

Nikon Scan 3 Reference Manual

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Overview



About This Manual

Welcome to Nikon Scan 3! At its most basic, Nikon Scan is a *driver* that acts as an interface between your scanner and your computer, making it possible to preview the image to be scanned, adjust scanner settings, and scan the image into another application. It also allows you to take advantage of the advanced features of your Nikon film scanner, such as multi-sample scanning and Digital ICE³ photo retouch options. Nikon Scan is more than just a scanner driver, however. Using its sophisticated color enhancement and sharpening tools, you can edit images before or after scanning.

Nikon Scan functions in two roles, first as *TWAIN source* (Windows) or *acquire plug-in* (Macintosh) that can be used to scan images directly into any application that supports the TWAIN standard (Windows) or Adobe Photoshop 5.0 acquire plug-ins (Macintosh). It also functions as an independent, or “stand-alone,” application that, in addition to supporting the scanning and editing functions included in the TWAIN source or acquire plug-in, allows you to open saved images, edit them, and save them to disk.

Supported scanners

Nikon Scan 3 can be used with the following scanners:

- 4000 ED (SUPER COOLSCAN 4000 ED)
- COOLSCAN IV ED
- SUPER COOLSCAN 2000 (LS-2000), firmware version 1.3 or later (see  57)
- COOLSCAN III, firmware version 1.3 or later (see  57)


 Pg. For more information on:


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This reference manual has been written to guide you through the process of using Nikon Scan to scan and edit images. The next chapter, “Getting Started,” describes the type of system required to run Nikon Scan and takes you step-by-step through the installation process. The “Tutorial” section provides enough information to enable you to scan images and open them in another application or save them to disk.


More information on scanning and image editing options is provided in the “Reference” section, which also describes how to use Nikon Scan as a stand-alone application and includes a detailed description of the Nikon Color Management System (CMS) and other scan preferences. The manual ends with a series of appendices, including a visual index to the program’s windows, menus, and dialogs, and instructions for reinstalling Nikon Scan.



To make it easier to find the information you need, the following symbols and conventions are used:



 This icon marks cautions, information that you should read before use to prevent damage to your Nikon scanner.


 This icon marks notes, information that you should read before using Nikon Scan.

 This icon marks tips, additional information you may find helpful when using Nikon Scan.

 This icon indicates that more information is available elsewhere in this manual or in other documentation.

 This symbol indicates that the cross-reference marked with the  icon is to the *Nikon Scan 3 Reference Manual* (this manual).

 This symbol indicates that the cross-reference marked with the  icon is to the hardware documentation provided with your scanner.

 Blue text indicates a link to another part of this manual or to the World-Wide Web. Click the text to follow the link.



Printing This Manual

If desired, portions of this manual can be printed for ease of reference using the **Print...** command in the Adobe Acrobat Reader **File** menu.



Terminology

Throughout this manual, “4000 ED” is used in reference to SUPER COOLSCAN 4000 ED film scanners and “LS-2000” in reference to SUPER COOLSCAN 2000 film scanners. “MA-20 (S)” is used in reference to both MA-20 and MA-20 (S) slide mount adapters, “IA-20 (S)” in reference to both IA-20 and IA-20 (S) adapters for APS (IX240) film (available separately), and “SF-200 (S)” in reference to both SF-200 and SF-200 (S) slide feeder adapters (available separately for 4000 ED and LS-2000 film scanners).



Illustrations

This manual is for use with both the Windows and Macintosh versions of Nikon Scan. While the majority of the illustrations are taken from the Windows version of the product, save where otherwise noted the operations described apply to both the Macintosh and Windows versions.



Background Knowledge

This manual assumes familiarity with operations common to the Macintosh and Windows operating systems. If you are in doubt about the meaning of any of the terms used here, refer to the documentation provided with your operating system.



Life-Long Learning

As part of Nikon’s “Life-Long Learning” commitment to ongoing product support and education, continually-updated information is available on-line at www.nikon-euro.com. Visit this site to keep up-to-date with the latest product information, tips, answers to frequently-asked questions (FAQs), and general advice on digital imaging and photography.

Getting Started

Installing Nikon Scan

Before You Begin (pp. 5–6) 

Installation (pp. 7–17) 



About This Chapter

This chapter takes you step-by-step through the process of installing Nikon Scan. Users who have already completed installation can proceed directly to the [next chapter](#) for a tutorial covering basic scan operations.



Pg. For more information on:



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Before You Begin

System Requirements

Before installing Nikon Scan, make sure that your computer system satisfies the following requirements:

Windows

CPU	MMX Pentium I 66 MHz or better (Pentium II or better recommended)
OS	Windows 98 Second Edition (SE)*, Windows Me, Windows 2000 or later
RAM	32 MB (64 MB or more recommended)†
Hard-Disk Space	20 MB free for installation with additional 20 MB available while Nikon Scan is running (200 MB or more recommended, or 400 MB or more when using Digital ROC or Digital GEM)
Video Resolution	640 × 480 pixels or greater with 16-bit RGB color (high color) or more
IEEE 1394/Firewire (4000 ED)	Only boards compliant with Open Host-Controller Interface (OHCI) are supported**. If your computer has an empty PCI slot and is not equipped with a suitable board, you can install the board provided with the 4000 ED.
USB (COOLSCAN IV ED)	Only built-in USB ports are supported**
SCSI (LS-2000, COOLSCAN III)	Only boards compliant with the ASPI interface standard are supported
Miscellaneous	CD-ROM drive required for installation

* The IEEE 1394 driver update provided with Nikon Scan is required when using the 4000 ED with Windows 98 SE.

