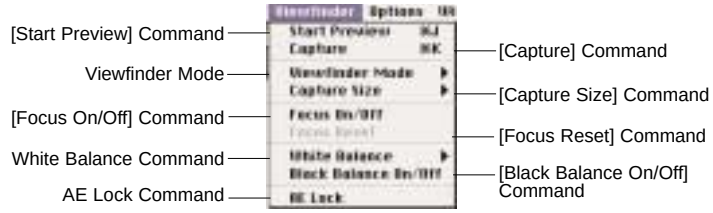


Figure 5a: [Viewfinder] Menu (Macintosh)

[Start Preview] Command

The [Start Preview] command (Windows - Alt+S, Macintosh - Cmd+J) controls power to the camera. When selected, the camera is powered on, displaying a constantly refreshed live image (preview) of the current camera subject in the Viewfinder Lite image window. When this command is not selected, the camera is powered off, and the Viewfinder Lite splash screen is displayed in the image window.

[Capture] Command

The [Capture] command (Windows - Alt+C, Macintosh - Cmd+K) instructs the camera to capture a still image of the current camera subject to the Studio Lite application, applying the defined

Viewfinder Lite capture settings (i.e. capture resolution, exposure, etc.) and image processing options (i.e. white/black balance, color balance, etc.).

[Viewfinder Mode] Command

The [Viewfinder Mode] command allows for the selection of one of three different preview display modes: Fast, Zoom, and Full.

Fast Mode

The default selection, the Fast mode Viewfinder Lite provides a view of the entire camera image area. This mode is suitable for positioning the subject, rapid focusing, and determining optimum brightness levels. In Fast mode, the previewed effect of the camera exposure time setting is limited to approximately 1/4 second. While the effect of longer exposure times will be reflected in the captured image, the effect in the preview image is simulated in the Viewfinder Lite software by intensifying the brightness level. The Viewfinder Lite preview image may appear of substantially lower quality than the final captured image at exposure time settings slower than 1/4 second.

Zoom Mode

The Zoom mode Viewfinder Lite provides a view which is zoomed on the center 25% of the camera image area. This portion of the image is displayed at the full CCD resolution (640x480 portion of 1392x1040), providing the highest level of detail of all of the Viewfinder Lite modes. The effect of the Sharpness setting (located under the [Options] menu) is previewed only in the Zoom mode and may assist in the focusing process. The frame rate of the preview image is slower than Fast mode (same as Full mode) and is limited by the exposure time setting.

Full Mode

The Full mode Viewfinder Lite provides a view of the entire camera image area by scaling the CCD-resolution image into the 640x480 pixel preview area, providing increased resolution over Fast mode, but decreased detail over Zoom mode. The frame rate of the preview image is slower than Fast mode (same as Zoom mode) and is limited by the exposure time setting.

[Viewfinder] Menu (cont.)

[Capture Size] Command

The [Capture Size] command allows for the selection of one of three image capture resolutions: 640x480, 1392x1040, and 2776x2074.

[Focus On/Off] Command

The [Focus On/Off] command switches between activation and deactivation of the Focusing Target and Focus Indicator. When selected, the Focus Indicator becomes enabled, displaying a dynamic indication of the current focus level for the area specified by the Focusing target. When this command is not selected, the Focus Indicator feature is disabled.

[Focus Reset] Command

The [Focus Reset] command sets the Optimum Focus Level to the Current Focus Level and is useful when you would like to calibrate the Focus Indicator on a new region of the preview.

[White Balance] Command

The [White Balance] command allows for the selection of one of three different white balance modes: Off, Auto, and One-Push.

Off

The Off setting disables all white balancing functions. No white balance operations will be performed in either the preview or captured image.

Auto

The Auto white balance setting allows the user to calibrate the white balancing by specifying any arbitrary region in the live image that is to be defined as the standard for white. This feature should be selected when viewing images which have discernable regions of true white. These settings are reflected in both the preview, as well as the captured image.

One-Push

The One-Push white balance setting calculates the white balance based on the entire camera scene, allowing the user to calibrate the Red, Green, and Blue (RGB) color correction coefficients by pointing the camera at a white target or light source. The calibration is performed immediately upon selecting this option. The coefficients stay fixed for all subsequent captures. This setting allows accurate adjustments for applications in which the scenes remain relatively static and unchanged. These settings are reflected in both the preview, as well as the captured image.

[Black Balance On/Off] Command

The [Black Balance On/Off] command switches between the activation and deactivation of the Black Balance feature of the Viewfinder Lite application. When selected, the Black Balance On/Off button in the [Capture] toolbar is automatically activated, allowing to you calibrate the black balancing by specifying any arbitrary region in the live image that is to be defined as the standard for black. Once this region is specified, the black balancing is automatically updated to provide optimum color reproduction. This feature should be selected when viewing images which have discernable regions of true black. When this command is not selected, the black balancing feature is disabled. These settings are reflected in both the preview, as well as the captured image.

AE Lock Command

Working in conjunction with the Viewfinder Lite's automatic exposure (AE) mode, the AE Lock command switches between the activation and deactivation of the auto exposure lock feature of the Viewfinder Lite application. When selected, the [AE Lock] button in the [Capture] toolbar is automatically activated, locking the exposure time and gain at their current settings and temporarily disabling the auto exposure function. When this command is not selected, the automatic exposure feature is re-enabled.

[Exit] Command (Windows Only)

The [Exit] command closes the Viewfinder Lite application window and quits the program.

[Options] Menu

The [Options] menu (Figure 6 or 6a) allows you to select the toolbars to be displayed within the Viewfinder Lite application window. This menu also includes selections found in the [Options] toolbar with the following seven commands: Grayscale, Settings, Rotate 180, Mirror, Flip, 16 Bits/Channel, and Sharpness.

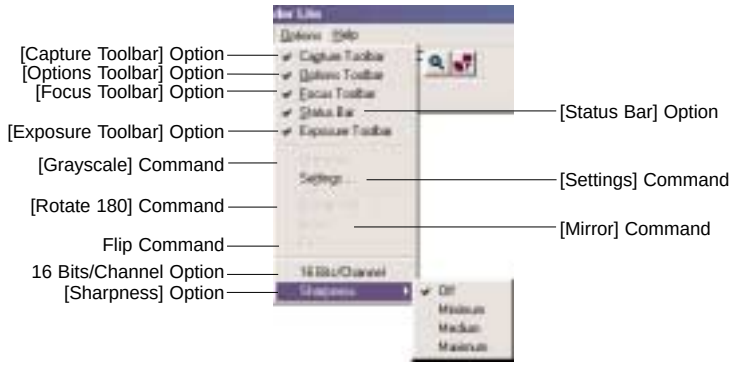


Figure 6: [Options] Menu



Figure 6a: [Options] Menu (Macintosh)

[Capture Toolbar] Option (Windows Only)

The [Capture Toolbar] option displays the [Capture] Toolbar when selected, hiding it otherwise.

[Options Toolbar] Option (Windows Only)

The [Options Toolbar] option displays the [Options] Toolbar when selected, hiding it otherwise.

[Focus Toolbar] Option (Windows Only)

The [Focus Toolbar] option displays the [Focus] Toolbar when

selected, hiding it otherwise.

[Status Bar] Option (Windows Only)

The [Status Bar] option displays the Status Bar when selected, hiding it otherwise.

[Exposure Toolbar] Option (Windows Only)

The [Exposure Toolbar] option displays the [Exposure] Toolbar when selected, hiding it otherwise.

[Grayscale] Command

When selected, the [Grayscale] command converts the preview image in the Viewfinder Lite image window from color to shades of gray. This change is reflected in the captured image as well.

[Settings] Command

The [Settings] command brings up the [Settings] property sheet, or dialog box, which allows you to customize the image processing functions of Viewfinder Lite with the following tabs: Color Balance, Level Adjustment, and User Preset.

[Settings] Dialog Box

The [Settings] property sheet allows you to customize the image-processing functions of Viewfinder Lite with the following tabs: Color Balance, Level Adjustment, and User Preset.

[Color Balance] Tab

The [Color Balance] tab (Figure 7) allows you to select from one of four white balancing schemes: Off, One-Push White Balance, Auto White Balance, and Manual Color Correction. Black balancing may also be applied here.

[Options] Menu (cont.)

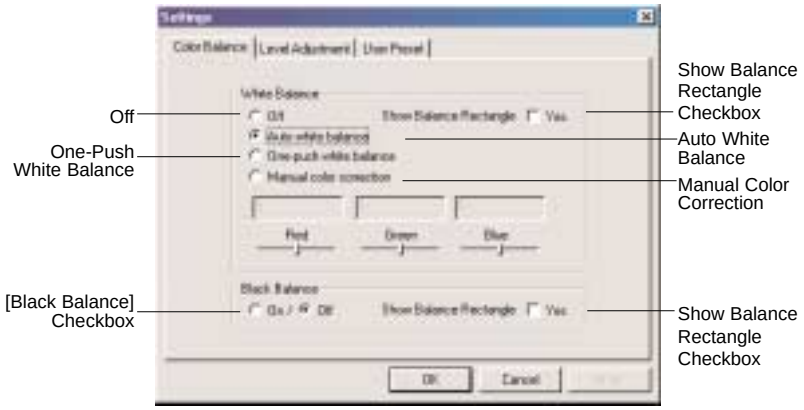


Figure 7: Setting Dialog Box ([Color Balance] Tab)

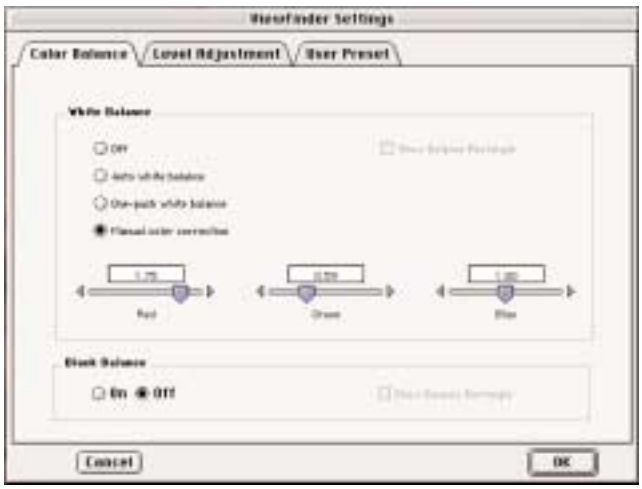


Figure 7a: Settings Dialog Box, [Color Balance] Panel (Macintosh)

Off

The Off setting disables all white balancing functions. No white balance operations will be performed in either the preview or captured image.

Auto White Balance

The Auto White Balance setting allows the user to calibrate the white balancing by specifying any arbitrary region in the live image that is to be defined as the standard for white. This feature should be selected when viewing images which have discernable regions of true white. These settings are reflected in both the preview, as well as the captured image.

One-Push White Balance

The One-Push White Balance setting calculates the white balance based on the entire camera scene, allowing the user to calibrate the Red, Green, and Blue (RGB) color correction coefficients by pointing the camera at a white target or light source. The calibration is performed immediately upon selecting this option. The coefficients stay fixed for all subsequent captures. This setting allows accurate adjustments for applications in which the scenes remain relatively static and unchanged. These settings are reflected in both the preview, as well as the captured image.

Manual Color Correction

The Manual Color Correction setting offers full user-control over the color correction settings. Three separate sliders allow you to specify custom values for the Red, Green, and Blue color correction coefficients. Dragging to the left decreases the level; dragging to the right increases it. The numbers above the slider display the numerical color channel values. Values can range from 0 to 2. The default color channel values are 1. These settings are reflected in both the preview, as well as the captured image.

[Black Balance] Checkbox

The [Black Balance] checkbox switches between the activation and deactivation of the Black Balance feature of the Viewfinder Lite application. When selected, this feature allows the user to calibrate the black balancing by specifying any arbitrary region in the live

image that is to be defined as the standard for black. Once this region is specified, the black balancing is automatically updated to provide optimum color reproduction. This feature should be selected when viewing images which have discernable regions of true black. When this command is not selected, the black balancing feature is disabled. These settings are reflected in both the preview, as well as the captured image.

[Show Balance Rectangle] Checkboxes

The [Show Balance Rectangle] checkboxes toggle between the displaying and hiding of the balance rectangles which specify the calibration regions for the Auto White Balance and Black Balance operations. When selected, the selected regions are displayed in the Viewfinder Lite image window. When this feature is not selected, the balance rectangles are hidden from view.

[Level Adjustment] Tab

The [Level Adjustment] tab (Figure 8) allows you to perform dynamic histogram adjustments to the preview displayed in the Viewfinder Lite image window. Shadow, Gamma, and Highlight values may be specified for either the individual color channels (Red, Green, or Blue) or the composite RGB channel. The current histogram for the live image being previewed in the Viewfinder Lite image window is represented graphically in the center of the dialog box. Viewfinder Lite allows you to save current level adjustment settings as well as load any previously saved settings.

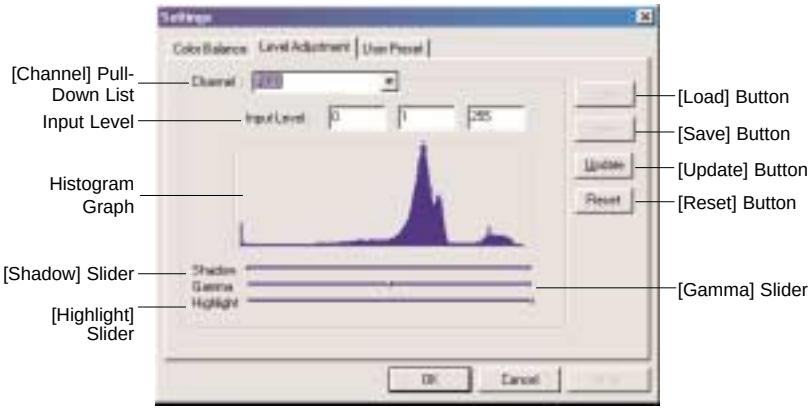


Figure 8: Setting Dialog Box ([Level Adjustment] Tab)

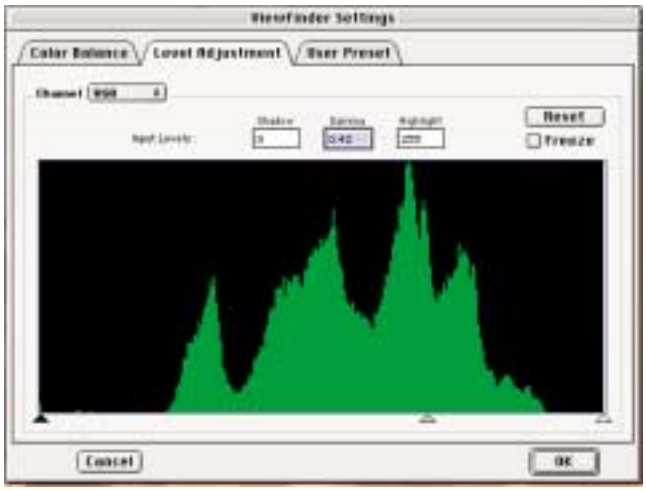


Figure 8a: Settings Dialog Box, [Level Adjustment] Panel (Macintosh)

[Channel] Pull-Down List, or Popup Menu

The [Channel] pull-down list, or popup menu, allows you to select the color channel(s) on which you would like the level adjustment operations performed. You may select any of the individual color channels (Red, Green, or Blue) or the composite RGB channel.

