Nikon

Scanner Control Software
and Acquire Plug-in

Nikon Scan
for Macintosh

Reference Manual

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Overview

Thank you for your purchase of a Nikon scanner. This reference manual explains how to use Nikon Scan 2.0 for the Macintosh. The Macintosh version of Nikon Scan 2.0 functions as a acquire plug-in, allowing you to scan images from your Nikon Film Scanner into any application that supports Adobe Photoshop version 4.0 plug-ins. It can also be used as a stand-alone scanning application for scanning images into your computer and saving them to disk.

Nikon Scan 2.0 supports scanning with the LS-2000 (SUPER COOLSCAN 2000). It allows non-sequential and batch scanning using the SA-20 strip-film adapter or IA-20 IX240 film adapter (sold separately). It also supports unattended sequential scanning with the slide-feeder adapter available for the LS-2000. Other features include:

- a scan window incorporating a wide variety of advanced setting options, making it possible to make fine adjustments to images before they are scanned

- a "defect correction" function that processes images digitally to remove dust and scratches during scanning

- support of grayscale, RGB (sRGB), HSL, and CMYK color models, producing images suited to a wide variety of uses

- advanced settings such as gamma curve adjustment and hue editing that allow precise adjustment of images prior to scanning

This reference manual describes how to install and use Nikon Scan 2.0 for Macintosh. The next chapter, "*Before You Begin*," lists the system requirements for Nikon Scan and takes you step-by-step through the installation process. For a quick guide to installation, refer to the *User's Guide*. "*Before You Begin*" is followed by "*Basic Operations*," which gives an overview of the steps involved in starting Nikon Scan, adjusting scan settings, scanning images, and saving images to disk. "*The Scan Window*" gives a detailed introduction to Nikon Scan's acquire plug-in, or scan, window and explains scan window preferences. "*The Thumbnail Drawer*" describes Nikon Scan's thumbnail display, used when previewing multi-frame film. The process of selecting the portion of an image to be scanned and adjusting can settings prior to scanning is detailed in "*Preview*," "*The Size Drawer*," "*The Curves and Levels Drawer*," and "*The Color Balance Drawer*," while "*Saving and Loading Settings*" describes how changes to settings can be saved for later use. The final chapter, "*Image Window Operations*," describes the options available when Nikon Scan is used as a stand-alone application. The settings available for each scanner are described in separate appendices.

The present manual describes the operation of *Nikon Scan 2.0 for Macintosh*. Refer to your hardware manual for details of scanner operation. Purchasers of the LS-2000 can refer to the *Fast Track* manual or *User's Guide* for a brief description of using Nikon software with their scanner, while a detailed description of the software available for Windows may be found in the Windows reference manual. We hope you find these manuals helpful.

Before You Begin

This section gives the system requirements for Nikon Scan 2.0 for Macintosh and guides you through the process of installing Nikon Scan 2.0 to your computer's hard disk.

Note: *This manual assumes a basic understanding of common Macintosh operations. If you are in doubt about the meaning of terms used here, refer to your Macintosh manuals.*

System Requirements

To run Nikon Scan 2.0 for Macintosh, you will need system hardware and software which meet the following minimum requirements:

- a Power Macintosh, or a Macintosh with a 68030 or better CPU

- System Software 7.1 or later

- at least 16 MBs or more of RAM available to Nikon Scan (24 MBs or more is recommended)
  (When launching this software as an acquire plug-in from another application, you must also take account of the amount of memory used by the application.)

- 3 MBs of free space on your hard-disk for installation, with another 20 MBs of free hard disk space available for temporary storage while Nikon Scan is running (100 MBs or more is recommended)

- a monitor with a resolution of 640 x 480 pixels or higher, with a video system supporting 16-bit RGB Color (32k/64k colors) or more (Nikon Scan also supports 24-bit True Color, or 16.7 million colors)

- a CD-ROM drive for installation

Software Installation

The installation disk provided with this product contains the Nikon Scan software and the drivers which handle the exchange of information between your computer and Nikon scanners.

Before starting the installation program, check to be sure that:

- no other applications are running

- you have enough free space on your hard disk to install and run the program (a minimum of 23 MBs of free disk space is required, of which 3 MBs must be available in the System folder; more space will be needed should you choose to install the applications bundled with Nikon Scan)

- your Nikon scanner is connected to the computer and powered on (it is not absolutely necessary that the scanner be connected and powered on at installation, but having the scanner connected allows you to start using the scanner without first powering off your computer)

After checking the above points, start installation as described below.

After turning on your scanner and computer, start your Macintosh and insert the Nikon Scan disk in the CD-ROM drive. When the CD-ROM is inserted in the drive, a folder containing one or more installer icons will appear on the desktop. Depending on the region in which you purchased your scanner, the Nikon Scan CD will contain an English installer (EN) only, English, French (FR), and Spanish (ES) installers, or English, French, German (DE), and Spanish installers.

Nikon Scan Installer EN

Double-click the installer icon for the language of your choice. The following window will appear on the desktop.

Nikon ELECTRONIC IMAGING

Continue...

This installation was created with Installer VISE 4.6.1 from MindVision Software

Step 2—Accept the software license agreement

Clicking **Continue…** in the window shown above displays the Software License Agreement dialog box. To install Nikon Scan, you must accept this agreement. If you choose **Decline**, the installer will close.
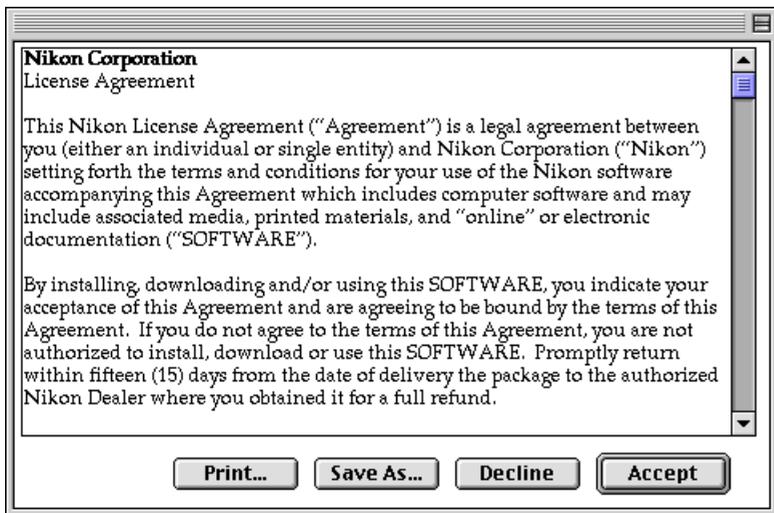
Note: *The Software License Agreement (in Step 2) and the ReadMe information (in Step 3) can be printed or saved as a file. Click **Print…** to display the Print Setup dialog box, or **Save As…** to display the Save As dialog box. When installation is complete, a copy of the Software License Agreement and Read Me file will be saved in the folder to which you installed Nikon Scan 2.0.*

## Step 3—View the ReadMe file

Clicking **Accept** in the agreement dialog will cause the "ReadMe" file to be displayed. It is recommended that you take a view moments to print or view the contents of this file, as it may contain important information that could not be included in this manual.

When you have finished reviewing the contents of the ReadMe file, click **Continue** to proceed to Step 4.

Step 4—Select a type of installation

Clicking **Continue** in the Read Me dialog brings up the Nikon Scan Installer dialog box. Select the type of installation you prefer (**Easy Install** is recommended for most users).
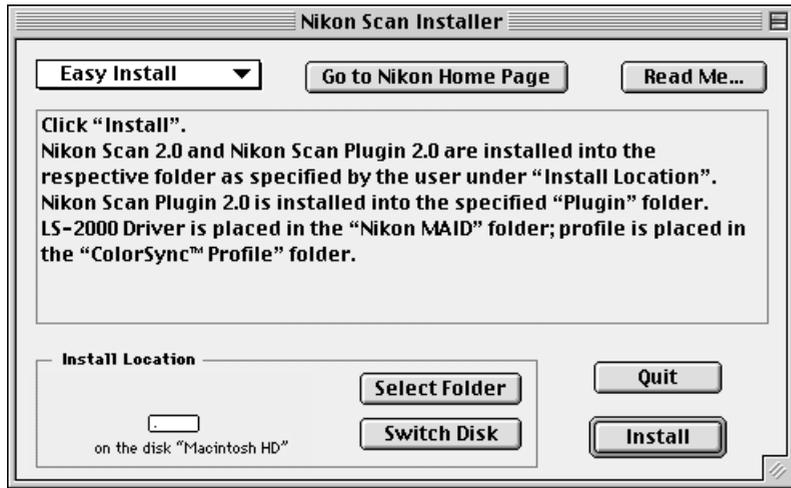

The default option is **Easy Install**, displayed in the menu button at the top left corner of the installer dialog. If you choose **Easy Install**, go directly to Step 5.

Custom install

Custom Install allows the user to choose what files will be installed. Click the menu button at the top left corner of the installer dialog and choose **Custom Install**. The installer dialog will display the following items.
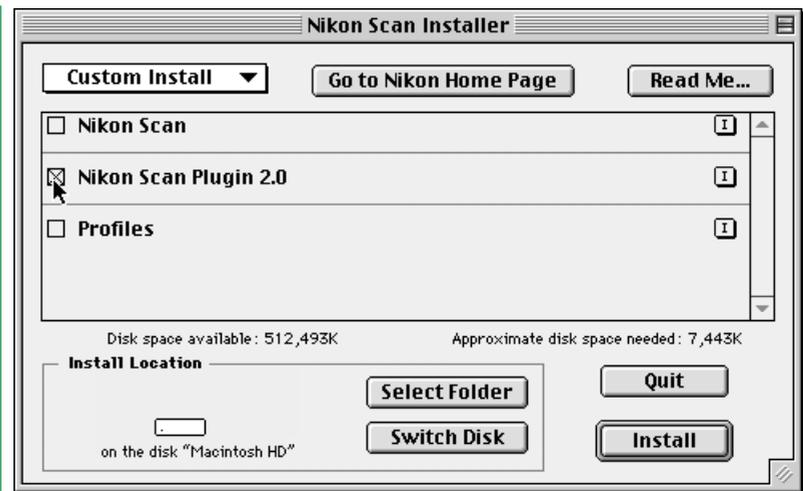

Select the components you wish to install by checking the boxes to the left of each item. Clicking the "I" button to the right of each item displays information on the item in question. If you intend to use Nikon Scan solely as a plug-in for another application such as Adobe Photoshop, you can choose to install only the Nikon Scan plug-in by checking **Nikon Scan Plugin 2.0** as shown above. To use Nikon Scan as a stand-alone application you will need to install Nikon Scan. The **Profiles** option installs ColorSync profiles for Nikon Scan.

Note: *For information on the* **Remove** *option and the location of files installed by the Nikon Scan 2.0 installer, see Appendix B.*

Step 5 — Select an installation folder for Nikon Scan

The location to which Nikon Scan will be installed when the **Install** button is clicked is shown in the lower left portion of the installer dialog. By default, Nikon Scan will be installed in the "Nikon Software" folder in the top folder of the start-up disk (if a "Nikon Software" folder does not already exist, it will be created). Should you wish to install Nikon Scan in a different location, you can select a different disk using the **Switch Disk** button and select a new folder clicking the **Select Folder** button. This will bring up the dialog box shown below.
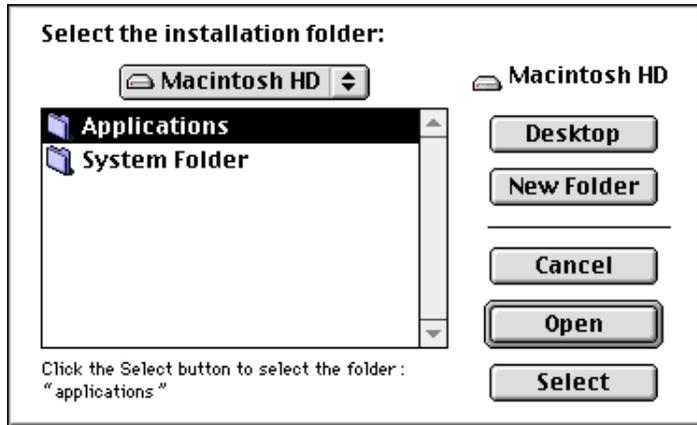
Specify the folder to which you would like to install the software and then click **Select** button. This will return you to the Installer dialog.
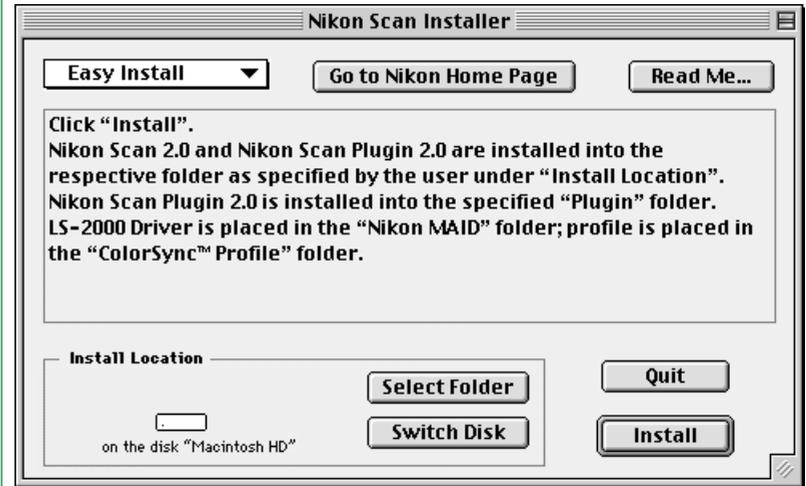
The other items in this dialog box are explained below.

Read Me…

Returns you to Step 3.

Go to Nikon Home Page

If you have an Internet connection, clicking **Go to Nikon Home Page** will start your Web browser (Netscape Navigator 3.0 or better or Internet Explorer 3.0 or better required) and take you to the Nikon technical support home page for the region in which your scanner was purchased. Nikon home pages for different regions are given below.

Region	URL
Europe	http://www.nikon-euro.com
U.S.A.	http://www.nikontechusa.com

Quit

Click **Quit** to close the installer without installing Nikon Scan.

Step 6 — Install Nikon Scan

Click **Install** to install Nikon Scan to the selected folder. While the program's components are being installed, the following progress indicator will be displayed.
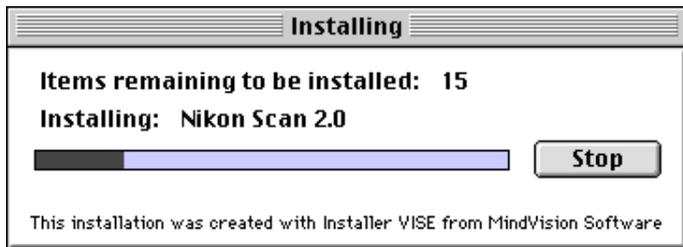
Interrupting installation

Clicking **Stop** in the Installing dialog interrupts the installation and brings up the following dialog box.
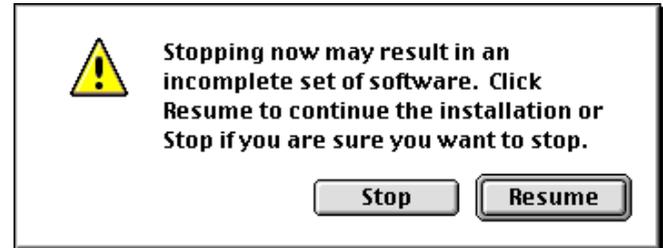
Click **Stop** to quit the installer without installing Nikon Scan, or **Resume** to continue installation. Clicking **Stop** will display a message to the effect that installation has been cancelled; click **OK**.


Should you choose to quit the installation program, you will still be able to complete installation at any time by repeating the process from Step 1.

Select a plug-ins folder

The Nikon Scan application and Nikon Scan plug-in will be installed to a folder named "Nikon Scan 2.0" under the "Nikon Software" folder in the folder and volume (disk) selected in the installer dialog. To launch Nikon Scan from another application, you will need to install a copy of the Nikon Scan plug-in in the application's plug-ins folder. The installer will automatically locate plug-ins folders and display them in the following dialog.
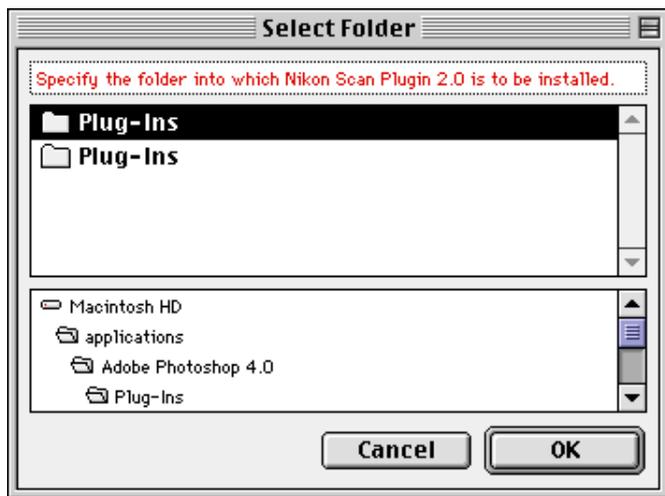
After selecting the plug-ins folder belonging to the application from which you would like to be able to launch Nikon Scan, click **OK**. Click **Cancel** to install the Nikon Scan plug-in to the Nikon Scan 2.0 folder only (if at a later date you should find that you would like to be able to scan images directly from Nikon Scan into another application, you can add Nikon Scan to the application's list import plug-ins by copying **Nikon Scan Plugin 2.0** from the Nikon Scan 2.0 plug-ins folder to application's plug-ins folder).

Step 7—Complete installation

Once the installer has finished copying Nikon Scan to the installation folder, the following dialog will be displayed. Click **Quit** to exit the installer. Clicking **Continue** will return you to the Installer dialog box shown in Step 4.

Once you have returned to the Finder, locate the Nikon Scan 2.0 folder in the directory you chose in Step 5.

Step 8—Check the memory available to Nikon Scan

Before using Nikon Scan 2.0 , check the amount of memory allocated to the program. Open the Nikon Scan 2.0 folder and click the Nikon Scan 2.0 icon once to select it. Then choose **Get Info** (⌘I) from the File menu in the Finder. The following information dialog will appear. If possible, in the "Preferred size" text box enter a value equal to or greater than the suggested size.

File

New Folder	⌘N
Open	⌘O
Print	⌘P
Move To Trash	⌘⌫
Close Window	⌘W
Get Info	**⌘I**
Label	▶
Sharing...	
Duplicate	⌘D
Make Alias	⌘M
Put Away	⌘Y
Find...	⌘F
Show Original	⌘R
Page Setup...	
Print Window...	

Nikon Scan 2.0

Nikon Scan 2.0 Info

Nikon Scan 2.0
2.0.0.3016
Kind: application program
Size: 4.6 MB on disk (4,904,792 bytes)
Where: Macintosh HD:Nikon Software:Nikon Scan 2.0:

Created: Thu, Apr 16, 1998, 12:00 AM
Modified: Thu, Apr 16, 1998, 12:00 AM
Version: 2.0.0.3016 EN
© 1995–1998 Nikon Corporation

Comments:

Memory Requirements

Suggested Size:	36000	K
Minimum Size:	13000	K
Preferred Size:	36000	K

☐ Locked

Note: Memory requirements will increase by 2,012K if virtual memory is turned off.

Basic Operations

This chapter provides a brief introduction to Nikon Scan 2.0's windows, menus, and buttons, and guides you step-by-step through the basics of using Nikon Scan 2.0 to acquire images from your scanner, modify them, and save them to disk. The details of each operation are provided in the chapters that follow.

Note: *In addition to the strip-film and slide adapters provided with your scanner, a slide feeder and IX240 film adapter are available separately for the LS-2000.*

Step 1—Connect the scanner

Connect the scanner to your computer as described in your scanner's user's manual, first making sure that both devices are off. Turn the scanner and any other peripheral devices on, then turn on your computer.

Step 2—Start Nikon Scan

Locate the Nikon Scan 2.0 folder in the destination folder you chose during installation. Open the folder and double-click the Nikon Scan 2.0 icon.

Nikon Scan 2.0

When Nikon Scan starts up, the menus shown below will appear in the menu bar and the **scan window** (where you will preview images and make adjustments prior to scanning) will open on the desktop.

▼ The Nikon Scan menu bar

File   Edit   View   Nikon Scan   Window   Help

The left side of the scan window is a control area containing a collection of buttons and menus, while on the right is the preview-image display area in which a preview of the image to be scanned is displayed. If no adapter is in the scanner or if no film is inserted in the adapter, all controls other than the **pref**erences button will be grayed out and inactive.

▼ The Nikon Scan scan window

Title bar

Control area   Preview/crop area
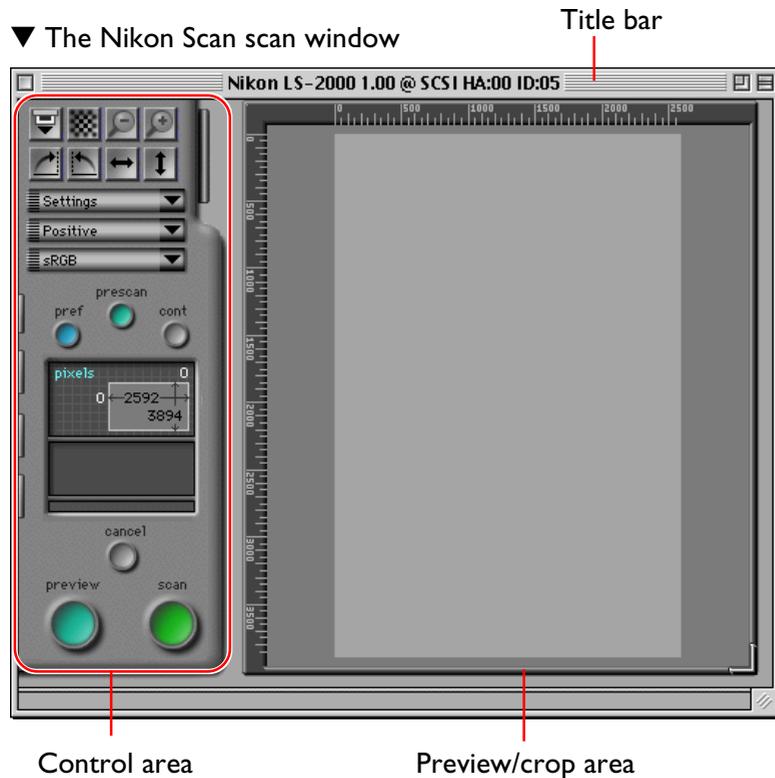
Note: *If the MA-20 Slide Mount Adapter is inserted in the LS-2000 film scanner, all controls will be active regardless of whether there is a slide in the adapter or not. If there is no slide in the adapter, clicking the autofocus, prescan, preview, or scan buttons will produce an error. Click OK in the error message box, check that a slide is inserted in the adapter, and repeat the autofocus, prescan, preview, or scan operation.*

Launching Nikon Scan from another application

The scan window can also be opened from any application that supports Adobe Photoshop version 4.0 plug-ins by selecting Nikon Scan 2.0 as the application's acquire plug-in. See the application manual for details. When Nikon Scan 2.0 is used as an acquire plug-in for another application, the Nikon Scan menu bar will not appear; instead, images will be passed directly to the calling application when scanned.

Choosing a scanner

Nikon Scan will open a separate scan window for every supported scanner that is connected and powered on at the time the application starts up. The name, host adapter, and SCSI ID of each scanner is shown in the scan window title bar. Clicking the scan window for the desired scanner to activate it and bring it to the front, or close unneeded windows by clicking the close button at the left end of the title bar (see "*The Scan Window*," below).

Step 3—Choose a film type and color space

Having chosen a scanner, select the type of film to be scanned and the "**color space**" to be used when scanning the image and displaying it in the scan window. Film type and color space may be selected from pop-up menus in the control area of the scan window.
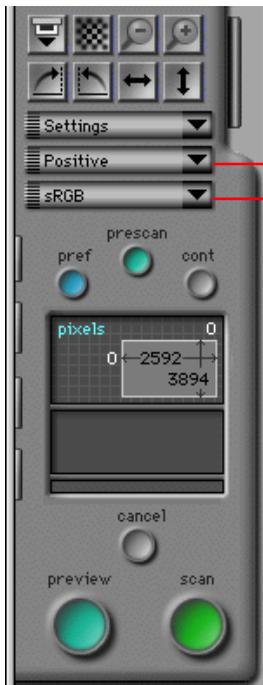
Film-type menu button
Color-space menu button

Film type selection

Clicking the film-type menu button will display the pop-up menu shown below. Select the type of film currently in the scanner. The chosen film-type will be displayed on the menu button. (More details on film-type selection may be found in "*Preview,*" below.)
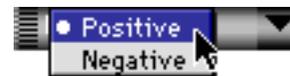
Color space selection

Clicking the color-space menu will display the pop-up menu shown below. Click a color space to select it from the list (the default is "**sRGB**"). The chosen color space will be displayed on the menu button. (More details on color space selection may be found in "*Preview,*" below.)

Note: *If the "Use Nikon Color Management System" check-box in the Color Management tab of the Preferences dialog box is off, the color-space menu will differ from those shown above. The alternative menu is shown in "*Preview," below.*

Step 4—Select thumbnails

When the strip-film or optional IX240 film adapter is in place, clicking the thumbnail drawer-tab in the scan window control area will open the thumbnail drawer. When the thumbnails drawer-tab is clicked, Nikon Scan will create thumbnail preview images for all frames in the scanner and display them in the thumbnail drawer automatically.

The size of the thumbnail drawer can be changed by dragging the lower right corner of the drawer. The drawer cannot be made larger than the scan window.
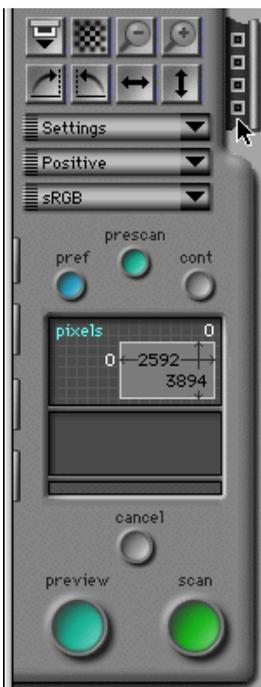
Thumbnail drawer-tab
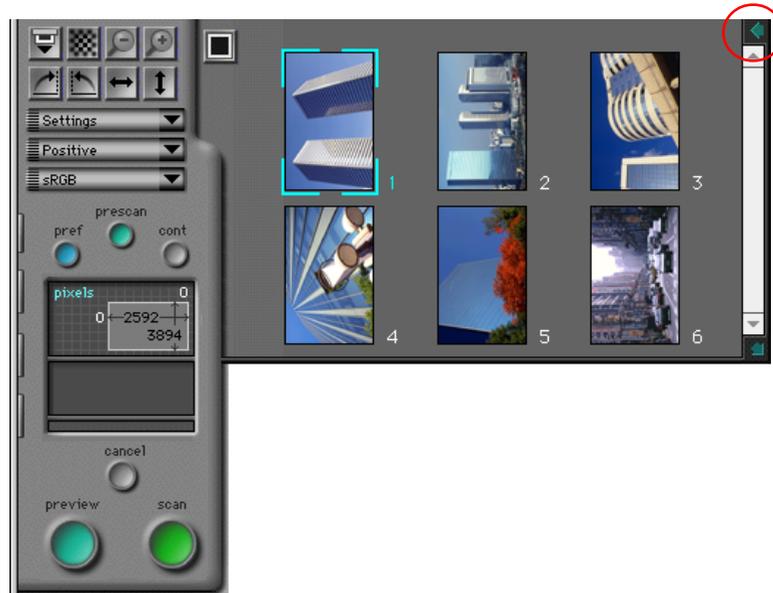
To select a particular frame for preview, click the associated thumbnail to select it. The selected thumbnail will be highlighted. If you then click the **preview** button, the selected frame will appear in the preview/crop area of the scan window, where it can be cropped or scanned as described in the following sections. To close the thumbnail drawer, click the button at the upper right corner of the drawer. (More details on thumbnail display and selection may be found in "*The Thumbnail Drawer*," below.)