† A minimum of 128 MB is recommended when using Digital GEM, Digital ROC, the optional IA-20 (S) APS (IX240) film adapter, or the optional SA-30 roll-film adapter for the 4000 ED. Additional memory is required to run the host application when Nikon Scan functions as a TWAIN source.

**The scanner may not function as expected when connected to an IEEE 1394/Firewire or USB hub.

CPU	Power PC G3 or later (Power PC G4 or later recommended)
OS	Mac OS 8.6 or later
RAM	24 MB (64 MB or more recommended)*
Hard-Disk Space	20 MB free for installation with additional 20 MB available while Nikon Scan is running (200 MB or more recommended, or 400 MB or more when using Digital ROC or Digital GEM)
Video Resolution	640 × 480 pixels or greater with 16-bit RGB color (thousands of colors) or more
IEEE 1394/Firewire (4000 ED)	Firewire Support 2.3.3 or later recommended [†] Built-in ports supported from Firewire Support 2.0. If you are using an old-model (beige) G3 desktop computer not equipped with a Firewire board, you can install the board provided with the 4000 ED.
USB (COOLSCAN IV ED)	Only built-in USB ports are supported [†]
SCSI (LS-2000, COOLSCAN III)	Only boards compliant with Macintosh SCSI Driver 4.3 are supported
Miscellaneous	CD-ROM drive required for installation

* A minimum memory allocation of 128 MB is recommended when using Digital GEM, Digital ROC, the optional IA-20 (S) APS (IX240) film adapter, or the optional SA-30 roll-film adapter for the 4000 ED. Additional memory is required to run the host application when Nikon Scan functions as an acquire plug-in.

† The scanner may not function as expected when connected to an IEEE 1394/Firewire or USB hub.

Windows

If you are connecting your scanner for the first time, *do not connect the scanner until you have completed installation of Nikon Scan*. Follow the steps below to complete installation.

Step 1—Turn the computer on

Turn the computer on and wait for the operating system to start up.

Click [here](#)  to proceed to the next step.

Macintosh

Step 1—Turn the computer on

Turn the computer on and wait for the operating system to start up.

Click [here](#)  to proceed to the next step.



If an earlier version of Nikon Scan is already installed on your system, before upgrading to version 3 you will need to uninstall the existing version of Nikon Scan. To uninstall Nikon Scan, click the **Start** button and select the uninstaller from under Nikon Scan in the **Programs** sub-menu.

Nikon Scan 3 offers full support for the scanners supported under version 2.x. Users of Nikon Scan 2 can enjoy the improved functionality of Nikon Scan 3 while continuing to use their existing scanners.



If an earlier version of Nikon Scan is already installed on your system, before upgrading to version 3 you will need to uninstall the existing version of Nikon Scan. To uninstall Nikon Scan, insert the Nikon Scan CD into the CD-ROM drive and start the installer. In the main install dialog, select **Uninstall** from the pop-up menu at the top left corner of the dialog, then click the **Uninstall** button to uninstall Nikon Scan.

Nikon Scan 3 offers full support for the scanners supported under version 2.x. Users of Nikon Scan 2 can enjoy the improved functionality of Nikon Scan 3 while continuing to use their existing scanners.

Step 2—Start the installer

Before starting installation of Nikon Scan, quit any other programs that may be running, including any virus-checking software. Insert the Nikon Scan 3 CD into the CD-ROM drive. After a pause, the Welcome dialog shown at right will open automatically.



Click [here](#)  to proceed to the next step.

Step 2—Start the installer

Before starting installation of Nikon Scan, quit any other programs that may be running, including any virus-checking software. Insert the Nikon Scan 3 CD into the CD-ROM drive and double-click the installer icon. The window shown at right will be displayed; click **Continue...**



Click [here](#)  to proceed to the next step.



If the Welcome dialog does not appear when the CD-ROM is inserted in the drive:

1. Double click the **My Computer** icon
2. In the My Computer window, click on the CD-ROM drive icon with the right mouse button
3. Select **Autorun** from the menu that appears



Depending on where you purchased your scanner, the Nikon Scan 3 CD will contain installers for from one to four language versions of Nikon Scan: English (EN), French (FR), German (DE), and Spanish (ES). Where installers for more than one language version are available, the installers may be found in separate folders; open the folder for the language of your choice and double-click the installer icon.

Step 3—Click Nikon Scan 3

Click **Nikon Scan 3** to begin installation of Nikon Scan.

Click [here](#)  to proceed to the next step.

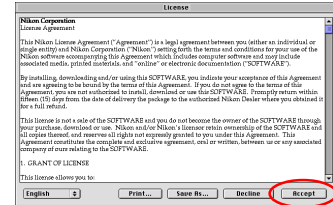


The other links in the Welcome dialog are described below.

Link	Description
Other software	Depending on where you purchased your scanner, one or more third-party software packages may be bundled with Nikon Scan. For information concerning installation and use, see the manuals provided.
ReadMe	Opens the ReadMe file, which may contain information that could not be included in the manual. Read this file before using Nikon Scan.
Exit	Exits the Welcome program.
URL(s)	Click to open your web browser to a Nikon Digital Imaging web-site (your computer must be set up for an Internet connection).

Step 3—Accept the license agreement

The software license agreement will be displayed. After reading the agreement, click **Accept** to continue with installation.



Click [here](#)  to proceed to the next step.