[Options] Menu (cont.)

Input Level

The Input Level displays three text boxes, indicating (from left to right) numerical input values for the Shadow, Gamma, and Highlight settings, respectively.

Windows:

[Shadow] Slider

The [Shadow] Slider adjusts the shadow level of the preview image in the Viewfinder Lite image window. Dragging to the left decreases the value; dragging to the right increases it. Values can range from 0 to 255. This setting is represented graphically on the histogram display and reflected in the captured image.

[Gamma] Slider

The [Gamma] Slider adjusts the gamma level of the preview image in the Viewfinder Lite image window. Dragging to the left decreases the value; dragging to the right increases it. Values can range from 0 to 5. This setting is represented graphically on the histogram display and reflected in the captured image.

[Highlight] Slider

The [Highlight] Slider adjusts the highlight level of the preview image in the Viewfinder Lite image window. Dragging to the left decreases the value; dragging to the right increases it. Values can range from 0 to 255. This setting is represented graphically on the histogram display and reflected in the captured image.

Macintosh:

There are three marker triangles below the histogram instead of the three sliders that the Windows version has. The meaning and use of these marker triangles, however, matches that of Windows' sliders. Thus the dark left-hand marker corresponds to the [Shadow] slider, the gray middle marker to the [Gamma] slider, and

the white right-hand marker to the [Highlight] slider. See the Windows text for further details. Moving the marker triangles produces an immediate effect on the preview image, and likewise the histogram is continuously updated in real-time as the camera's scene changes.

[Reset] Button

The [Reset] button resets the level adjustments which were previously set by the user.

[Update] Button (Windows Only)

The [Update] button displays the histogram for the current frame of the Viewfinder preview.

[Freeze] Checkbox (Macintosh Only)

Level adjustments are automatically applied in real time to the preview-image histogram, so there is no need for an Update button on the Macintosh. To freeze the histogram, however, so that it does not change due to noise, to changes in the scene viewed by the camera, or to adjustments of the markers, click the Freeze checkbox. To unfreeze the histogram, click again.

[User Preset] Tab

The [User Preset] tab (Figure 9) allows you to save current Viewfinder Lite capture settings or load previously saved settings. All user-selected settings are saved, including: white balance mode, frame accumulation options, sensitivity, exposure mode, spot size, capture resolution, and exposure time.

[Options] Menu (cont.)

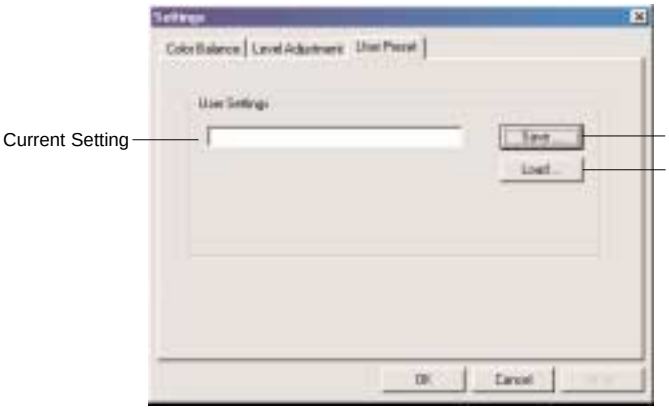


Figure 9: Setting Dialog Box ([User Preset] Tab)

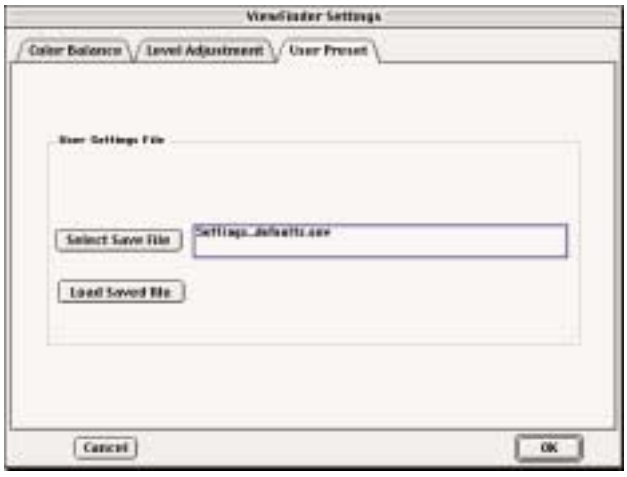


Figure 9a: Settings Dialog Box, [User Preset] Tab (Macintosh)

[Save] Button

The [Save] button brings up the [Save Settings] dialog box which allows you to save current Viewfinder Lite capture settings (i.e. capture resolution, white/black balance calibrations, etc.) so that they may be re-applied at a later time. The filename representing the currently saved settings is displayed in the dialog box.

[Load] Button

The [Load] button brings up the [Load Settings] dialog box which allows you to import previously saved Viewfinder Lite capture settings (i.e. capture resolution, white/black balance calibrations, etc.). The filename representing the currently loaded settings is displayed in the dialog box.

[Rotate 180] Command

The [Rotate 180] command rotates the live image in the Viewfinder Lite image window by a half turn (180°). This change is reflected in the captured image as well.

[Mirror] Command

The [Mirror] command flips the live image in the Viewfinder Lite image window horizontally, along the vertical (Y) axis. This change is reflected in the captured image as well.

[Flip] Command

The [Flip] command flips the live image in the Viewfinder Lite image window vertically, along the horizontal (X) axis. This change is reflected in the captured image as well.

[16 Bits/Channel] Option

When selected, the [16 Bits/Channel] option allows captured images to be processed with 16-bits of data per color channel (red, green, and blue). The increased dynamic range offered by the resulting 48-bit RGB images is particularly effective in increasing image detail during accumulation operations, including frame averaging and integration.

[Sharpness] Option

The [Sharpness] option allows you to set the use of the sharpening filter in the Viewfinder Lite application. Four varying settings for

sharpening are available: Off, Minimum, Medium, and Maximum.

Windows Help:

The [Help] menu (Figure 10) provides access to the detailed online help reference, as well as information regarding the current release of the Viewfinder Lite application.



Figure 10: [Help] Menu

[Help Topics] Command

The [Help Topics] command displays the Help Topics dialog box (Figure 11) with the following category tabs: Contents, Index, and Find. These tabs assist in navigating through the extensive online help reference offered in the Viewfinder Lite application.



Figure 11: Help Topics Dialog Box

[About Viewfinder Lite] Command

The [About Viewfinder Lite] command displays version and copyright information pertaining to the current release of the

[Help] Menu (cont.)

Viewfinder Lite application.

Macintosh Help:

The [Help] menu (Figure 10a) provides access to detailed online help reference.

[Studio Lite Help] Command

The [Studio Lite Help] command displays online help in a new window.



Figure 10a: [Help] Menu (Macintosh)

The window displays the same information as this printed manual and can be searched for specific topics or keywords.

[Capture] Toolbar

The [Capture] Toolbar (Figure 12) provides the functions necessary for basic camera control. These include: Preview On/Off, Capture, Capture Size, Accumulation, Option, Auto White Balance, Black Balance, One-Push White Balance, Photometry, Photometry Centering, and AE Lock. **Windows only:** The [Capture] toolbar can be manually repositioned to any location on the Windows desktop using mouse drag-and-drop. Double-clicking on the upper border of the [Capture] toolbar will return it to the Viewfinder Lite application window.

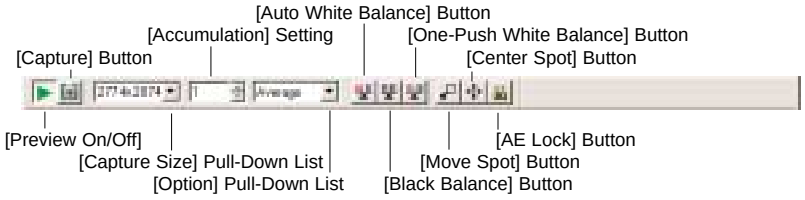


Figure 12: [Capture] Toolbar



Figure 12a: [Capture] Toolbar Controls (Macintosh)

[Preview On/Off] Button

The [Preview On/Off] button controls power to the camera. When this button is depressed, the camera is powered on, displaying a constantly refreshed live image (preview) of the current camera subject in the Viewfinder Lite image window. Otherwise, the camera is powered off, and the Viewfinder Lite splash screen is displayed in the image window.

[Capture] Button (Windows)

The [Capture] button instructs the camera to capture a still image of the current camera subject to the Studio Lite application, applying the defined Viewfinder Lite capture settings (i.e. capture resolution, exposure, etc.) and image processing options (i.e. white/black balance, color balance, etc.).

[Capture] Toolbar (cont.)

[Capture] Button (Macintosh)

The [Capture] button instructs the camera to capture a still image of the current camera subject and place it in a new window, applying the defined capture settings (i.e., capture resolution, exposure, etc.) and image-processing options (i.e., white/black balance, color balance, etc.).

[Capture Size] Pull-Down List, or Popup Menu

The [Capture Size] pull-down list, or popup menu allows for the selection of one of three predefined image capture resolutions: 640x480, 1392x1040, and 2776x2074.

[Accumulation] Setting

The [Accumulation] setting allows you to specify the number of frames to be captured by the Viewfinder Lite application for frame averaging or integration operations. You may select a value between 1 (single capture - no accumulation) and 64 by clicking the up.down arrows, or by typing a number in the box.

[Option] Pull-Down List, or Popup Menu

The [Option] pull-down list, or popup menu, allows you to select either of the following two frame accumulation options: Average or Integral.

Average

The Average operation sums (adds) the raw image data of the specified number of accumulated frames and divides the resulting signal by the number of frames summed. Frame averaging results in an improvement of the signal-to-noise ratio (S/N) of the captured image by a factor equal to the square root of the number of frames averaged (up to sqrt[256]=16). This operation reduces the random noise generated under low-light conditions (i.e. darkfield, fluorescence microscopy), while maintaining contrast, brightness, and color, and is only suitable for still subjects. The enhancement in the captured image due to the frame averaging operation is not

reflected in the live image displayed in the Viewfinder Lite image window.

Integral

The Integral operation sums (adds) the raw image data of the specified number of accumulated frames. Frame integration strengthens weak image signals by accumulating image data, but also has the effect of increasing any noise which is present in the accumulated images and is only suitable for still subjects. The effect in the captured image due to the frame integration operation is not reflected in the live image displayed in the Viewfinder Lite image window.

[Auto White Balance] Button

Pressing the [Auto White Balance] button allows the user to select with the cursor a rectangular area of the image which the application will use to set the white balance automatically. You may thus set any arbitrary region of the live image to be the standard by which white is defined. This region remains in effect until a different mode of color balancing is selected, the Focus Finder is activated, or the Move Spot button is pressed to on. Once this region is specified, the white balancing is automatically updated to provide optimum color reproduction. This feature should be selected when viewing images which have discernible regions of true white. These settings are reflected in both the preview, as well as the captured image.

Black Balance Button

The [Black Balance] button acts in a similar fashion to the [White Balance] button. Pressing it permits the user to draw a rectangular area that will be used as the standard for black. Once this region is specified, the black balancing is automatically updated to provide optimum color reproduction. This feature should be selected when viewing images which have discernible regions of true black. The setting is reflected in both the preview, as well as the captured image., and remains in effect until a different mode of color balancing is selected, the Focus Finder is activated, or the Move

[Capture] Toolbar (cont.)

Spot button is pressed to on.

[One-Push White Balance] Button

The [One-Push White Balance] button calculates the white balance based on the entire camera scene, allowing the user to calibrate the Red, Green, and Blue (RGB) color correction coefficients by pointing the camera at a white target or light source. The calibration is performed immediately upon selecting this option. The coefficients stay fixed for all subsequent captures until a different mode of color balancing is selected, the Focus Finder is activated, or the Move Spot button is pressed to on. This setting allows accurate adjustments for applications in which the scenes remain relatively static and unchanged. These settings are reflected in both the preview, as well as the captured image.

[Move Spot] Button

The [Move Spot] button allows you to reposition the spot meter under automatic exposure mode. When this button is depressed, you may place the spot meter on the region of the subject under which you would like the auto exposure calculated. By default, the spot meter is centered in the Viewfinder Lite image window. The effect of the spot meter position on exposure time is dynamically updated in the preview image.

[Center Spot] Button

The [Center Spot] button relocates the spot meter to the center of the Viewfinder preview window.

[AE Lock] Button

The [AE Lock] button switches between the activation and deactivation of the auto exposure lock feature of the Viewfinder Lite application. When AE Lock is selected, the exposure time and gain are locked at their current settings, temporarily disabling the auto exposure function. When this button is not selected, the automatic exposure feature is re-enabled.

[Exposure] Toolbar

The [Exposure] Toolbar provides the functions necessary for camera exposure control. These include: Exposure Time, Sensitivity, Exposure Mode, Spot, and Exposure Adjust. **Windows only:** The [Exposure] toolbar can be manually repositioned to any location on the Windows desktop using mouse drag-and-drop. Double-clicking on the upper border of the [Exposure] Toolbar will return it to the Viewfinder Lite application window.

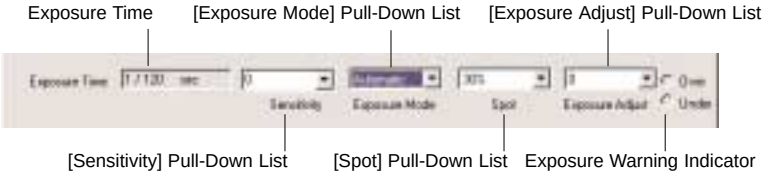


Figure 13: [Exposure] Toolbar



Figure 13a: [Exposure] Toolbar Controls (Macintosh)

Exposure Time

The Exposure Time slider enables you to control the electronic shutter of the camera by manually selecting an exposure time. Dragging the slider to the left decreases the value; dragging to the right increases it. You may also adjust the exposure time by clicking on the increment and decrement arrows beside the slider. Available exposure times range from a shortest time of 1/10000 of a second to a longest time of 60 seconds. This control is enabled only under manual exposure mode and is disabled under automatic exposure (AE) mode. These settings are reflected in both the preview, as well as the captured image.