Note: *Nikon Scan's thumbnail function can be used when scanning with the LS-2000's strip-film adapter or the IX240 film adapter available separately for the LS-2000. This function is not available when scanning with other adapters or scanners.*

Step 5—Conduct a preview scan

Before actually scanning an image into your computer, conduct a preview scan to select an area and orientation for the final scan and to determine whether adjustments to scan settings are necessary. To make a preview scan, click the **preview** button.
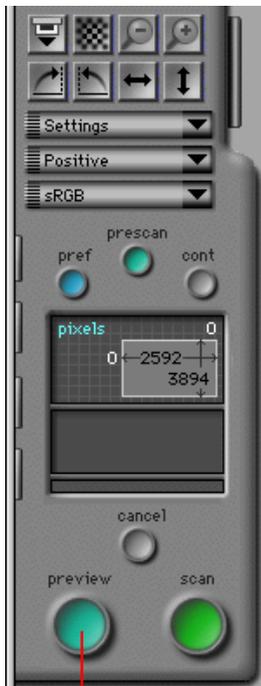
Preview button

When the preview button is clicked, a preview scan will be made using the current scan control and color-space settings, and an image will be displayed in the preview-image display area.

Step 6—Rotate and flip the preview image

Once a preview image is displayed in the scan window, it can be rotated or flipped prior to scanning using the flip and rotate buttons in the control area.
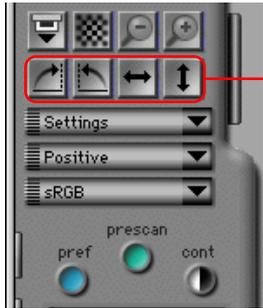
Rotate and flip buttons

For example, clicking the button below will rotate the preview image ninety degrees clockwise. When the **scan** button is clicked to make the final scan, the image will be read into Nikon Scan applet or other calling application in this orientation.

Four buttons are used to control the orientation of the image:

Rotate 90° Clockwise

Click this button to rotate the preview image clockwise, ninety degrees at a time.

Rotate 90° Counter-clockwise

Clicking this button rotates the preview image counter-clockwise, ninety degrees at a time.

Flip Horizontal

Clicking this button flips the preview image horizontally.

Flip Vertical

Clicking this button flips the preview image vertically.

Step 7—Choose an area for the final scan

If desired, an area and location for the final scan can be selected by using the mouse to specify a rectangular crop area in the preview-image display. Only the area within the crop will be included in the final scan.
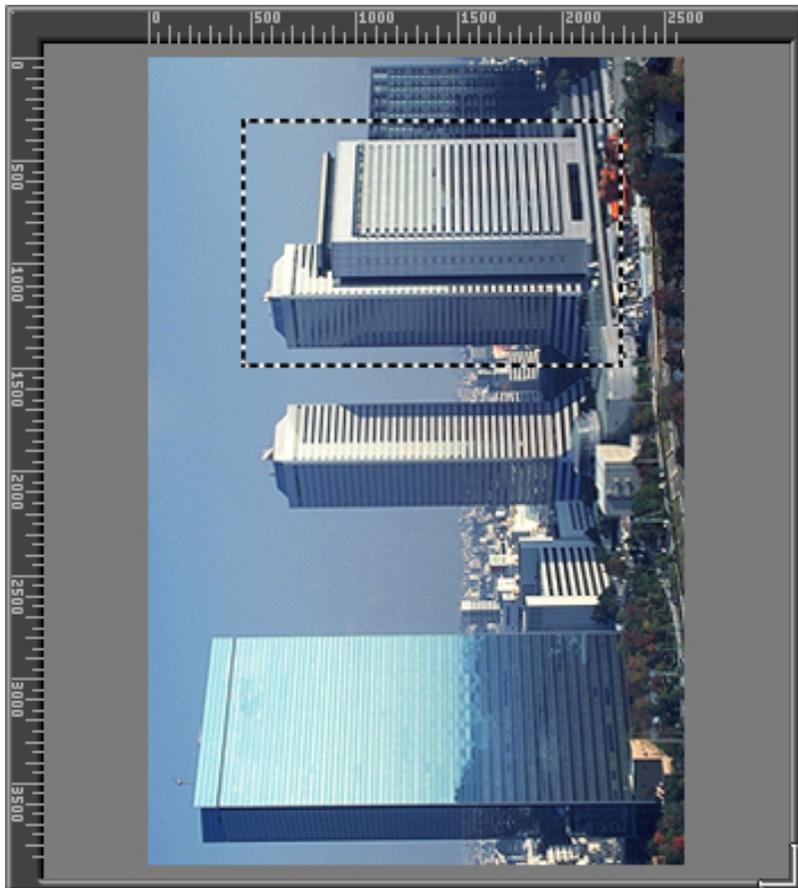
Note: *The coordinates of the current crop appear in the control area, where the height and width and the coordinates of the top left corner of the crop are displayed. For details on how to specify file size and output resolution for the final scan, see "Preview" and "The Scan Size Drawer," below.*

The size of the preview-image display can be changed by dragging its lower right corner, while the entire preview/crop area can be repositioned by dragging the rulers on the top and left borders of the display. The preview area can not be made larger than the scan window as a whole, but the scan window can be enlarged by dragging its bottom right corner if necessary.
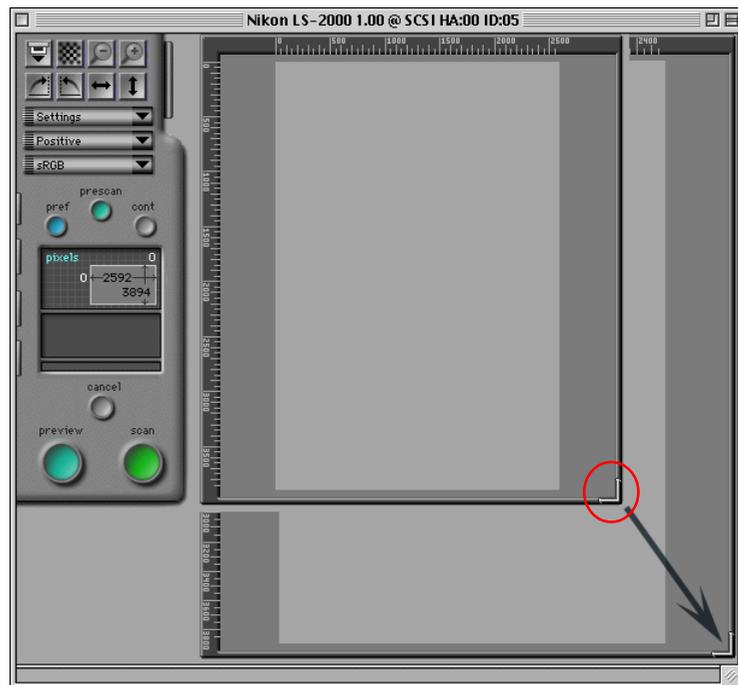
Zooming the crop area in and out

Clicking the zoom-in button will expand the currently selected crop to fill the preview area. The original view can be restored by clicking the zoom-out button.


Zoom buttons

Zoom-in button Zoom-out button
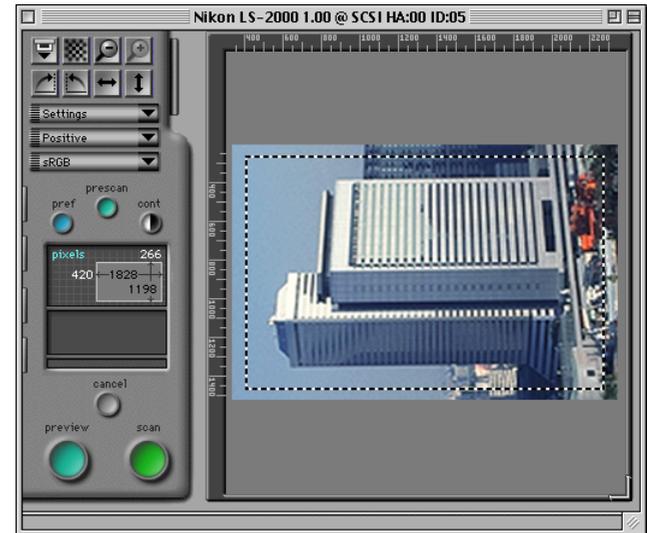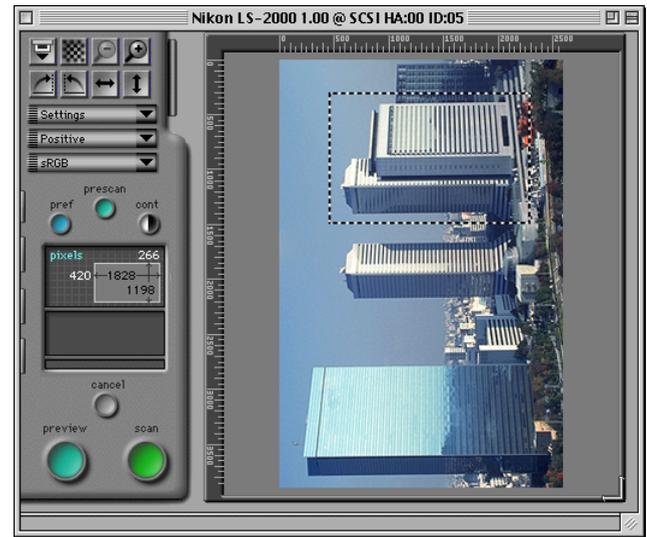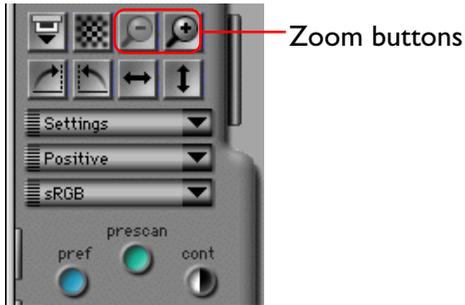
Step 8—Automatic contrast adjustment

If desired, Nikon Scan is capable of modifying contrast adjustment automatically. Simply click the **cont**rast button.


Contrast button

Note: *When the contrast button is clicked, Nikon Scan analyzes the preview image to maximize contrast. The tone curve that will produce the best possible results is automatically selected. The original contrast can be restored by clicking the **reset** button in the curves-and-levels drawer. For manual tone-curve adjustment, refer to "The Curves and Levels Drawer."*

Step 9—Scan an image

If, after specifying a crop and adjusting contrast, you are satisfied with the preview image, click the **scan** button to perform the final scan.

While scanning is in progress, the following indicator will be displayed. Clicking the **cancel** button stops scanning.
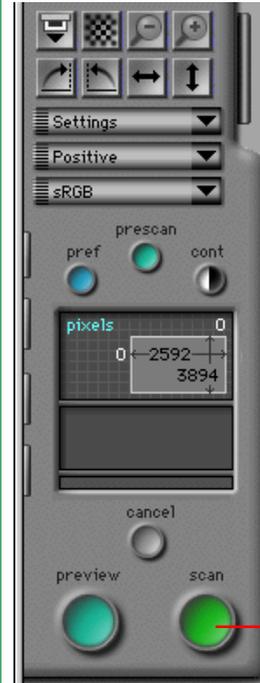
Progress indicator

Cancel button

Scan button
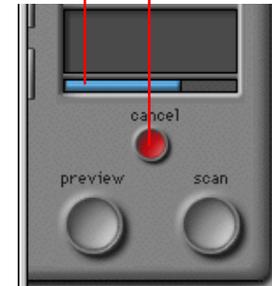
The scanned image will not appear in the scan window; instead, the scanned image will be passed to the calling application. If you are using Nikon Scan as a stand-alone application, the image will be opened in an image window on the desk top where it can be saved to disk, printed, or flipped and rotated using the commands available in the Nikon Scan menu bar.

▼ The Nikon Scan menu bar

▼ A Nikon Scan image window
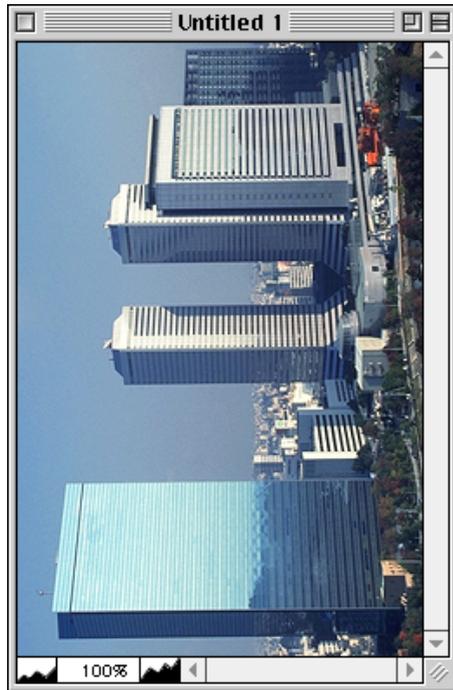
Step 10—Scan additional images

If the scan window is clicked, the scan window will be activated and another image can be scanned (if you are using Nikon Scan 2.0 from within another application, the scan window can be activated by selecting Nikon Scan from the application's acquire menu). When additional images are scanned, each will appear in an image window in the host application or in the Nikon Scan applet.

Note: *If a slide feeder is being used with the LS-2000 film scanner, clicking the Eject and Feed button in the scan window will eject the current slide and feed the next one. This button can also be used to eject film from the LS-2000's strip-film or IX240 adapters.*

Eject and feed button
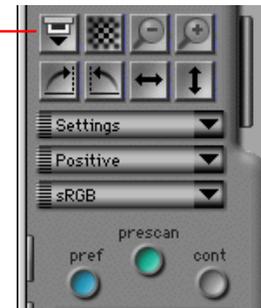
Opening the scan window

If the scan window is no longer open on the desktop, a scan window can be opened by choosing a scanner from the devices listed in the **Devices** submenu of the **Nikon Scan** menu (scanners not supported by Nikon Scan will not be displayed). To re-launch Nikon Scan from another application, select Nikon Scan from the application's list of acquire sources.


Step 11—Save scanned images

Choose **Save As** from the **File** menu to save the image in the active image window (if more than one image window is open on the desktop, click the image to be saved once to activate the window).
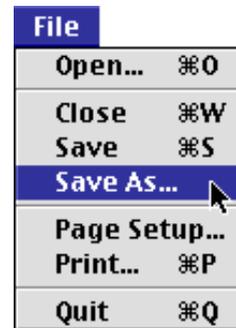
If the image has not been saved before, or is being saved under a new name using the **Save As...** command, the following Save As dialog will appear. Specify a file-name, folder, file-type and image-quality, then click the **Save** button.
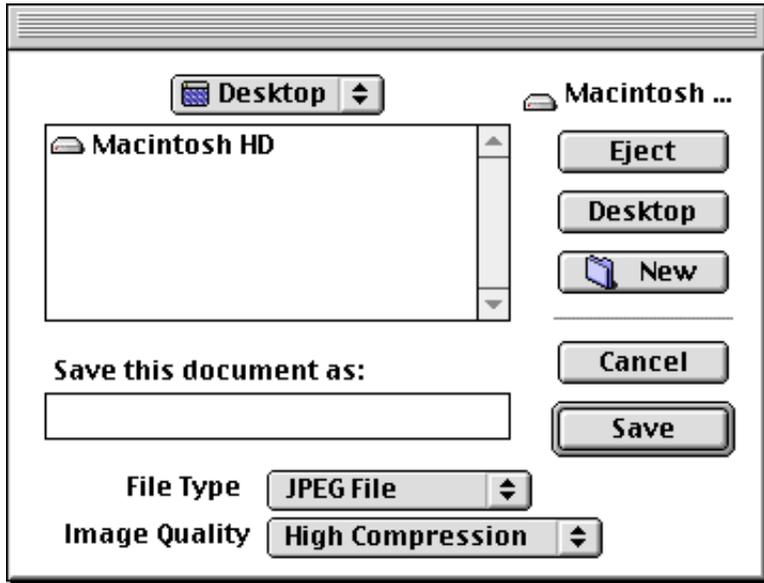

(More details on file-type and image-quality selection may be found in "*Image window Operations*," below.)

Step 12—Exit Nikon Scan

Choose **Quit** from the **File** menu to close all scan and image windows and exit Nikon Scan.
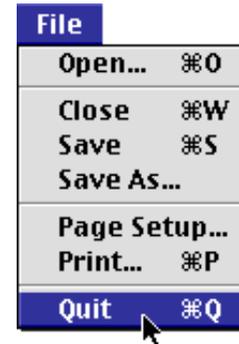
If an image in an image window has yet to be saved, the following dialog will appear.
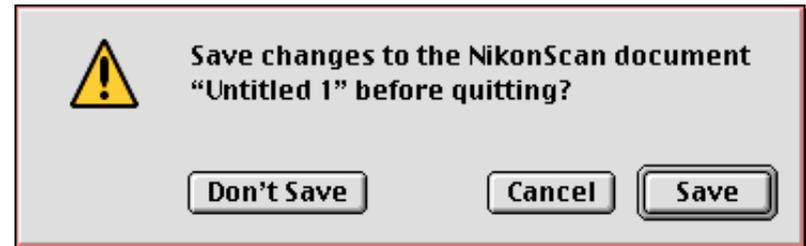
Click **Save** to display the Save As dialog shown above, where the image can be saved. Clicking **Don't Save** closes Nikon Scan without saving the image. Click **Cancel** to return to the Nikon Scan applet.

The Scan Window

The "scan window" is where scans are performed and scan settings adjusted. This chapter overviews basic scan window layout and settings.

Opening the Scan Window

When Nikon Scan is started, one scan window will be opened for each supported scanner connected and powered on (you can choose the scan window to be opened at start up using the Preferences dialog box as described in "*The Scan Window: Preferences,*" below). If you are using Nikon Scan as a "stand-alone" application and have closed the scan window for a particular scanner, you can re-open the window by choosing the scanner from the list of devices shown in the **Device** submenu of the **Nikon Scan** menu. If Nikon Scan is functioning as an acquire plug-in for another application, the scan window can be opened by selecting Nikon Scan from the application's list of acquire or import sources.

The Parts of the Scan Window

The scan window is composed of the following sections:

- the title bar
- the control area
- the preview/crop area
- the interactive help display

The control area is the area on the left side of the scan window containing a crop information display and the buttons and tabs used in changing scan settings. The image to be scanned is previewed in the preview/crop area on the right of the window, where the area to be scanned (called a "**crop**") can be selected. The title bar, at the top of the window, shows the name and firmware version of the scanner currently selected and gives its SCSI ID and the ID of the host adapter. The interactive help display, at the bottom of the window, displays help messages when the cursor is moved over controls in the scan window.

Title bar

Control area

Preview/crop area

Interactive help display
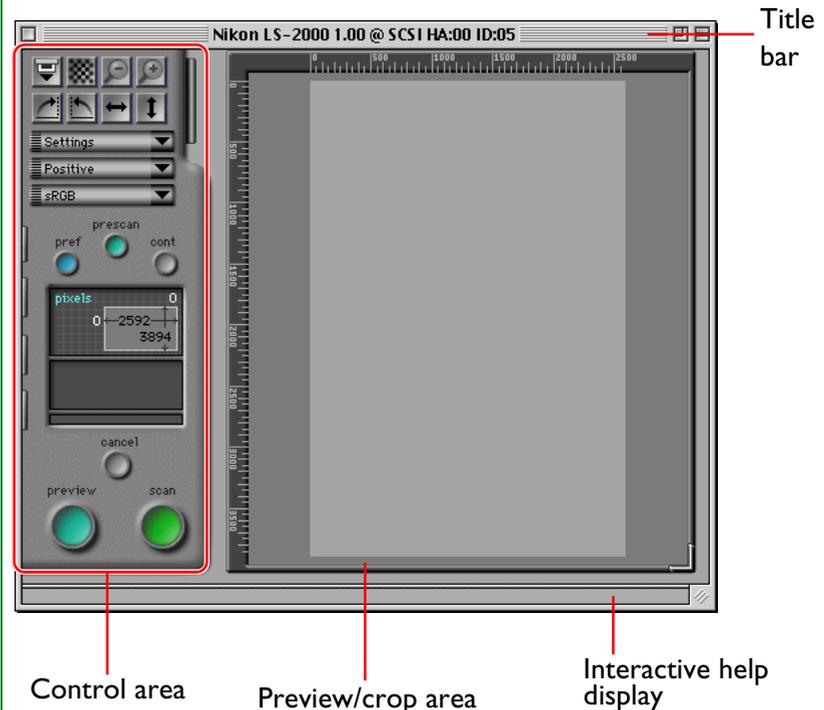
Active controls

The buttons in the control area are active at different times during the preview and scanning process depending on the media and adapter used. Controls that are inactive are "grayed out" or not colored. If the current adapter allows non-sequential scanning of multiple images, a thumbnail drawer-tab will be displayed at the top of the control area. This tab will not be displayed when a slide adapter is inserted in the scanner.

Moving the cursor over any of the drawer-tabs at the left side of the control area causes the tab to pop out. Click the tab to open the drawer and view the controls it contains. The drawer can be closed by clicking the arrow tab at the right edge of the drawer.

Control area for
multiple-image adapters

Control area for
slide adapters

Thumbnail
drawer-tab

Drawer tab

Drawer
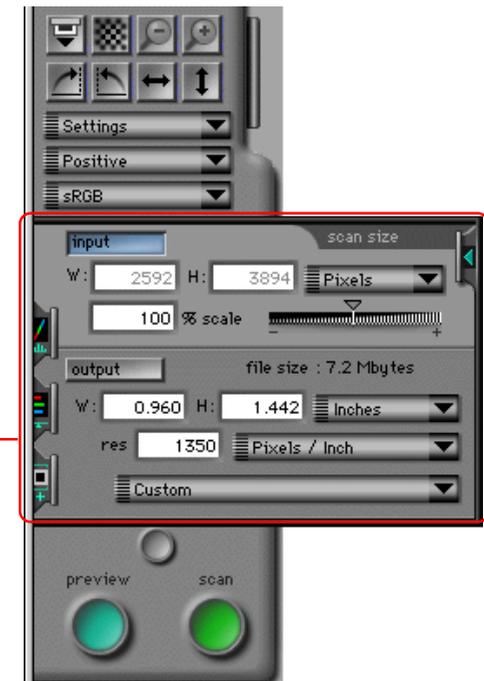
No film/no adapter

If no adapter is inserted in the scanner or if no media are in the adapter, the scan window will be grayed out and all controls other than the **pref**erences button will be inactive.
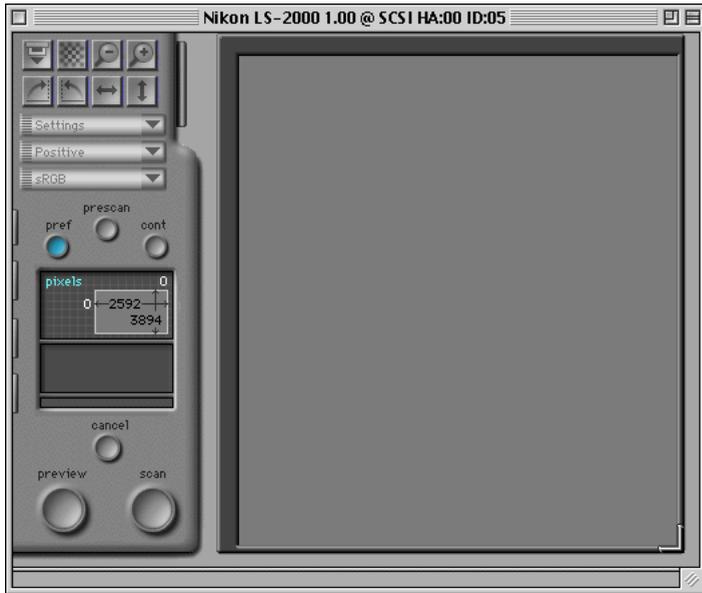

Note: *Adapters will not be recognized unless fully inserted in the scanner.*

The controls and settings in the scan window will remain active if the slide mount adapter or the slide feeder is removed from the scanner, but the controls will not function as expected. For example, clicking the **scan** button will produce an error.

Moving and Resizing the Scan Window

The scan window can be moved and resized using standard window controls. Drag the bottom right corner of the window to adjust it to any size between 600 × 450 pixels and the dimensions of the computer monitor. Drag the title bar to move the window anywhere on the desktop.
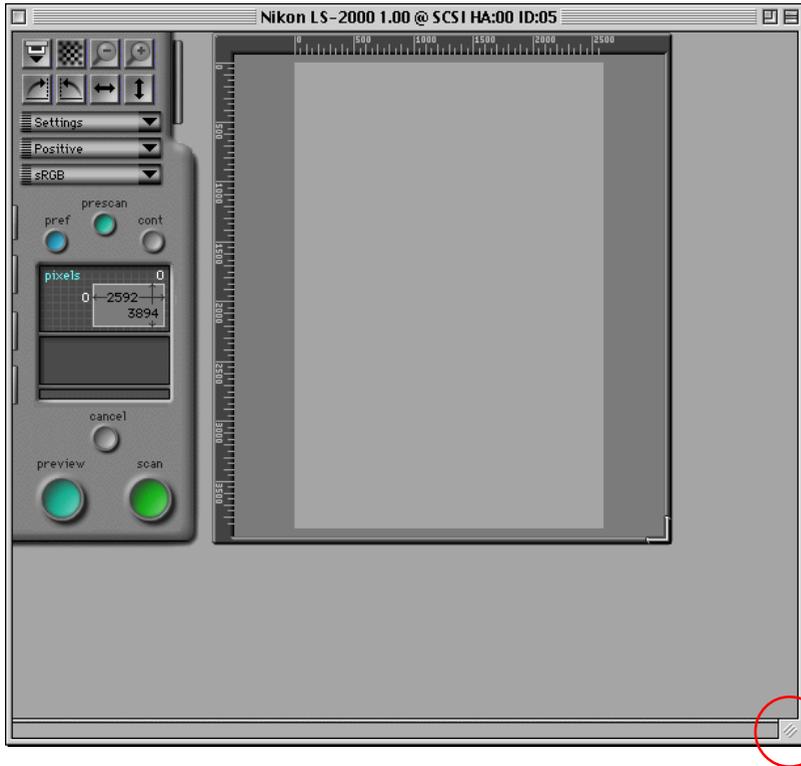
The window control buttons in the title bar offer the following functions (the buttons shown are for MacOS versions 8.0 or later; the "window-shade" button is not available in System 7):

**(Close)**: Closes the window and returns you to the calling application.

(Resize): Enlarges the window to fill the screen. Clicking the button a second time returns the window to its original size.

(Window-shade): Reduces the window to a title bar. Click the button a second time to reopen the window.