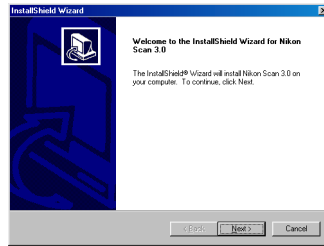
To print the software license agreement (above) or the ReadMe file described in Step 4, click **Print...** Copies of these files are stored on the Nikon Scan 3 CD in the same folder as the installer, where they can be accessed at any time.

Step 4—Choose a language for Nikon Scan

Depending on where you purchased your scanner, you may be prompted to select the language in which Nikon Scan's menus and dialogs will be displayed. Choose a language from the list provided.

Step 5—Start the installation wizard

The dialog shown at right will be displayed; click **Next** to proceed to the next step.



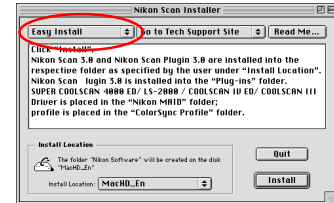
Click [here](#)  to proceed to the next step.

Step 4—Read the ReadMe file

After accepting the license agreement, take a few moments to view the ReadMe file, which may contain important information that could not be included in this manual. When you have finished, click **Continue**...

Step 5—Select the installation type

The installer dialog shown at right will be displayed. Select **Easy Install** from the pop-up menu at the top left corner of the dialog.



Click [here](#)  to proceed to the next step.



The other options in the installer dialog are described below.

Button	Description
Go to Nikon Home Page	Opens your web browser to the Nikon Digital Imaging web-site for your area (your Macintosh must be set up for an Internet connection).
Read Me...	Opens the ReadMe file described in Step 4.
Quit	Quits the installer.

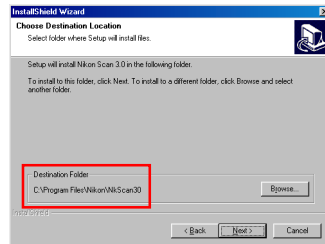
Step 6—Accept the license agreement

The software license agreement will be displayed. After reading the agreement, click **Yes** to continue with installation.

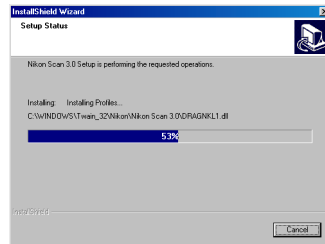


Step 7—Choose a location for Nikon Scan

The default location for Nikon Scan is shown in the Destination Folder text box in the Choose Destination Location dialog. To install Nikon Scan to a different folder, click **Browse** and navigate to the desired location.



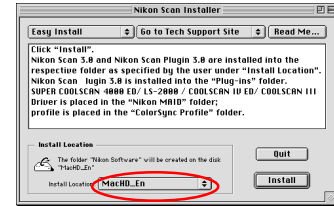
After selecting a destination folder, click **Next** to begin installation. The dialog shown at right will be displayed while installation is in progress.



Click [here](#)  to proceed to the next step.

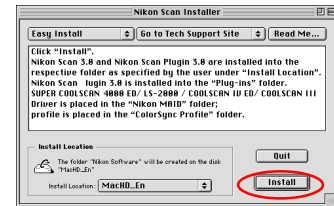
Step 6—Choose a location for Nikon Scan

The disk and folder to which Nikon Scan will be installed (by default, the root directory on the system disk) are shown in the Install Location panel. Choose a new disk from the **Install Location** pop-up menu, or choose **Select Folder...** to navigate to the desired location.



Step 7—Click Install

Click **Install** in the installer dialog to begin installation. A progress indicator will be displayed while files are copied to your hard disk.



Click [here](#)  to proceed to the next step.



Pg. For more information on:



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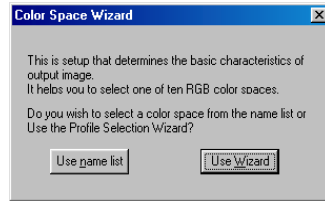


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Step 8—Select an RGB profile

When images are scanned in RGB, Nikon Scan uses calibrated RGB profiles to ensure consistent color reproduction. As part of the installation process, you can choose which of these profiles will be used as the default for the calibrated RGB color space when you first start Nikon Scan. A new profile can be chosen at any time from the Nikon Scan Preferences dialog.

8-1 Once the Nikon Scan program files have been installed, a dialog similar to that shown at right will be displayed.



To choose a profile from a list, click **Use name list** and proceed to [Step 8-4](#). To choose a profile with the help of a Wizard, click **Use Wizard** and proceed to [Step 8-2](#). If you are unsure as to what color-space profile to choose, we recommend that you select **Use Wizard** and choose the profile suggested for your platform. A new profile can be chosen at any time after installation in the Nikon Scan Preferences dialog.



Pg. For more information on:



105 Preferences

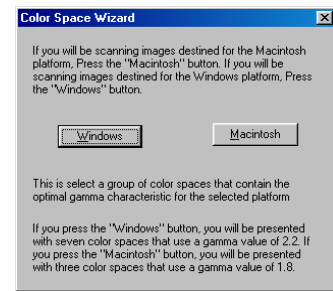


115 Color-space profiles



107 Nikon Color Management System

8-2 The Color Space Wizard opens with the dialog shown at right.



Choose **Windows** if the majority of the images that you scan will be edited on Windows platforms, or **Macintosh** if you do most of your editing on a Macintosh.