[Sensitivity] Pull-Down List, or Popup Menu

The [Sensitivity] pull-down list, or popup menu, allows you to manually control the camera's hardware gain controls. Analogous to a standard film camera's ISO sensitivity ratings, these settings, 50/100/200/400, control the amplification of image data signals, resulting in varying sensitivity. These settings are reflected in both the preview, as well as the captured image.

[Exposure] Toolbar (cont.)

[Exposure Mode] Pull-Down List, or Popup Menu

The [Exposure Mode] pull-down list, or popup menu, allows you to select between automatic and manual exposure modes.

Automatic Exposure

Under Automatic Exposure (AE) mode, the camera automatically calculates the optimum exposure time based on the region of the image contained within the spot meter. The Exposure Time controls are disabled under this mode.

Manual Exposure

Under Manual Exposure mode, exposure times may be specified manually using the Exposure Time controls. The Spot and Exposure Adjust controls are disabled under this mode.

[Spot] Pull-Down List, or Popup Menu

The [Spot] pull-down list, or popup menu, allows you to select the size of the spot meter. The sizes are specified as an area percentage of the capture area. Available sizes are: 30%, 1%, and 0.1%. Under automatic exposure mode, the exposure time is calculated based on the image data present within the region defined by the spot meter. This control is enabled only under automatic exposure (AE) mode and is disabled under the AE Lock and manual exposure modes.

[Exposure Adjust] Pull-Down List, or Popup Menu

The [Exposure Adjust] pull-down list, or popup menu, allows you to fine tune the exposure of images under automatic exposure mode. The Exposure Adjust range is +2 EV to -2 EV by 1/3 EV steps.

Exposure Warning Indicators

Two indicators, Over and Under, feedback regarding whether an image is over-exposed or under-exposed. This control is enabled only under automatic exposure (AE) mode and is disabled under manual exposure mode.

[Options] Toolbar

The [Options] toolbar (Figure 14) provides functions which adjust the properties of the live image presented in the Viewfinder Lite image window as well as the captured image. These include: Rotate 180, Mirror, Flip, Toggle Grayscale, Settings, Brightfield, Fluorescence, Fast, Zoom, and Full. **Windows only:** The [Options] toolbar can be manually repositioned to any location on the Windows desktop using mouse drag-and-drop. Double-clicking on the upper border of the [Options] toolbar will return it to the Viewfinder Lite application window.

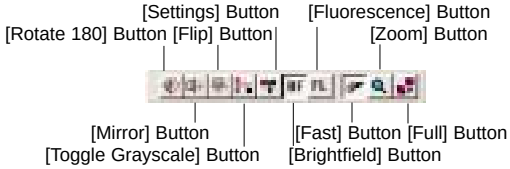


Figure 14: [Options] Toolbar



Figure 14a: [Options] Toolbar Controls (Macintosh)

[Rotate 180] Button

The [Rotate 180] button rotates the live image in the Viewfinder Lite image window by a half turn (180°). This change is reflected in the captured image as well.

[Mirror] Button

The [Mirror] button flips the live image in the Viewfinder Lite image window horizontally, along the vertical (Y) axis. This change is reflected in the captured image as well.

[Flip] Button

The [Flip] button flips the live image in the Viewfinder Lite image window vertically, along the horizontal (X) axis. This change is reflected in the captured image as well.

[Options] Toolbar (cont.)

[Toggle Grayscale] Button

The [Toggle Grayscale] button converts the preview image in the Viewfinder Lite image window from color to shades of gray. This change is reflected in the captured image as well.

[Settings] Button

The [Settings] button brings up the [Settings] dialog box which allows you to customize the image processing functions of Viewfinder Lite with the following tabs: Color Balance, Level Adjustment, and User Preset.

[Brightfield] Button

The [Brightfield] button (BF) works in conjunction with the automatic exposure mode (AE) to optimize exposure settings for image capture under brightfield microscopy.

[Fluorescence] Button

The [Fluorescence] button (FL) works in conjunction with the automatic exposure mode (AE) to optimize exposure settings for image capture under fluorescence microscopy. The fluorescence mode can have a different target exposure than brightfield mode when the Viewfinder is set to automatic exposure mode. These parameters are defined in the file, settings.dat. If the fluorescence parameter is lower than brightfield, it will converge on a darker setting, causing the preview image to appear darker in FL mode.

[Fast] Button

The [Fast] button displays a view of the entire camera image area within the Viewfinder Lite image window. Taking the image directly from the CCD, the fastest possible frame rate is achieved by sub-sampling every other pixel horizontally and every fourth pixel vertically. This mode is suitable for positioning the subject, rapid focusing, and determining optimum brightness levels. In Fast mode, the previewed effect of the camera exposure time setting is

limited to approximately 1/4 second. While the effect of longer exposure times will be reflected in the captured image, the effect in the preview image is simulated in the Viewfinder Lite software by intensifying the brightness level. The Viewfinder Lite preview image may appear of substantially lower quality than the final captured image at exposure time settings slower than 1/4 second.

[Zoom] Button

The [Zoom] button provides a live Viewfinder Lite preview which is zoomed on the center 25% of the camera image area. This portion of the image is displayed at the full CCD resolution (640x480 portion of 1392x1040), providing the highest level of detail of all of the Viewfinder Lite modes. The effect of the Sharpness setting (located under the [Options] menu) is previewed only in the Zoom mode and may assist in the focusing process. The frame rate of the preview image is slower than Fast mode (same as Full mode) and is limited by the exposure time setting.

[Full] Button

The [Full] button provides a live Viewfinder Lite preview of the entire camera image area by scaling the CCD-resolution image into the 640x480 pixel preview area, providing increased resolution over Fast mode, but decreased detail over Zoom mode. The frame rate of the preview image is slower than Fast mode (same as Zoom mode) and is limited by the exposure time setting.

[Focus] Toolbar

The [Focus] toolbar (Figure 15) gives you access to the focusing tools in Viewfinder Lite. These include: Focus On/Off, Reset Focus, Current Focus Level Indicator, and Optimum Focus Level Indicator. This tool, represented by the Current Focus Level Indicator and Optimum Focus Level, assists in the focusing process for stationary subjects. Click once on the [Focus] toolbar with your mouse to switch between a graphical or numerical user interface. **Windows only:** The [Focus] toolbar can be manually repositioned to any location on the Windows desktop using mouse drag-and-drop. Double-clicking on the upper border of the [Focus] toolbar will return it to the Viewfinder Lite application window.

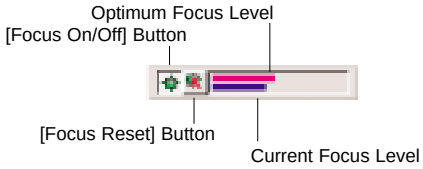


Figure 15: [Focus] Toolbar



Figure 15a: [Focus] Toolbar Controls (Macintosh)

[Focus On/Off] Button

The [Focus On/Off] button toggles between the activation and deactivation of the Focus Indicator, as well as the Focusing Target in the Viewfinder Lite image window.

[Focus Reset] Button

The [Focus Reset] button sets the Optimum Focus Level to the Current Focus Level and is useful when you would like to calibrate the Focus Indicator on a new region of the preview.

Current Focus Level

The Current Focus Level numerically or graphically displays the present level of focus quality for the region currently specified by

the Focusing Target. Maximum focus is achieved as the Current Focus Level approaches the Optimum Focus Level.

Optimum Focus Level

The Optimum Focus Level numerically or graphically indicates the highest level of focus quality achieved up to the present time for the region currently specified by the Focusing Target. The objective is to maximize the number which represents this level.

Focusing Target

The Focusing Target may be placed on a region of the subject within the Viewfinder Lite image window that you wish to focus on. It constantly displays the edge gradient of the region and is most suitable for use on areas of high contrast. Used in conjunction with the Focus Indicator, this tool assists in the focusing process.

6. Studio Lite



The Basics

Running the Application

Taskbar

The Taskbar is the bar on the Windows desktop that includes the Start button. Buttons representing programs currently running on your computer appear on this bar.

Windows:

The Studio Lite application allows for the editing and analysis of images captured with the digital camera system.

To run the Studio Lite application:

1) Click on the Start button located on the Windows taskbar.

2) Point to Programs. The Programs menu will appear.

3) Click on Studio Lite.

The Studio Lite application window will appear.

Macintosh:

On the Macintosh platform the Viewfinder and Studio Lite functionality is integrated into the single Studio Lite application. Therefore the Mac user can ignore references to Studio being a separate application program the Viewfinder application, having to be started up separately, etc. On the Macintosh when the user captures an image using the Viewfinder, the captured image immediately opens in a new window of the same application.

This chapter contains a number of Windows-only explanations which the Mac user can ignore. But *functionality* described in this Studio Lite chapter that is not explicitly marked as "Windows only" is available to users of both platforms for still-image, or "Studio", windows. Keep in mind that any open window in Studio Lite which is not the Viewfinder window (the preview window), is here called a Studio window.

Creating a New Image

The [New] command lets you create a blank, untitled Studio Lite image. You can use this command to create a new image with the exact same pixel dimensions as an image or selection that has been copied to the Clipboard.

To create a new image:

Method A

1) Click on the [File] menu.

2) Select the [New] command.

Method B

Windows: Use the following keyboard shortcut: Ctrl + N.

Macintosh: Use the following keyboard equivalent Cmd + N.

Method C

Click the [New] button located in the Studio Lite Toolbar.

If no valid image data is stored in the Clipboard, the default dimensions for the new image window is 320x240 pixels.

Windows Clipboard

A reserved section of memory that is used as a temporary holding area when you copy and paste or cut and paste from one application to another. After you copy or cut data from your application, it is viewable in the clipboard. If you cut data from an application and do not paste it into another, and you do not save the clipboard's contents as a file, the data will be lost upon exiting Windows or when the next copy or cut operation is performed.

Selecting the Active Image Window

When multiple image windows are opened, Studio Lite requires that an active image be selected to target operations to that specific image.

To specify the active image:

Method A

Click once anywhere within the desired image window.

Method B

Select the desired image in the Window menu.

The active image is brought to the foreground of the Studio Lite application window, and a checkmark is placed next to the filename of the active image in the Open Windows list located in the Window menu.

Opening Existing Images

In Studio Lite, you can open previously saved images in a variety of image file formats and have multiple images opened simultaneously. The following image file format types are supported by Studio Lite's [Open] command: Bitmap, FlashPix, JPEG, LeadTools, Mac PICT, PCX, Photo CD, PNG, Targa, TIFF, and Windows Metafile.

To open an existing image file:

Method A

1) Click on the [File] menu.

2) Select the [Open] command. This will bring up the Open dialog box.

3) **Windows only:** Specify a file format. In the Files of Type dialog box, choose an individual image format type to display only files saved in that particular format. Select Images to display all supported image files in the selected folder. Choose All Files to display all of the files (including those with unsupported file formats) in the selected directory.

4) Select the file.

5) Double-click the file name, or highlight it and click the [Open] button.

Method B

1) Windows: Use the following keyboard shortcut: Ctrl + O.

Macintosh: Use the following keyboard equivalent: Cmd + O.

This will bring up the Open dialog box.

2) Repeat steps 3 to 5 above.

Method C

1) Click the [Open] button located in the Studio Lite Toolbar. This

Bitmap

Bitmap (*.BMP) is the standard Windows image format on DOS and Windows-compatible computers.

FlashPix

The FlashPix (*.FPX) format is designed to speed the transfer and display of large, high-resolution files in applications that support the FlashPix technology.

JPEG

The Joint Photographic Experts Group (*.JPG) format is an ISO/ITU standard for compressing still images that is becoming very popular due to its high compression capability. Using discrete cosine transform, it provides lossy compression.

LeadTools

The Lead Compressed (*.CMP) format results in smaller files and better image quality than industry-standard formats.

Mac PICT

The PICT (*.PCT) format is the primary Macintosh graphics file format and is the Mac counterpart to the Windows Metafile (WMF) format.

PCX

The PCX format is commonly

Opening Existing Images (cont.)

used by IBM PC-compatible computers. This format is capable of achieving compression ratios of approximately 1.1:1 to 1.5:1.

Photo CD

A CD imaging system from Kodak that digitizes 35mm slides or negatives onto a CD-ROM disc.

PNG

A bitmapped graphics file format endorsed by the World Wide Web Consortium.

Targa

The Targa (*.TGA) format is a bitmapped graphics file format developed by Truevision, Inc.

TIFF

The Tagged-Image File Format (*.TIF) is used to exchange files between applications and computer platforms.

Windows Metafile

The Windows Metafile (*.WMF) file format that holds vector graphics, bitmaps and text. The Windows Metafile is Windows" preferred vector format, since it contains actual Windows commands (GDI calls) to draw the images. It is also used by programs to hold data between sessions, and, Windows sometimes uses it for temporary storage.

will bring up the Open dialog box.

2) Repeat steps 3 to 5 above.

Method D

Windows: Using your mouse, drag one or more existing image-file icons from the Windows file system and drop them directly within the Studio Lite application window.

Macintosh: Using your mouse, drag one or more existing image-file icons from the Finder and let go of the mouse button when the arrow cursor is directly over the Studio Lite application icon and the icon becomes highlighted.

Method E (Windows only)

Studio Lite provides shortcuts for up to the last four (4) previously opened image files. To open one of these images, do this: in the [File] menu select the desired image from the list of recently opened images.

Using one of the methods A to E will result in the selected image appearing in a new image window. If the file does not open, the file format may not be supported, or the file may be damaged.

Studio Lite provides shortcuts for up to the last four (4) previously opened image files. To open one of these images:

1) Click on the [File] menu.

2) Select the desired image from the recently opened images list by clicking once directly on the filename.

The selected image should appear in a new image window. If the file does not open, the file format may not be supported or the file may be damaged.

Closing an Image Window

Windows:

To close a displayed image window, choose from one of the following five methods:

Method A

1) Click once directly on the image you wish to close to make it the active image window.

2) Click on the [File] menu.

3) Select the [Close] command.

Method B

1) Click once directly on the image you wish to close to make it the active image window.

2) Click once on the x button located at the far right of the image window's title bar.

Method C

1) Click once directly on the image you wish to close to make it the active image window.

2) Double-click the Control Menu icon located at the far left of the image window's title bar.

Method D

1) Click once directly on the image you wish to close to make it the active image window.

2) Click once on Control Menu icon located at the far left of the image window's title bar.

Closing an Image Window (cont.)

3) Select the [Close] command.

Method E
1) Click once directly on the image you wish to close to make it the active image window.

2) Use the following keyboard shortcut: Ctrl + F4.

To close all opened image windows:

1) Click on the Window menu.

2) Select the [Close All] command.

You may be prompted to save any images which have not been saved or that have been altered since the last save operation took place.

Macintosh:

Use the close box or file menu [Close] to close a single image window. The keyboard equivalent Cmd + W, will also work. To close all the image windows, hold the Option key down before using one of the three methods for single windows.