Changing the size of the preview/crop area

The size of the scan-window control area is fixed, but the size of the preview/crop area can be changed by dragging its bottom right corner. The preview/crop area can not be made larger than the scan window. The preview/crop area can be moved anywhere in the scan window by dragging the rulers at the top and left side of the area.
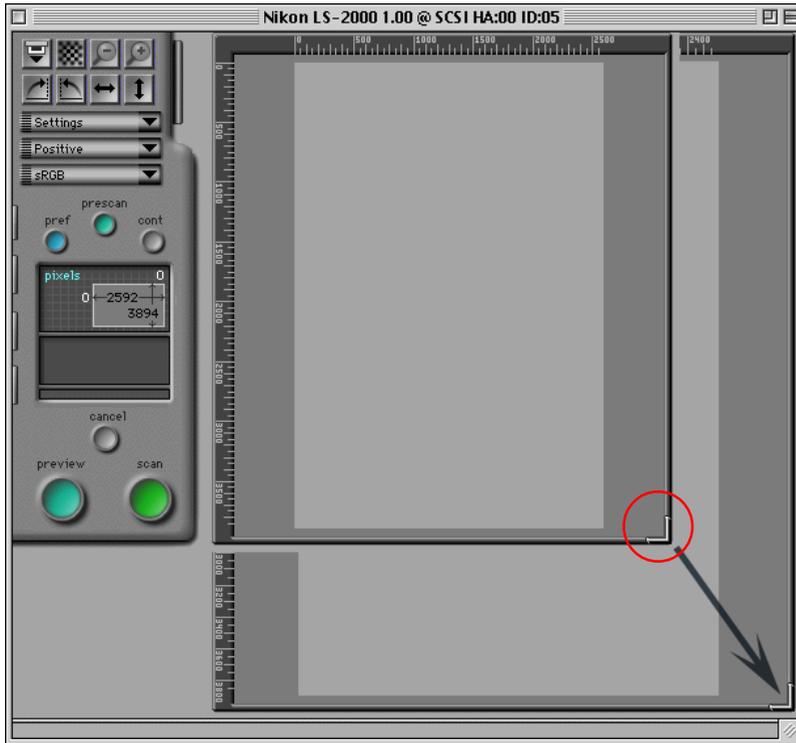

Resizing the preview/crop area
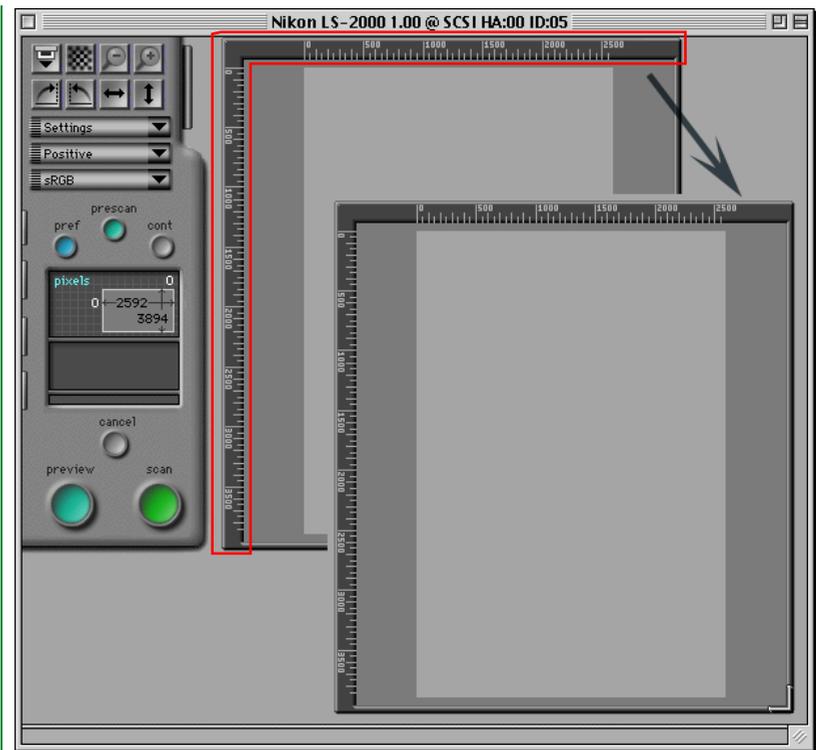
Moving the preview/crop area

Scan Window Preferences

This section discusses the scan window preferences, or basic scan settings. Some of these settings depend on the scanner selected.

Opening the preferences dialog

Clicking the **pref**erences button in the control area of the scan window, or selecting **Preferences** from the **Edit** menu in the menu bar, displays the Preferences dialog box shown opposite.
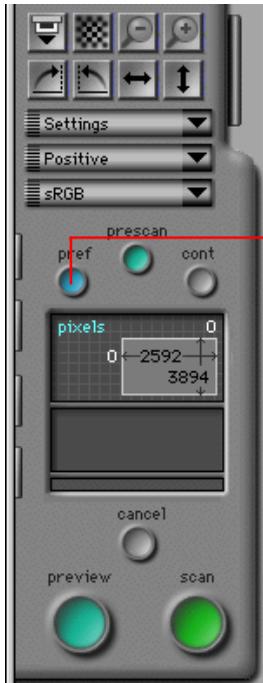
Preferences button
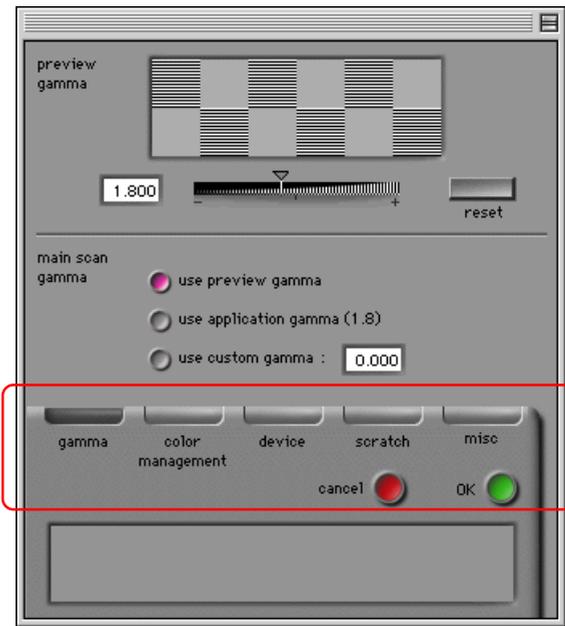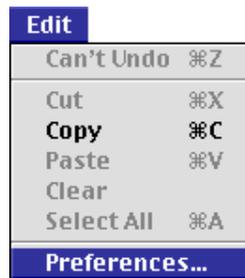
The Preferences dialog contains the following five tabs:

- gamma tab
- color management tab
- device tab
- scratch tab
- miscellaneous tab

The tab currently displayed is indicated by a dark gray bar above the name of the tab. Clicking the **OK** button at the bottom of the window saves any changes to preferences and returns you to the previous window. Clicking **cancel** returns you to the previous window without saving changes.

The Device tab

The Device tab is shown below.
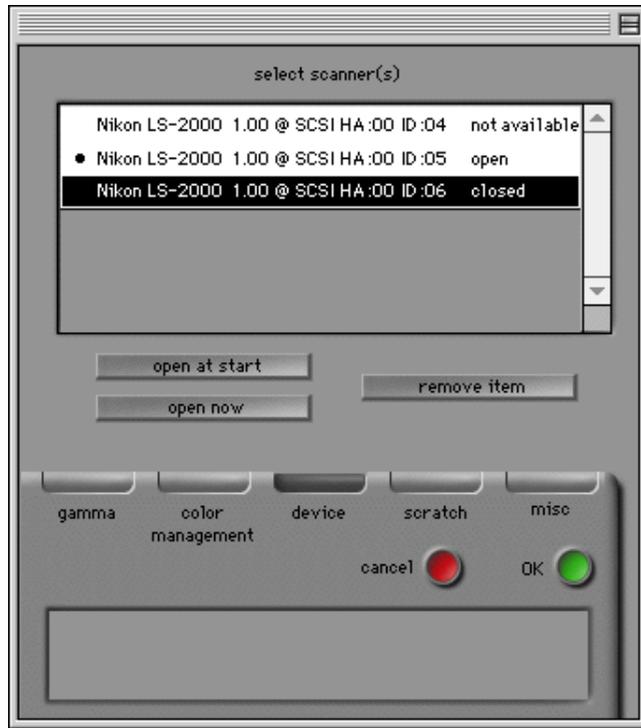
Device status

The Device tab gives the status of the devices available, together with their name and SCSI ID.

open: the scan window for this device is currently open

closed: the device is connected but the scan window for the device is closed

not available:

a previously-connected scanner is either no longer connected or is off

Selecting the scan window(s) to be open at startup

Using the Device tab in the Preferences dialog, it is possible to select what scan windows will be opened at start-up when multiple supported scanners are connected and powered on. The scan window for devices marked with a bullet in the **select scanner(s)** list-box will be opened automatically when Nikon Scan starts up. To have the scan window for a given device open at start-up, select the device in the **select scanner(s)** list-box and click the **open at start** button. Clicking the button a second time to prevent the scan window for the device from opening automatically. To remove an unavailable device from the list of scanners, select the device and click the **remove item** button. Devices that were open in your last session of Nikon Scan cannot however be removed.

Opening a scan window from the Preferences dialog

The scan window for devices currently marked as closed can be opened by selecting the device in the **select scanner(s)** list-box and clicking **open now**. This operation has no effect on whether the scan window for the device will open at start-up.

The Gamma tab

The Gamma tab in the Preferences dialog allows the user to set the output gamma values used in displaying preview images and in making the final scan.
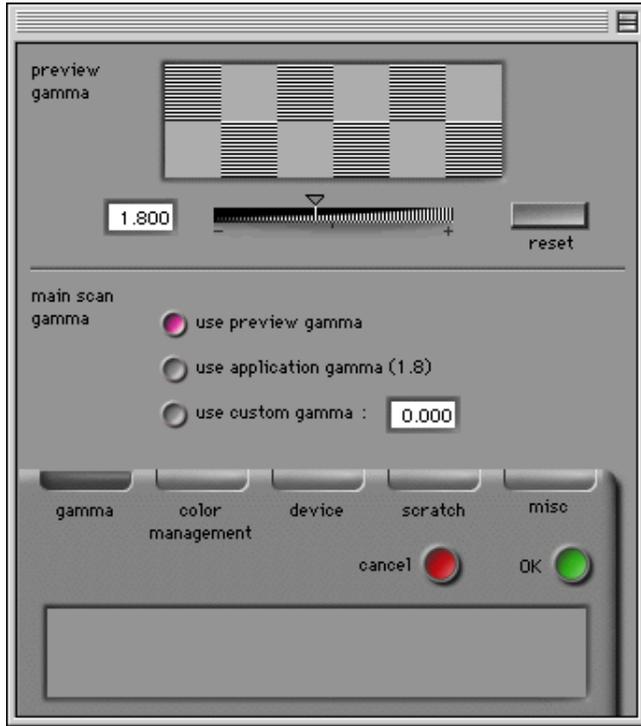
Note: *If you are using the Nikon Color Management System, you can specify that the gamma values set in the Gamma tab not be used. See "The Color Management tab," below.*

Preview gamma

Gamma compensation for the scan window can be set by direct input or using the slider. Adjust the gamma value so that the gray patterns above the gamma slider match in density. When performing this adjustment, it is best if you set the resolution of the monitor to a low value such as 640 × 480 dots and sit as far away from the monitor as possible. To restore the factory default gamma value of 1.8, click the **reset** button.

Main scan gamma

Main scan gamma is used when the image in the scan window is scanned and passed to the host application (if you are using Nikon Scan as a "stand-alone" application, preview gamma will be used when the image is scanned; hence the main scan area will not appear in the Gamma tab). The gamma value used in the final scan can be chosen from the following options:

use preview gamma

The gamma value for the final scan will be the same as that shown in the **preview gamma** text box.

use application gamma

The gamma value of the calling application is used.

use custom gamma

A value for main scan gamma can be entered in the text box.

The Color Management tab

Nikon Scan's Color Management System (CMS) allows you to select calibrated RGB (sRGB), CMYK, and HSL color models as the color space for displaying and modifying images prior to scanning. You can adjust Nikon Color Management settings using the Color Management tab in the Preferences dialog.
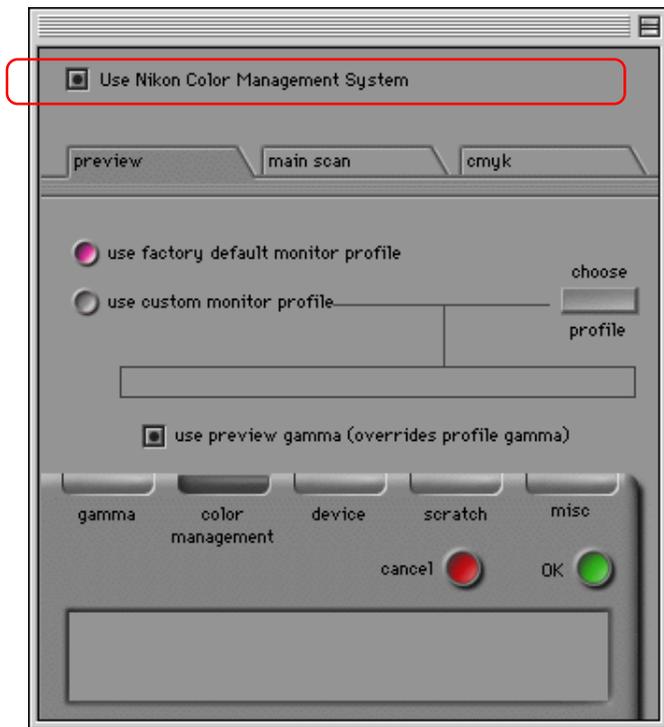
If the "**use Nikon Color Management System**" check-box in the top of Color Management tab is on (the default setting), the Nikon Color Management System will be used. When CMS is on, the user can choose from sRGB (calibrated RGB), CMYK, and HSL color spaces. When off, only RGB and grayscale color spaces are available. To put changes to Color Management settings into effect, click the **OK** button to close the Preferences dialog, then exit and restart Nikon Scan.

Output color space

The color space used when the image is scanned and passed to the host application depends on whether Nikon Color Management is used. When CMS is used and Nikon Scan is being used as an acquire plug-in, the color space chosen in the scan window color-space pop-up menu (sRGB, CMYK, or HSL) is used in the scan window only; when scanned, the image is passed to the host application as RGB data. When Nikon Scan is being used as a "stand-alone" application, the color space does not change when the image is scanned. If CMS is not used, the scanned images will be passed to the host application using the color space specified in the scan window (RGB or grayscale).

Color management settings

The settings in the Color Management tab apply only when Nikon Color Management is on. The following three types of settings are available:

- preview settings (monitor profile)
- main scan settings (output profile)
- CMYK settings
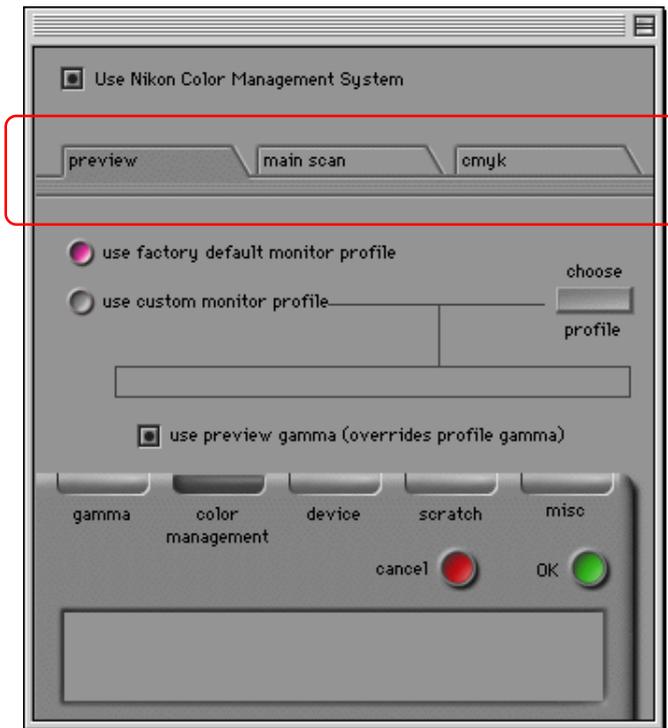
When Nikon Scan is being used as a "stand-alone" application, the output profile is the same as the monitor profile, and the main scan settings sheet is not available.

Note: *Incorrect color management settings could result in loss of image quality. It is recommended that you use the factory default settings for most purposes.*

Preview settings (monitor profile)

The Preview sheet in the Color Management tab allows you to choose a monitor profile.
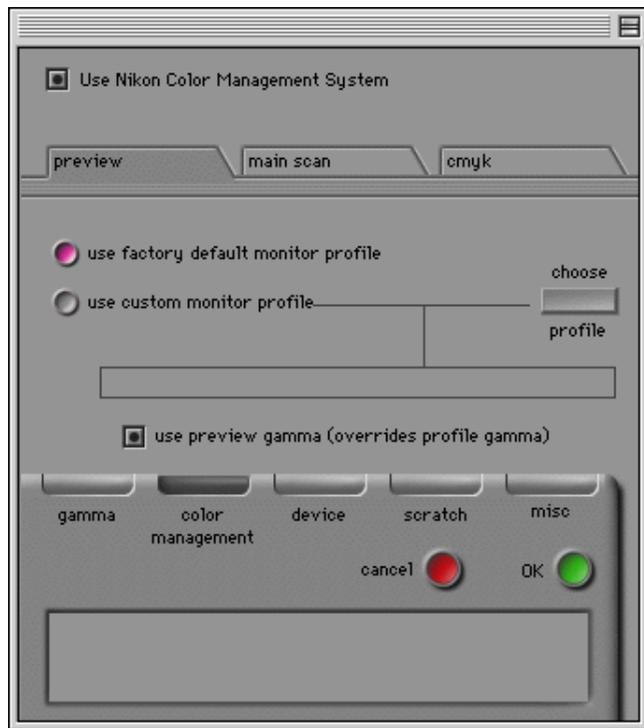
The following choices are available:

use factory default monitor profile

Nikon Scan's monitor profile is used (default setting).

use custom monitor profile

This option allows the user to choose a monitor profile supplied by the monitor's manufacturer. When this radio button is on, the **choose profile** button will be active. Clicking the **choose profile** button displays a standard open dialog, allowing you to navigate to the folder containing the manufacturer's profile. The selected path will be displayed in the text box below the radio button.

use preview gamma (overrides profile gamma)

If this check-box is on, the preview gamma value specified in the Gamma tab (see above) will be used in place of the default or custom monitor profile.

Main scan settings (output profile)

The Main Scan sheet in the Color Management tab allows you to select the profile used when scanned images are transferred (output) to the host application (these settings are not available when Nikon Scan is used as a "stand-alone" application).
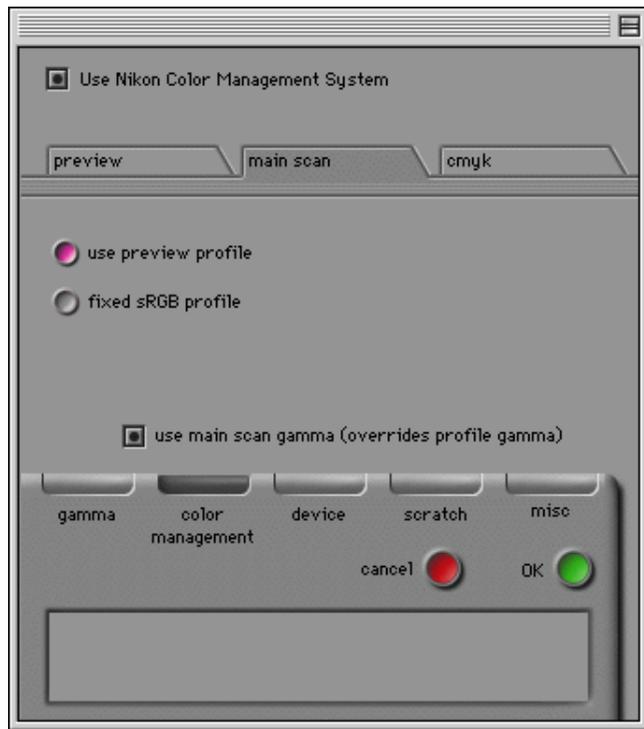
The following settings are available:

use preview profile

The monitor profile settings specified in the Preview sheet are used. This is the default setting.

fixed sRGB profile

A fixed sRGB (calibrated RGB) profile is used.

use main scan gamma (overrides profile gamma)

When this check-box is on, the gamma value specified for main scan gamma in the Gamma tab (see above) will be used.

CMYK settings

The CMYK color model is used for output on standard four-color printers. A custom CMYK profile can be chosen in the CMYK sheet of the Color Management tab.

The following settings are available:

use default CMYK

Nikon Scan's default color library is used (default setting).

use custom profile

This option allows the user to choose the color library to be used. When this radio button is on, the **choose profile** button will be active. Clicking the **choose profile** button displays a standard open dialog, allowing you to navigate to the folder containing the color library. The selected path will be displayed in the text box below the radio button.

The Scratch Disk tab

The Scratch Disk tab in the Preferences dialog box allows you to choose the volume (disk) or volumes that Nikon Scan uses for temporary storage, or "virtual memory."
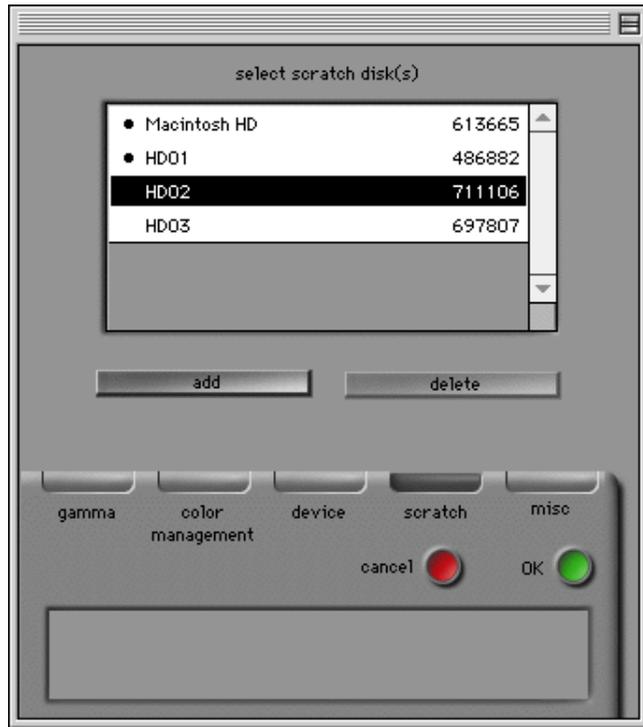
The **select scratch disk(s)** list-box shows the disks available for virtual memory and the amount of free disk-space on each disk, with a bullet next to the disks that are currently selected for temporary storage. By default, the disk on which Nikon Scan is located is used for temporary storage. To add another disk to be used as virtual memory, highlight the desired disk in the list-box and click **add**. The selected disk will be marked with a bullet. To deselect a bulleted disk, highlight the disk and click **delete**. The bullet will disappear, indicating that the disk will not be used for temporary storage. To put changes to scratch-disk settings into effect, click **OK** to exit the Preferences dialog, then close all open programs and restart your computer.

The Miscellaneous tab

The Miscellaneous tab in the Preferences dialog box determines the initial values for a number of scan window settings.
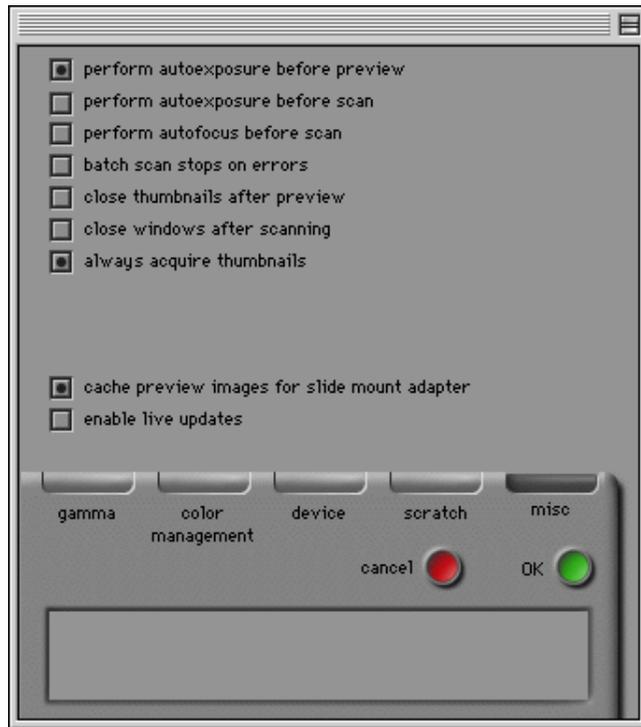
Autoexposure

By default, a prescan is performed to determine exposure levels before a preview scan is made. If the **perform autoexposure before preview scan** check-box is off, an auto-exposure operation will not be performed before the preview scan.

The **perform autoexposure before main scan** check-box controls whether a second autoexposure operation will be performed before the image is scanned and opened in the host application. By default, no autoexposure is performed before the main scan. If this check-box is on, an autoexposure operation will be performed before the final scan.

Regardless of how these options are set, an autoexposure operation will be performed when the **prescan** button in the scan window is clicked.

Autofocus

By default, an autofocus operation will only be performed when the autofocus button in the scan window is clicked (see "*Preview*," below). If the **perform autofocus before main scan** check-box is on, an autofocus operation will be performed before the final scan. This option is not available when the selected device does not support autofocus.

Batch scan

Some scanners, such as the LS-2000, can automatically scan several frames of strip or IX240 film in succession. Depending on the scanner, multiple images can also be scanned automatically using a slide-feeder. If such a device is selected, the scanner can be set to stop scanning after an error has occurred by turning **batch scan stops on error** check-box off (by default, the scanner will not stop scanning even when an error has occurred).

Close thumbnails after preview

By default, the thumbnail drawer remains open after a preview scan is performed. If the **close thumbnails after preview** check-box is on, the thumbnail drawer will close automatically after a preview has been performed.

Close window after scanning

By default, the scan window will remain open after an image has been scanned and transferred to the host application or to an image window in Nikon Scan. If the **close window after main scan** check-box is on, the scan window will close automatically when the **scan** button is clicked to scan an image.

Note: *Some host applications may close the scan window after scanning regardless of how this check-box is set.*

Acquire thumbnails

By default, the scanner creates and displays thumbnail previews for all frames when the thumbnail drawer is opened. If the **always acquire thumbnails** check-box is off, thumbnails will not be created; instead, frames will be indicated by number only. Thumbnails can be created and displayed by clicking the "hide/display thumbnails" button in the thumbnails drawer.

Cache preview images

When a preview image is zoomed in, Nikon Scan stores the previous preview image so that it can be quickly re-displayed when the image is zoomed out. Setting the **cache preview images for slide mount adapter** check-box to off forces Nikon Scan to perform a preview scan every time the image is zoomed out.

Note: *This function is only available when a slide adapter is used.*

Live picture updates

By default, changes to gamma curves are only reflected in the preview image after a point on the curve has been dragged to a new position and the mouse button released (see "*The Curves and Levels Drawer*", below). If the **enable live picture updates** check-box is on, the preview image will be updated continuously while points on the gamma curve are being dragged to a new position. This feature makes requires a powerful computer.

The Thumbnail Drawer

When a scanner that supports non-sequential scanning of multi-image media such as strip film or IX240 film is selected, the scan window's thumbnail drawer-tab will be activated. Using the thumbnail drawer, all images in the film can be previewed as thumbnail images and one or more selected for full-scale preview or scanning.

Opening the Thumbnail Drawer

Click the thumbnail drawer-tab in the control area of the scan window to open the thumbnail drawer.
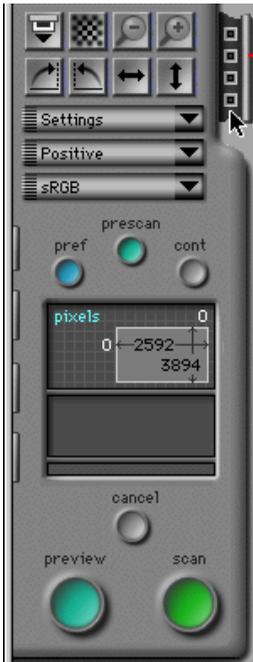
Thumbnail drawer-tab
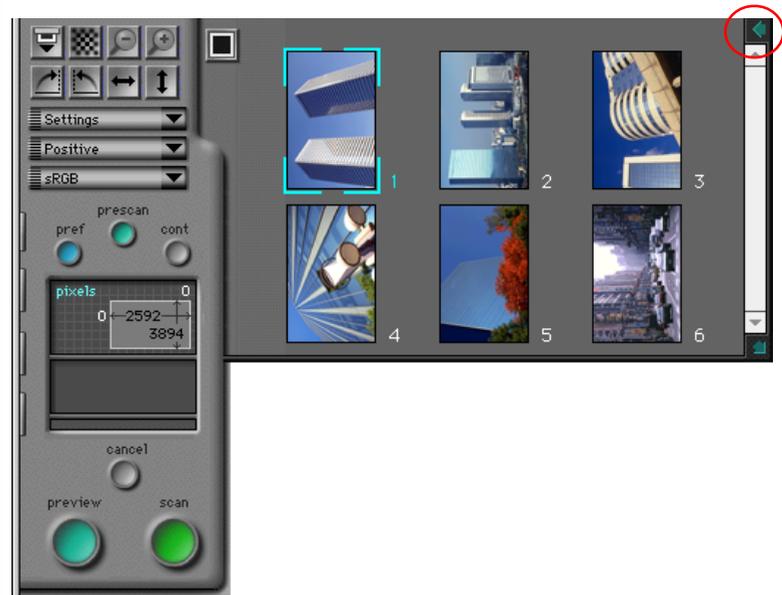
The thumbnail drawer can be closed by clicking the box at its upper right corner.