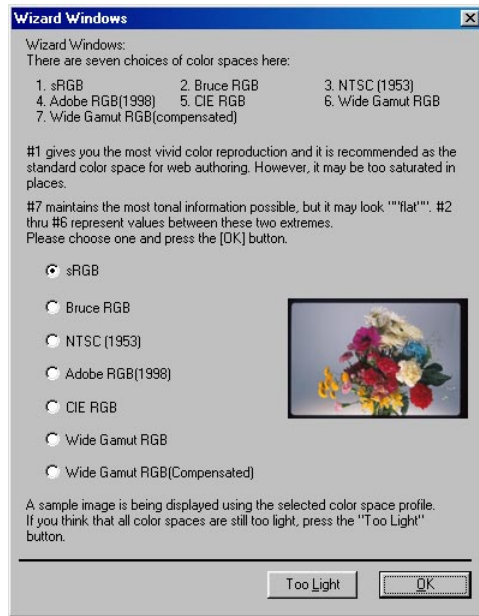
[Click here](#)  to proceed to the next step.



“Profile”

To ensure accurate color reproduction, the Nikon Color Management System (Nikon CMS) must have information about the color characteristics of your scanner, monitor, and the color space used when editing or printing images. This information is contained in files called “profiles.”

8-3 Depending on your choice, you will be presented with one of the dialogs shown below.

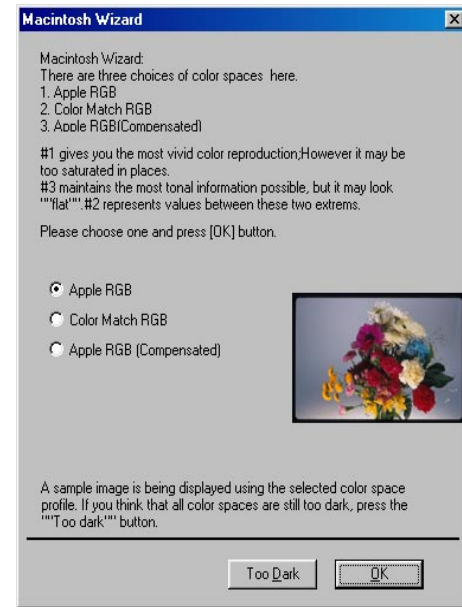


Windows profiles
(gamma 2.2)

Narrow gamut: vivid,
“saturated” colors



Wide gamut: low-
contrast, “flat” colors



Macintosh profiles
(gamma 1.8)

Choose a profile from the list (sRGB is recommended for images destined for Windows computers, Apple RGB for the Macintosh). The effects of the color range and gamma value for each profile can be previewed in the image to the right of the list. If the image seems too dark or too bright, click **Too dark** to choose from a list of Windows profiles, or **Too light** to choose from a list of Macintosh profiles. Click **OK** to choose the selected profile as the initial RGB color space.

[Click here](#)  to proceed to the next step.

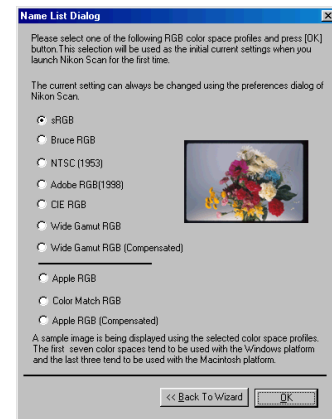


Pg. For more information on:



72 Gamma and color range (gamut)

8-4 A list of ten RGB color-space profiles will be displayed. Choose a profile for use as the initial calibrated RGB color space. The effects of the color range and gamma setting for each profile can be seen in the image to the right of the profile list. Select a profile and click **OK**. If you are not sure which profile is right for you, click **Back to Wizard** to open the Wizard dialog shown in Step 8-3.



Click [here](#)  to proceed to the next step.

Choosing the profile that is right for you

When choosing a profile for the RGB color space, you should bear two things in mind: the *gamma value* for your platform and the *gamut* (range) of colors required for the task at hand.

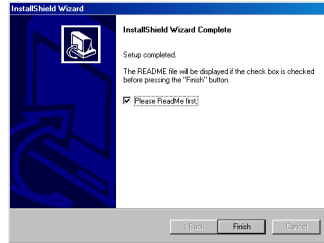
Gamma is a fundamental characteristic of imaging systems, used to adjust the brightness of scanned images so that they display correctly on your monitor. The first seven profiles in the profile list have a gamma value of 2.2, which is the *de facto* standard for Windows. The last three have a gamma value of 1.8, the default value for the Macintosh. Select a profile appropriate to the platform on which the image is to be displayed.

The other factor to bear in mind when selecting a profile is the *gamut*, or range of colors you will need for the task at hand. If you are not planning to make fine adjustments to color, a profile with a narrow range of colors is suitable. Note, however, that a narrow gamut may produce colors that are too “saturated,” or vivid. If you intend to fine-tune color, contrast, and brightness using an editing tool such as the Curves palette, choose a profile that offers a wide range of colors. Without editing, however, such a profile may produce “flat,” low-contrast images.

Profiles within each of the two groupings are ordered by the size of their gamut. Those with a narrow gamut are listed at the top, those with a wide gamut at the bottom.

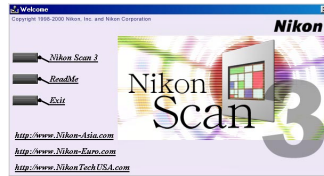
Step 9—Read the ReadMe file

When installation is complete, the dialog shown at right will be displayed. Confirm that **Please ReadMe first** is checked and click **Finish** to display the ReadMe file. Take a few moments to view this file, which may contain information that could not be included in this manual.