Saving Images

Studio Lite supports a variety of file formats to suit a wide range of output needs. Using Studio Lite's save commands, you can save your image to any of the following formats: JPEG, Bitmap, TIFF, TIFF (compressed), Mac PICT, and FlashPix (Windows only).

JPEG - When saving in Joint Photographic Experts Group (JPEG) format, Studio Lite allows you to specify the image quality and compression level. To specify image quality and compression, enter a Quality value between 1 and 100 or drag the slider bar. Higher-quality images use less compression (and more disk space) than lower-quality images. In most cases, the maximum quality option produces a result indistinguishable from the original. The following color depths are available in JPEG mode: 256 Grays (8-bits) and 16 million colors (24-bits).

Bitmap - Studio Lite allows for the selection of the following color depths when saving images in the standard Windows bitmap format: Monochrome (1-bit), 16 Colors (4-bits), 256 Colors (8-bits), and 16 million colors (24-bits).

TIFF - Studio Lite allows for the selection of the following color depths when saving images in the Tagged-Image File format: Monochrome (1-bit), 16 Colors (4-bits), 256 Colors (8-bits), 16 million colors (24-bits), and 281 trillion colors (48-bits).

Mac PICT - Studio Lite allows for the selection of the following color depths when saving images in the PICT format: Monochrome (1-bit), 16 Colors (4-bits), 256 Colors (8-bits), and 16 million colors (24-bits).

FlashPix - Studio Lite allows for the selection of the following color depths when saving images in the FlashPix format: 256 Grays (8-bits) and 16 million colors (24-bits).

To save a captured image file for the first time:

Method A

1) Click once on the desired image to make it the active image

Bitmap

Bitmap (*.BMP) is the standard Windows image format on DOS and Windows-compatible computers. Also known as a "bump" file, it is a Windows and OS/2 bitmapped graphics file format. It is the Windows native bitmap format, and every Windows application has access to the BMP software routines in Windows that support it. BMP files provide formats for 2, 16, 256 or 16 million colors (1-bit, 4-bit, 8-bit and 24-bit color).

FlashPix

The FlashPix (*.FPX) format, developed by Kodak, is designed to speed the transfer and display of large, high-resolution files in applications that support the FlashPix technology. Although Studio Lite is not a FlashPix-optimized application, it can open and save FlashPix files. The FlashPix format supports grayscale and RGB color modes, and does not support alpha channels.

JPEG

The Joint Photographic Experts Group (*.JPG) format is an ISO/ITU standard for compressing still images that is becoming very popular due to its high compression capability. Using discrete cosine transform, it provides

Saving Images (cont.)

lossy compression (you lose some data from the original image) with ratios up to 100:1 and higher.

It depends on the image, but ratios of 10:1 to 20:1 may provide little noticeable loss. The more the loss can be tolerated, the more the image can be compressed. Compression is achieved by dividing the picture into tiny pixel blocks, which are halved over and over until the ratio is achieved.

Mac PICT

The PICT (*.PCT) format is the primary Macintosh graphics file format. It holds QuickDraw vector images, bitmapped images and text and is the Mac counterpart to the Windows Metafile (WMF) format.

TIFF

The Tagged-Image File Format (*.TIF) is used to exchange files between applications and computer platforms. A widely-used bitmapped graphics file format developed by Aldus and Microsoft, TIFF handles monochrome, grayscale, 8- and 24-bit color.

Image File Compression

Compression is the encoding of data to take up less storage space. Digital data is compressed by finding repeatable patterns of binary

window.

2) Click on the [File] menu.

3) Select the [Save] command. The Save As dialog box should appear.

4) Specify a file format in which you would like the image saved. In the "Save as Type" pull-down list (**Windows**), or the "File Format" radio-button group (**Macintosh**), choose an individual image format type to save the file in that particular format.

If you decide to save the image in JPEG format, you may also select the compression factor using a slider bar. (On Macintosh the slider appears when you click the JPEG radio button.) The lower the compression factor (minimum value of 1), the greater the compression, resulting in smaller image files and more image quality degradation. The higher the compression factor (maximum value of 100), the less the image data is compressed, resulting in larger image files and less image quality degradation. By default, the compression factor is set to 75 for JPEG images.

5) Specify the color depth in which you would like the image saved. In the Colors pull-down list, , or Bit Depth popup menu, choose the desired setting.



Figure 1a: SaveAs Dialog Box (Macintosh)

Saving Images (cont.)

6) Enter a filename, and select the location to which you would like the file saved.

7) Click the [Save] button.

Method B

1) Click once on the desired image to make it the active image window.

2) Click on the [File] menu.

3) Select the Save As command. The Save As dialog box should appear.

4) Repeat steps 4 to 7 above.

Method C

1) Click once on the desired image to make it the active image window.

2) Click the [Save] button located in the Studio Lite Toolbar. The Save As dialog box should appear.

3) Repeat steps 4 to 7 above.

To save an existing image in a different file format:

1) Click once on the desired image to make it the active image window.

2) Click on the [File] menu.

3) Select the Save As command. The Save As dialog box should appear.

4) Repeat steps 4 to 7 above.

0s and 1s. The more patterns can be found, the more the data can be compressed. Graphics files can generally be compressed to about 20% to 90% of its original size. Compression ratios depend entirely on the type of file and compression algorithm used.

The LZW (Lempel-Ziv-Welch) compression method stems from two techniques introduced by Jacob Ziv and Abraham Lempel. LZ77 creates pointers back to repeating data, and LZ78 creates a dictionary of repeating phrases with pointers to those phrases.

Saving Images (cont.)

To save an image in its current format:

Method A

1) Click once on the desired image to make it the active image window.

2) Click on the [File] menu.

3) Select the [Save] command.

Method B

1) Click once on the desired image to make it the active image window.

2) Click the [Save] button located in the Studio Lite Toolbar.

After completing the save operation, the selected filename of the saved image should be displayed in the title bar of the active image window.

Correcting Mistakes

Studio Lite allows for the correction of mistakes made while editing an image. Most single operations can be undone if a mistake is made. You can also restore an altered image to its last saved state.

To reverse the last performed operation:

Method A

1) Click on the [Edit] menu.

2) Select the [Undo] command.

Method B

Use the following keyboard shortcut: Ctrl + Z.

Method C

Click the [Undo] button located in the Studio Lite Toolbar.

If an operation cannot be reversed, the [Undo] command will not be available as an active selection.

To re-apply the previously un-done operation (Windows only):

Method A

1) Click on the [Edit] menu.

2) Select the [Redo] command.

Method B

Use the following keyboard shortcut: Ctrl + Y.

Method C

Correcting Mistakes (cont.)

Click the [Redo] button located in the Studio Lite Toolbar.

If a previously un-done operation cannot be re-applied, the [Redo] command will not be available as an active selection.

To reverse all changes made to an image since it was last saved:

Method A

1) Click on the [File] menu.

2) Select the [Revert] command.

Method B

Use the following keyboard shortcut: Alt + R.

Printing an Image

Studio Lite provides basic functions for outputting captured images to a variety of printing devices. The general steps for printing an image are: setting up the printer, previewing the image, and performing the print operation.

To set the printer options:

1) Click on the [File] menu.

2) Windows: Select the [Print Setup] command. This will bring up the standard Windows Print Setup dialog box.

Macintosh: Select the [Page Setup] menu item in the File menu. This will bring up the Print Setup dialog box. You can then select the printer and its paper size, the image's orientation on the paper, and the scaling percentage.

3) (**Windows only**) If more than one printer is configured on your system, you have the option of selecting which printer you would like to print from. To select the printer, click on the Printer pull-down menu and highlight the desired printer.

4) (**Windows only**) Click the Properties button to customize printer settings. This will bring up the dialog box for the selected printer. Available options are dependent on the particular printer and will vary from model to model.

5) (**Windows only**) Click on the Paper Size pull-down list to select a paper size which corresponds to the particular print media that you will be using. Available paper and media types are dependent on the particular printer and will vary from model to model.

6) (**Windows only**) To select the paper source from which to print, click on the Source button and highlight the correct paper source. Available paper sources are dependent on the particular printer and will vary from model to model.

7) (**Windows only**) Select either Portrait or Landscape to specify the Orientation in which you would like the selected image printed.

PostScript

A page description language (PDL) from Adobe that is used extensively on all computer platforms. It is the standard for electronic input in most commercial typesetting and printing houses.

Aspect Ratio

The ratio of height to width of an image. The aspect ratio of images captured by cameras is approximately 3:4, equal to that of standard computer monitors and television sets.

Printing an Image (cont.)

8) Click OK to apply the changes.

To Preview a Printed Image:

1) Click on the [File] menu.

2) Select the [Print Preview] command. A representation of the printed image will be displayed on the screen.

3) (**Windows only**) If the printed image spans more than a single page, you may use the Next Page and Prev Page buttons to view different pages. Click on the Two Page button to view two consecutive pages simultaneously in a split-screen view. To return to the single-page preview, click on the One Page button.

4) (**Windows only**) To magnify the view, click the Zoom In button. To decrease magnification, click the Zoom Out button.

5) Click the Close button to exit the preview mode and return to the standard Studio Lite application window.

To Print an Image:

Method A

1) Click once on the desired image to make it the active image window. If you would like to print only a portion of the selected image, use the [Marquee] tool to select the desired region of interest.

2) Click on the [File] menu.

3) Select the [Print] command. This will bring up the standard Windows or Macintosh Print dialog box.

4) If more than one printer is configured on your system, you have the option of selecting which printer you would like to print from. To

select the printer, click on the Printer pull-down menu and highlight the desired printer.

5) (**Windows only**) Click the Properties button to customize printer settings. This will bring up the dialog box for the selected printer. Available options are dependent on the particular printer and will vary from model to model.

6) To print the image to a standard PostScript (*.ps) file, click on the Print to File checkbox (**Windows**), or use the Destination popup menu (**Macintosh**).

7) Select the range of pages which you would like printed. To print every page, click on the All radio button. To print a selected range of pages, click on the Pages radio button, and enter the range in the From: and To: boxes. **Windows only:** To print only the region of interest selected earlier with the [Marquee] tool, click on the Selection radio button.

8) Select the number of copies you would like printed of the current image. To print multiple copies in a sorted fashion, click on the Collate checkbox.

9) Click OK to print the image.

Method B

1) Click once on the desired image to make it the active image window. **Windows only:** If you would like to print only a portion of the selected image, use the [Marquee] tool to select the desired region of interest.

2) Windows: Use the following keyboard shortcut: Ctrl + P.

Macintosh: Use the following keyboard equivalent: Cmd + P.

This will bring up the standard Windows or Macintosh Print dialog box.

Printing an Image (cont.)

3) Repeat steps 4 to 9 above.

Method C

1) Click once on the desired image to make it the active image window. **Windows only:** If you would like to print only a portion of the selected image, use the [Marquee] tool to select the desired region of interest.

2) Click the [Print] button located in the Studio Lite Toolbar. This will bring up the standard Windows Print dialog box.

3) Repeat steps 4 to 9 above.

Method D

1) Click once on the desired image to make it the active image window. **Windows only:** If you would like to print only a portion of the selected image, use the [Marquee] tool to select the desired region of interest.

2) Click on the [File] menu.

3) Select the [Print Preview] command. A representation of the printed image will be displayed on the screen.

4) Click on the [Print] button located at the top of the page. This will bring up the standard Windows or Macintosh Print dialog box.

5) Repeat steps 4 to 9 above.

By default, Studio Lite formats the printed image to "fill" the print media, while preserving the original aspect ratio. Print quality and color reproduction are dependent on a number of factors, including printer type (i.e. dye-sublimation, laser, ink-jet, etc.), printer resolution, image resolution, and proper monitor calibration.

Switching to Viewfinder

Windows:

Studio Lite offers the capability of launching the Viewfinder Lite application from the Studio Lite application.

To run Viewfinder Lite:

Click the [Viewfinder Lite] button located in the Studio Lite Toolbar.

The Viewfinder Lite application window will then be displayed.

Macintosh:

The functionality of Studio and Viewfinder are integrated in one application on Macintosh. At any time when there are image windows open, the Macintosh user can switch to the Viewfinder window by (1) clicking on some part of the Viewfinder window itself, (2) selecting it in the Window menu, or (3) pressing the "Viewfinder" button on the Main Toolbar.

Quitting the Studio Lite Application (Windows Only)

To close the Studio Lite application:

Method A

1) Click on the [File] menu.

2) Select the [Exit] command.

Method B

Click once on the x button located at the far right of the Studio Lite application window's title bar.

Method C

Double-click the Control Menu icon located at the far left of the Studio Lite application window's title bar.

Method D

1) Click once on the Control Menu icon located at the far left of the Studio Lite application window's title bar.

2) Select the [Close] command.

Method E

Use the following keyboard shortcut: Alt + F4.

You may be prompted to save any images which have not been saved or that have been altered since the last save operation took place.

Editing and Retouching Images

Studio Lite offers powerful tools which simplify the editing and retouching of captured images. Available operations include cut, copy, paste, crop, clear, and fill functions. Most operations can only be performed on portions of the image which lie within the visible image window. Parts of the image which lie beyond this area may be repositioned using the [Pan] tool or Windows scroll bars.

Images captured by 48 bits can be performed only with the crop function.

To cut all or a portion of the active image to the clipboard:

Method A

1) Click once on the desired image to make it the active image window.

2) Using the [Marquee] tool, specify a region of interest representing the portion of the image that you would like to cut.

3) Click on the [Edit] menu.

4) Select the [Cut] command.

Method B

1) Click once on the desired image to make it the active image window.

2) Using the [Marquee] tool, specify a region of interest representing the portion of the image that you would like to cut.

3) Click the [Cut] button located in the Studio Lite Toolbar.

Method C

1) Click once on the desired image to make it the active image window.

2) Using the [Marquee] tool, specify a region of interest

Clipboard

A reserved section of memory that is used as a temporary holding area when you copy and paste or cut and paste from one application to another. After you copy or cut data from your application, it is viewable in the clipboard. If you cut data from an application and do not paste it into another, and you do not save the clipboard's contents as a file, the data will be lost upon exiting the operating system or when the next copy or cut operation is performed.

Editing and Retouching Images (cont.)

representing the portion of the image that you would like to cut.

3)Windows: Use the following keyboard shortcut: Ctrl + X.
Macintosh: Use the following keyboard shortcut: Cmd + X.

Method D

1) Click once on the desired image to make it the active image window.

2) Using the [Marquee] tool, specify a region of interest representing the portion of the image that you would like to cut.

3) Click once directly within the specified region of interest using the right-mouse button.

4) Select the [Cut] command.

The selected area of the image will be removed and replaced by the current background color. The deleted image data is stored in the clipboard and will be available for use by Studio Lite or other Windows applications (until the clipboard data is deleted or replaced by other data).