Note: *Nikon Scan's thumbnail function is only available when the scanner currently selected allows non-sequential access to multiple images. Non-sequential access is supported on the LS-2000 when SA-20 strip film adapter or the IA-20 IX240 film adapter are inserted. When the strip film adapter is connected, 2–6 thumbnails will be displayed depending on the number of frames in the strip. Depending on the film used, fifteen, twenty-five, or forty thumbnails will be shown when the IX240 adapter is in place. If the current scanner or adapter does not support non-sequential access, no thumbnail drawer-tab will be displayed.*

Displaying Thumbnails

The contents of the thumbnail drawer can be displayed either as thumbnail previews or as frame numbers only.

Thumbnail display

In this mode, small preview images, or "thumbnails," of all frames will be displayed in the thumbnail drawer. By default, thumbnail previews will automatically be created and displayed when the thumbnail drawer is opened.

Hide thumbnails button
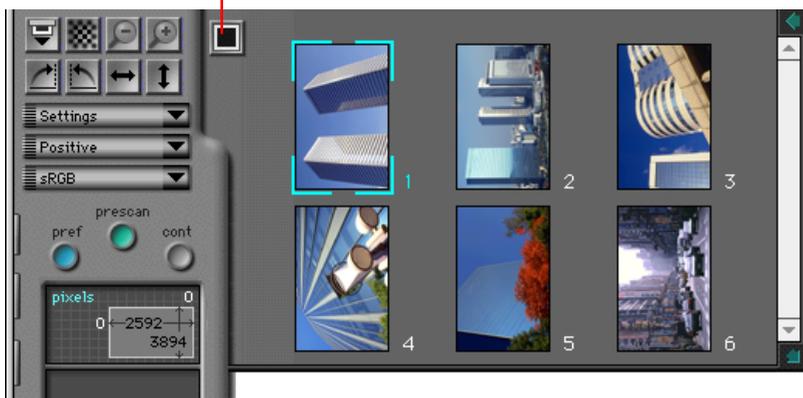
Clicking the "Hide thumbnails" button in the thumbnail drawer when thumbnails are displayed will replace the thumbnails with a frame-number display.

Frame-number display

In this mode, frame numbers are displayed in place of thumbnail previews. The thumbnails will however be stored in memory, making it possible to return instantly to a thumbnail display by clicking the "Display thumbnails" button a second time. The thumbnail images will be kept until the scan window is closed or film ejected.

Display thumbnails button
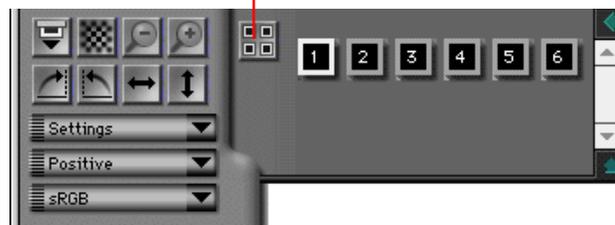
Note: *If in the Miscellaneous tab of the Preferences dialog the "always acquire thumbnails" check-box is on (the default setting), thumbnails will be created the first time the thumbnail drawer is opened. As a result, it may take some time for the drawer to open the first time the drawer-tab is clicked. If you prefer, you can select the frame-number display. In this case, thumbnail images are only created when the "Display thumbnails" button is clicked. Note however that the LS-2000's SA-20 strip-film adapter adjusts frame settings when creating thumbnails. If you conduct a preview scan without first creating thumbnails, the borders of the frames may be slightly out of position when the image is previewed or scanned.*

Resizing the Thumbnail Drawer

When there are too many frames to be displayed at one time in the thumbnail drawer, a scroll bar will appear at the drawer's right border. Thumbnails can be scrolled a line at a time.
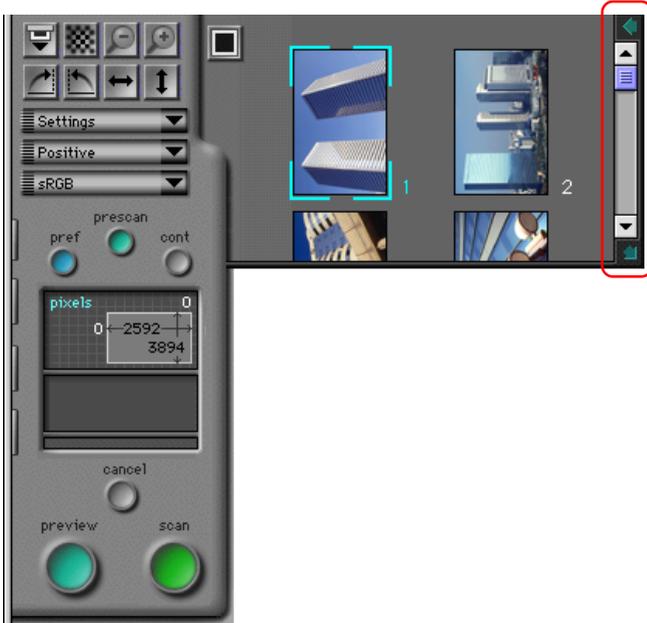
The drawer can also be enlarged or reduced in size by dragging the re-size box at its lower right corner. The drawer cannot be made larger than the scan window. The next time the thumbnail drawer is opened, it will be restored to the most recently specified size.
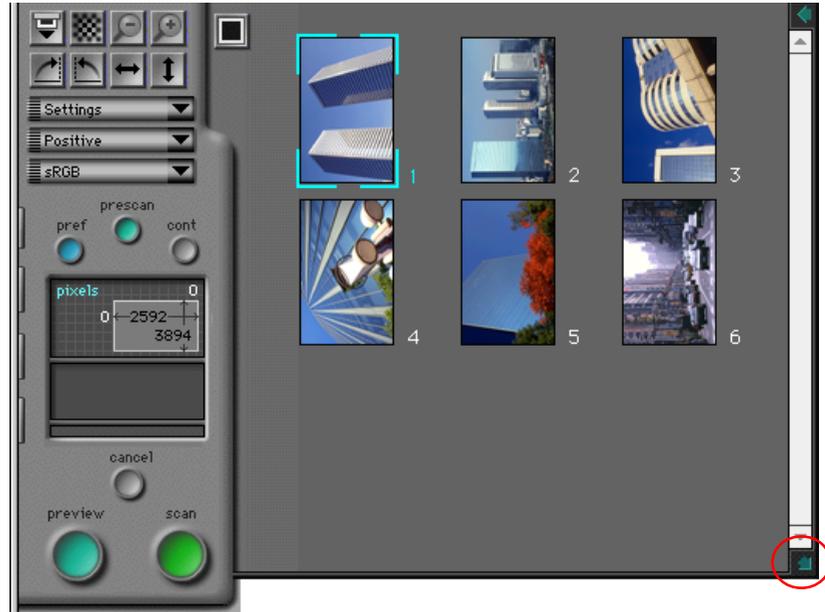
Selecting Thumbnails for Scanning

Using the thumbnail drawer, frames can be selected for preview and scanning. When a thumbnail or frame number is clicked, it will be highlighted with a blue border to indicate that it has been selected. Selected images can be previewed in the scan window by clicking the **preview** button. A preview operation will also be performed when a thumbnail or frame number is double-clicked. After making any adjustments, click the **scan** button to scan the image into the host application or into an image window in Nikon Scan.

Flipping and Rotating Thumbnail Images

Selected frames in the thumbnail drawer can be rotated or flipped prior to preview using the rotate and flip buttons in the control area of the scan window.

Rotate and flip buttons

For example, clicking the "Rotate Clockwise" button ( ) with a frame selected will rotate the thumbnail ninety degrees to the right. When the frame is previewed, it will appear in the scan window rotated ninety degrees clockwise.

Scanning multiple frames simultaneously

Selecting multiple thumbnails

Multiple frames can be selected for scanning by holding down the **command** key while clicking each frame in turn. If, after selecting one frame, you select a second while holding down the **shift** key, all frames between the two will be selected. Frames already selected can be deselected by clicking them a second time. Flip and rotate operations apply simultaneously to all selected thumbnails.

Scanning multiple thumbnails

Preview or scan operations can be performed on multiple selected frames. When the **preview** button is clicked, a preview scan will be performed one at a time on the selected frames and the resulting preview images stored temporarily in memory. When any of the previewed thumbnails is subsequently selected in the thumbnail drawer, the preview for that image will be displayed in the preview/crop area. You can switch among the images in memory by clicking the thumbnails of the previewed images. Crops and scan settings can be specified separately for each preview. When the **scan** button is clicked, a full scan will be performed on all the frames currently in memory using the scan settings and crops for each frame. The scanned images will be opened in separate windows in the host application or in Nikon Scan.

If the **scan** button is clicked when multiple frames are selected in the thumbnail drawer, the images will be scanned and transferred to the host application one at a time. If Nikon Scan is functioning as a "stand-alone" application, the scanned images will be opened in separate image windows.

IX240 Film Thumbnails

The number of thumbnail frames displayed varies depending on the adapter used. In the case of the IA-20 (IX240 film adapter), depending on the number of frames in the roll fifteen, twenty-five, or forty thumbnails will be displayed.
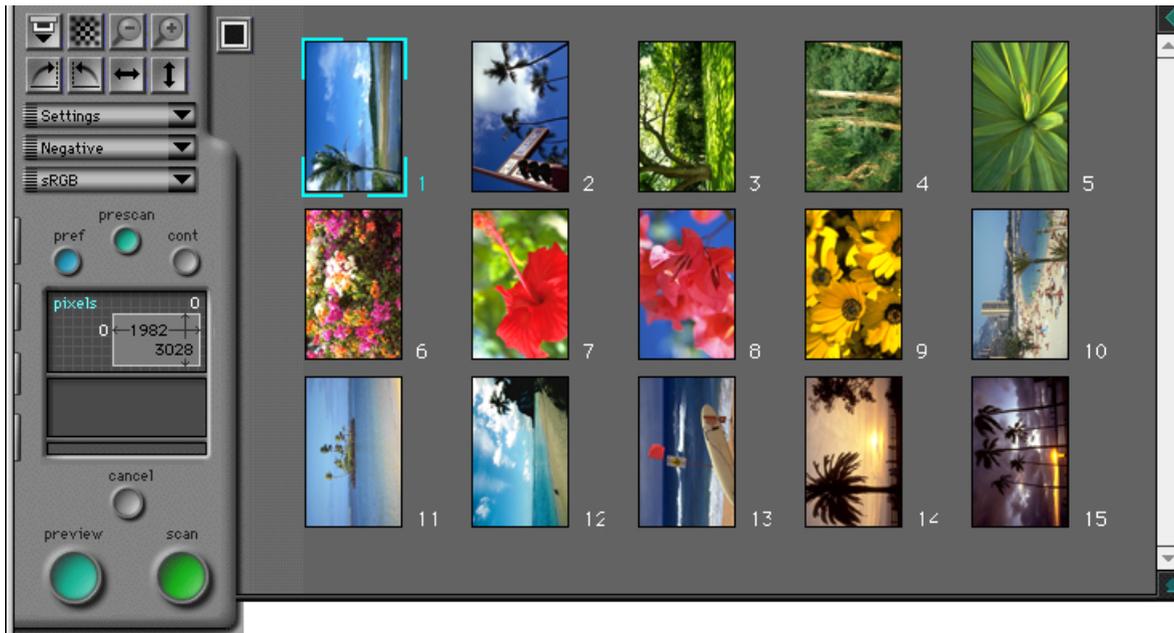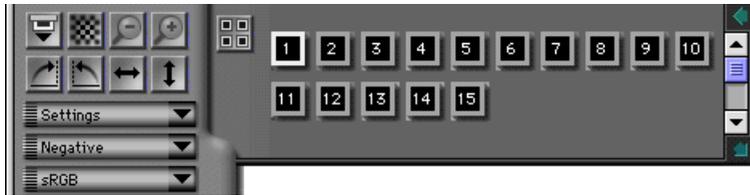
Preview

Before an image is scanned into another application or into an image window in Nikon Scan, it can be previewed in the scan window. This chapter describes the basic operations that can be performed prior to scanning, such as rotating and flipping the image, adjusting contrast and focus, and selecting an area for the final scan. Other adjustments that can be made using the drawer tab controls are discussed in the chapters for each drawer.

Film Type and Color Space Selection

Before previewing an image, it is necessary to specify the type of film used in the scanner and to select the "color space" into which the images are to be scanned.

Specifying the film type

The type of film to be scanned is set using the film-type pop-up menu in the scan window's control area.

To specify the film type, click the film-type menu button and from the menu that appears select the type of film to be scanned (note that the contents of this menu may vary depending on the scanner selected). The current film type will be displayed in the menu button.
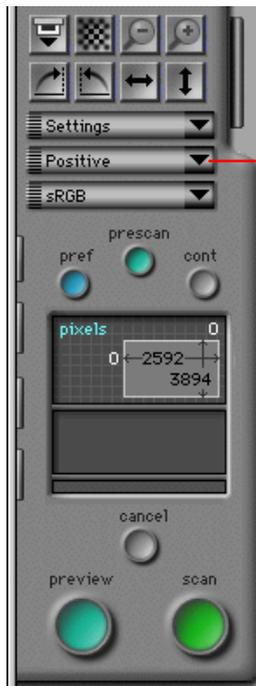
Film-type menu button
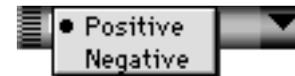
Film-type pop-up menu

In the case of film scanners, the following film types are supported.

Positive: Choose this option when scanning positive film, such as slides

Negative: Choose this option when scanning negatives

Choosing a Color Space

When scanning images with Nikon Scan, you must choose a "**color space**," i.e., the color model that will be used in converting the original, analog image into digital form for transfer to your computer. This chapter explains the color spaces available in Nikon Scan and how to change the color space setting.

Clicking the color-space menu button in the scan window's control area displays the color-space pop-up menu shown below. Choose the desired color space from the menu. The selected space will be displayed in the menu button.
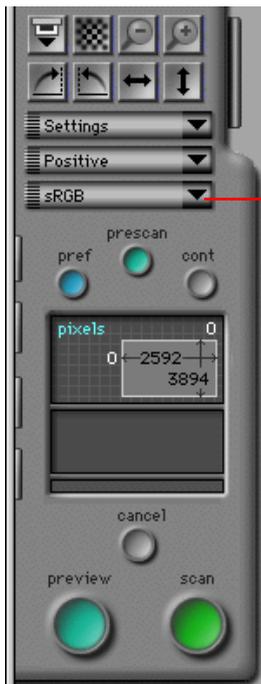
Color-space menu button
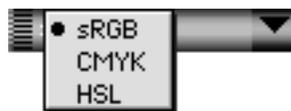
Color-space pop-up menu when Nikon Color Management is "on"

Color space can be selected from among the following color models. The default setting is sRGB (calibrated RGB).

sRGB   RGB is the model used in displaying images on a computer monitor. Colors are represented using different intensities of the three primary colors, red, green, and blue. Nikon Scan actually uses a calibrated RGB, or sRGB.

CMYK   Colors in the CMYK color model are represented using combinations of the four colors commonly used in printing (cyan, magenta, yellow, and black).

HSL   Colors in HSL are represented using hue, saturation, and luminosity. Nikon Scan uses a calibrated HSL color model.

The selected color space is used for making adjustments to color balance and tone range in the preview window. If Nikon Scan is being used as a "stand-alone" application, the color space will be preserved when the image is scanned. When Nikon Scan functions as an acquire plug-in for another application, however, the scanned image will be converted to RGB before being transferred to the host application.

Note: *The contents of the color-space pop-up menu vary depending on whether "use Nikon Color Management System" has been selected in the Color Management tab of the Preferences dialog. When Nikon Color Management is "on" (the default setting), the menu shown above will appear.*

The color-space menu when CMS is off

When the "use Nikon Color Management System" check-box in the color management tab of the Preferences dialog is "off," the following color-space menu will appear.

Color space can be selected from among the following:

RGB   Uncalibrated RGB

Grayscale   The image will be represented using 256 shades of gray

Note: *If you are scanning black-and-white (monochrome) film, the best results will usually be obtained with a grayscale color space. To select a grayscale or uncalibrated RGB color space, you must first open the Preferences dialog to the Color Management tab, set the "use Nikon Color Management System" check-box to off, click **OK** to close the Preferences dialog, and then quit and restart Nikon Scan. The color-space menu will then be that shown immediately above.*

Setting and Ejecting Film

Set the film as described in your scanner's hardware manual. If the current scanner or adapter supports remote ejection, the eject button will be active, and film can be ejected by clicking the button.

Eject and feed button

If the optional SF-200 slide-feeder is inserted in the LS-2000, clicking the eject button ejects the current slide and feeds the next slide from the feed magazine.

Creating a Preview Image

Clicking the **preview** button in the scan window's control area will cause the scanner to perform a preview scan of the current slide or currently selected frames and display the resulting image in the preview/crop area. While the preview scan is in progress, the **cancel** button will turn red to show that it has been activated. To stop the preview scan without creating a preview image, click the **cancel** button.
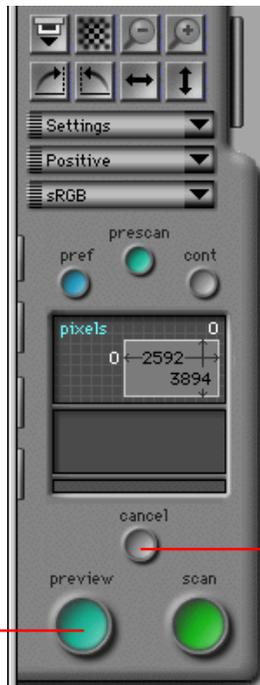
Cancel button

Preview button

Changing the size of the preview/crop area

The image in the preview/crop area can be enlarged by first resizing the scan window to make it bigger (see "*The Scan Window*," above) and then dragging the resize handle at the lower right corner of the preview/crop area to the desired size. The preview image will be enlarged to match the size of the preview area while retaining its proportions. The image can be reduced by dragging the corner of the preview area to make it smaller.
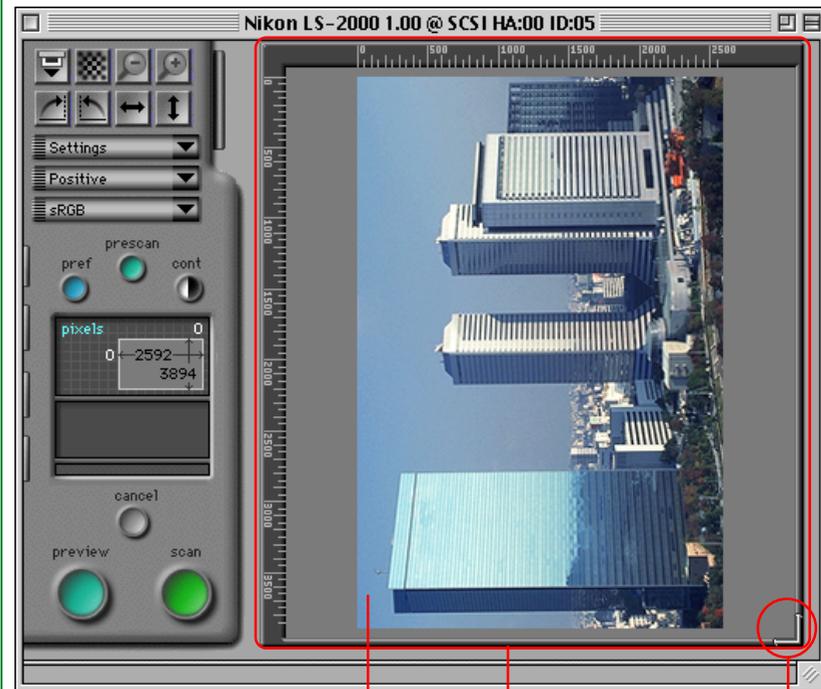
Preview image

Resize handle

Preview/crop area

Flipping and Rotating the Preview Image

Prior to scanning, the preview image can be rotated and flipped using the rotate and flip buttons in the control area of the scan window. Any flips and rotations performed on the preview image will be preserved when the image is scanned and transferred to the host application.

 Rotate and flip buttons

The rotate and flip buttons are described in detail below.

Rotating the preview image

The image can be rotated ninety degrees at a time using either of the following two button:

Rotate Clockwise Button

Rotates the preview image ninety degrees to the right

Rotate Counter-Clockwise Button

Rotates the preview image ninety degrees to the left

Flipping the preview image

The image can be flipped using the two buttons shown below:

Flip Horizontal Button

Flips the preview image horizontally

Flip Vertical Button

Flips the preview image vertically

Rotating and flipping thumbnails

When the thumbnail drawer is open, rotates and flips will affect any images selected in the thumbnail drawer. If the selected thumbnail is also displayed in the preview/crop area, flips and rotates will apply both to the thumbnail and the preview image. If multiple thumbnails are selected, all selected thumbnails will be rotated or flipped simultaneously.

Selecting a Crop

When an image is previewed in the scan window, you can select the area that will be scanned during the final scan. The part of the image that will be scanned is called a "**crop**." This section discusses how to select a new crop and how to change the size and position of the current crop (the size of the crop can also be set through direct input, as discussed in "*The Scan Size Drawer*," below).

Making a new crop

To select a crop, move the mouse pointer over the image in the preview/crop area, then click at one corner of the desired area and drag the cursor to the opposite corner. The area selected will be marked by a frame. The current crop can be cancelled by creating another crop or by double-clicking in the current crop. If no other crop is specified, the current crop will have the same dimensions as the image as a whole, with the result that when the **scan** button is clicked to perform the final scan, the entire image will be scanned and opened in the host application.
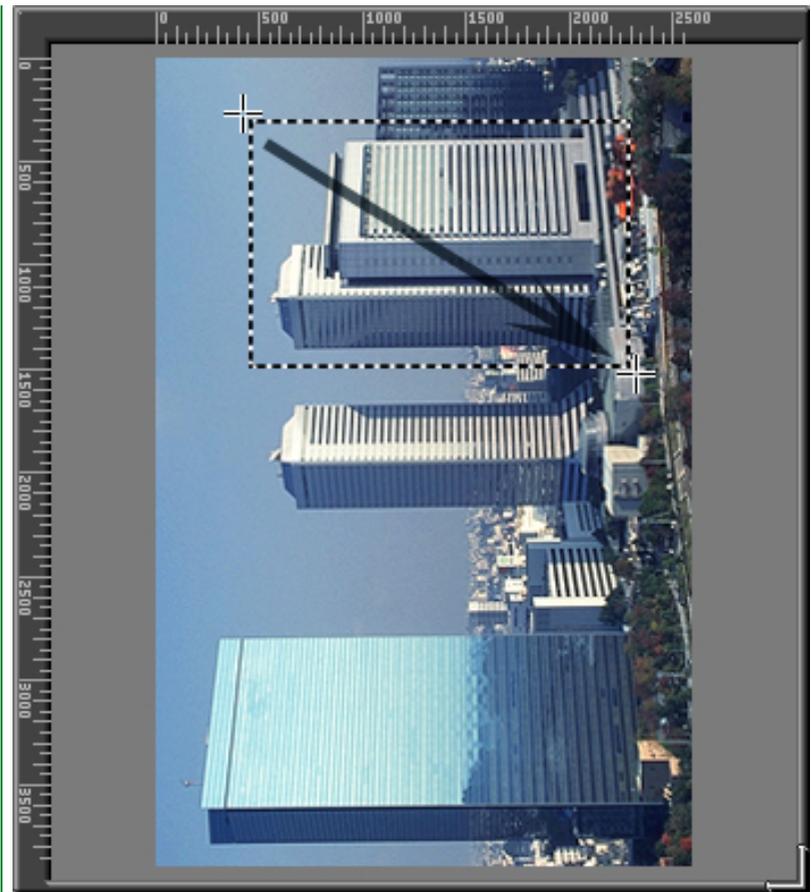
Note: *When output lock is selected in the scan-size drawer (see "The Scan Size Drawer," below), the crop sometimes can not be enlarged to the same size as the original image by double-clicking in the current crop. In this case, you will need to open the scan-size drawer and click the input-lock button to release output lock.*

Moving the crop area

The crop frame can be moved to a new location simply by placing the cursor within the frame and dragging it to a new position.

Note: *"Dragging" means moving the mouse while holding down the mouse button.*

Changing the size of the crop area

To change the size of the crop area, drag a side or corner of the crop frame. Dragging a side will change the size of the area in only one dimension, while dragging a corner allows you to change both height and width simultaneously.

Note: *When output lock is selected in the scan-size drawer (see "The Scan Size Drawer," below), the width-height aspect ratio of the current crop can not be changed by dragging the crop borders. To release output lock, open the scan-size drawer and click the input-lock button.*

Note: *For reasons relating to the compression and display of the preview image, there may be a slight difference between the crop area specified on the screen and the area that is actually scanned. When cropping an image, always allow a sufficient margin to ensure that no important element of the image will be inadvertently cropped out.*
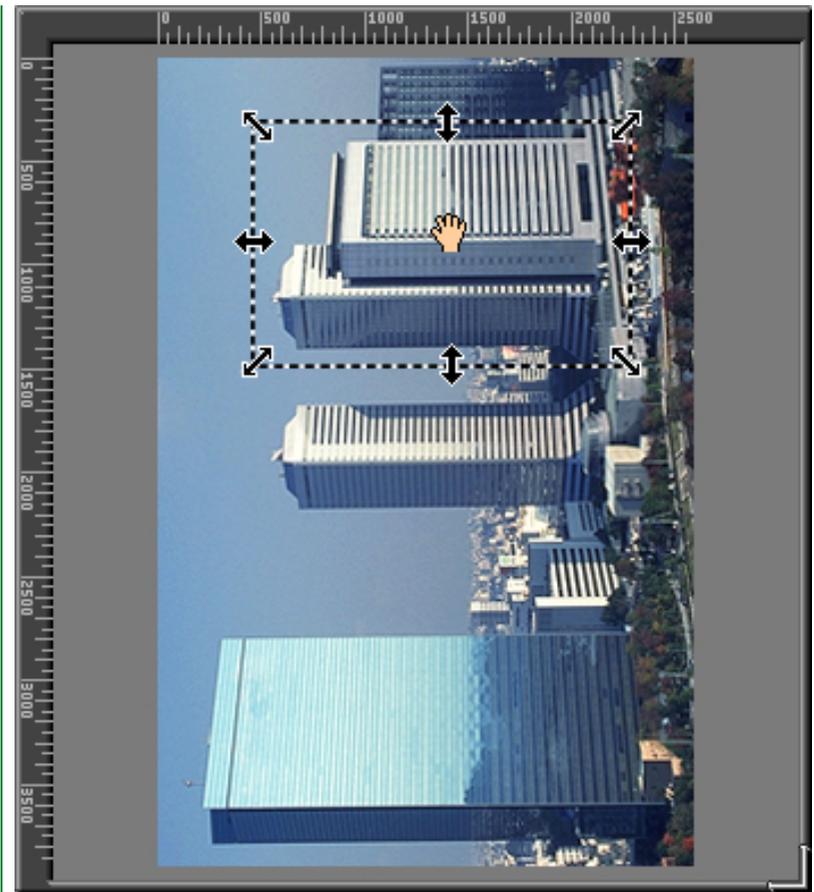
The crop coordinates display

The coordinates of the top left corner of the current crop, together with its height and width, are displayed in the control area. By default, size and location are given in pixels, but a new unit for the display can be chosen from the scan-size drawer. The units used in the crop coordinate display are also those used in the rulers at the top and left sides of the preview/crop area.
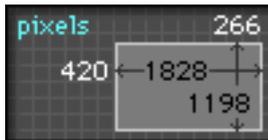
Note: *The units used for the rulers and crop coordinates are the same as the input units specified in the scan-size drawer (see "The Scan Size Drawer," below)*
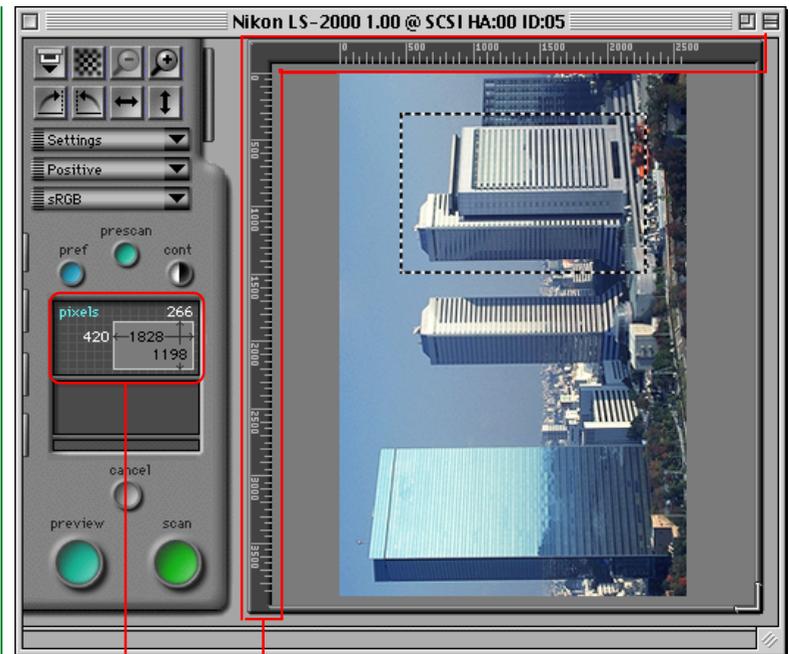
Crop coordinates

Rulers

Zooming in on the crop area

The user can view the current crop at a higher zoom ratio using the "Zoom-in" button in the control area. The "Zoom-out" button is used to return to a lower zoom ratio.