Step 10—Quit the installer

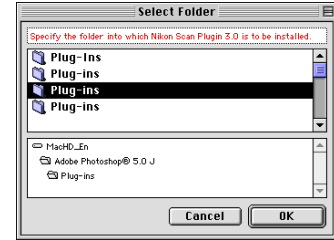
Closing the ReadMe file returns you to the Welcome dialog. Click **Exit** to return to Windows.



Click [here](#)  to proceed to the next step.

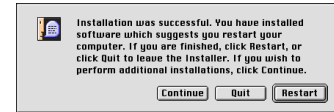
Step 9—Select a plug-ins folder

To scan images using a third-party application, you will need to install a copy of the Nikon Scan plug-in in the application's plug-in folder. The installer will automatically locate the plug-in folders on your computer and display them in the dialog shown at right. Select the plug-ins folders for the desired applications and click **OK**.



Step 10—Quit the installer

The dialog shown at right will be displayed when installation is complete. Click **Restart** to restart your computer.





Click [here](#)  to proceed to the next step.




The installer saves a copy of the Nikon Scan plug-in in a plug-ins folder under the folder to which you installed Nikon Scan. To use the plug-in with another application, first make sure that the application is not running and then copy the plug-in to the application's plug-in folder.

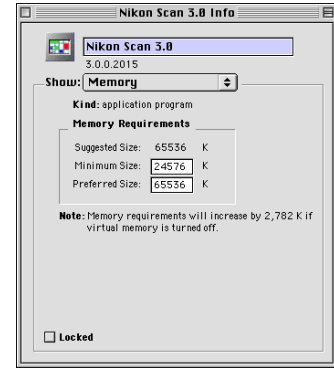
Step 11—Check that the Nikon Scan CD is in place

If you will be connecting your scanner for the first time, before you will be able to use the device you will need to register it with the Windows Device Manager. Before proceeding to the next step, make sure the Nikon Scan 3 CD is inserted in the CD-ROM drive, and then click [here](#)  to proceed to the next step.

If you have already registered your scanner with Windows, either because you are re-installing Nikon Scan or are a user of a LS-2000 or COOLSCAN III film scanner who is upgrading to Nikon Scan 3, installation is complete. Click [here](#)  to view the next chapter.

Step 11—Check the memory available to Nikon Scan

Locate the **Nikon Scan 3.0** icon in the location you chose in [Step 6](#). After clicking the icon once to select it, choose **Get Info** () from the Finder **File** menu. Select **Memory** from the **Show** pop-up menu in the information dialog to display memory requirements as shown at right. If possible, enter a value for “Preferred size” greater than or equal to the suggested size.



Click [here](#)  to proceed to the next step.

**Memory requirements for the Macintosh**

Memory requirements vary with the adapter used. The following minimum allocations are recommended:

Adapter	Preferred Size*
MA-20 (S)	65,536 K (64 MB)
SA-21/SA-20	65,536 K (64 MB)
IA-20 (S)	131,072 K (128 MB)
SA-30	131,072 K (128 MB)

* A minimum allocation of 128 MB is recommended when using Digital ROC or Digital GEM.


Step 12—Connect the scanner


Connect the device as described in the hardware documentation. If you are using the LS-2000 or COOLSCAN III, be sure to turn the computer off before connecting the device. If you are using a scanner with an IEEE 1394/Firewire or USB interface, such as the 4000 ED or COOLSCAN IV ED, you can leave the computer on while connecting the scanner. Note, however, that if you are using the 4000 ED under Windows 98 Second Edition, you will need to install the IEEE 1394 driver update provided with Nikon Scan before connecting the scanner.

Step 13—Turn the scanner on

Turn the scanner on. If you are using a scanner with a SCSI interface, such as the LS-2000 or COOLSCAN III, after turning the scanner on turn on the computer and start Windows.

Step 14—Register the scanner with Windows

The registration process differs depending on the scanner and operating system used. Click [here](#)  for step-by-step instructions on registering your scanner.


Once you have registered your scanner, installation is complete. Click [here](#)  to view the next chapter.

Step 12—Connect the scanner

Connect the device as described in the hardware documentation. If you are using the LS-2000 or COOLSCAN III, be sure to turn the computer off before connecting the device. If you are using a scanner with an IEEE 1394/Firewire or USB interface, such as the 4000 ED or COOLSCAN IV ED, you can leave the computer on while connecting the scanner.

Step 13—Turn the scanner on

Turn the scanner on. If you are using a scanner with a SCSI interface, such as the LS-2000 or COOLSCAN III, after turning the scanner on turn on the computer and start Windows.

Installation is now complete. Click [here](#)  to view the next chapter.



Pg. For more information on:



A-I IEEE 1394 driver update for Windows 98 SE



To check whether Mac OS recognizes the scanner, use the **Apple System Profiler** in the Apple menu.

The Scan Window (pp. 19–25) 

Making a Scan (pp. 26–35) 



About This Chapter

This chapter:

- Introduces you to the scan window, the scanner control center
- Takes you step-by-step through the process of making a scan

This chapter provides enough information to enable you to scan images and open them in another application or save them to disk. More information on scanning, image processing, and preferences is included in the following chapters.