To copy all or a portion of the active image to the clipboard:

Method A

1) Click once on the desired image to make it the active image window.

2) Using the [Marquee] tool, specify a region of interest representing the portion of the image that you would like to copy.

3) Click on the [Edit] menu.

4) Select the [Copy] command.

Method B

1) Click once on the desired image to make it the active image window.

2) Using the [Marquee] tool, specify a region of interest representing the portion of the image that you would like to copy.

3) Click the [Copy] button located in the Studio Lite Toolbar.

Method C

1) Click once on the desired image to make it the active image window.

2) Using the [Marquee] tool, specify a region of interest representing the portion of the image that you would like to copy.

3) Windows: Use the following keyboard shortcut: Ctrl + C.

Macintosh: Use the following keyboard equivalent: Cmd + C.

Method D

1) Click once on the desired image to make it the active image window.

2) Using the [Marquee] tool, specify a region of interest representing the portion of the image that you would like to copy.

3) Click once directly within the specified region of interest using the right-mouse button.

4) Select the [Copy] command.

The copied image data is stored in the Windows Clipboard and will be available for use by Studio Lite or other Windows applications (until the Clipboard data is deleted or replaced by other data).

Editing and Retouching Images (cont.)

To paste the contents of the Windows Clipboard into the active image:

Method A

1) Click once on the desired image to make it the active image window.

2) By default, the image data is pasted into the upper-left corner of the active image window. To denote a specific position for the pasted data, specify a region of interest representing the destination area using the [Marquee] tool.

3) Click the [Edit] menu.

4) Select the [Paste] command.

Method B

1) Click once on the desired image to make it the active image window.

2) By default, the image data is pasted into the upper-left corner of the active image window. To denote a specific position for the pasted data, specify a region of interest representing the destination area using the [Marquee] tool.

3) Click the [Edit] menu.

4) Click the [Paste] button located in the Studio Lite Toolbar.

Method C

1) Click once on the desired image to make it the active image window.

2) By default, the image data is pasted into the upper-left corner of the active image window. To denote a specific position for the pasted data, specify a region of interest representing the destination

area using the [Marquee] tool.

3) Windows: Use the following keyboard shortcut: Ctrl + V.

Macintosh: Use the following keyboard equivalent: Cmd + V.

Method D

1) Click once on the desired image to make it the active image window.

2) By default, the image data is pasted into the upper-left corner of the active image window. To denote a specific position for the pasted data, specify a region of interest representing the destination area using the [Marquee] tool.

3) Click the [Edit] menu.

4) Select the [Paste] command.

If no region of interest is specified as the destination area, the image data appears at full size in the upper-left corner of the active image window. Otherwise, the pasted image data is resized to fit within the specified area. Valid image data must be present in the Windows Clipboard for the [Paste] command to be available.

To create a new image from the contents of the Windows Clipboard:

1) Click the [Edit] menu.

2) Select the [Paste as New Image] command.

A new image window appears containing the contents of the Clipboard. Valid image data must be present in the Windows Clipboard for the [Paste as New Image] command to be available.

To crop an image:

Editing and Retouching Images (cont.)

Method A

1) Using the [Marquee] tool, specify a region of interest representing the portion of the image that you would like to keep.

2) Click the [Edit] menu.

3) Select the [Crop] command.

To discard a portion of the active image:

Method A

1) Click once on the desired image to make it the active image window.

2) Using the [Marquee] tool, specify a region of interest representing the portion of the image that you would like to discard.

3) Click on the [Edit] menu.

4) Select the [Clear] command.

Method B (Windows only)

1) Click once on the desired image to make it the active image window.

2) Using the [Marquee] tool, specify a region of interest representing the portion of the image that you would like to discard.

3) Use the following keyboard shortcut: Delete.

To fill a portion of the active image with a specified color:

Method A

Editing and Retouching Images (cont.)

1) Click once on the desired image to make it the active image window.

2) Using the [Marquee] tool, specify a region of interest representing the portion of the image that you would like to fill.

3) Click on the [Edit] menu.

4) Select the [Fill] command.

The selected area of the image will be filled by the current Pen & Brush Color.

Editing and Retouching Images (cont.)

Specifying a Region of Interest

The region of interest (ROI) specifies the portion of the active image upon which a number of Studio Lite operations will be applied, including image editing, adjustment, and filtering tools.

To specify a specific region of interest:

1) Click once on the desired image to make it the active image window.

2) Click on the Marquee button located in the Studio Lite Toolbox. When placed over the active image, the mouse pointer will be designated by a crosshair.

3) Click and hold the mouse button (**Windows:** left-hand button) at the starting point of the selection.

4) Drag the mouse to encompass the desired region of interest.

5) Release the mouse button.

The specified region of interest will be bordered by a rectangular frame.

To select the entire active image:

1) Click once on the desired image to make it the active image window.

2) Click the [Edit] menu.

3) Choose the [Select All] command.

The entire active image will be specified as the region of interest and bordered by a rectangular frame.

To remove a previously specified region of interest:

Specifying a Region of Interest (cont.)

Method A

1) Click once on the desired image to make it the active image window.

2) Click the [Edit] menu.

3) Choose the [Deselect] command.

Method B

Click once using the mouse button (**Windows:** left-hand button) anywhere within the active image window outside the selected region of interest.

To reposition a previously specified region of interest:

1) Click on the Marquee button located in the Studio Lite Toolbox. When placed over the active image, the mouse pointer will be designated by a crosshair.

2) Click and hold the mouse button (**Windows:** left-hand button) anywhere within the selected region of interest.

3) Drag the region of interest to the desired position.

4) Release the mouse button.

To resize a previously specified region of interest:

1) Click on the Marquee button located in the Studio Lite Toolbox. When placed over the active image, the mouse pointer will be designated by a crosshair.

2) Click and hold the mouse button (**Windows:** left-hand button) on a corner or side anchor of the rectangular frame of the region of interest.

3) Drag the anchor to resize the region of interest as desired.

4) Release the mouse button.

Magnifying and Reducing the View

Studio Lite allows you to magnify or reduce your view of an image using a variety of methods. The current zoom percentage of a displayed image is displayed in the title bar of the image at all times.

To zoom in on an image:

Method A

1) Click once on the desired image to make it the active image window.

2) Click the View menu.

3) Select the [Zoom In] command.

Method B

1) Click once on the desired image to make it the active image window.

2) **Windows:** Use the following keyboard shortcut: +.

Method C

1) Click once on the desired image to make it the active image window.

2) Click on the [Zoom] button located in the Studio Lite Toolbox. When placed over the active image, the mouse pointer will be designated by a magnifying glass.

3) Click any area within the active image area which you would like to magnify. Each click magnifies the image to the next preset percentage, centering the display around the point you click.

To zoom out of an image:

Magnifying and Reducing the View (cont.)

Method A

1) Click once on the desired image to make it the active image window.

2) Click the View menu.

3) Select the [Zoom Out] command.

Method B

1) Click once on the desired image to make it the active image window.

2) **Windows:** Use the following keyboard shortcut: -.

Method C

1) Click once on the desired image to make it the active image window.

2) Click on the [Zoom] button located in the Studio Lite Toolbox. When placed over the active image, the mouse pointer will be designated by a magnifying glass.

3) Hold down the Shift key, and click any area within the active image area which you would like to reduce. Each click reduces the image to the next preset percentage, centering the display around the point you click.

To magnify or reduce to a specified percentage:

1) Click once on the desired image to make it the active image window.

2) Click on the [View] Menu.

3) Select the [Zoom Factor] command. This will bring up the [Zoom

Magnifying and Reducing the View (cont.)

Factor] dialog box.

4) Using the mouse, drag the slider to the desired preset zoom factor.

5) Click OK to apply the change.

To display an image at 100%:

Method A

1) Click once on the desired image to make it the active image window.

2) Click the View menu.

3) Select the [Actual Pixels] command.

Method B

1) Click once on the desired image to make it the active image window.

2) **Windows:** Use the following keyboard shortcut: Home.

Method C

1) Click once on the desired image to make it the active image window.

2) Click on the [Zoom] button located in the Studio Lite Toolbox. When placed over the active image, the mouse pointer will be designated by a magnifying glass.

3) Hold down the Ctrl key, and click once anywhere within the active image window.

Magnifying and Reducing the View (cont.)

To change the view to fit the active image window:

1) Click once on the desired image to make it the active image window.

2) Click the View menu.

3) Select the [Fit in Window] command.

This option scales the view to match the active image window size.

To change the view to fit the Studio Lite application window:
1) Click once on the desired image to make it the active image window.

2) Click the View menu.

3) Select the [Fit to Screen] command.

This option scales the view and the active image window size to match the Studio Lite application window size.

To change the view to fill the screen:

Method A

1) Click once on the desired image to make it the active image window.

2) Click the View menu.

3) Select the [Full Screen] command.

Method B

1) Click once on the desired image to make it the active image window.

Magnifying and Reducing the View (cont.)

2) Click the [Full Screen] button located in the Studio Lite Toolbar

This option scales the view to display the active image in the entire screen. Press Esc to return to the previous image size.

Working Within the Studio Lite Application Window (Windows Only

Studio Lite allows for the customization of the viewing properties of the Studio Lite application window.

To enable the full screen view of the Studio Lite application:

Method A

1) Click the [View] menu.

2) Select the [Edit View] command.

3) Choose the Full Screen option.

Method B

Use the following keyboard shortcut: F7.

This option will enable a full screen view of the Studio Lite application window with a menu bar, but no Title Bar or Status Bar.

To restore the default view of the Studio Lite application:

Method A

1) Click the [View] menu.

2) Select the [Edit View] command.

3) Choose the Restore option.

Method B

Use the following keyboard shortcut: F8.

To display or hide the Studio Lite Toolbar:

Method A

Working Within the Studio Lite Application Window (cont.)

1) Click the [View] menu.

2) To display the Toolbar, place a checkmark next to the Toolbar command. To hide the Toolbar, remove the checkmark.

Method B

Use the following keyboard shortcut: F3. This will toggle between displaying and hiding the Toolbar.

To display or hide the Studio Lite Status Bar:

Method A

1) Click the [View] menu.

2) To display the Status Bar, place a checkmark next to the Status Bar command. To hide the Status Bar, remove the checkmark.

Method B

Use the following keyboard shortcut: F4. This will toggle between displaying and hiding the Status Bar.

To display or hide the Studio Lite Toolbox:

Method A

1) Click the [View] menu.

2) To display the Toolbox, place a checkmark next to the Toolbox command. To hide the Toolbox, remove the checkmark.

Method B

Use the following keyboard shortcut: F5. This will toggle between displaying and hiding the Toolbox.

Measuring Color Values

To measure color values within an image:

You may position your mouse pointer over any portion of the active image window. To view the color values under each channel (red, green, and blue) for a particular pixel, refer to the Color Channel Values located in the Studio Lite Status Bar (Windows), or in the Main Toolbar (Macintosh).

To view pixel coordinates within an image:

You may position your mouse pointer over any portion of the active image window. To view the X- and Y-axis coordinates for a particular pixel, refer to the Mouse Pointer Coordinates located in the Studio Lite Status Bar (Windows), or in the Main Toolbar (Macintosh).

Viewing Informational Windows

You may view information about the active image, the Studio Lite application, or the host computer system.

To view information about the Studio Lite application:

1) **Windows:** Click the Help menu.

Macintosh: Click the Apple menu.

2) Select the [About Studio Lite] command.

A "splash screen" containing current version number and copyright information will be displayed.

To view information about the host computer system:

1) **Windows:** Click the [View] menu.

Macintosh: Click the Apple menu.

2) **Windows:** Select the [System Info] command.

Macintosh: Select the “Apple System Profiler” menu item.

The System Information dialog box containing CPU/Memory, Operating System, and Disk Information will be displayed.

To view information about the active image:

Method A

1) Click the [View] menu.

2) Select the [Image Info] command.

Viewing Informational Windows (cont.)

The Image Information dialog box containing file size, bit depth, and pixel dimension information will be displayed.

Choosing the Foreground Color

Windows:

Studio Lite uses the Foreground Color for paint operations and stroke selections using the Pencil, Brush, Line, Rectangle, and [Ellipse] tools. The current Foreground Color is displayed in the lower right corner of the Studio Lite application window, along with the current Background Color.

To select the Foreground Color:

Method A

1) Click on the [Options] menu.

2) Select the [Pen & Brush Color] command. This will bring up the standard Windows Color dialog box.

3) A list of 48 available colors are displayed. Click once on the desired color.

4) Click OK to apply the change.

Method B

1) Double-click on the Foreground Color displayed in the lower right corner of the Studio Lite application window. This will bring up the standard Windows Color dialog box.

2) Repeat steps 3 and 4 above.

To select a custom Foreground Color

Method A

1) Click on the [Options] menu.

2) Select the [Pen & Brush Color] command. This will bring up the standard Windows Color dialog box.

Choosing the Foreground Color (cont.)

3) Press the Define Custom Colors button.

4) Specify a custom color by entering either Hue, Saturation, and Luminance values or values for the Red, Green, and Blue color channels.

5) Press the Add to Custom Color button.

6) The specified color will be displayed under "Custom Colors." Click once on the desired color.

7) Click OK to apply the change.

Method B

1) Double-click on the Foreground Color displayed in the lower right corner of the Studio Lite application window. This will bring up the standard Windows Color dialog box.

2) Repeat steps 3 to 7 above.

Macintosh:

Studio Lite uses the Foreground Color for the fill color function. The current Foreground Color is displayed at the right-hand end of the Main Toolbar, along with the current Background Color.

To select the Foreground Color, double-click on the Foreground Color patch displayed on the Main Toolbar (the left-hand patch). This will bring up the standard Macintosh Color Picker dialog box.

Choosing the Background Color

Windows:

Studio Lite uses the Background Color to fill in erased areas of an image. The current Background Color is displayed in the lower right corner of the Studio Lite application window, along with the current Pen & Brush Color.

To select the Background Color:

Method A

1) Click on the [Options] menu.

2) Select the [Background] command. This will bring up the standard Windows Color dialog box.

3) A list of 48 available colors are displayed. Click once on the desired color.

4) Click OK to apply the change.

Method B

1) Double-click on the Background Color displayed in the lower right corner of the Studio Lite application window. This will bring up the standard Windows Color dialog box.

2) Repeat steps 3 and 4 above.

To select a custom Background Color

Method A

1) Click on the [Options] menu.

2) Select the [Background] command. This will bring up the standard Windows Color dialog box.

Choosing the Background Color (cont.)

3) Press the Define Custom Colors button.

4) Specify a custom color by entering either Hue, Saturation, and Luminance values or values for the Red, Green, and Blue color channels.

5) Press the Add to Custom Color button.

6) The specified color will be displayed under "Custom Colors." Click once on the desired color.