Zoom in

 "Zoom-in" button

If the current crop is smaller than the preview image as a whole, the "Zoom-in" button in the control area will be activated. Clicking this button enlarges the crop to fill the preview area. If desired, another crop can then be selected within the original crop and the zoom-in operation performed again to view the image at a still higher zoom ratio. To speed processing, Nikon Scan does not perform a new preview scan each time the image is zoomed in; the existing preview is used instead. To preview the image at the new zoom ratio, click the **preview** button.

Zoom out

 "Zoom-out" button

After a zoom-in operation has been performed, the original zoom ratio can be restored by clicking the "Zoom-out" button. Multiple zoom-in operations can be reversed one at a time by clicking the "Zoom-out" button several times in succession. The "Zoom-out" button is only active when the image has been zoomed in.
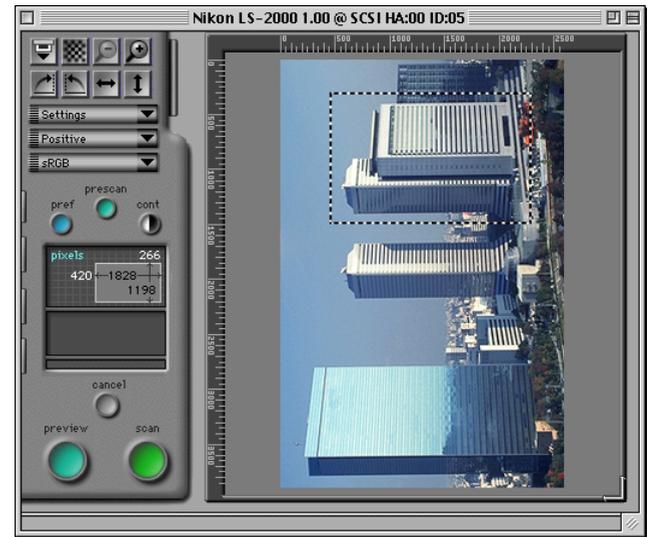
"Zoom-out" button   "Zoom-in" button
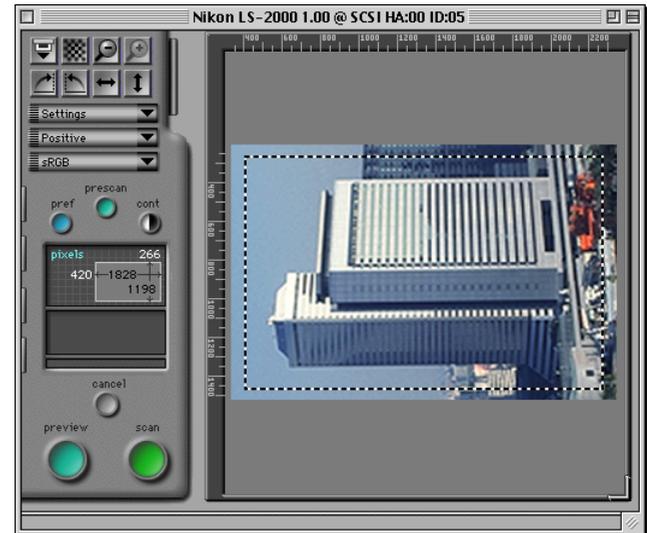
# Automatic Contrast Adjustment

Contrast can be adjusted automatically to suit the image in the preview/crop area, creating a more clearly-defined image (contrast can also be adjusted manually, as described in "*The Curves and Levels Drawer*," below). When a preview image is displayed in the scan window, the auto contrast button (labeled **cont**) will be activated. Click this button to maximize contrast while retaining the color balance of the original image.
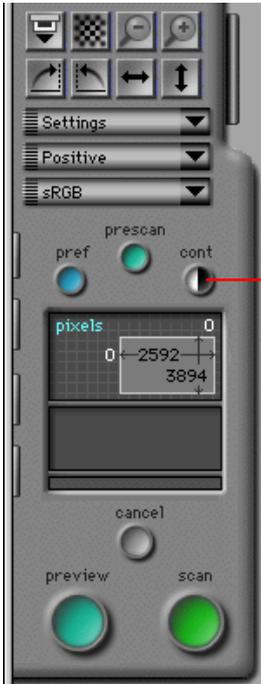
Note: *Auto contrast is only available when the color space is RGB, sRGB, CMYK, or grayscale. The auto contrast button has the same effect as the* **auto** *button in the curves-and-levels drawer (see "*The Curves and Levels Drawer*," below). While auto contrast is in effect, the tone curves for each color channel will be automatically adjusted to increase contrast. The original contrast can be restored by clicking the* **reset** *button in the curves-and-levels drawer while holding down the* option *key on the keyboard.*


Auto contrast button

The Pixel Data Display

When the cursor is moved over the image in the preview area, color data for the pixel under the cursor are shown in the pixel data display.
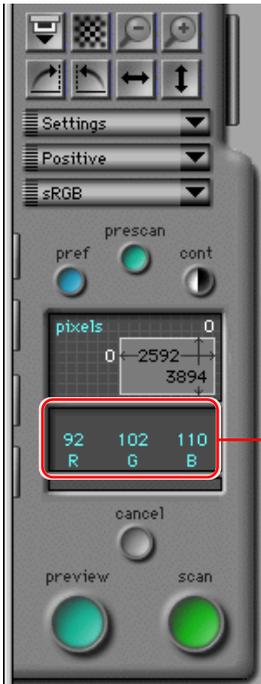
Pixel data display

How the pixel data are displayed depends on the currently selected color space. Numerical data will be displayed separately for each color element (e.g., red, green, and blue for an RGB color space, hue, saturation, and luminosity for an HSL color space). The displays for the sRGB (or RGB) and CMYK color spaces are shown below. If output levels have been edited in the curves-and-levels or color-balance drawers (see "*The Curves and Levels Drawer*" and "*The Color Balance Drawer*," below), two sets of data will be displayed. The top line gives the pixel data for the original image, the bottom the data for the image as it would appear after scanning.

Pixel data display for sRGB or RGB color space

Pixel data display for CMYK color space

Autofocus

The autofocus function adjusts scanner focus to compensate for films of varying thicknesses and for uneven film surfaces. The focus position for the autofocus operation can be changed using the "autofocus" button in the control area of the scan window.
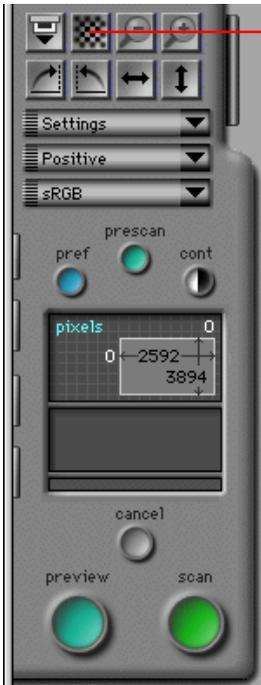
Autofocus button

Nikon Scan allows the user to choose from the following two methods for determining focus: standard autofocus and auto-focus based on a user-selected point. The default is standard autofocus, in which focus is determined using a point in the center of the preview image. To use standard autofocus, click the autofocus button.

Note: *Using the Miscellaneous tab in the Preferences dialog, it is possible to set the scanner to perform an autofocus operation automatically before making the final scan (see "*The Scan Window: Preferences,*" above).*

User-selected focus

To change the focus position, hold down the **option** key on the keyboard and click the autofocus button. The cursor will take the shape of a cross. Move the cross-shaped cursor over the point in the preview image that you want to use as the new focus point and click. An autofocus operation will be performed using the selected point as the focus position, and the result of this operation will be used in subsequent scans.

Note: *When a scanner that does not support autofocus is selected, the autofocus button will be grayed out and inactive. If the scanner does not support user-selected autofocus, only standard autofocus can be used.*

Pre-scan

By default, when the **preview** button is clicked to scan preview images, a pre-scan (preliminary scan) operation will be automatically performed to adjust exposure settings.

Note: *A pre-scan will not be carried out before preview if the "perform auto exposure before preview scan" option in the Miscellaneous tab of the Preferences dialog is not checked. A pre-scan will not be carried out before the final scan if the "perform auto exposure before main scan" option is not checked (see "*The Scan Window: Preferences,*" above).*

To adjust exposure manually, click the **prescan** button in the control area. A pre-scan operation will be carried out regardless of the settings in the Preferences dialog. To stop the pre-scan operation, click the **cancel** button.

Prescan button

Cancel button
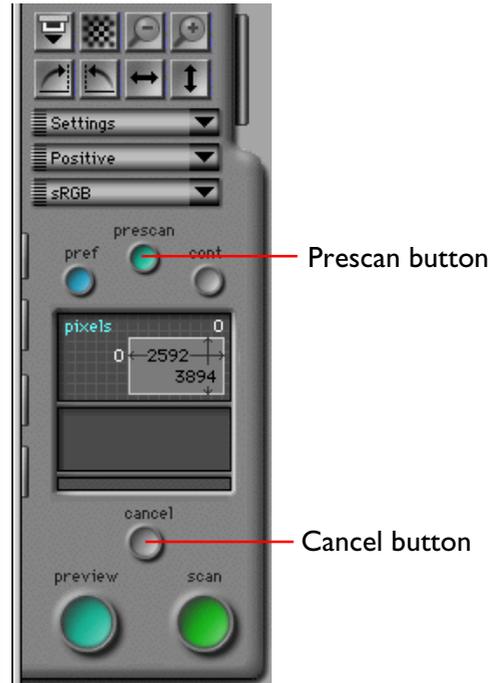
Scanning the Image into an Application

After selecting a film and color type, previewing the image, selecting a crop, and making other adjustments to scan settings as described above and in the following chapters, the image in the preview window is ready to be scanned. To scan the image into Nikon Scan's main window or into the calling application, click the **scan** button. While the scanning operation is being carried out, the **cancel** button will be activated and a progress indicator will appear in the control area. Scanning can halted by clicking the **cancel** button.
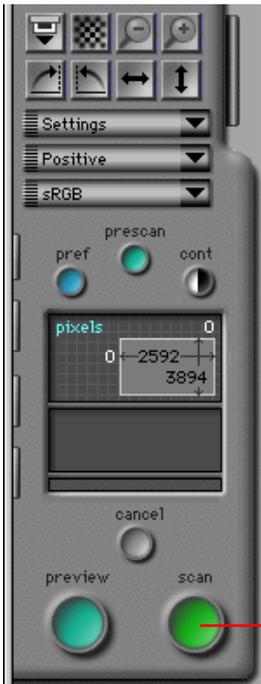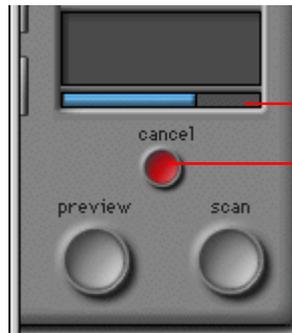
Progress indicator

Cancel button

If Nikon Scan is being used as a stand-alone application, the scanned image will be opened in an image window when scanning is complete (see "*Image Window Operations*," below). If Nikon Scan is being used as an acquire plug-in for another application, the image will be transferred to the host application.


Scan button

The Scan Size Drawer

This chapter describes the functions of the scan-size drawer in the scan window. The scan-size drawer is used to specify the size and resolution at which images will be scanned into the host application. The size controls can also be used to scale the crop so that it will fit in a specified area or file size, or to create a crop of specified dimensions.

Opening the Scan Size Drawer

Clicking the scan-size drawer tab in the control window as shown below opens the scan-size drawer. The drawer can be closed by clicking the button at its right edge.

Drawer close button

Scan-size drawer tab
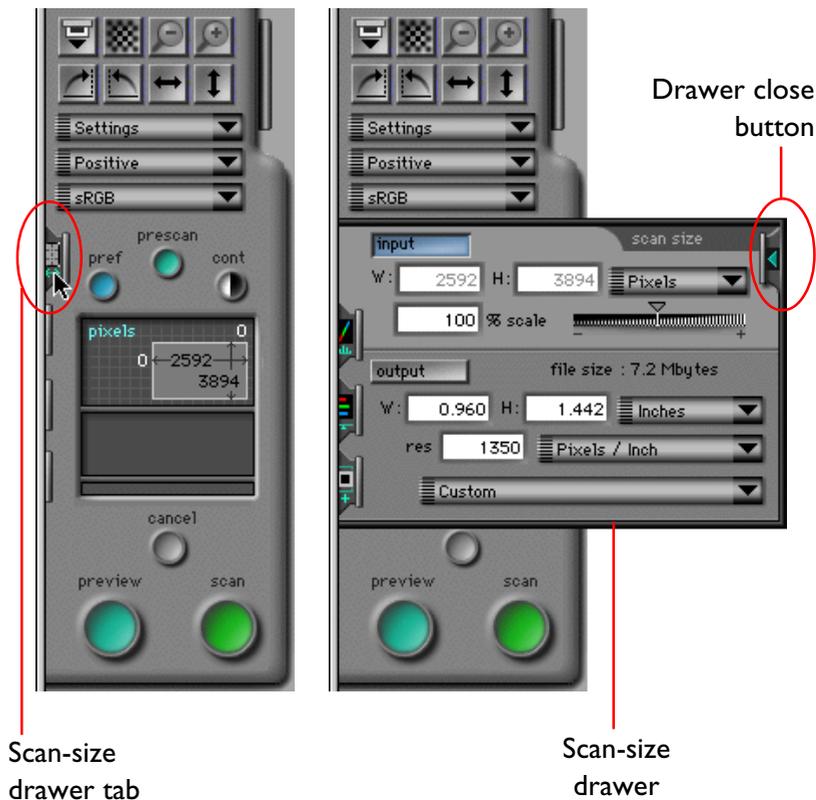
Scan-size drawer

Scan-Size Drawer Controls

The scan-size drawer is shown below.
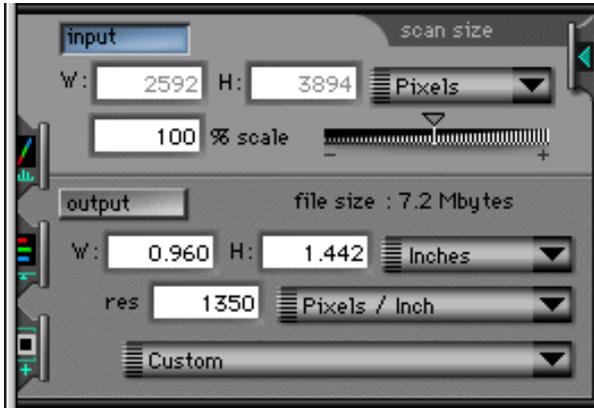
The scan-size drawer is divided into two portions. The upper portion contains the input-size display, which gives the dimensions of the current crop. The input-size display contains the following items:

- an input lock button, which locks the crop at its current height-aspect ratio
- an input-units pop-up menu, from which the units used for the rulers and crop information can be chosen
- a display showing the size of the current crop expressed using the units chosen in the input-units pop-up menu
- scale slider and text box, which gives the amount the input crop will be scaled when scanned

The lower portion contains output size controls, which determine the final size of the image after it is scanned. Output size controls include the following:

- a file size display giving the size of the file that would result were the current crop to be scanned at the stated output settings
- an output lock button, which locks output dimensions and file size at their current values
- an output-units pop-up menu, from which the units used for stating output dimensions can be chosen
- output resolution and pop-up menu for output resolution units
- a device pop-up menu, from which the user can choose an output resolution suited to a particular output device

Using these controls, the user can select an output resolution and specify the dimensions and file size of the image to be scanned.

Input size

The input portion of the scan-size drawer gives the height (H) and width (W) of the current crop, which are the actual physical dimensions of the portion of the medium to be scanned. New values for crop size can not be entered in the input size text-boxes, but the size of the crop can be changed by dragging the borders of the crop in the preview/crop area.

Output size

The output size determines the size of the image after it is scanned into the calling application. The output size can be changed either by adjusting the size of the crop in the preview image, or by entering values directly into the boxes in the output size area. Unacceptable values will be displayed in red. The size of the current crop is linked to the output size, and changes when new values are entered in the output height and width boxes.

Input size
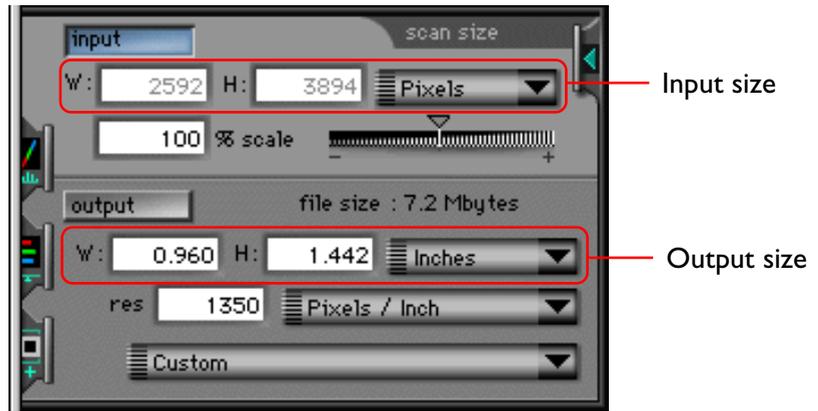
Output size

The units for the input or output size display can be selected from the pop-up menus to the right of the input- and output-size text boxes.
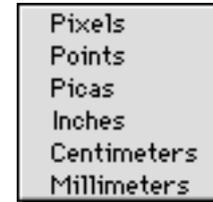
Note: *The units used for the input height and width display are also those used in the scan window crop coordinate display and preview area rulers.*

File size

The file size display shows the size (in bytes, kilobytes, or megabytes) of the image that would be created were the current crop to be scanned at the current output size and resolution.

It is a good idea to check the file size value before starting a scan.

Scale

"Scale" expresses the relationship between the input size and the output size. If the scale is two-hundred percent, a crop fifty pixels by fifty pixels in size would be passed to the host application as an image of 100 by 100 pixels after scanning.

Scale can be set by dragging the scale slider or entering a value directly in the input box. Unacceptable values will be displayed in red. The input size remains constant when the scale is changed, while the output size changes to match the new setting.
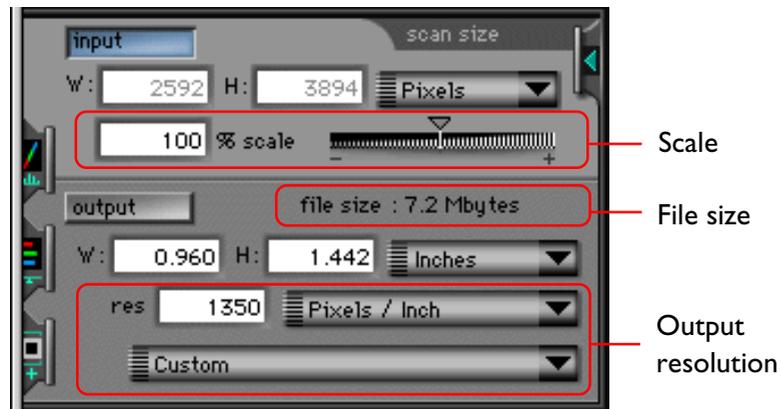
Output resolution

The output resolution is the resolution of the image that will result when the current crop is scanned. The resolution chosen should reflect how the image is to be used; if the image is ultimately intended for display on a printer with a resolution of 720 dpi, for example, setting the output resolution to 1,350 dpi would create an unnecessarily large file. Enter the desired resolution in the **res**olution field. Unacceptable values will be shown in red.

The units for resolution can be selected from the pop-up menu to the right of the resolution field.
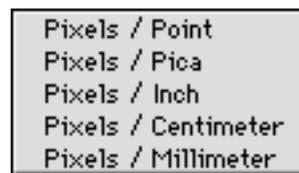
Resolution can be set to a value that matches the standard resolution of a specific output device, such as the computer's monitor or the currently selected printer. To set resolution to a value that corresponds to the resolution of an output device, choose the desired device from the pop-up menu at the bottom of the scan-size drawer. The devices that will be displayed in this menu depend on what devices are registered on your system.

```
Custom

300 dpi Laserprinter (100 dpi)
600 dpi Laserprinter(200 dpi)
360 dpi Inkjet (120 dpi)
720 dpi Inkjet (240 dpi)
1440 dpi Inkjet (360 dpi)
Monitor (72 dpi)
300 dpi Dye Sub printer (300 dpi)
400 dpi Dye Sub printer (400 dpi)
```

Input and Output Lock

The scan size drawer contains two lock buttons: an **input** lock button and an **output** lock button. One or the other of the lock buttons is always in effect.

Input lock button
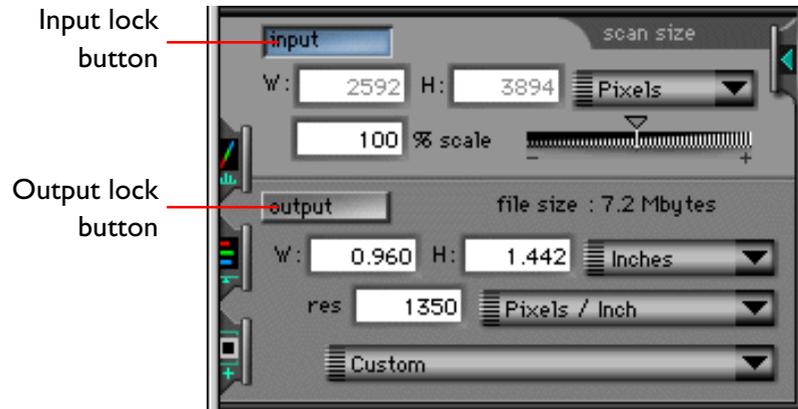
Output lock button

Input lock

The **input** button locks the height and width of the current input crop so that when one of these dimensions is changed by entering a new value in the output size area, the other changes to maintain a constant height-width aspect ratio. When clicked, the button is highlighted in blue. When a new value is entered for either height or width in the output size area, the other dimension will change automatically to maintain the crop at its current proportions. This lock affects only the scan size drawer; the size and position of the current crop can be freely altered in the preview/crop area using the mouse, in which case the height-width aspect ratio in the scan size drawer will be locked at the proportions of the new crop. To unlock the aspect ratio, click the **output** button.

Output lock

The **output** button locks the output dimensions and file size at their current values. When clicked, the button is highlighted in blue. Even when the sides of the current crop in the preview/crop area are dragged to re-size the crop, the output dimensions will not change. Instead, the scale will change to maintain the output dimensions and file size at their current values. When the crop is enlarged, the scale will decrease to keep the output dimensions the same; similarly, shrinking the crop will cause the scale to increase. The crop cannot be enlarged or reduced beyond the acceptable limits for scale. When output lock is in effect, the output dimensions in the output size area of the scan size drawer can still be changed by direct input, in which case the scale will not change. To unlock the output dimensions and file size, click the **input** button.

The Curves and Levels Drawer

Nikon Scan provides two means of color control: direct manipulation of the gamma curves via the curves and levels drawer, and basic color balance adjustment by means of the sliders in the color balance drawer. This chapter describes the tools available in the curves and levels drawer in the scan window. Color balance is described in the following chapter.

The curves and levels drawer is used to modify the contrast and brightness for the various color elements ("channels") in the output by adjusting the gamma curves and levels either for the image as a whole or for each color element separately. In many cases, the factory default gamma curves, which are designed to handle the widest possible variety of film, will produce images with excellent color. In some cases, however, you may wish to adjust the gamma curves prior to scanning. The color balance drawer provides a simple method of making this adjustment, but the curves and levels drawer offers more selective control.

Curves and Levels Explained

The curves and levels drawer contains two tools for altering the gamma curves and levels: gamma curve adjustment and black point/white point adjustment. Gamma curves are plotted on two axes, one representing the input, i.e., the colors present in the actual image, and the other the output, which expresses how the colors in the input will be represented in the final scan. At one end of each axis is the minimum possible value for the color (zero, or no color) and at the other is the maximum value (the maximum value depends on the scanner's bit depth; if the image is to be scanned at a bit depth of eight bits per pixel, the maximum value will be 255). The gamma curve determines how the input values will be converted, or "mapped," to output values. The default mapping is one-to-one, so that input values of zero are output as zero, while input values of 255 are represented as 255 in the output.

By altering the gamma curves, it is possible to change the mapping between input and output colors at any point on the curve. Thus input values of zero could be mapped to a value of 255 in the output, and input values of 255 to a value of zero. If the curve between these two points were a straight line, the result would be a negative image. In practice, smaller adjustments are made to enhance the tonal range for specific portions of the image, such as shadows, mid-tones, and highlights. Steepening the slope in a small portion of the curve will accentuate detail in that part of the tonal range, allowing color balance and definition to be selectively adjusted.

Black- and white- point adjustment allow the user to adjust the range for each color element, in effect adjusting contrast. The black point for a given color represents the darkest shade, or minimum value for that color in the image. By default, this value is zero. The minimum value in the actual input may however be greater than zero, with the result that the portion of the scanner's tonal range between zero and the actual minimum is wasted. Using black point adjustment, it is possible to map the actual minimum input value to an output value of zero, thus matching the range of colors in the output to the range available in the input. Similarly, white point adjustment can be used to map the maximum value actually present in the input to the maximum possible output value, eliminating all values greater than the maximum input value and making the best use of the scanner's tonal range.
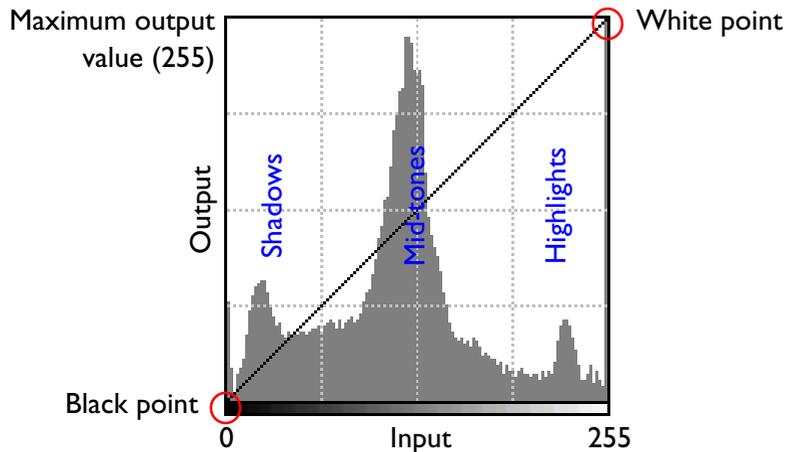
Default master gamma curve
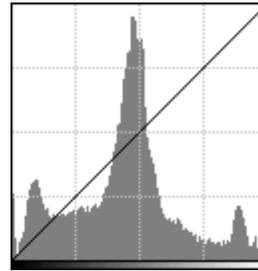
Increased black-point
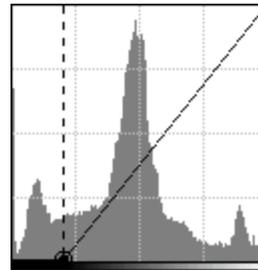
(Note increased contrast in highlights and mid-tones and loss of detail in shadows)

Increased gamma value
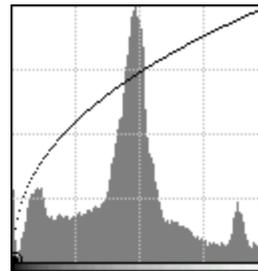
(Note overall increase in brightness and loss of contrast in highlights and midtones)

Maximum output value (255)

White point

Output

Shadows

Mid-tones

Highlights

Black point

0   Input   255

The curves-and-levels drawer offers the following four methods for adjusting gamma curves and levels:

• automatic white point and black point selection
• pixel sampling to determine the white point and black point
• simple gamma curve adjustment using a slider
• fine gamma curve adjustment by adding and moving points on the curve

Opening the Curves and Levels Drawer

The curves and levels drawer is opened by clicking the curves and levels drawer tab. The drawer can be closed by clicking the close button.