The Scan Window

The Nikon Scan Plug-in or TWAIN Source

Nikon Scan consists of the following two modules:

- **The Scan Window**

The scan window is the interface between your scanner and the imaging application that acts as a *host* for Nikon Scan. It is where you adjust scanner settings and perform image enhancement before scanning the image into the host application, which can be any application that supports TWAIN (Windows) or Adobe Photoshop 5.0 plug-ins (Macintosh).

- **The Nikon Scan Applet**

The Nikon Scan applet, or mini-program, serves as a host for the scan window when no other compatible program is available, or when you don't have the resources needed to run a more sophisticated imaging program. When you are using the Nikon Scan applet, Nikon Scan is said to be functioning as a “*stand-alone*” application.

This section describes how to access the scan window and introduces you to scan window controls.

Opening the Scan Window

Before opening the scan window, make sure that your Nikon scanner is connected and powered on.

- **Opening the Scan Window from a Host Application**

To open the scan window from a third-party application such as Adobe Photoshop, select Nikon Scan from the host's import or acquire menu (see the host application manual for details). If you are using a Macintosh, the Nikon Scan 3.0 plug-in must first be copied to the application's Plug-ins folder. In the Windows version of Adobe Photoshop LE, the **F**ile menu contains a sub-menu of import commands which includes an option for selecting the TWAIN source; select this option and choose “Nikon Scan 3.0” from the list of sources that appears. In the Macintosh version, the scan window can be opened by choosing “Nikon Scan 3.0” from the sub-menu of import/export plug-ins under the **F**ile menu.

- **Using Nikon Scan as a Stand-Alone Application**

Double-click the Nikon Scan 3.0 icon in the folder to which you installed Nikon Scan. Windows users can also start Nikon Scan by clicking the Windows **S**tart button and selecting Nikon Scan 3.0 from the **P**rograms sub-menu.



Pg. For more information on:



90 Starting the Nikon Scan applet

Getting to Know the Scan Window

Take a few moments to familiarize yourself with scan window controls.

Control area (see 21)

Contains the most frequently used scanning and preview controls, including the film eject button and media type and color-model menus.

Information panel (see 22)

Indicates:

- whether the image has been flipped or rotated
- the physical dimensions and file size of the portion of the image to be scanned
- what extra processing will be performed when the image is scanned
- the color values for the pixel under the cursor

Preview button (see 23)

Click to preview the frame to be scanned. The preview shows how the image will look when it is scanned.

Thumbnail drawer tab (see 23)

Click to select frames to be scanned from multi-frame film (this tab is not displayed when the MA-20 (S) or SF-200 (S) is inserted in the scanner).

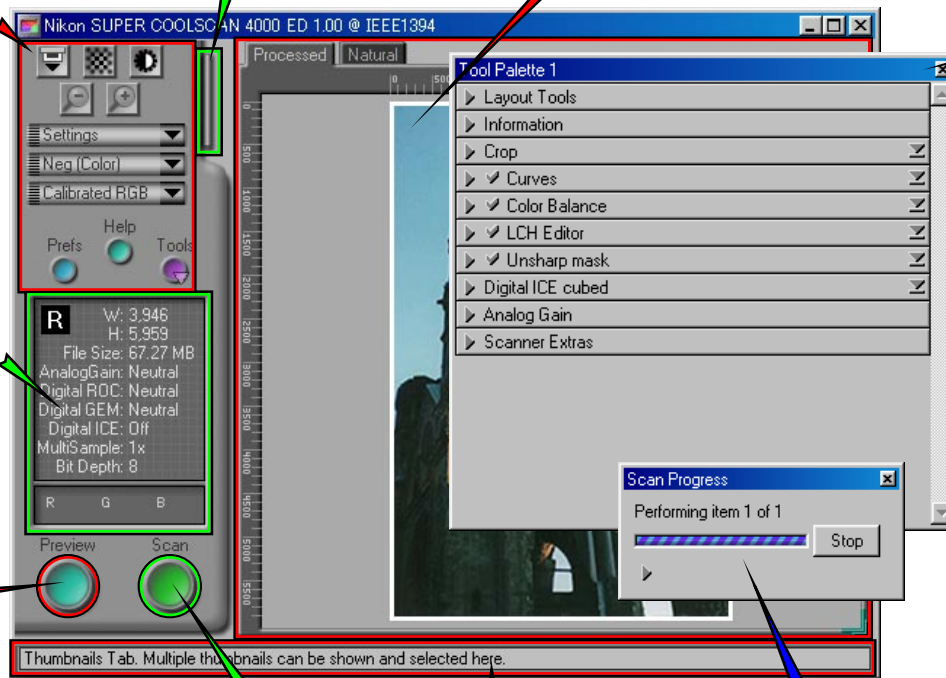
Preview area

The preview image is displayed here. Click the Natural tab (see 23) to see how the image looked before processing; click the Processed tab (see 23) to see how the image will look when it is scanned.

Tool chest (see 24)

Contains tools for:

- setting the image orientation and choosing the portion of the image to be scanned
- controlling the physical dimensions and file size of the image when opened in the host application
- enhancing color, contrast, and sharpness before the image is scanned and, when Nikon Scan is used as a stand-alone application, after images are opened in the Nikon Scan applet
- removing the effects of scratches, dust, fading, and film grain
- controlling the exposure values for the scanning element and other features particular to your scanner



Scan button (see 23)

Click to scan the selected portion of the image into the host application.

Interactive help

Gives a brief tip about the control under the mouse cursor.

Scan Progress window (see 23)

Shows what actions are being performed, and gives a log of automated tasks.