7) Click OK to apply the change.

Method B

1) Double-click on the Background Color displayed in the lower right corner of the Studio Lite application window. This will bring up the standard Windows Color dialog box.

1) Repeat steps 3 to 7 above.

The current Background Color selection displayed in the lower right corner of the Studio Lite application window will be updated to reflect the change.

Macintosh:

Studio Lite uses the Background Color to fill in erased areas of an image. The current Background Color is displayed at the right-hand end of the Main Toolbar, along with the current Foreground Color.

To select the Background Color, double-click on the Background Color patch displayed on the Main Toolbar (the right-hand patch). This will bring up the standard Macintosh Color Picker dialog box.

Viewing Images (Windows Only)

Studio Lite offers a wide range of options and tools for viewing images.

To open multiple views of the same image:

1) Click once on the desired image to make it the active image window.

2) Click the Window menu.

3) Select the [New Window] command.

A duplicate of the active image is displayed in a new image window.

To display a cascading view of all opened image windows:

1) Click the Window menu.

2) Choose the [Cascade] command.

All opened image windows are displayed stacked and cascading from the top left to the bottom right of the Studio Lite application window.

To display a tiled view of all opened image windows:

1) Click the Window menu.

2) Choose the [Tile] command.

All opened image windows are displayed edge to edge in the Studio Lite application window.

To arrange all minimized image windows:

1) Click the Window menu.
2) Choose the [Arrange Icons] command.

Minimized image windows are displayed neatly along the bottom of the Studio Lite application window.

Using Online Help

Studio Lite offers help topic documentation in online help, including all of the information provided in this User's Manual.

To access online help:

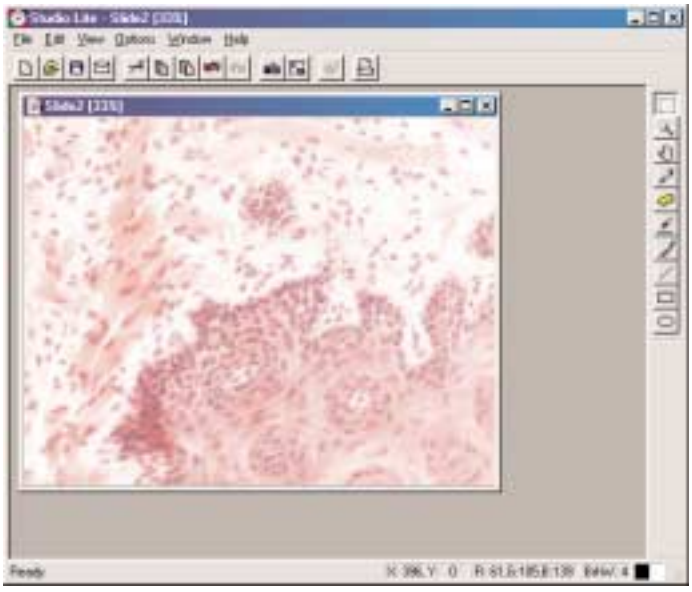
1) Click on the [Help] menu.

2) **Windows:** Select the [Help Topics] command.

Macintosh: Select the [Studio Help] menu item.

Online help is searchable by topic or keyword.

6. Studio Lite



Reference

Title Bar (Windows Only)

The strip across the top of the Studio Lite application window is called the Title Bar (Figure 2). The Studio Lite program name, icon, and current filename are displayed along with buttons which represent functions and menus that contain commands.

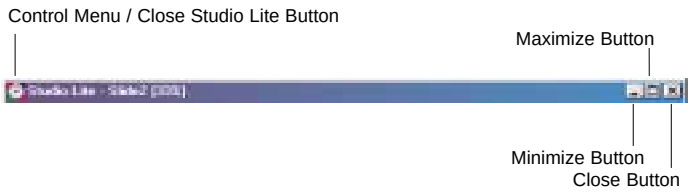


Figure 2: Title Bar

Control Menu / Close Studio Lite Button

The Studio Lite icon displayed at the upper left corner of the Studio Lite application window represents the Control Menu / Close Studio Lite button. A single mouse-click of this button displays the Control menu. Double-clicking this button closes the Studio Lite application window and quits the program.

Minimize Button

Clicking once on the Minimize button reduces the Studio Lite application window to an icon on the Windows taskbar.

Maximize Button

Clicking once on the Maximize button increases the size of the Studio Lite application window to fill the entire Windows desktop.

Close Button

Clicking once on the Close button closes the Studio Lite application window and quits the program.

Control Menu (Windows Only)

The Control menu (Figure 3) is comprised of six commands which control the physical aspects of the Studio Lite application window: Restore, Move, Size, Minimize, Maximize, and Close.



Figure 3: Control Menu

[Restore] Command

The [Restore] command returns the Studio Lite application window to its previous state.

[Move] Command

The [Move] command allows for the manual positioning of the Studio Lite application window within the Windows desktop using the keyboard's directional arrow keys.

[Size] Command

The [Size] command allows for the manual sizing of the Studio Lite application window using the keyboard's directional arrow keys.

[Minimize] Command

The [Minimize] command reduces the Studio Lite Pro application window to an icon in the Windows taskbar.

[Maximize] Command

The [Maximize] command increases the size of the Studio Lite application window to fill the entire Windows desktop.

[Close] Command

Control Menu (Windows Only) (cont.)

The [Close] command closes the Studio Lite application window and quits the program.

Windows:

The strip below the Title Bar is called the Menu Bar (Figure 4). Control over the range of image editing tools offered by Studio Lite is available through the six menu selections: File, Edit, View, Options, Window, and Help.

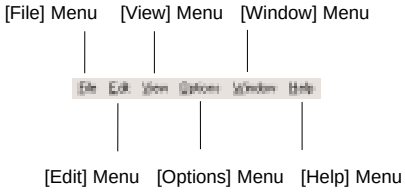


Figure 4: Menu Bar

Macintosh:

The Menu Bar is the strip across the top of the display.

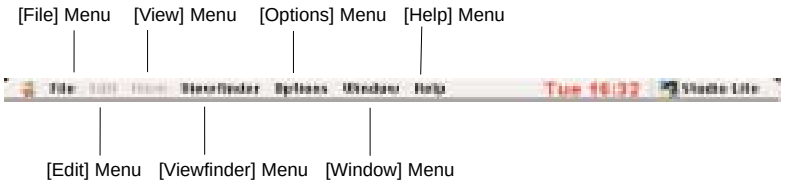


Figure 4a: Menu Bar

[File] Menu

The [File] Menu (Figure 5 & 5a) provides access to standard file manipulation commands, common to many Windows applications. These include: New, Open, Close, Close All, Save, Save As, Revert, Duplicate, Print, Print Preview, Print Setup or Page Setup, and Exit or Quit. **Windows only:** The filenames of the four most recently opened images are also displayed.

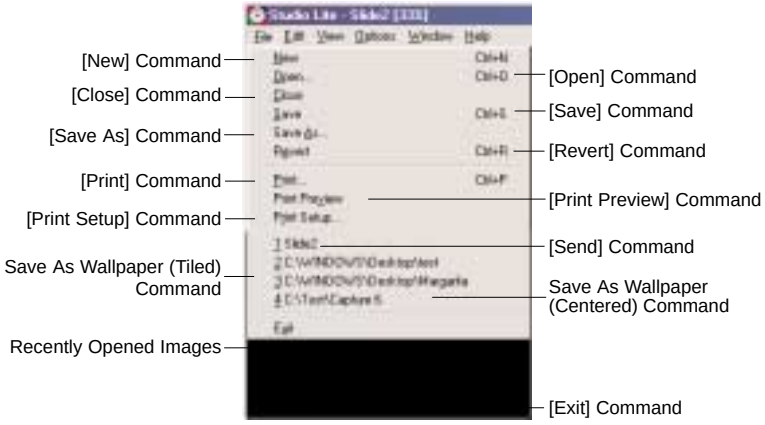


Figure 5: [File] Menu



Figure 5a: [File] Menu (Macintosh)

[New] Command

The [New] command (Windows: Ctrl+N, Macintosh: Cmd+N) creates a new, blank image window. The size of the window is

determined by the dimensions of any image data which may exist in the Windows Clipboard. By default, the window size is 320x240 pixels.

[Open] Command

The [Open] command (Windows: Ctrl+O, Macintosh: Cmd+O) allows you to open any supported image file into a new image window.

[Close] Command

The [Close] command (Windows: Ctrl+C, Macintosh: Cmd+W) closes the active (current) image window.

[Close All] Command

(Macintosh only, for Windows see "Close All" in the Window menu) The [Close All] command (Opt + Cmd + W) closes all the still-image windows.

[Save] Command

The [Save] command (Windows: Ctrl+S, Macintosh: Cmd+S) saves the image in the active image window to disk.

[Save As] Command

The [Save As] command allows you to save the image in the active image window to a destination file and format other than its original source.

[Revert] Command

The [Revert] command (Windows: Ctrl+R, Macintosh: Cmd+R) discards all changes made to the image in the active image window since the last save operation and reloads the source file.

[File] Menu (cont.)

[Print] Command

The [Print] command (Windows: Ctrl+P, Macintosh: Cmd+P) brings up the Print dialog box, which allows you to select options for printing the image in the active image window with any accessible printer.

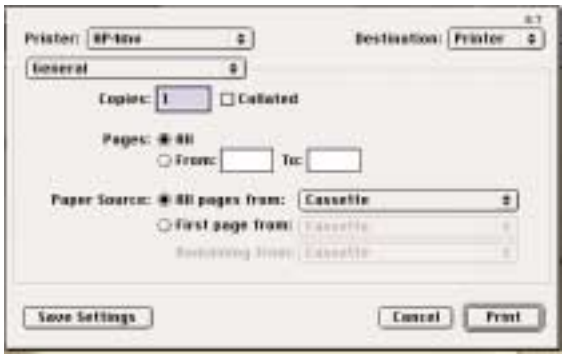


Figure 5b: Print Dialog Box (Macintosh)

[Print Preview] Command

The [Print Preview] command brings up the Print Preview dialog box (Figure 6), which allows you to inspect the printed layout of the active image on your screen.

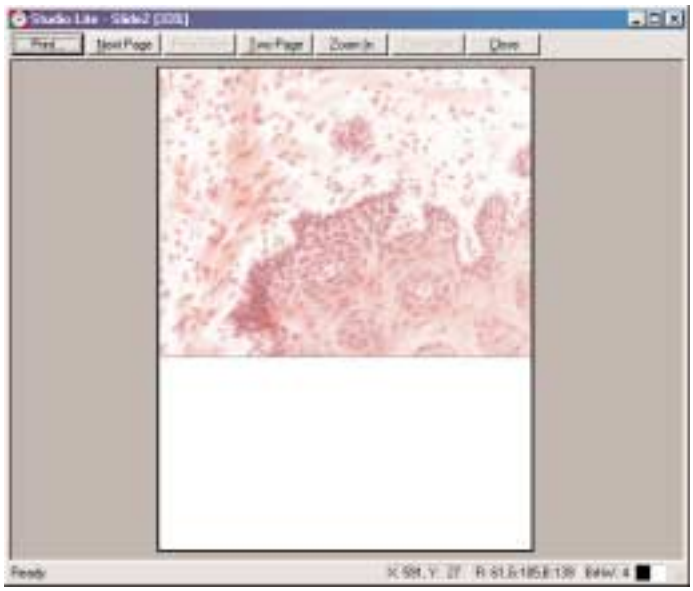


Figure 6: Print Preview Dialog Box

[File] Menu (cont.)

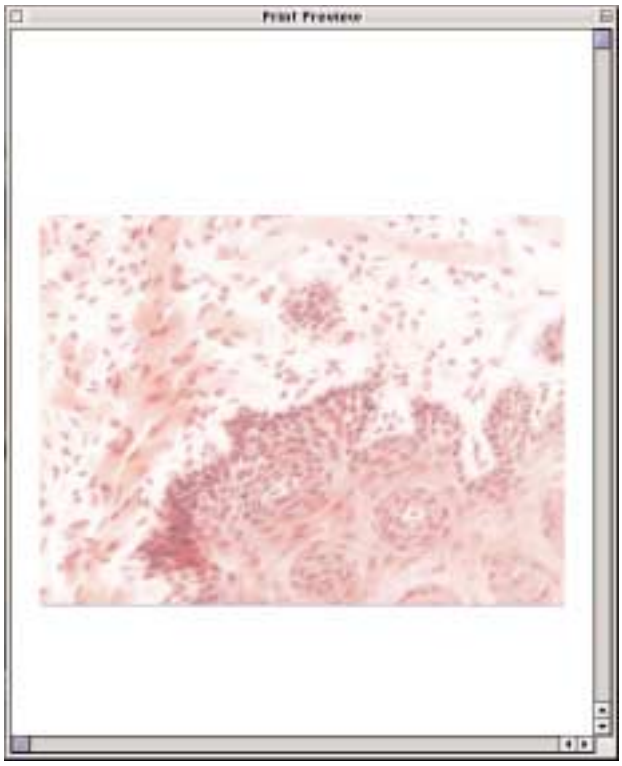


Figure 6a: Print Preview Window (Macintosh)

[Print Setup] / [Page Setup] Command

The [Print Setup] command (Windows), or [Page Setup] command (Macintosh) brings up the setup dialog box (Figure 7 & 7a), which allow you to specify printer properties, such as paper size and orientation.



Figure 7: Print Setup Dialog Box

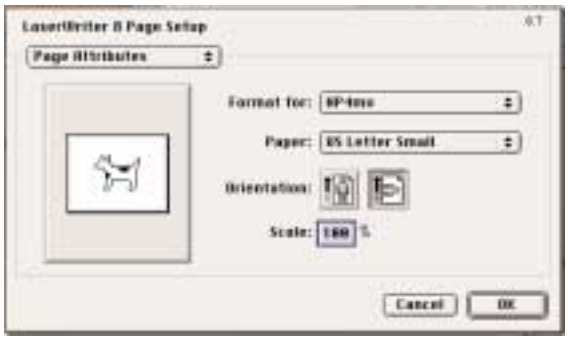


Figure 7a: Page Setup Dialog Box (Macintosh)

Recently Opened Images (Windows Only)

Recently Opened Images lists the paths and filenames of up to four of the most recently opened image files. Each file can be opened by clicking on its filename.

[Exit] Command (Windows Only)

The [Exit] command closes the Studio Lite application window and quits the program.

[Quit] Command (Macintosh Only)

The [Quit] command quits the "Studio Lite" application, and closes all its windows.

[Edit] Menu

The [Edit] menu (Figure 8) provides access to standard file editing commands, common to many applications. These include: Undo, Redo, Cut, Copy, and Paste. Commands specific to Studio Lite are: Paste as New Image, Crop, Clear (Del), Fill, Select All, and Deselect.