Drawer close button
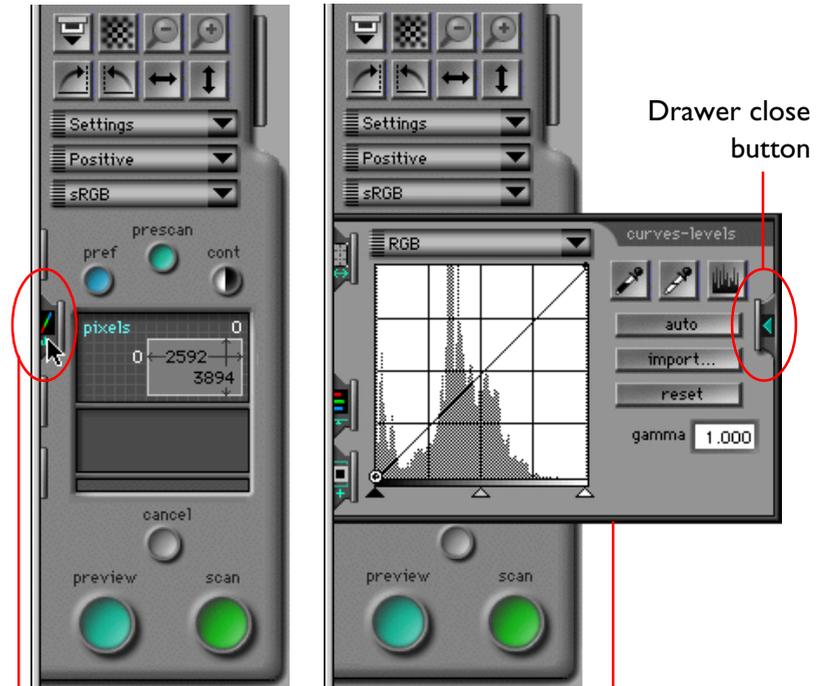
Curves and levels drawer tab

Curves and levels drawer

The appearance of the curves and levels drawer depends on the currently selected color space.

The Curves and Levels Display

The curves and levels display for an RGB color-space is shown below. The displays for grayscale and CMYK color-spaces are similar; the display for a color space of HSL is unique and is discussed in the final section of this chapter.

Channel menu button
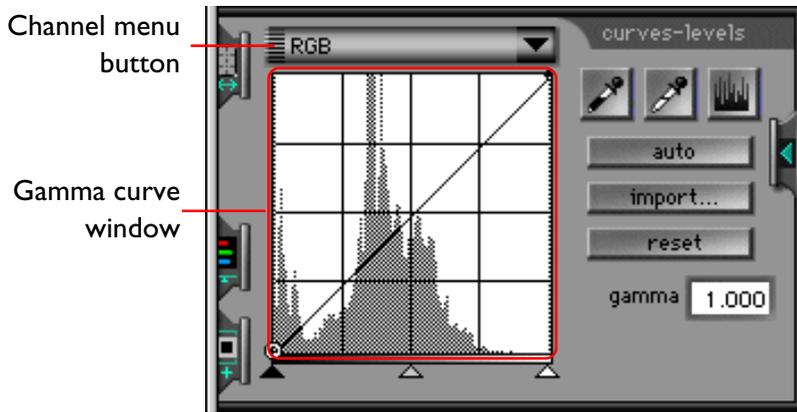
Gamma curve window

The gamma curve window in the curves and levels tab shows the gamma curve for the currently selected color element, or "channel." The illustration above shows the default gamma curve, which runs diagonally from the lower left corner of the window to the upper right. The input value is plotted on the horizontal axis, the output value on the vertical. Thus the left edge of the gamma curve window corresponds to an input value of zero, the right edge to the maximum possible input value for the current channel, while the bottom and top of the window show respectively the minimum and maximum output values.

A histogram of the current channel is displayed as a bar graph in the background of the gamma curve window. The histogram's horizontal axis represents the pixel intensity, the high density (darker) values appearing on the left and the transparent (lighter) density values on the right. The vertical axis represents a scaled version of the number of occurrences of each pixel value. The histogram therefore gives a graphical view of the brightness of an image.

Channel selection

The gamma curve and histogram for each channel can be displayed using the channel pop-up menu. Select the desired channel from channel pop-up menu for the current color space, which can be displayed by clicking the channel menu button. The current channel is shown in the menu button. The items available in the channel menu vary depending on the color space. Each color space has a master channel, which allows adjustments that affect all the color elements in the image, and a separate channel for each of the color elements in the space. The menus for the sRGB (or RGB) and CMYK color-spaces are shown below.


RGB channel pop-up menu   CMYK channel pop-up menu

The grayscale color space is composed of a single color element and hence has only one gamma curve. When the selected color space is "grayscale," the channel menu button will not be shown in the curves and levels drawer.
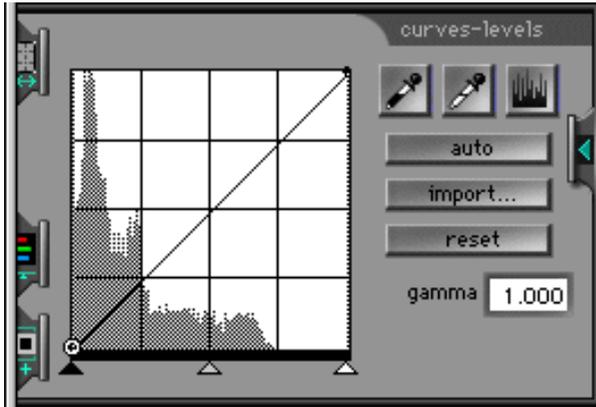
The input/output value display

When the cursor is moved over the gamma curve window, the horizontal (input) and vertical (output) coordinates of the point under the cursor are shown in the input/output value display. The range of values shown is 0–255, independent of scanner bit depth (the actual scanner bit depth is however used in internal calculations involving the gamma curves).
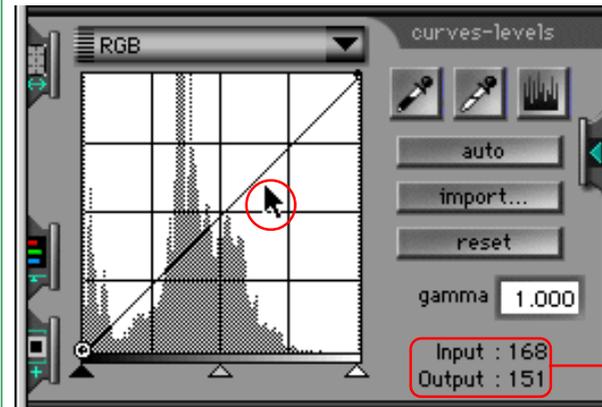
Input/output value display

When the cursor is over the image in the preview/crop area, a point on the gamma curve corresponding to the value of the pixel under the cursor will be highlighted. The input value will show the actual value of the pixel, the output value the value of the pixel after the mapping function represented by the gamma curve has been applied.

Gamma Curve Adjustment

The gamma curve for each channel can be adjusted either using the gamma slider, which raises or lowers output levels for the curve as a whole, or by adding additional points to the curve to make more precise adjustments to output levels.

Using the gamma slider

Output levels can be raised or lowered for the entire gamma curve using the gamma slider at the bottom of the gamma curve window. The slider can be activated by clicking it once.

Reset button

Gamma value input box
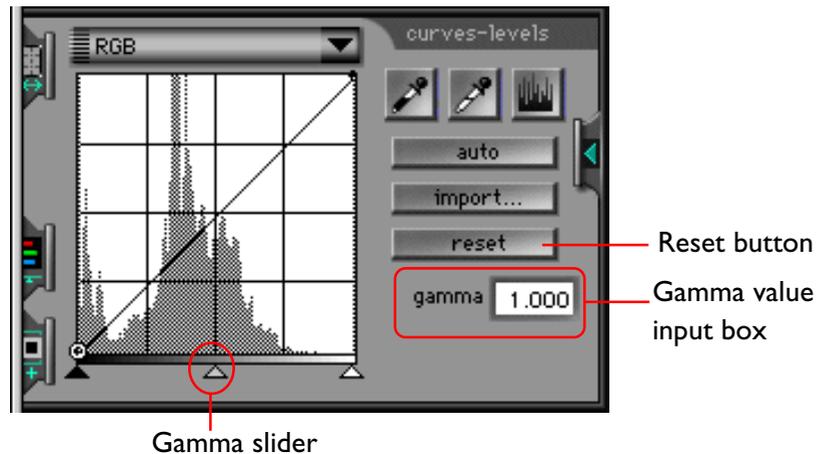
Gamma slider

Moving the slider to the left increases all the output values for the selected channel, while the output values will decrease when the slider is moved to the right. The gamma curve will be altered to reflect the new values, and the preview image in the scan window will change to show the effects of the new values.
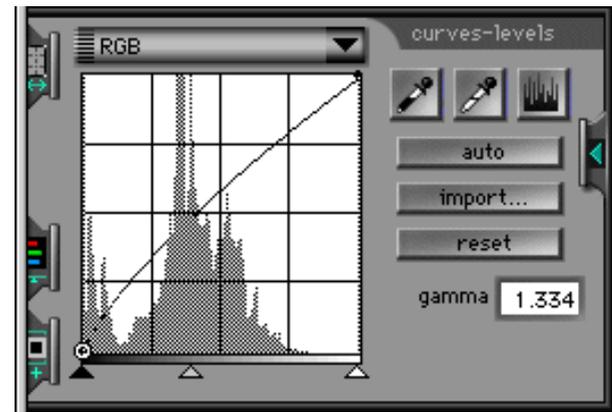
The gamma value input box

The gamma value displayed in the gamma input box to the right of the gamma curve window is linked to the gamma slider, increasing as the slider is moved to the left and decreasing as it is moved to the right. If desired, the gamma curve can be set by entering a value between 0.45 and 3.00 in the input box.

Undoing changes

Clicking the **reset** button will return the gamma curve for the current channel to linear (equivalent to a gamma value of 1.00). Clicking **reset** with the **option** key held down resets the gamma curves for all channels to linear.

Graphically altering the gamma curves

For finer adjustments to output levels, points can be added to the gamma curve by clicking anywhere in the gamma curve window. These points can be freely adjusted by dragging them to the desired position, changing the shape of the gamma curve.

Adding new points to the gamma curve

Move the cursor into the gamma curve window and click once anywhere within the window to enter gamma curve edit mode. Move the cursor to the place you would like to add a new point, then click. A new point will appear at this position and the curve automatically adjusted to pass through this point. To move the new point, place the cursor over the point. The new points can be moved by dragging them in the gamma curve window to change the shape of curve. The preview image in the scan window will be altered automatically to reflect changes to the gamma curve.
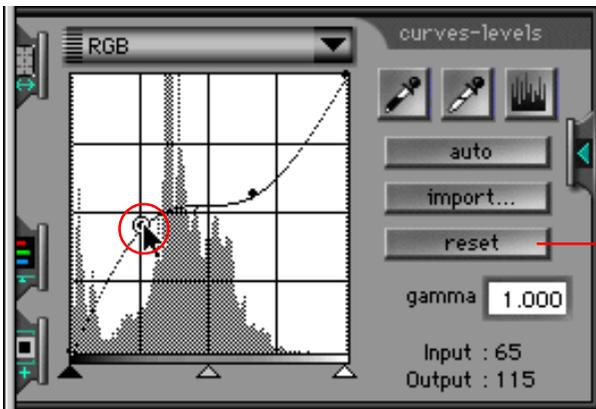
Removing points from the gamma curve

Points can be removed from the gamma curve by dragging them out of the gamma curve window.

Undoing changes

Clicking the **reset** button will restore the gamma curve for the current channel to linear, removing all points but those on either end of the curve. Clicking **reset** with the **option** key held down resets the gamma curves for all channels to linear.


Reset button

Adjusting the Black and White Points

The left of the gamma curve for a given channel represents the "black point" for that channel, the right end the "white point." Moving the black point to the right results in all input values less than the black point being mapped to an output value of zero. Moving the white point to the left results in all input values greater than the white point being mapped to the maximum output value. These tools can be used to adjust the gamma curve to remove values not available in the input, making better use of the scanner's dynamic range and increasing contrast.

Nikon Scan offers three methods for adjusting the white and black points. The white and black points can be set automatically, or adjusted manually using the sliders in the gamma curve window. The preview image can also be sampled directly to select a white or black point from the values actually visible in the original film.

Automatic contrast adjustment

If desired, Nikon Scan can analyze the preview image and select optimum black and white points for the current channel. To perform automatic contrast adjustment, click the **auto** button in the curves and levels drawer. The end points of the selected curve will be adjusted to optimize the dynamic range for the entire crop.
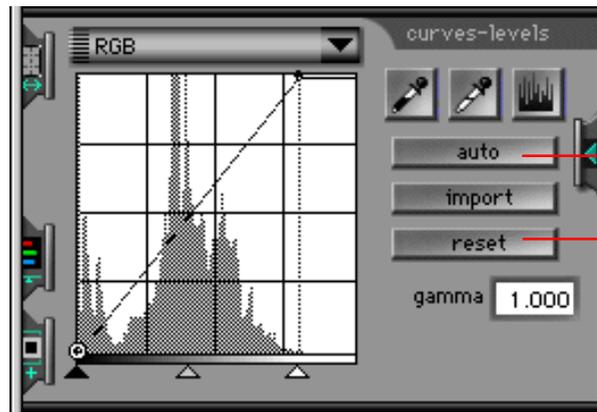

Auto contrast button

Reset button

To cancel automatic contrast and return the gamma curve to linear, click the **reset** button. If the **option** key on the keyboard is held down when the **reset** button is clicked, the gamma curves for all channels will be reset to linear.

Note: *The effect of the **auto** button in the curves-and-levels drawer differs from that of the **cont**rast button in the control area. The **cont**rast button in the control area affects not just the currently selected channel but also the master channel, adjusting contrast for all color channels simultaneously. Note that this may sometimes lead to undesirable color balance. If for example, the original image is of a predominantly "warm toned" scene, such as a sunset, then the neutral highlight produced by automatic contrast adjustment would be too "cold" for the image.*

Using the black-point and white-point sliders

The black- and white-points can also set directly for each channel using the sliders at the bottom of the gamma curve window. While the sliders can be used to edit the curves for any channel, in most cases the best results can be obtained when they are used to modify the master curve.
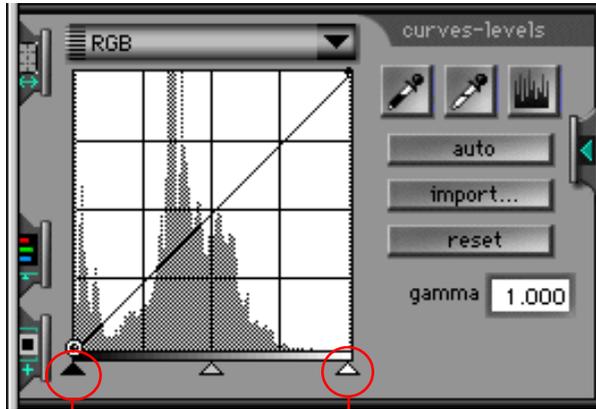

Black-point slider   White-point slider

The black-point slider

Click the black-point slider once to activate it, then drag it to the right or left to set the new black point. All pixels in the input with a value less than the black point will be mapped to an output value of zero. This can be used to eliminate points from the curve that are not represented in the input, enhancing contrast, or to adjust brightness. If a histogram is displayed in the gamma curve window, the black point can be set to the lowest available input value by matching the slider with the left-most bar in the histogram. The effects of the new black point can be ascertained by observing the preview image, which is adjusted automatically to match changes in the black point.
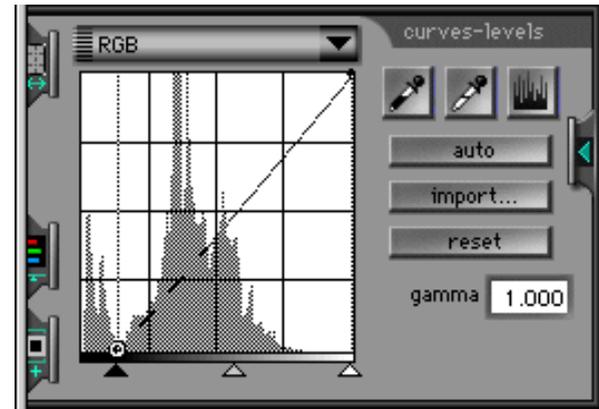
The white point slider

Click the white-point slider once to activate it, then drag it to the right or left to set the new white point. All pixels in the input with a value greater than the white point will be mapped to the maximum possible output value. This can be used to eliminate points from the curve that are not represented in the input, enhancing contrast, or to adjust brightness. If a histogram is displayed in the gamma curve window, the white point can be set to the highest available input value by matching the slider with the right-most bar in the histogram. The effects of the new white point can be ascertained by observing the preview image, which is adjusted automatically to match changes in the white point.
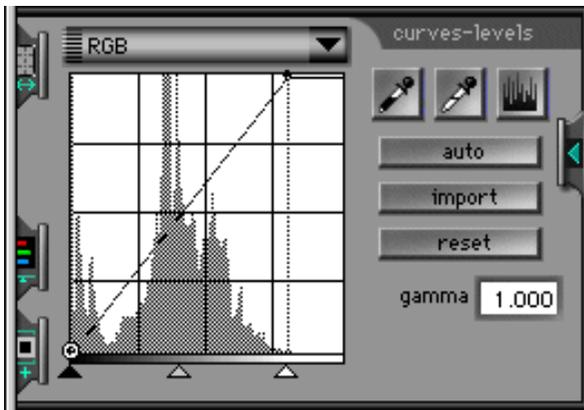
Undoing changes

To restore the black and white points to their default values, click the **reset** button. If the **option** key on the keyboard is held down when the **reset** button is clicked, the gamma curves for all channels will be reset.

Setting the black and white points by sampling

The black and white points can be set by directly sampling the pixels in the preview area. This provides a means of matching the black and white points to the minimum and maximum values actually visible in the original film. Direct sampling can be used to set the end points of the gamma curve for any channel, but is most effective when used with the master channel.

Sampling the black point

To set the black point, or minimum input value, select the desired color channel and then click the black-point button (![button]). When the button is clicked, the cursor will become an eye-dropper when moved over the image in the preview/crop area.

Move the cursor to the point to be used as the darkest in the image. You may wish to close the curves and levels drawer so that you can view the pixel data display to determine which area of the image is the darkest for the color or colors in the current color channel. The darkest point in the image will have the lowest pixel values for that color. With the cursor over the point that is to serve as the darkest in the image, click the mouse button. The selected point will be the new black point, or reference point for darkness. The cursor will return to its previous shape, and the preview image will automatically be altered to reflect the new black point.

Note: *Sampling the black point does not change the master curve. If the master channel is selected when the black point is sampled, the black point for each individual color channel (e.g., the channels for red, green, and blue in the case of RGB) will be altered to match the input value for that color at the pixel sampled, but the black point for the master channel will remain unaltered. The new black points for the remaining color channels can be viewed by holding down the histogram button ( ).*
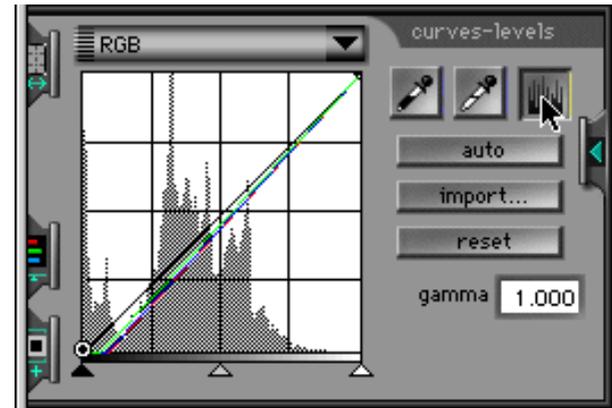

Note: *The black-point button is only active when a preview image is displayed in the preview/crop area.*

Sampling the white point

To set the white point, or maximum input value, select the desired color channel and then click the white-point button (![eyedropper]). When the button is clicked, the cursor will become an eye-dropper when moved over the image in the preview/crop area.

Move the cursor to the point to be used as the brightest in the image. You may wish to close the curves and levels drawer so that you can view the pixel data display to determine which area of the image is the brightest for the current color channel. The brightest point in the image will have the highest pixel values for the color or colors in the current channel. With the cursor over the point that is to serve as the brightest point in the image, click the mouse button. The selected point will be the new white point, or reference point for brightness. The cursor will return to its previous shape, and the preview image will automatically be altered to reflect the new white point.

Note: *Sampling the white point does not change the master curve. If the master channel is selected when the white point is sampled, the white point for each individual color channel (e.g., the channels for red, green, and blue in the case of RGB) will be altered to match the input value for that color at the pixel sampled, but the white point for the master channel will remain unaltered. The new white points for the remaining color channels can be viewed by holding down the histogram button (![histogram]).*
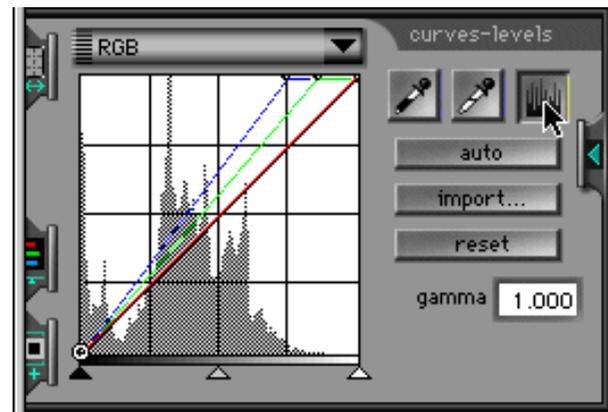

Note: *The white-point button is only active when a preview image is displayed in the preview/crop area.*

Undoing changes

To restore the black and white points to their default values, click the **reset** button. If the **option** key on the keyboard is held down when the **reset** button is clicked, the gamma curves for all channels will be reset to linear.

Displaying the Modified Histogram

Pressing the histogram button (▓▓) in the curves and levels drawer displays a histogram for the output image, which reflects any modifications to the gamma curve for the current channel.
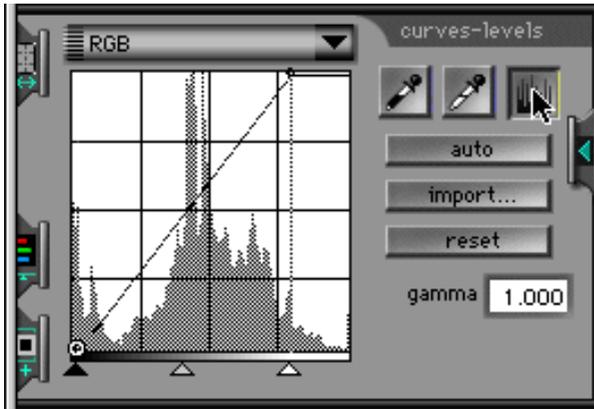
The modified histogram will only be displayed while the histogram button is held down. When the button is released, the original input histogram will be restored.

Importing Settings

Level settings created and saved using Adobe Photoshop can be read into Nikon Scan and used to modify how images will be scanned. To import settings, click the **import** button in the curves and levels drawer.

Import button
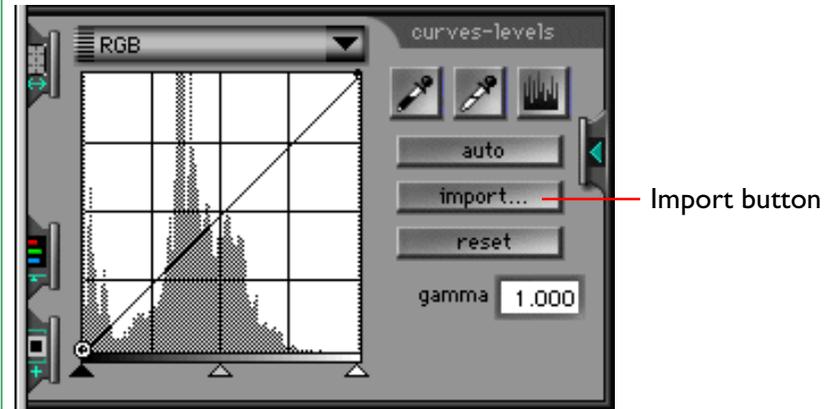
The standard open dialog will be displayed, allowing you to navigate to the folder where the Photoshop settings are stored.

Note: *When settings are imported into Nikon Scan, the endpoints of the gamma curves will be set to the values in the imported settings and the gamma value will center around 1.00. Any points added to the gamma curves in the curves and levels window will be lost.*

HSL Controls

When the selected color space is HSL, gamma curves will not be displayed in the curves and levels drawer. Instead, HSL controls appear, making it possible to determine how input hue, saturation, and luminance will be altered when the image is scanned.

Channel menu button
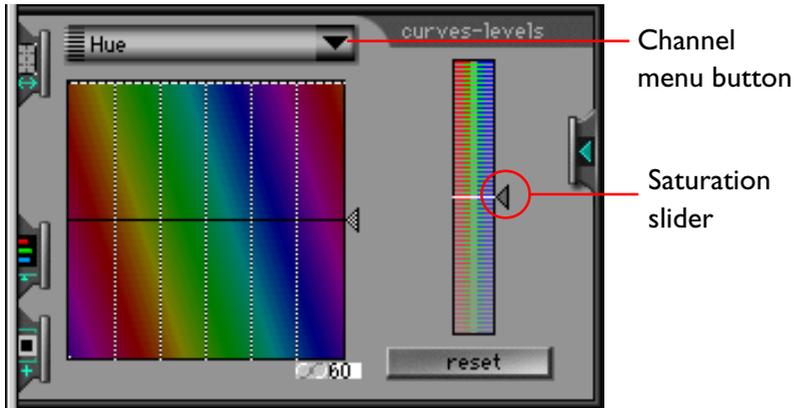
Saturation slider

The HSL controls consist of a saturation slider and separate channels for luminance and hue. The following channel pop-up menu will appear when the channel menu button is clicked. The appearance of the drawer will vary depending on whether luminance or hue is selected.

Using the saturation slider

The saturation slider appears in the displays for both the luminance and hue channels. Its function is equivalent to that of the gamma slider in the RGB, CMYK, and grayscale gamma windows. Raising the slider increases saturation and decreases the gamma value, creating a preview image with deeper colors, while lowering the slider increases the gamma value, lightening the colors in the image. The center of the scale is equivalent to a gamma value of 1.00

Editing the hue channel

When the hue channel is selected from the channel pop-up menu, the curves-and-levels drawer takes on the appearance shown below. The controls for editing hue are unique, consisting of a horizontal line crossing a rainbow-colored background. The input values for each hue (color) are plotted along a straight line running through the center of the editing window. Points on the control line can be raised or lowered to map the input color to a new output color.