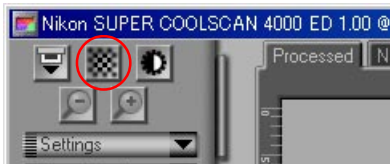
Eject Button



Ejects film from multi-frame adapters (this button is disabled when the MA-20 (S) slide-mount adapter is in place). Control-click (Windows) or option-click (Macintosh) to eject a slide from the optional SF-200 (S) slide feeder without feeding a new one.



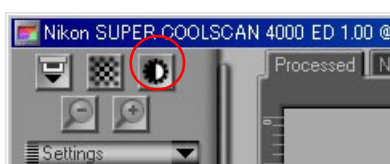
Autofocus Button



Click to focus the scanner on the selected point of the image, or control-click (Windows) or option-click (Macintosh) to select a new focus point.



Autoexposure Button





Before scanning, the scanner needs to gather information about the image to adjust exposure for best results. Click this button to adjust exposure.



Zoom Buttons



Click the  button to zoom in on the current crop, enlarging it to fill the preview area. Click the  button to zoom out.



Settings Menu



Using the options in this menu, you can reset the scanner to default settings, or save scanner settings suited to particular scanning conditions and recall them as desired.



Media Type Menu



Adjusts scanner settings to match the media in the scanner. Select positive when scanning film positives (slides, reversal film, or monochrome positives), negative (color or monochrome) when scanning negatives. A separate option is available for scanning Kodachrome positives.



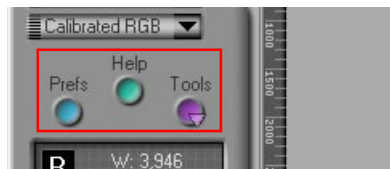
Color Model Menu



Select a color model according to the capacities of your image editing software and whether the image is destined for output on a commercial four-color printing press or display on a monitor.

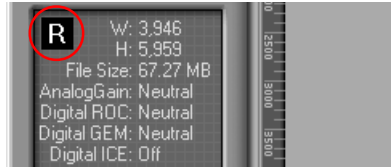


Window Buttons



- **Prefs:** click to open the preferences dialog (see [🔗 105](#))
- **Help:** click to open the Nikon Scan help file
- **Tools:** open the Tool Chest ([🔗 40](#)) or Scan Progress windows ([🔗 31](#)).

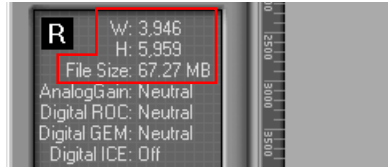
Orientation



Shows the orientation of the preview image relative to the original, reflecting any flips or rotations that have been performed.



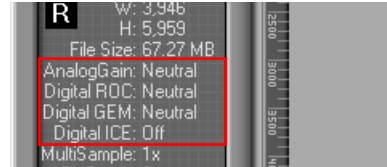
Dimensions/File Size



Gives the height and width of the current crop in pixels, and the size of the file that will result if the crop is scanned at current output size and resolution.



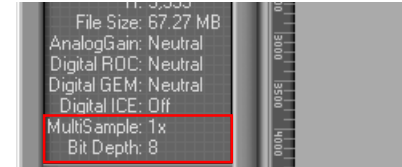
Image Enhancement



Indicates whether Digital ICE³ and analog gain are in effect. Remember to use Digital ICE³ only when needed, as turning these features on can substantially increase scanning times.



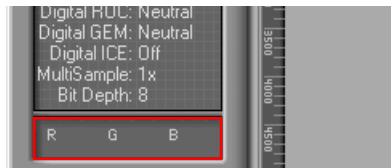
Scanner Extras



Indicates the current bit depth (which determines the maximum number of colors in the image) and whether multi-sample scanning (4000 ED and LS-2000 only) is in effect.



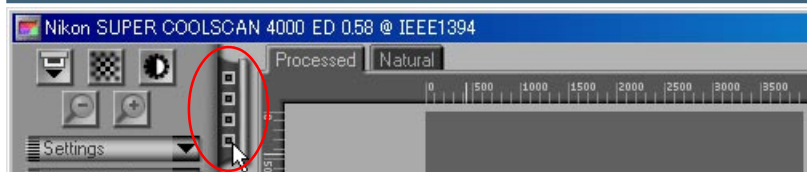
Color Values




Gives the color values for the pixel under the cursor. After processing, two values appear, one reflecting the color in the Natural tab (top row), the other the color in the Processed tab (bottom row).



The Thumbnail Drawer Tab



This tab is only displayed when a multi-frame adapter is inserted in the scanner. Clicking this tab opens the thumbnail drawer, where you can select the frame to be scanned by clicking the associated frame number. To view the frames as small previews (thumbnails), click the  button. Multiple frames can be selected by clicking each frame in turn while holding down the control (Windows) or command (Macintosh) key, or by holding down the shift key while clicking two frames to select these frames and all the frames between them.



The Preview Button



Clicking this button displays a preview of the image to be scanned (if multiple frames are selected in the thumbnail drawer, a preview will be performed for each frame). You will need to create a new preview after changing the media type or using the zoom buttons.



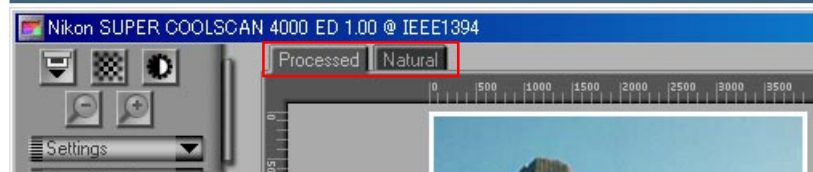
The Scan Button



Scans the image and opens it in the host application (if multiple frames are selected in the thumbnail drawer, each frame will be scanned and opened in a separate window).