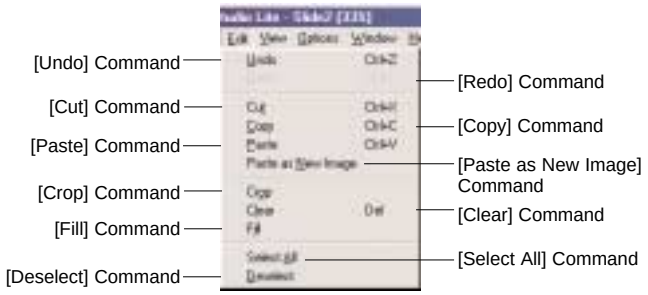


Figure 8: [Edit] Menu

[Undo] Command

The [Undo] (Windows: Ctrl+Z, Macintosh: Cmd+Z) command reverses the most recent operation performed on the image in the active image window.

[Redo] Command (Windows only)

The [Redo] (Windows: Ctrl+Y) command re-applies the previously undone action.

[Cut] Command

The [Cut] (Windows: Ctrl+X, Macintosh: Cmd+X) command removes the selected area from the active image window and places it in the clipboard. Studio Lite fills the empty space with the current Background Color.

[Copy] Command

The [Copy] (Windows: Ctrl+C, Macintosh: Cmd+C) command copies the selected area to the clipboard without removing it from the active image window.

[Paste] Command

The [Paste] (Windows: Ctrl+V, Macintosh: Cmd+V) command places the image data content in the clipboard into the active image window.

[Paste as New Image] Command

The [Paste as New Image] command places image data that is currently in the clipboard into Studio Lite as a new image with its own image window.

[Crop] Command

The [Crop] command allows you to remove an unwanted board around your image by deleting all parts of the image in the active image window that are not selected within a specified region of interest, creating a smaller rectangular image that will retain the portion of the image you want to keep.

[Clear] Command

The [Clear] (Del) command removes the selected (highlighted) area from the active image window, filling the space with the current Background Color. Use this command to delete information without affecting the clipboard.

[Fill] Command

The [Fill] command fills the selected (highlighted) area within the active image window with the current Foreground Color.

[Select All] Command

The [Select All] command (Macintosh: Cmd+A) selects the entire image in the active image window as the region of interest.

[Deselect] Command

The [Deselect] command nullifies the currently selected region of interest within the active image window.

[View] Menu

The [View] menu (Figure 9 & 9a) allows you to control the viewing of images and customize the user interface by showing or hiding elements of the Studio Lite workplace. Viewing options include: Zoom In, Zoom Out, Zoom Factor, Actual Pixels, Fit in Window, Fit to Screen, Full Screen, Edit View, Toolbar, Status Bar, Toolbox, System Info, Image Info, and Refresh.

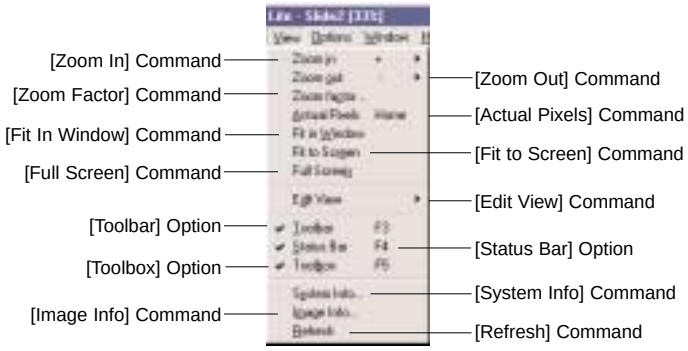


Figure 9: [View] Menu



Figure 9a: [View] Menu (Macintosh)

[Zoom In] Command

The [Zoom In] (Windows: +) command allows you to magnify the active image by selecting a zoom factor ranging from 200% to 800%.

[Zoom Out] Command

The [Zoom Out] (Windows: -) command allows you to decrease the magnification of the active image by selecting a zoom factor ranging

from 12% to 50%.

[Zoom Factor] Command

The [Zoom Factor] command brings up the [Zoom Factor] dialog box which allows you to manually select a zoom factor ranging from 6% to 1600% with a slider bar.

[Zoom Factor] Dialog Box

The [Zoom Factor] dialog box (Figure 10) allows you to manually select a zoom factor ranging from 6% to 1600% with a slider bar.



Figure 10: [Zoom Factor] Dialog Box

[Actual Pixels] Command

The [Actual Pixels] (Home) command displays the active image at its actual physical size (100%).

[Fit in Window] Command

The [Fit in Window] command optimizes the active image's zoom ratio to fit within the active image window.

[Fit to Screen] Command

The [Fit to Screen] command optimizes the active image's size and zoom ratio to fill the Studio Lite application window.

[Full Screen] Command

The [Full Screen] command hides the Studio Lite and Windows interface, filling the screen with the current image. This enables you to view an image without the distractions of other open

windows or programs. To return to Windows, press Esc.

[Edit View] Command (Windows Only)

The [Edit View] command presents a sub-menu which allows you to choose either a full screen view with menu bar (F7) or restore the view to the default.

[Toolbar] Option (Windows Only)

The [Toolbar] (F3) option displays the Toolbar when checked, while hiding it when unchecked.

[Status Bar] Option (Windows Only)

The [Status Bar] (F4) option displays the Status Bar when checked, while hiding it when unchecked.

[Toolbox] Option (Windows Only)

The [Toolbox] (F5) option displays the Toolbox when checked, while hiding it when unchecked.

[System Info] Command (Windows Only)

The [System Info] command presents a dialog box (Figure 11) with configuration information regarding the host computer system.



Figure 11: System Information Dialog Box

[Image Info] Command

The [Image Info] command presents a dialog box (Figure 12) with detailed information about the active image.

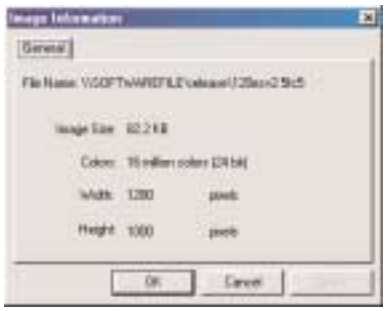


Figure 12: Image Information Dialog Box



Figure 12a: Image Information Dialog Box (Macintosh)

[Refresh] Command (Windows Only)

The [Refresh] command refreshes the active image window.

[Window] Menu

Windows:

The Window menu (Figure 16) controls the positioning of images and icons within the Studio Lite application workspace. The following commands are available: New Window, Cascade, Tile, Arrange Icons, and Close All. The Open Windows list displays all opened image windows by their filenames and current zoom factor.

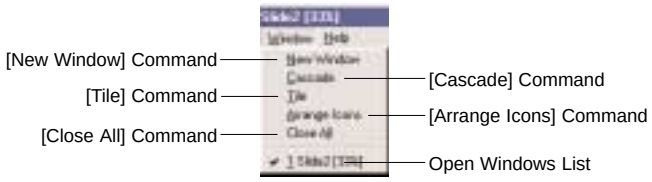


Figure 16: [Window] Menu

[New Window] Command

The [New Window] command creates a new image window containing a duplicate of the image in the active image window. All manipulations made to this image will be reflected in the original and vice-versa.

[Cascade] Command

The [Cascade] command arranges all open image windows diagonally in the workspace from left to right and top to bottom.

[Tile] Command

The [Tile] command arranges all open image windows as non-overlapping tiles, left to right-top to bottom.

[Arrange Icons] Command

The [Arrange Icons] command arranges icons for all minimized images in the workspace neatly along the bottom of the workspace.

[Window] Menu (cont.)

[Close All] Command

The [Close All] command closes all image windows, prompting you to save any altered or unsaved images.

Open Windows List

The Open Windows List displays all open image windows by their filenames and current zoom factor.

Macintosh:



Figure 16a: [Window] Menu (Macintosh)

[Viewfinder] Command

The [Viewfinder] Command will bring the Viewfinder preview window to the top of the stack of open windows. If the Viewfinder window is not currently open, it will be opened by this command.

Open Image-Window List

The Open Image-Windows List displays all open image windows by their filename and current zoom factor.

[Help] Menu

Windows Help:

The [Help] menu (Figure 17) provides access to the detailed online help reference, as well as information regarding the currently release of the Studio Lite application.



Figure 17: [Help] Menu

[Help Topics] Command

The [Help Topics] command displays the Help Topics dialog box (Figure 18) with the following category tabs: Contents, Index, and Find. These tabs assist in navigating through the extensive online help reference offered in the Studio Lite application.



Figure 18: Help Topics Dialog Box

[About Studio Lite] Command

The [About Studio Lite] command displays version and copyright information pertaining to the current release of the Studio Lite application.

[Help] Menu (cont.)

Macintosh Help:

The [Help] menu (Figure 18a) provides access to detailed online help reference.

[Studio Lite Help] Command

The [Studio Lite Help] command displays online help in a new window.



Figure 18a: [Help] Menu (Macintosh)

The window displays in a Browser window the same information as this printed manual and can be searched for specific topics or keywords.

Toolbar

The Toolbar (Figure 19 and 19a) provides access to functions governing all aspects of the Studio Lite application, including file management and image editing. It is composed of the following eleven buttons: New, Open, Save, Cut, Copy, Paste, Undo, Redo, Viewfinder Lite, Full Screen, and Print. **Windows Only:** The Toolbar can be manually repositioned to any place on the Windows desktop using mouse drag-and-drop. Double-clicking on the upper border of the Toolbar will return it to the application window.

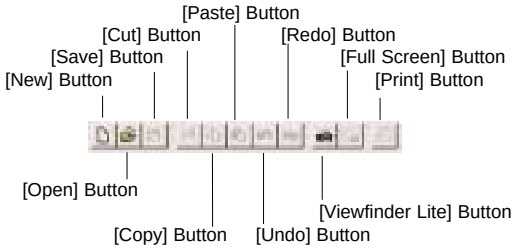


Figure 19: Toolbar



Figure 19a: Toolbar (Macintosh)

[New] Button

The [New] button creates a new, blank image window. The size of the window is determined by the dimensions of any image data which may exist in the clipboard. By default, the window size is 320x240 pixels.

[Open] Button

The [Open] button allows you to open any supported image file into a new image window.

[Save] Button

The [Save] button saves the image in the active image window to

disk.

[Cut] Button

The [Cut] button removes the selected area from the active image window and places it in the clipboard. Studio Lite fills the empty space with the current background color. If no region of interest is selected, the entire image is cut.

[Copy] Button

The [Copy] button copies the selected area to the clipboard without removing it from the active image window. If no region of interest is selected, the entire image is copied.

[Paste] Button

The [Paste] button places the image content in the clipboard into the active image window.

[Undo] Button

The [Undo] button reverses the most recent operation performed on the image in the active image window.

[Redo] Button (Windows only)

The [Redo] button re-applies the previously undone action.

[Viewfinder Lite] Button

Windows: The [Viewfinder Lite] button starts up the Viewfinder Lite application and powers up the camera, displaying a live image of the current camera subject in the Viewfinder Lite image window.

Toolbar (cont.)

Macintosh: The Viewfinder Lite button will bring the Viewfinder preview window to the top of the stack of open windows. If the Viewfinder window is not currently open, it will be opened by this command.

[Full Screen] Button

The [Full Screen] button enlarges the active image window to occupy the entire screen.

[Print] Button

The [Print] button brings up the Print dialog box, which allows you to select options for printing the image in the active image window with any accessible printer.

Macintosh only:

On the Macintosh four additional functions are located on the right-hand end of the Toolbar. (On Windows machines these four functions are placed on the Windows Status Bar.)

Mouse Pointer Coordinates

The Mouse Pointer Coordinates display the horizontal (X-axis) and vertical (Y-axis) pixel coordinates for the current mouse pointer position.

Color Channel Values

The Color Channel Values display the Red (R), Green (G), and Blue (B) color channel values for the current mouse pointer pixel position.

Foreground Color

Double-clicking on the Foreground Color patch will cause the Color

dialog box to open, allowing you to select a custom color. The Foreground Color is used with the Fill Color option.

Background Color

The Background Color displays the current color selected for the background, pertaining to the [Cut] and [Clear] commands. Double-clicking on the Background Color will cause the Color dialog box to open, allowing you to select a custom color.

Toolbox

The Toolbox (Figure 20 & 20a) provides three common tools pertaining to image viewing, editing, and drawing. These comprise: Marquee, Zoom, and Pan. The Toolbox can be repositioned to any place on the Desktop with the mouse. (**Windows only:** Double-clicking on the upper border of the Toolbox will return it to the Studio Lite application window.)

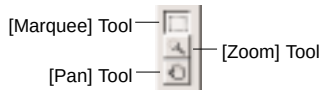


Figure 20: Toolbox



Figure20a: Toolbox (Macintosh)

[Marquee] Tool

The [Marquee] tool allows you to select any rectangular portion of the image in the active image window as the region of interest. To select an area, click-and-hold the mouse button (Windows: left button) on a starting point, drag the mouse pointer to highlight the desired area, and release the mouse button. All subsequent operations will affect only the selected area.

[Zoom] Tool

The [Zoom] tool allows you to magnify and reduce the view of the image in the active image window. The image window's title bar displays the magnification or reduction percentage at all times. Clicking on the image increases the magnification in increments of 100%. Holding down the Shift key while clicking on the image decreases the magnification. Hold down the Control key while clicking on the image to restore the image to its actual size (100%).

[Pan] Tool

The [Pan] tool allows you to move an image within the active image

window, performing the equivalent function as the side and bottom scrollbars. To pan an image, click-and-hold the mouse button (Windows: left button) on any region of the image and drag the pointer in the direction that you would like the image moved.

Status Bar (Windows Only)

The Status Bar (Figure 21) provides current information for the active image, including Tool Status, Mouse Pointer Coordinates, Color Channel Values, Foreground Color, and Background Color.

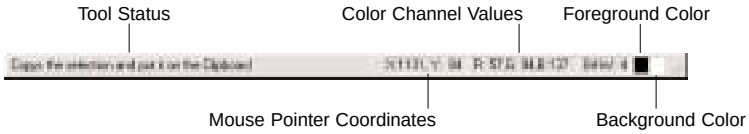


Figure 21: Status Bar

Tool Status

The Tool Status displays information regarding the currently selected tool, as well as descriptions of the Toolbar and menu options.

Mouse Pointer Coordinates

The Mouse Pointer Coordinates display the horizontal (X-axis) and vertical (Y-axis) pixel coordinates for the current mouse pointer position.

Color Channel Values

The Color Channel Values display the Red (R), Green (G), and Blue (C) color channel values for the current mouse pointer pixel position.