Input color (color in original image)

Output color (color after scanning)

Width slider

Point-edit cursor
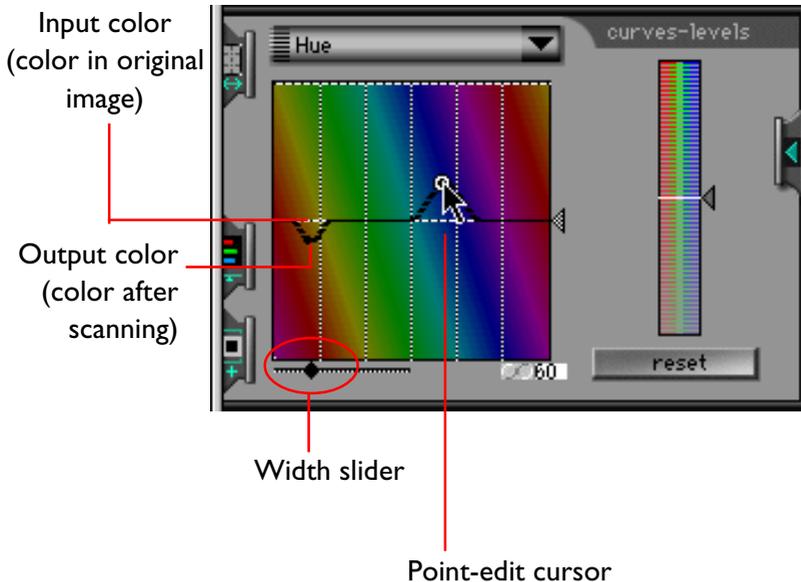
The width slider

When a point on the control curve is moved, the control curve will be altered to pass through the new point using a simple bell-shaped curve to join the new point to the center line. The width of the bell curve can be adjusted using the width slider. These hue controls provide an extremely powerful editing function which allows the user to change the mapping for a specific color without affecting other colors in the image. To determine the color of a specific pixel, move the cursor over the preview image in the scan window. A point on the input line corresponding to the color of the pixel under the cursor will be highlighted in the curves and levels edit window.

The scale button

The vertical scale can be changed by clicking the scale button beneath the edit window. Increasing the scale gives the user more colors to choose from for each input point.

Scale button
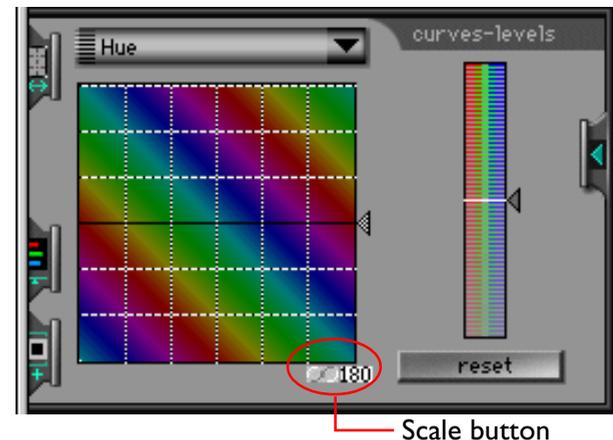
The input slider

The slider on the right of the window can be used to change all input colors at once.

Input slider
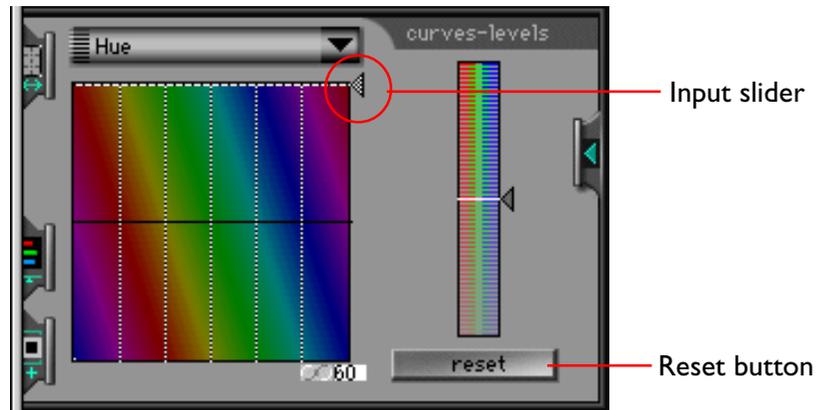
Reset button

The reset button

To restore the hue controls to their default values, click the **reset** button. If the **option** key on the keyboard is held down when the **reset** button is clicked, both the hue and the luminance channels will be reset.

The luminance channel

Using the luminance channel, it is possible to control how input luminance (brightness) will be changed when the image is scanned. The luminance controls are similar to the gamma, black-point, and white-point slider controls discussed in the preceding sections, consisting of a luminance slider, which controls the main luminance curve, and sliders to set the minimum and maximum values for input luminance. The luminance curve-editing window also contains a histogram. The horizontal axis of the histogram gives the value for luminance, with minimum luminance on the left and maximum luminance on the right. The bars in the histogram show the number of pixels in the current crop at each point on the luminance scale.
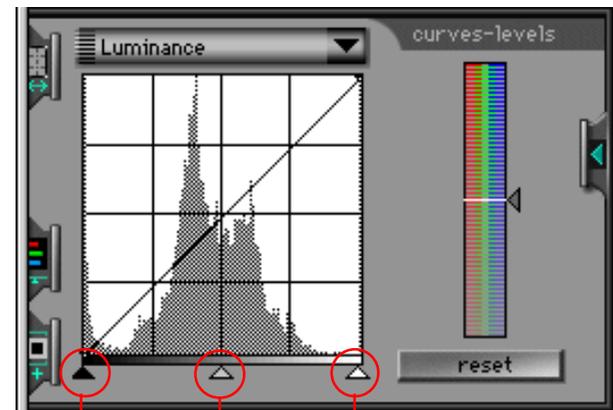
Minimum input-
luminance slider

Maximum input-
luminance slider

Luminance-
curve slider

Moving the luminance-curve slider to the left increases output luminance, making the image brighter, while moving the slider to the right decreases output luminance, creating a darker image. The effects of the luminance slider can be determined by viewing the image in the preview/crop area.

The sliders for maximum and minimum luminance can be used to adjust output luminance to match the range of values actually present in the input, so making best use of the scanner's dynamic range. The minimum input-luminance slider sets the minimum value for input luminance. All pixels in the input image that have values less than the minimum are converted to a value of zero (black) when scanned. The minimum value increases when the slider is moved to the right and decreases when the slider is moved to the left. The minimum input-luminance value can be matched with the lowest value actually present in the input image by matching the slider with the left-most bar in the histogram. The luminance value for a specific pixel in the input image can also be determined by moving the cursor over the preview image in the scan window. A point on the horizontal axis equivalent to the luminance value of the pixel under the cursor will be highlighted in curves and levels edit window.

The maximum input-luminance slider is used to set the maximum value for input luminance. All pixels in the input image that have values greater than the maximum are converted to white (i.e., the maximum output value, which varies depending on scanner bit-depth) when scanned. The maximum value decreases when the slider is moved to the left and increases when the slider is moved to the right. The maximum input-luminance value can be matched with the highest value actually present in the input image by matching the slider with the right-most bar in the histogram.

To restore the hue controls to their default values, click the reset button. If the **option** key on the keyboard is held down when the reset button is clicked, both the hue and the luminance channels will be reset.

The Color Balance Drawer

Nikon Scan 2.0 offers two means of adjusting the colors in an image. One is the curves and levels drawer, discussed in the previous chapter, which offers selective control over the output levels for the components of each color space. The other is the color balance drawer, which provides a straight-forward means of adjusting overall color balance, brightness, and contrast for the entire image. This chapter explains the operations that can be performed using the color balance drawer.

Opening the Color Balance Drawer

Clicking the color-balance drawer-tab in the control area of the scan window opens the color-balance drawer. The drawer can be closed by clicking the button at its right edge.

Drawer close button
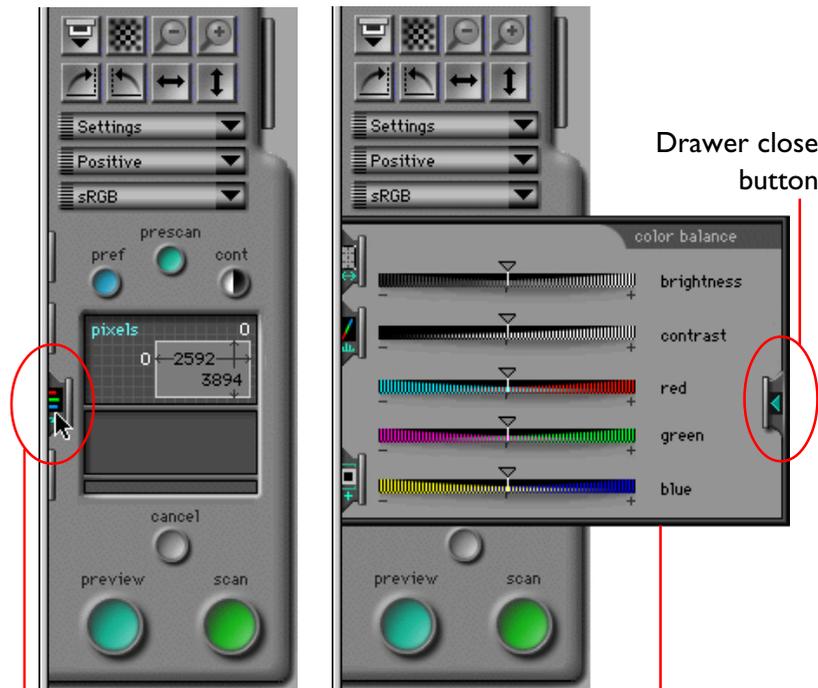
Color balance drawer tab

Color balance drawer

Note: *The color balance drawer is active only when the current color space is sRGB/RGB or grayscale.*

Color Balance Controls

When the color space is sRGB or RGB, the color balance tab will contain the controls shown below. When the color space is grayscale, only the brightness and contrast sliders will be active.
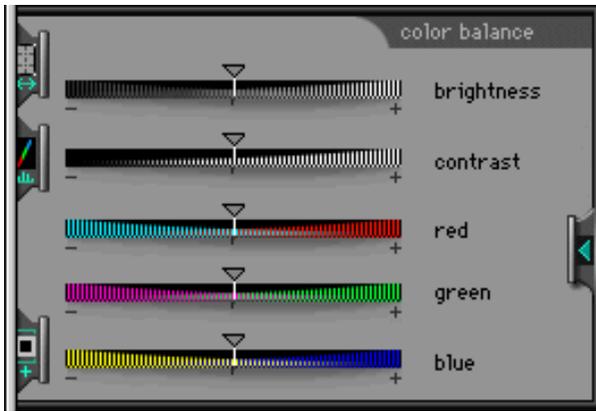
Brightness, contrast, and color balance can be set by dragging the sliders to the right or left. Any changes made in the color balance drawer will be reflected immediately in the preview image in the scan window.

Brightness

The brightness slider adjusts brightness for the entire image. Dragging the brightness slider to the right brightens all the colors in the image, making the image as a whole more white. Dragging the slider to the left darkens all the colors in the image, making the image as a whole darker and less distinct.

Contrast

Dragging the contrast slider to the right heightens the difference between highlights and shadows in the image, increasing contrast. Dragging the slider to the left decreases the difference between light and dark portions of the image, making the images flat and dull.

Color balance

While the brightness slider adjusts brightness for the image as a whole, the three color balance controls allow the user to adjust brightness for each color individually. For example, dragging the red slider to the right brightens the red portions of the image, making the image as a whole more red. Dragging it to the left dims the red elements in the image, bringing out the remaining colors.

Note: *The brightness and color sliders have the same function as the gamma slider (brightness corresponds to the slider for the master curve, the color sliders to the curves for each color element). When contrast is increased with the contrast slider, the effect is the same as if the white- and black- points were moved toward one another, steepening the master gamma curve. The two drawers however function however independently of one another; hence changes in one drawer are not reflected in the other. If separate adjustments are made in each drawer, the changes will be merged when the image is scanned.*

Saving and Loading Settings

This chapter describes how to save changes to scan settings made in the scan window and how to restore previously saved settings.

The Settings Menu

The control area of the scan window contains a settings pop-up menu, which is used to save the current scan settings and to restore settings previously saved. To open the settings pop-up menu, click the settings menu button.
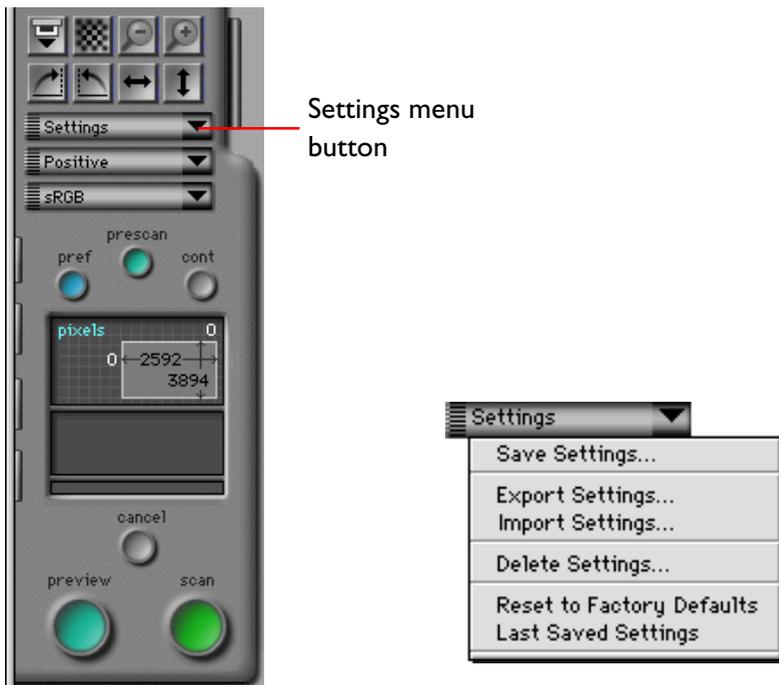
Settings menu button

The settings saved using the settings menu are all those that can be adjusted in the scan window, including:

- the currently selected device, media and film type, output units, the dimensions and location of the current crop, and any flips or rotates currently in effect

- input and output lock, output resolution value, and scale

- the master gamma curve for the current color space and the gamma curves for each channel, brightness and contrast settings, and color balance

- scanner settings and information on whether interactive help is on or off

Note: *The settings for different scanners are not mutually compatible. For example, settings saved when a LS-20 film scanner was the selected device cannot be read or used while another device, such as the LS-2000, is the currently selected scanner.*

Adding settings to the settings menu

When the **Save Settings…** option is chosen from the settings pop-up menu, the Save Settings dialog appears.
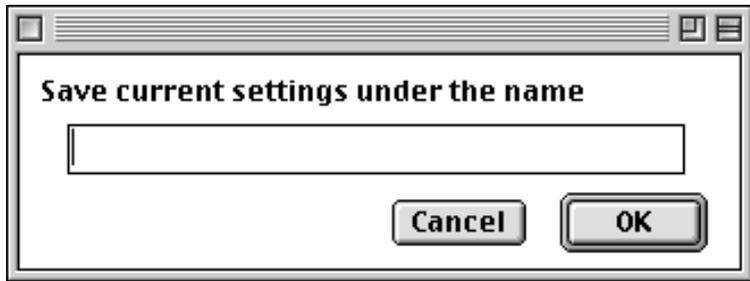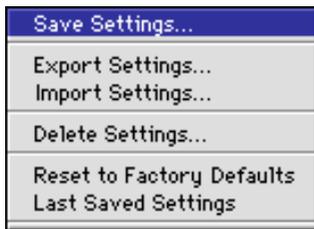
Enter a name for the current settings in the text box and click the **OK** button. Settings are saved in a special file in the same folder as Nikon Scan 2.0. Click the **Cancel** button to exit the Save Settings dialog without saving the current settings.

If settings have previously been saved under the same name, a warning will appear when the **OK** button is clicked. Click **Yes** to overwrite the previously saved settings, or **No** to return to the Save Settings dialog and enter a new name.

Loading settings from the settings menu

Saved settings will be added to the end of the settings pop-up menu. To restore previously saved settings, select the desired settings from the menu. The settings in the scan window will immediately be altered to match the saved values.
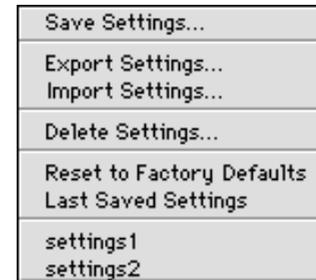
Deleting settings from the settings menu

When **Delete Settings…** is chosen from the settings pop-up menu, the Delete Settings window appears and the settings to be deleted can be chosen from a pop-up menu.
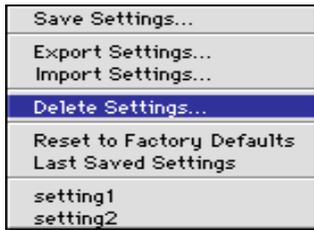
Choose the settings to be deleted from the pop-up menu and click the **Delete** button. To exit the window without deleting the chosen settings, click **Cancel**.

Once settings have been deleted, their names will no longer be displayed at the end of the settings menu.

Restoring factory defaults

If **Reset to Factory Defaults** is chosen from the settings menu, scan-window settings will be returned to factory default values.
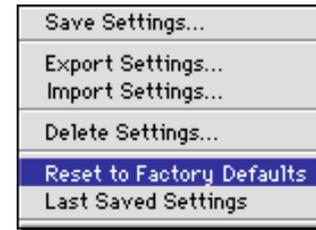
Exporting and Importing Settings

You can save the current scan window settings to a file using **Export Settings…**. Unlike **Save Settings…**, which saves settings in a system file that can only be accessed by Nikon Scan 2.0, **Export Settings…** saves settings to independent files. These files can be read using **Import Settings…**. It is recommended that **Export Settings…** be used to store settings in a location separate from Nikon Scan, for example in the same folder as the images scanned at the saved settings.

Exporting settings

When **Export Settings…** is chosen from the settings menu, the standard save file dialog will appear. After specifying the drive and folder to which the settings are to be saved and entering a file name for the settings, click the **Save** button to save the settings under the specified name.
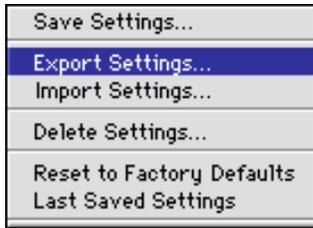
Importing settings

Settings saved with **Export Settings…** can be read using the **Import Settings…** command.
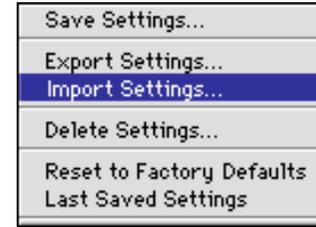
When **Import Settings…** is chosen from the settings menu, the standard open file dialog will appear. Choose the drive and folder containing the settings to be read and select the desired file, then click the **Open** button to load the specified settings into Nikon Scan.

When a settings file is read into Nikon Scan, the preview image in the scan window will disappear.

Image Window Operations

When Nikon Scan 2.0 is used as a stand-alone application, images will be opened in the Nikon Scan applet after scanning. The Nikon Scan applet is a small-scale application that allows the user to flip and rotate images after scanning, save images to disk in a variety of file formats, open previously saved image files, and print images. This chapter describes the Nikon Scan applet and its functions.

Note: *When Nikon Scan 2.0 is being used as an acquire plug-in for another application such as Adobe Photoshop rather than as a stand-alone application, images will be opened in the host application. Refer to the application's manual for details on post-scan image editing.*

The Nikon Scan Applet

When Nikon Scan 2.0 is used as a stand-alone application, scanned images will be opened in image windows on the desktop, where they can be viewed, modified, printed, or saved. The operations that can be performed in image windows are carried out using the menus in the Nikon Scan menu bar.

▼ The Nikon Scan menu bar
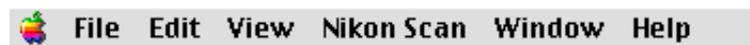
▼ Image window

The menu bar

Nikon Scan's menus are shown below. Each menu item in the illustrations below is linked to the section of this manual in which its function is explained. Click on the menu items in the illustration to view a description of their function.

File

Open...	⌘O
Close	⌘W
Save	⌘S
Save As...	
Page Setup...	
Print...	⌘P
Quit	⌘Q

Edit

Can't Undo	⌘Z
Cut	⌘X
Copy	⌘C
Paste	⌘V
Clear	
Select All	⌘A
Preferences...	

View

Zoom In	
Zoom Out	
Transform ▶	

Rotate CW
Rotate CCW
Flip Horizontal
Flip Vertical
Flip Both Axes

Nikon Scan

Device	▶
Settings	▶
Color Space	▶
Film Type	▶
Eject	
Slide Feeder...	

Window

Fit to Screen
Actual Size
Untitled 2
Untitled 1
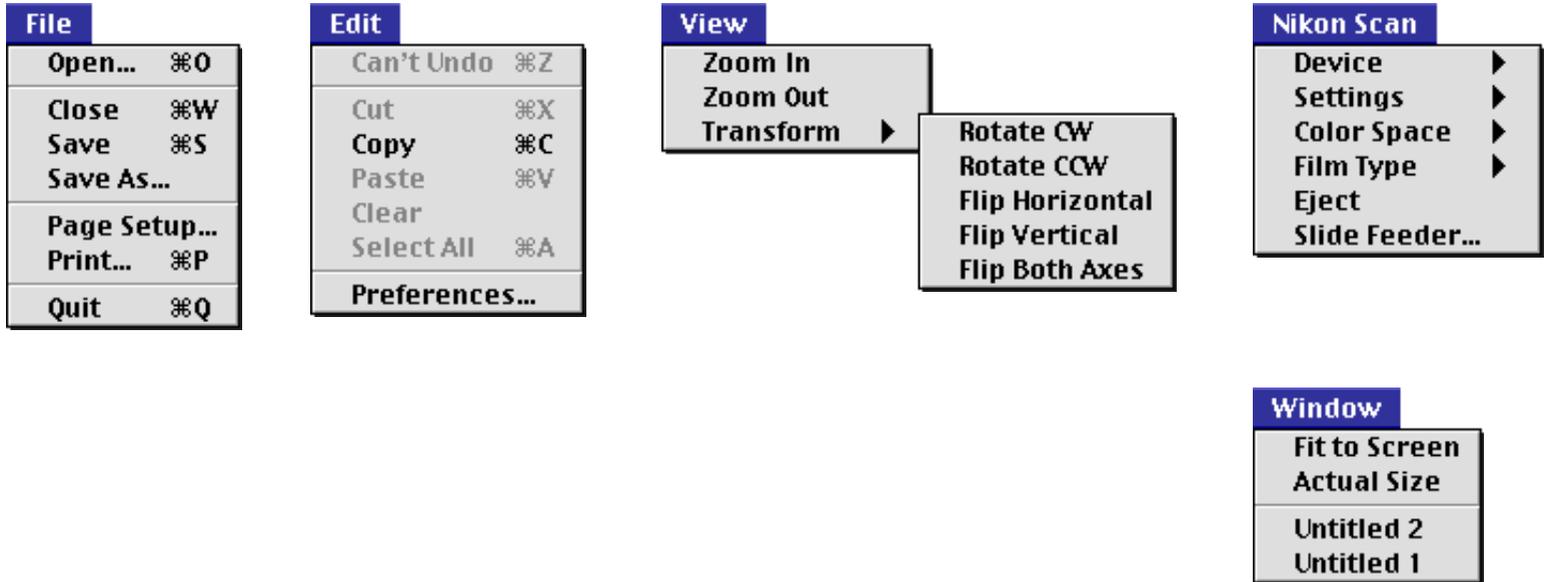
Moving and resizing image windows

Image windows can be moved and resized using standard window controls. Drag the lower right corner of the window to adjust to any size between 600 × 450 pixels and the dimensions of the computer monitor. Drag the title bar to move the window anywhere on the desktop.
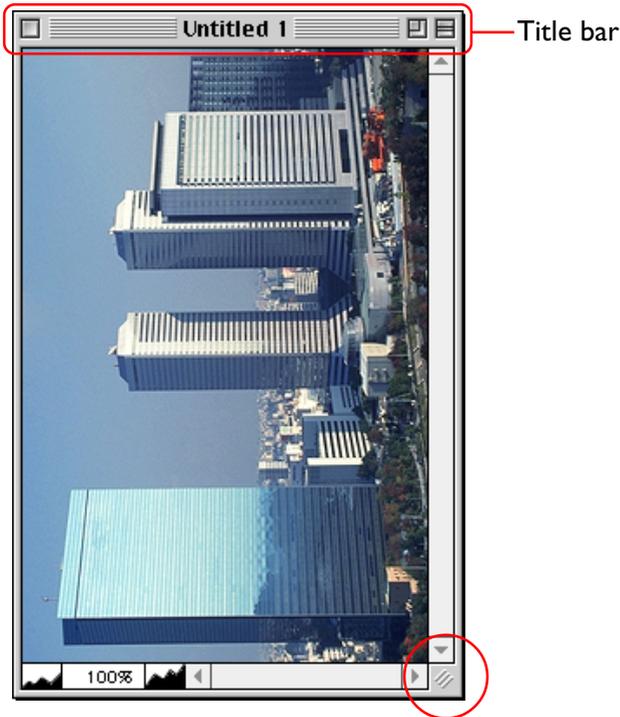
 — Title bar

The window control buttons in the title bar offer the following functions (the title bar shown below is for MacOS 8.0 or later; System 7 does not offer a "window-shade" button):

(Close)

> Closes the image window. The active image window can also be closed by selecting **Close** from the **File** menu.

(Resize)

> Enlarges the window to fill the screen. Click the button a second time to return the window to its original dimensions.

(Window-shade)

> Reduces the window to a floating title bar. Click the button a second time to return the window to its original dimensions.

Zoom

The image in the active image window can be zoomed in or out using the commands in the **View** menu. The image in the active image window can also be zoomed in by selecting **Zoom In** from the **View** menu, or by clicking the zoom-in button at the bottom of the window. To zoom the image out, select **Zoom Out** from the **View** menu or click the zoom-out button.

Zoom in

Zoom out
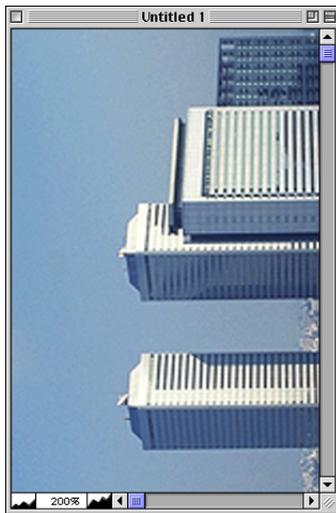
Zoom-in button

Zoom-out button

To view the image at a zoom ratio of one to one, select **Actual Size** from the **Window** menu..

To view the image at the maximum zoom ratio at which the entire image can be seen on the desktop, select **Fit to Screen** from the **Window** menu. The image window will be resized to the maximum possible dimensions that allow the entire image to be displayed on the desktop, and the image scaled to fill the image window.

Rotating and Flipping Images

The image in the active image window can be flipped or rotated using the commands in the **Transform** submenu of the **View** menu.
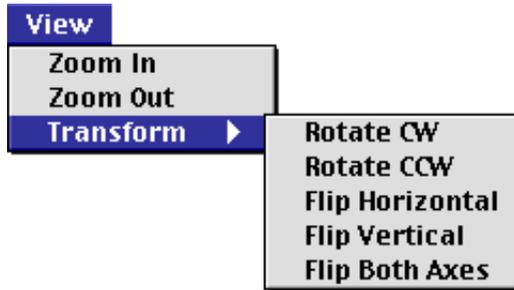
Rotate CW: Rotates the image clockwise, ninety degrees at a time.

Rotate CCW: Rotates the image counter-clockwise, ninety degrees at a time.

Flip Horizontal: Flips the image horizontally.

Flip Vertical: Flips the image vertically.

Flip Both Axes: Flips the image both horizontally and vertically.

Rotating images

The image in the active image window can be rotated using the **Rotate CW** and **Rotate CCW** commands in the **Transform** submenu. For example, the image will be rotated ninety degrees to the right each time **Rotate CW** is selected.
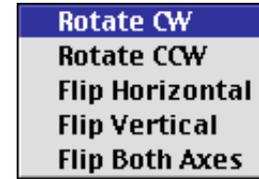
Flipping images

The image in the active image window can be flipped using the **Flip Horizontal**, **Flip Vertical**, and **Flip both Axes** commands in the **Transform** submenu. For example, the image will be flipped horizontally time **Flip Horizontal** is selected.
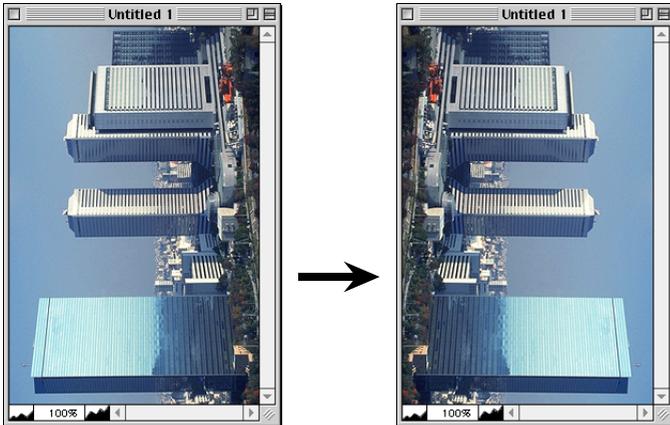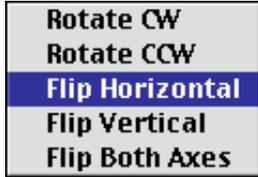
Copying Images to the Clipboard

The image in the active image window can be copied to the clipboard by choosing **Copy** from the **Edit** menu. The images that have been copied to the clipboard can be pasted to other applications.
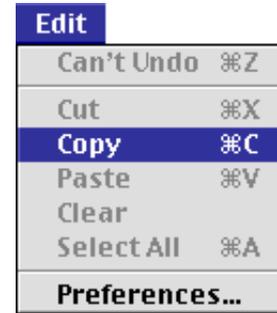
Note: *The "cut," "paste," "clear," and "select all" commands are placed in the **Edit** menu to allow users access to the standard keyboard shortcuts (*command+X*, *command+V*, *delete*, and* command+A*) when a dialog containing a text box is open. These commands are always grayed out and unavailable when an image window is active.*

Saving Images to Disk

The image in the active image window can be saved by choosing **Save As…** from the **File** menu.

File type and image quality can be selected from the following pop-up menus. The image quality menu, which controls how much JPEG images are compressed when saved, is only available when the selected file type is JPEG, JPEG PICT, or JPEG FlashPix. JPEG compression results in loss of detail in the saved image; the more the image is compressed, the greater the loss of detail will be.
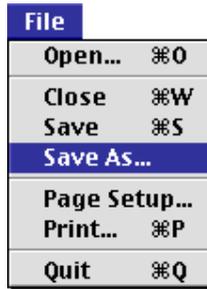
The Save As dialog will appear. Navigate to the drive and folder to which the image is to be saved, enter a name for the file in the **Save this document as** text box, and choose a file type and image quality for the file.

The image will be saved in the specified location when the **Save** button is clicked. Clicking **Cancel** closes the Save As dialog without saving the image. Once an image has been saved to disk, it can be saved again under the same name and in the same location by choosing **Save** from the **File** menu.

Reading Images from Disk

Images that have been saved using the **Save As** command can be opened in Nikon Scan by choosing **Open…** from the **File** menu.

The Open dialog will appear. Navigate to the drive and folder containing the image file and double-click the file name or select the file and click the **Open** button. The selected file will be opened in an image window.
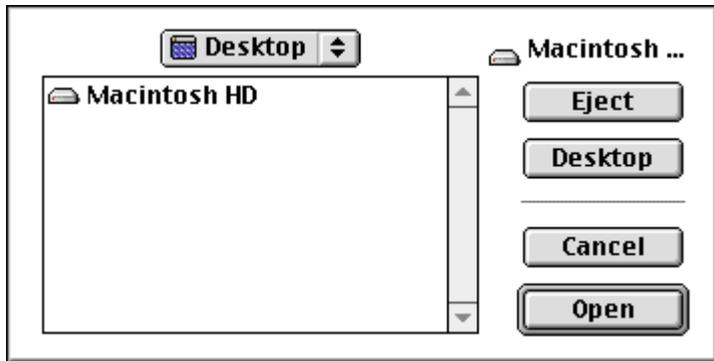
You can switch among multiple image windows by selecting the desired image from those listed at the bottom of the **Window** menu.

Printing Images

The image in the active image window can be printed using the two printing commands in the **File** menu.

Page Setup

To choose a printer and make changes to page size and other printing options, choose **Page Setup…** from the **File** menu. The Page Setup dialog will appear.
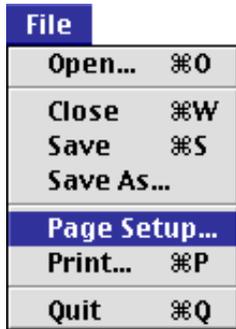
The Page Setup dialog differs depending on what printer is selected.

Print

To print the image, select **Print** from the **File** menu.
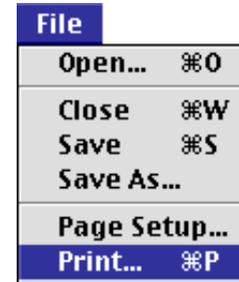
The Print dialog will appear.
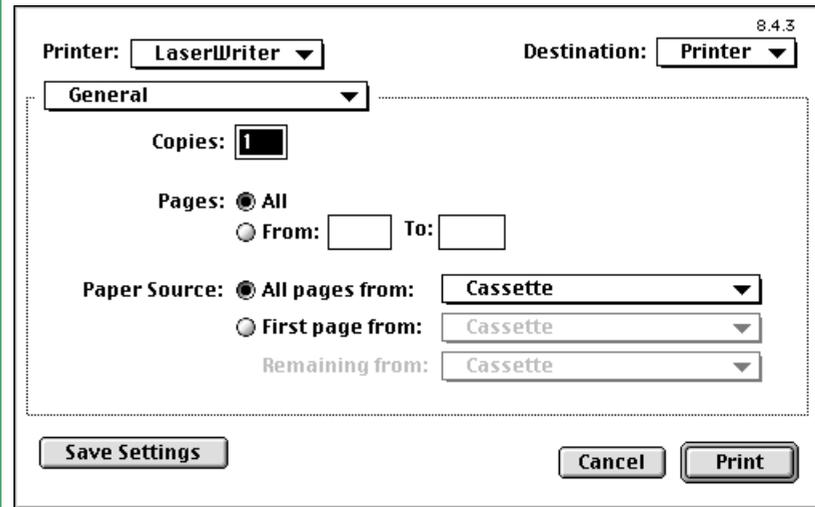
In the Print dialog, chose a printer, printing resolution, and the number of copies to be printed, then click the **Print** button to print the image. Clicking **Cancel** closes the Print dialog without printing the image.

Scan Window Settings

Scan window settings for a selected scanner can be changed from the **Nikon Scan** menu.

```
Nikon Scan
   Device        ▶
   Settings      ▶
   Color Space   ▶
   Film Type     ▶
   Eject
   Slide Feeder...
```

Nikon Scan menu options

Device: Open the scan window for a selected scanner by choosing the device from those listed in this submenu.

Settings: This submenu is only available when a scan window is active. When a scan window is active, this submenu offers the same commands as the settings pop-up menu in the scan window. Using this menu, you can save and load settings or restore factory defaults for the active scan window.

Color Space:

When a scan window is active, this submenu offers the same commands as the color-space pop-up menu in the scan window. Using this menu, you can change the color space in the active scan window. When an image window is active, you can select a new color space for the image from among RGB, sRGB, CMYK, and HSL. Note that as HSL is not supported by any of the available file formats, you must change the document color space to RGB or CMYK before saving an HSL image.

Film Type: This submenu is only available when a scan window is active. When a scan window is active, this submenu offers the same commands as the film-type pop-up menu in the scan window. Using this menu, you can change the film type in the active scan window.

Eject/Next Slide:

This command is only available when a scan window is active, when it performs the same function as the eject button in the scan window control area.

Slide Feeder:

If the device selected in the active scan window has a slide feeder, a batch-scan dialog appears. Enter the number of slides to be scanned in the **number of slides to scan** text-box and click **OK**. The number chosen will be entered in the Slide Feeder Scan panel of the scanner extras drawer (see "*LS-2000 Scanner Extras*" in Appendix A, below).

Quitting Nikon Scan

To quit Nikon Scan, choose **Quit** from the **File** menu.
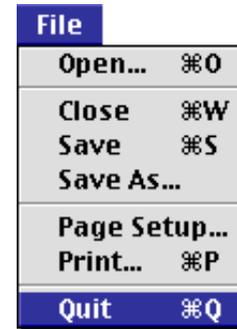
If there are images in the main window that have yet to be saved to disk, you will be prompted to save them before exiting.
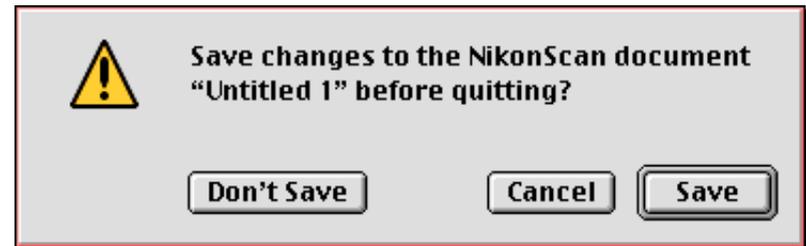
Appendix A: Scanner Extras

The contents of the scan window's "scanner extras" drawer vary depending on the currently selected device. The scanner extras drawers for each of the scanners supported by Nikon Scan are given in the sections that follow.

Opening the Scanner Extras Drawer

To open the scanner extras drawer for the currently selected device, click the scanner extras drawer tab in the control area of the scan window. The drawer can be closed by clicking the tab at its right edge.
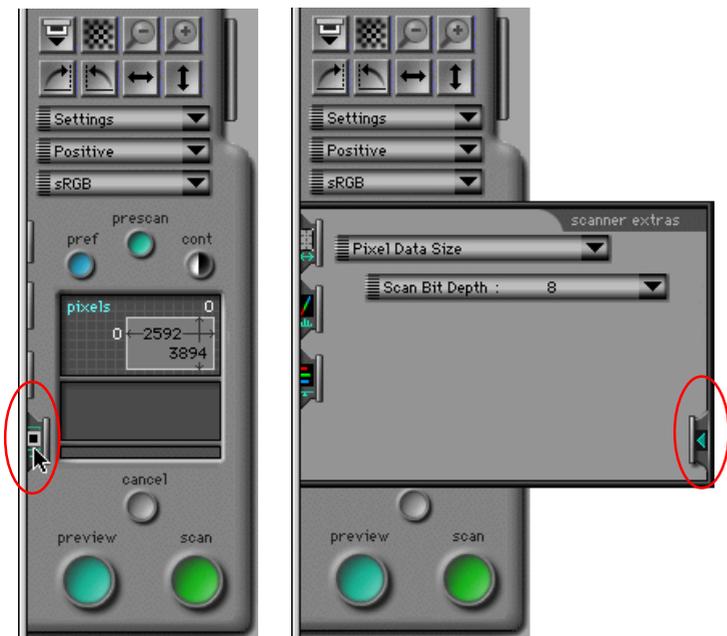

LS-2000 Scanner Extras

The scanner extras drawer for the LS-2000 consists of two sections. The top section contains a pop-up menu listing the features available for adapter currently inserted in the scanner. The bottom section contains pop-up menus or sliders that allow the user to choose settings for the selected feature.
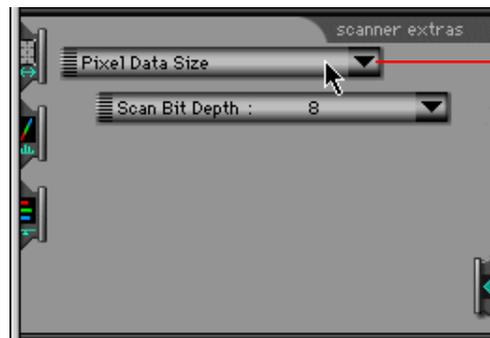
Features pop-up menu button

To change the scanner extras settings, select the desired feature from the features pop-up menu, then select the settings for that feature from the settings pop-up menu or menus. The features pop-up menu is shown below.
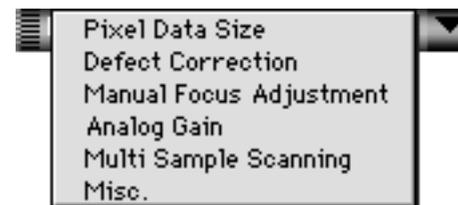
The LS-2000 scanner extras drawer allows access to the following items:

- pixel data size
- defect correction
- manual focus adjustment
- analog gain
- multi sample scanning
- miscellaneous settings
  - software interpolation
  - negative prescan mode
- module extras
  - strip film offset (SA-20 strip film adapter)
  - IX240 crop choices (IA-20 IX240 film adapter)
  - slide-feeder scan (SF-200 slide-feeder adapter)

Note: *Changes to settings in the scanner extras drawer do not take effect until the preview or scan button is clicked. Settings are canceled if a thumbnail is selected before a preview scan is performed. After changing scanner extras settings, perform a preview scan before selecting thumbnails.*

Pixel data size

The pixel data-size dialog controls the bit depth of the scanned image. Images can be scanned at a depth of eight bits per pixel, which produces images containing a maximum of 256 colors or shades of gray, or at a depth of twelve bits per pixel, producing a maximum of 4,096 colors or shades of gray.
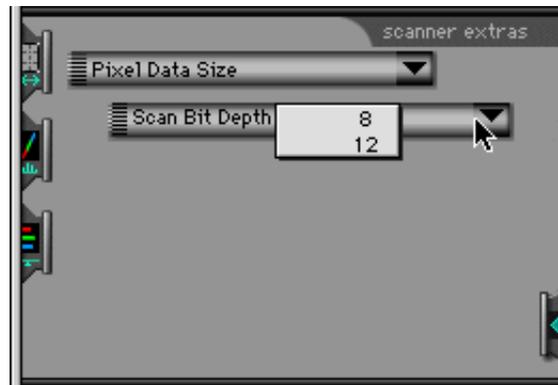

Increasing pixel data size from eight to twelve increases the file size by half a byte for every pixel in the image.

Note: *Images scanned at a bit depth of twelve bits are converted to sixteen bits when opened in the host application, or to eight bits when the color space is CMYK. If the color space is HSL, images will be processed at a bit depth of sixteen bits per pixel regardless of the bit-depth setting. If the bit-depth is set to eight bits per pixel, HSL images will be converted to eight bits when passed to the host application.*

Defect Correction

"Defect Correction" digitally removes dust and scratches from scanned images. "Defect Correction" settings can be chosen from the pop-up menu shown below at right.
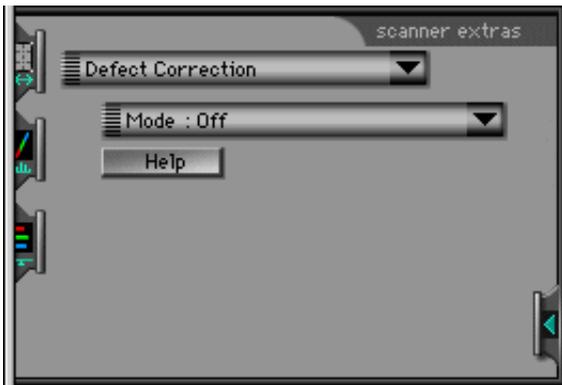
Off: No compensation is made for scratches or dust. The image is scanned "as is."

On (Normal):
The image is digitally processed to remove scratches and dust. The effects of "Defect Correction" are reflected in the preview image.

On (Sharpen):
Defect correction may sometimes blur details of the image. Select this option to sharpen edges while correcting defects.

Click the **Help** button for information on using Defect Correction settings.

Manual focus adjustment

Manual focus adjustment allows you to adjust focus using the focus position slider. Changes to focus take effect when the image is previewed or scanned. Click the **Help** button for information on using manual focus adjustment.
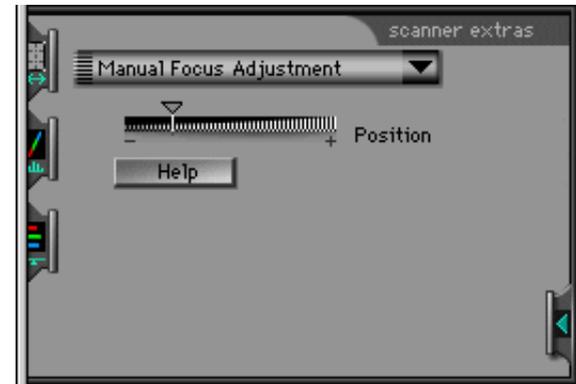
Analog gain

Analog gain is used to adjust the intensity of the scanner's light source, emphasizing selected colors in the input image. The controls for analog gain consist of four sliders: a master slider that allows the user to increase the brightness of all LEDs in the scanner's light source simultaneously, and red, green, and blue sliders that allow independent adjustment of the red, green, and blue LEDs.


Moving a slider to the right increases the intensity of the affected LED; moving it to the left decreases the intensity. Click the **Help** button for information on using analog gain.

Note: *Setting the intensity of the scanner's light source too high may produce "smear" or other defects in the scanned image.*

Multi-sample scanning

"Multi-sample scanning" controls the pixel bit-depth of the scanner's analog-to-digital conversion. The actual bit-depth is twelve bits per pixel; the bit-depth can however be increased using multi-sample scanning to reduce system noise, ensuring a true twelve-bit image. In practice, a twelve-bit image produced by multi-sample scanning can be of a quality equal to a sixteen-bit image produced without noise reduction.
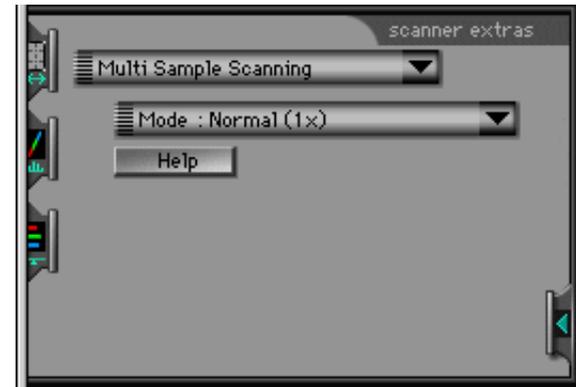
The following multi-sample scanning options are available:

Normal (1x)
Fine (4x)
Super Fine (16x)
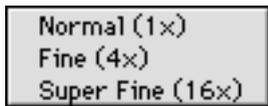
Normal (1x):

Multi-sample scanning is not performed (normal image quality)

Fine (4x): Multi-sample scanning is performed, increasing pixel depth by two bits per pixel ("fine" image quality)

Super Fine (16x):

Multi-sample scanning is performed, increasing pixel depth by four bits per pixel ("super fine" image quality)

Click the **Help** button for information on multi-sample scanning.

Miscellaneous settings

"Miscellaneous" offers the following two controls: software interpolation and negative prescan mode. The first item determines how the image will be digitally processed when scanned, the second controls the autoexposure settings for negative film.

Misc.

Interpolation Method : Bilinear

Negative Prescan Mode : Normal
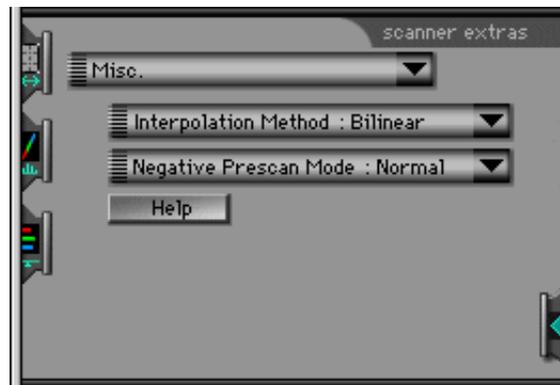
Help

Click the **Help** button for information on miscellaneous settings.

Software interpolation

The LS-2000 supports resolutions of 2,700dpi and all fractions of 2,700dpi with a whole-number denominator (e.g., 2,700/2=1,350dpi, 2,700/3=900dpi, etc.). At other resolutions, some pixels must be generated by computer algorithm to make up the specified number of pixels per inch. Software interpolation controls the algorithm used in generating these extra pixels. The following choices are available:

```
Bilinear
Neighbor
None
```

Bilinear: Extra pixels are generated using a bilinear algorithm

Neighbor: Extra pixels are generated using a "nearest neighbor" algorithm

None: No interpolation is performed (in this case, the scanned image will be larger than the value indicated in the scan-size drawer)

Negative prescan mode

For the best possible results, a prescan is required when negative film is used. The prescan method can be chosen from "normal" and "alternative." "Alternative" is used when scanning images with no clear black- and white-point, such as close-up photographs in which a narrow range of colors predominates.

```
Normal
Alternative
```

Module extras

Separate module extras are available for the SA-20 strip-film adapter, the IA-20 IX240 film adapter (an optional accessory available separately for the LS-2000), and the SF-200 slide-feeder adapter (available separately).

### Strip-film offset (SA-20 strip-film adapter extras)

Strip-film offset is available when the SA-20 strip-film adapter is inserted in the LS-2000's adapter slot. This option can be used to adjust the offset when the position of the film differs slightly from the scan position. To use this option, the thumbnail drawer must be open with thumbnails displayed. The position of the film can then be adjusted using the slider. The effects of offset can be judged by clicking the **Reload** button.

IX240 crop choices (IA-20 IX240 film adapter extras)

IX240 crop choices are available when the IA-20 adapter for IX240 film (sold separately) is inserted in the LS-2000 and control the crop setting for different IX240 film apertures.
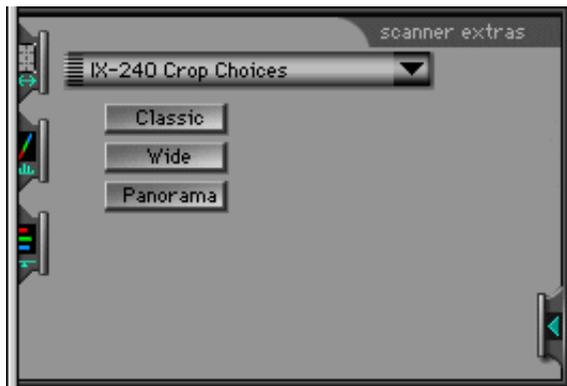
Classic: The initial crop in the preview/crop area is adjusted to suit photographs made at an aperture setting of "classic."

Wide: The initial crop in the preview/crop area is adjusted to suit photographs made at an aperture setting of "wide."

Panorama: The initial crop in the preview/crop area is adjusted to suit photographs made at an aperture setting of "panorama."

Slide-feeder scan (SF-200 slide-feeder module extras)

Slide-feeder scan settings are available when the SF-200 slide-feeder adapter (sold separately) is inserted in the LS-2000. The number of slides to be scanned when the **scan** button is clicked can be set by entering a number in the **Feed Images** text box. Pressing the **scan** button will cause the specified number of slides to be scanned at current scan settings and passed to the calling application. To scan all slides in the feeder, enter a large number such as "999".

Appendix B: Installation Map

This section lists the files on the installer CD and the locations of the files installed by the Nikon Scan 2.0.

Nikon Scan 2.0 Installer CD-ROM

The Nikon Scan 2.0 installer CD-ROM contains the following files:

Folder/File Name	Notes
ReadMe	"Read Me" file for the Nikon Scan 2.0 installer CD-ROM
License Agreement	Software license agreement
Nikon Scan 2.0 Installer EN	Installer (English version) Depending on your region, installers for the German (Installer DE), French (FR), and Spanish (ES) versions of Nikon Scan 2.0 may also be included.
Nikon Scan 2.0 EN	Folder containing the files used by the Nikon Scan 2.0 Installer EN Other folders containing the files used by the installers for other language versions may also be included.
Other folders	Depending on your region, the installer disk may also include additional folders containing the installers for software bundled with Nikon Scan 2.0. Read the "ReadMe" files in these folders for more information.

Nikon Scan 2.0 Installation Map

The Nikon Scan 2.0 installer installs the following files to the locations listed below.

Folder/File Name	Notes	Destination directory
Nikon Software	Folder for Nikon software[1,2,3]	User-specified directory (defaults to the start-up disk)
Nikon Scan 2.0	Folder for Nikon Scan 2.0[1,2,3]	Nikon Scan 2.0 folder
ReadMe	"Read Me" file for Nikon Scan 2.0[1,2,3]	"
License Agreement	File containing text of license agreement[1,2,3]	"
Nikon Scan 2.0	Nikon Scan 2.0 applet[1]	"
Nikon Scan Plugin 2.0	Nikon Scan 2.0 plug-in[2]	Nikon Scan 2.0 folder and/or user-specified application plugins folder
Nikon MAID	Folder for scanner drivers (modules)[1,2]	System folder	Preferences folder
LS2000 Module	Driver for LS-2000 film scanner[1,2]	Nikon MAID folder
MAID Driver	Driver[1,2]	"
SDCLPower	Defect Correction module[1,2]	"
Profiles	Folder for color management profiles[1,2]	"

Folder/File Name	Notes	Destination directory
NKLS2000Posi_16.icm	Scanner profile for LS-2000[1,2]	Profiles folder
NKLS2000Posi_8.icm	″[1,2]	″
NKLS2000Posi_SD_16.icm	″[1,2]	″
NKLS2000Posi_SD_8.icm	″[1,2]	″
NKLS2000Nega_16.icm	″[1,2]	″
NKLS2000Nega_8.icm	″[1,2]	″
NKLS2000Nega_SD_16.icm	″[1,2]	″
NKLS2000Nega_SD_8.icm	″[1,2]	″
NKMonitor_Mac.icm	Monitor profiles[1,2]	″
NKsRGB.icm	Profile for calibrated RGB color space[1,2]	″
NKLch.icm	Profile for Lch (HSL) color space[1,2]	″
NKCMYK_SWOP.icm	CMYK color library[1,2]	″
LS2000_Mac.icm	ColorSync profiles[3]	System folder | Preferences | ColorSync
Utility	Utility folder[1,2]	Nikon Scan 2.0 folder
Attachment Utility	Attachment utility for optional SF-200 slide feeder for LS-2000[1,2]	Utility folder

Notes

1 Installed by "Easy Install" and "Custom Install/Nikon Scan" options

2 Installed by "Easy Install" and "Custom Install/Nikon Scan Plugin 2.0" options

3 Installed by "Easy Install" and "Custom Install/Profiles" options

Appendix C: Uninstall

Nikon Scan can be removed from your system using the "Remove" option in the Nikon Scan installer dialog. Insert the Nikon Scan 2.0 CD into your computer's CD-ROM drive and double-click the installer for the language of your choice.

Nikon Scan Installer EN

Complete steps 1–3 of the installation process as described in "*Before You Begin: Software Installation*." The installer dialog will be displayed.
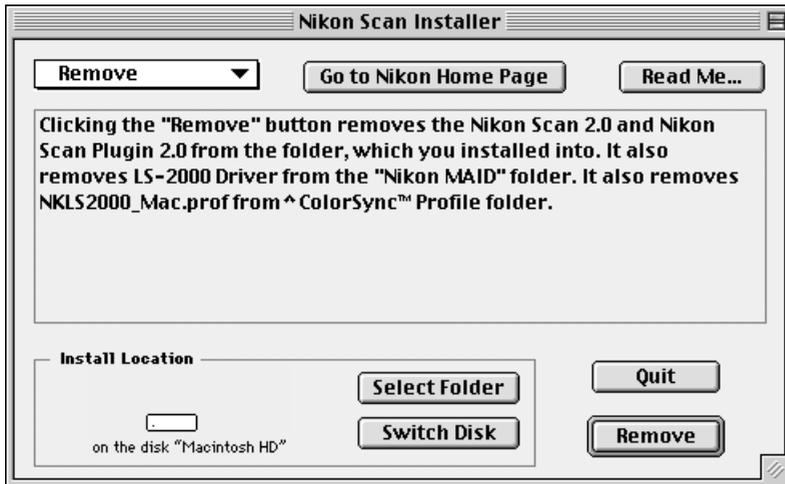
Click the menu button at the top right corner of the installer dialog and select **Remove** from the menu that appears.

The contents of the installer dialog will change to those shown above. Click **Remove** to remove Nikon Scan and all related files from your system.