Foreground Color

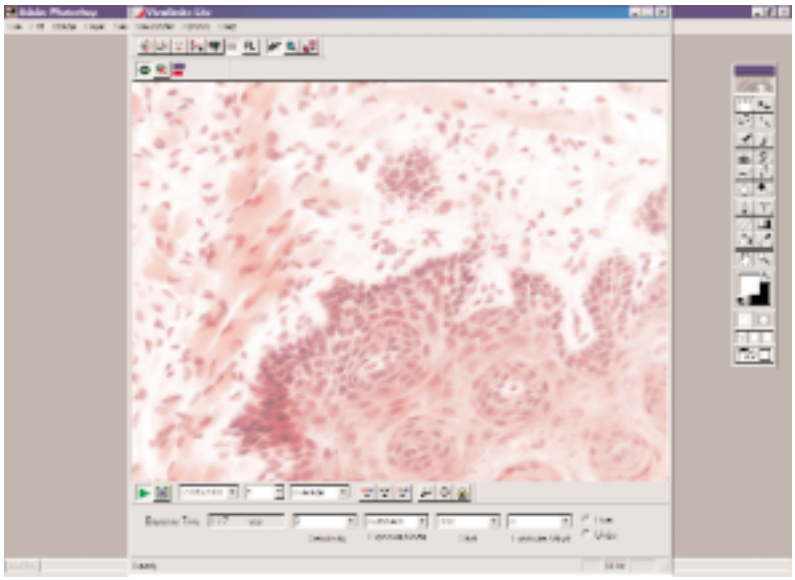
Double-clicking on the Foreground Color patch will cause the Color dialog box to open, allowing you to select a custom color. The Foreground Color is used with the Fill Color option.

Background Color

The Background Color displays the current color selected for the background, pertaining to the [Eraser] tool, as well as the [Cut] and [Clear] commands. Double-clicking on the Background Color will cause the Color dialog box to open, allowing you to select a custom color.

(On Mac OS machines these last four functions are placed on the right-hand end of the Toolbar.)

7. TWAIN Viewfinder Lite (Windows Only)



Example

TWAIN Viewfinder Lite

Using TWAIN Viewfinder Lite (Windows Only)

The TWAIN Viewfinder Lite application is functionally and visually identical to the standard Viewfinder Lite application. For more detailed information on using TWAIN Viewfinder Lite, please refer to the instructions beginning on page 19.

The TWAIN Viewfinder Lite application provides an interface between popular imaging or image analysis programs and your camera system. Functionally and visually identical to the standard Viewfinder Lite application, the TWAIN interface allows you to capture images directly from your camera to most TWAIN-compliant application programs.

Below is an illustrated example of accessing the TWAIN Viewfinder Lite interface from the popular third-party image editing program, Adobe Photoshop:

1) Start the desired third-party TWAIN-compliant application (Figure 1).

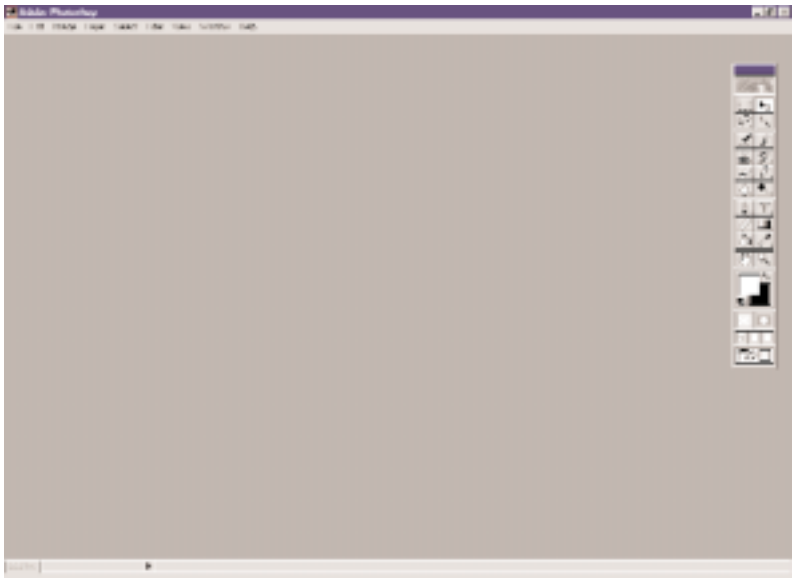


Figure 1: Run Third-Party TWAIN-Compliant Application

2) Select the correct TWAIN source device (Figures 2 and 3). The device name for your camera is [TWAIN Viewfinder Lite].

Using TWAIN Viewfinder Lite (cont.)

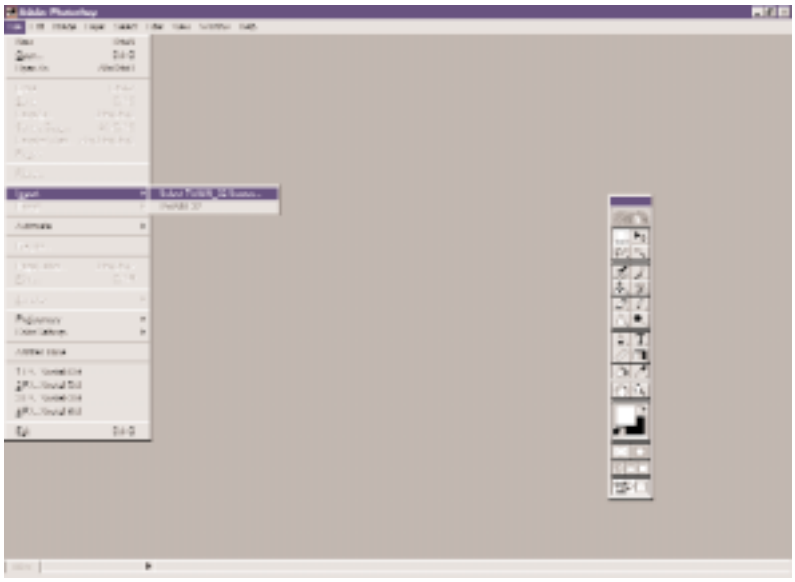


Figure 2: Select the TWAIN Source



Figure 3: Select [TWAIN Viewfinder Lite]

3) Acquire the selected TWAIN source (Figure 4).

Using TWAIN Viewfinder Lite (cont.)

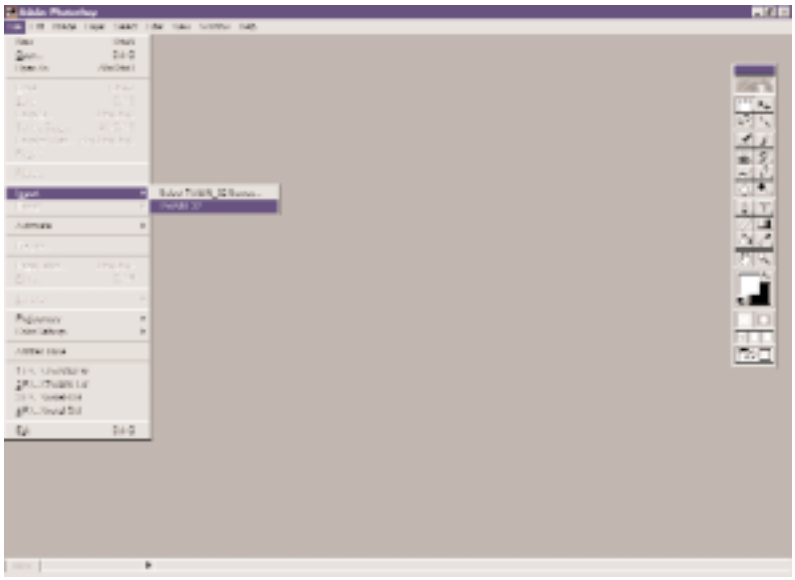


Figure 4: Acquire TWAIN Source

The TWAIN Viewfinder Lite application window will appear (Figure 5). You can now use this application to capture images directly to your TWAIN-compliant host application.

Using TWAIN Viewfinder Lite (cont.)

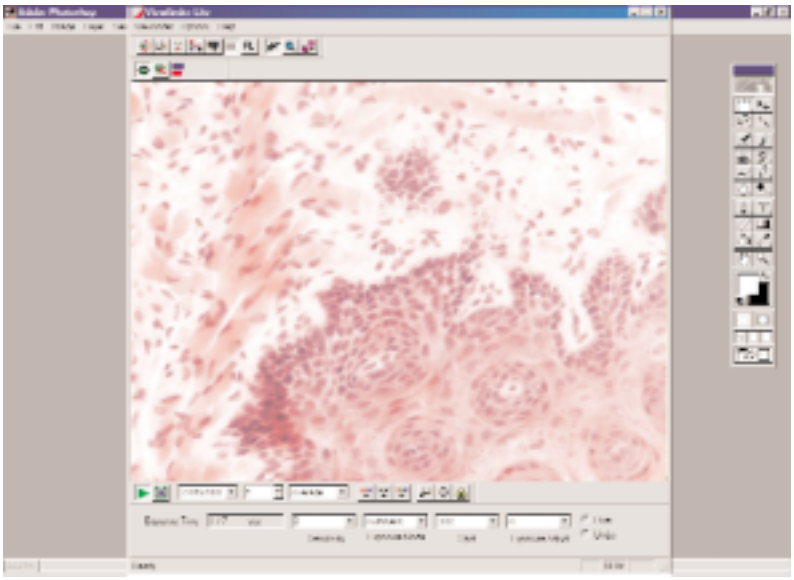


Figure 5: TWAIN Viewfinder Lite

8. Studio Lite Photoshop Plugin (Macintosh Only)

Example

Using the Studio Lite Photoshop Plugin (Macintosh Only)

Images captured from the Digital Microscopy Camera System can be imported by Adobe Photoshop (and compatible applications) in two different ways.

Method A

Launch Studio Lite and capture an image (as described above in this manual); save the captured image. Quit Studio Lite and launch Photoshop (or simply launch Photoshop with Studio Lite still open). Inside Photoshop, open the captured image file. Proceed to manipulate the file as you would any other file that Photoshop can manipulate.

Method B

Launch the Photoshop application. In Photoshop's File menu select the Import sub-menu and the "Viewfinder" menu item found there. (This menu item will only appear if you have previously installed the Studio Lite Plugin by selecting "Studio Lite with Photoshop Plugin" when you ran the Studio Lite installer.)

The result of selecting "Viewfinder" will be the launching of the Studio Lite application. While in this mode, Studio Lite when the user presses the Capture button, will transfer the captured image to Photoshop. You can continue to capture as many still images as you want, with all of them going to Photoshop. When you wish to return to Photoshop, use the Mac OS application menu, or simply click on one of the Photoshop windows. When Photoshop is once again the running application, it will terminate Studio Lite. You can also exit Studio Lite by using "Quit" in its file menu. Proceed to manipulate the file in Photoshop as you would any other file that Photoshop can manipulate. After switching back to Photoshop, you can select "Viewfinder" to perform additional image captures at any time.

9. Specifications

Item	Specification
Camera Type	Single Chip CCD Color Camera with Light Swing
Cooling System	Electronic Cooling with Peltier Device
Image Sensor	1/2” 1,500,000pixel single chip color CCD No. of Total Pixels: 1434(H) x 1050(V)(1.5Mpixels) No. of Effective Pixels:1392(H) x 1040(V)(1.45Mpixels)
Image Size	640 x 480, 1392 x 1040, 2776 x 2074 pixels
Sensitivity	ISO 50/100/200/400 equivalent
A/D Conversion	10 bits/color
Spot Meter	30%, 1% or 0.1% selectable spot size
Exposure Control	Exposure Mode: AE / Manual / AE Lock
	Exposure Adjust: -2EV to +2EV
Exposure Time	1/10,000 sec to 60 sec
Frame Accumulation	Mode : Average / Integral
	Number of Accumulations : 64 frames (maximum)
White Balance	Auto White Balance One-Push White Balance Manual White Balance
Image Format	TIFF (8 bits / 24 bits / 48 bits), BMP (8 bits / 24 bits), JPEG (8 bits / 24 bits), PICT (8 bits / 24 bits), FlashPix (8 bits / 24 bits) (Windows only)
Hand Switch	Mode: EXPOSE / AE LOCK / SPOT
Interface	PCI Bus Interface
Preview Frame Rate	10 frames/sec maximum
Operating Environment	Indoor Use Altitude: Max 2000 meters Ambient Temperature: 5°C - 35°C (41°F - 95°F) Maximum relative humidity: 80% for temperature up to 31°C(88°F), decreasing linearly through 66% at 35°C (95°F). Power supply voltage fluctuation: Not to exceed ±10% of normal voltage. Pollution degree: 2 (in accordance with IEC 664) Installation/over voltage category: II (in accordance with IEC 664)

10. Troubleshooting

Under certain conditions, performance of the system may be adversely affected by factors other than defects. If a problem occurs, please review the following list and take remedial action as needed. If you cannot solve the problem after checking the entire list, please contact your local dealer for assistance.

Problem	Cause	Remedy	Page
The hand switch does not work.	The hand switch cable is not connected to the PCI interface card.	Connect the hand switch cable properly to the PCI interface card.	9
Images are not captured by pressing the EXPOSE button.	The computer is currently capturing or processing an image.	Release the EXPOSE button after previous captured images are processed and displayed.	34
	Free disk space on Hard Disk Drive is not enough (Windows only).	Make more than 100MB of free disk space on Hard Disk Drive.	
The images are not in focus.	The microscope is not focused properly.	Adjust the focus correctly with the fine focus adjustment knob.	
	The aperture iris diaphragm of the condenser is open too wide.	Close the aperture iris diaphragm a little.	
	The field iris diaphragm is not set properly.	Close the field iris diaphragm until the image circumscribes the field of view.	
	Lens components of the microscope are contaminated or the cover glass on the front side of the camera is stained.	Clean the objective lens, photography lens, condenser and/or window lens, or clean the cover glass on the front side of the camera if the cover glass is stained.	
The images are too dark or too bright.	[AE lock], [Exposure Adjust], [BF] and/or [FL] are not set properly.	Set them properly.	56

Troubleshooting (cont.)

Problem	Cause	Remedy	Page
The colors in the images are not correct.	The wrong color temperature is set in the white balance control operation.	Calibrate the white balance by specifying the white region with a rectangular frame of the Auto White Balance.	46
Error messages occur when Viewfinder Lite or other application started.	Camera cable is not connected properly	Connect camera cable properly.	10
	Device driver is not installed.	Install the device driver in the computer.	13 21
	TWAIN is not installed (Windows Only).	Install the TWAIN in the computer properly	18
	Photoshop Plug-in is not installed. (Macintosh only)	Install the Photoshop Plug-in in the computer properly.	23

Windows: If no operations can be activated by pressing any of the buttons, restart Windows or the computer.

Macintosh: If no operations can be activated by pressing any of the buttons or using a menu (the machine "hangs"), press Opt + Cmd + esc to exit the program. If that does not work, restart the computer.