The Natural/Processed Tabs

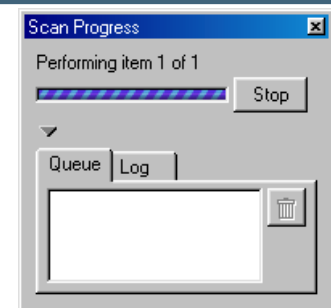


These tabs allow for a quick “before-and-after” comparison showing the effects of processing. The Natural tab shows how the image looked before processing, the Processed tab how the image will look when scanned at current settings. If you are using Nikon Scan as a stand-alone application, you can switch back and forth between the tabs using the **Show Natural Pane/Show Processed Pane** commands in the **View** menu or the Ctrl-T (Windows) or ⌘-T (Macintosh) keyboard shortcuts.

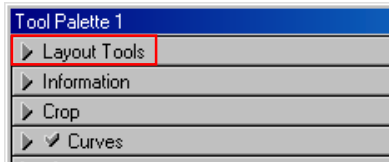


The Scan Progress Window

This window shows the progress of preview and scan operations. The current task can be cancelled by clicking the **Stop** button. Tasks that have yet to be performed are listed in the Queue tab and can be cancelled by selecting the task and clicking the  icon. Completed tasks are listed in the Log tab.



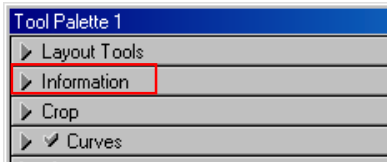
Layout Tools*



Use these tools to select the portion of the image to be scanned (the “crop”) and to rotate and flip the image prior to scanning. You can also select a new focus area and scroll images that have been opened in Nikon Scan after scanning.



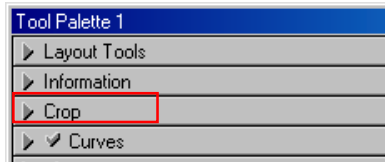
Information*



Gives height and width of the current crop and the coordinates of its top left corner. The color value display shows the color of the pixel under the cursor before and after processing.



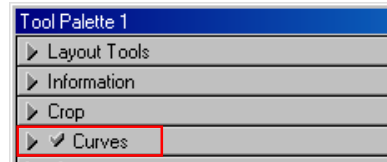
Crop†



This is where you adjust the resolution and size of the image according to the output device (printer or monitor) on which the image will be displayed.



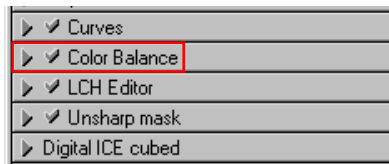
Curves*



One of three color editing tools offered by Nikon Scan, the curves tool is useful when adjusting contrast and making changes to color balance that effect only a specific portion of the tone range (shadows, mid-tones, or highlights).



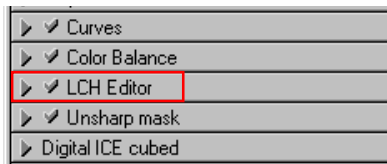
Color Balance*



Use the color balance tools to make adjustments to brightness, contrast, and color balance that affect the entire image.



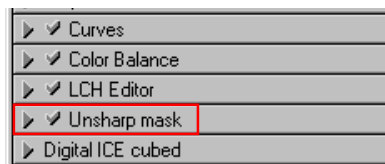
LCH Editor*



Like the Curves too, the LCH editor can be used to adjust brightness and contrast in shadows, mid-tones, and highlights. It also incorporates hue and chroma editors, which provide extremely flexible tools for adjusting color.



Unsharp Mask*



Unsharp mask increases the sharpness of the image by making edges more distinct, either over the entire image or in areas where specific colors are prominent.



Tools marked with an asterisk (“*”) are available both in the scan window and (where Nikon Scan is used as a stand-alone application) when images are opened in the Nikon Scan applet after scanning. Those marked with a “†” are only available in the scan window.

The Tool Chest (Continued)

Digital ICE Cubed (Digital ICE³)[†]

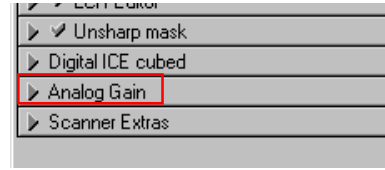


Depending on your scanner, up to three image enhancement tools are available:

- **Digital ICE:** reduces the effects of dust and scratches
- **Digital ROC:** restores colors lost through fading
- **Digital GEM:** reduces the effect of film grain



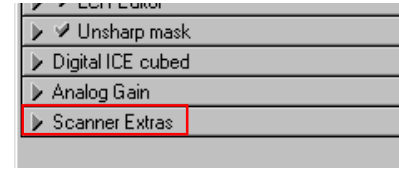
Analog Gain[†]



This tool allows exposure for the colored elements in the scanner's light source to be adjusted manually. Use when you want to change exposure from the values produced by the autoexposure operation.



Scanner Extras[†]



These tools offer you control over features specific to your scanner.



Tools marked with a “†” are only available in the scan window.

Making a Scan

This section covers the basics of making a scan, from opening the scan window to scanning an image into the host application. A detailed description of Nikon Scan's color editing and image enhancement features may be found in the [following chapter](#).

STEP 1 Open the scan window (📍 27)

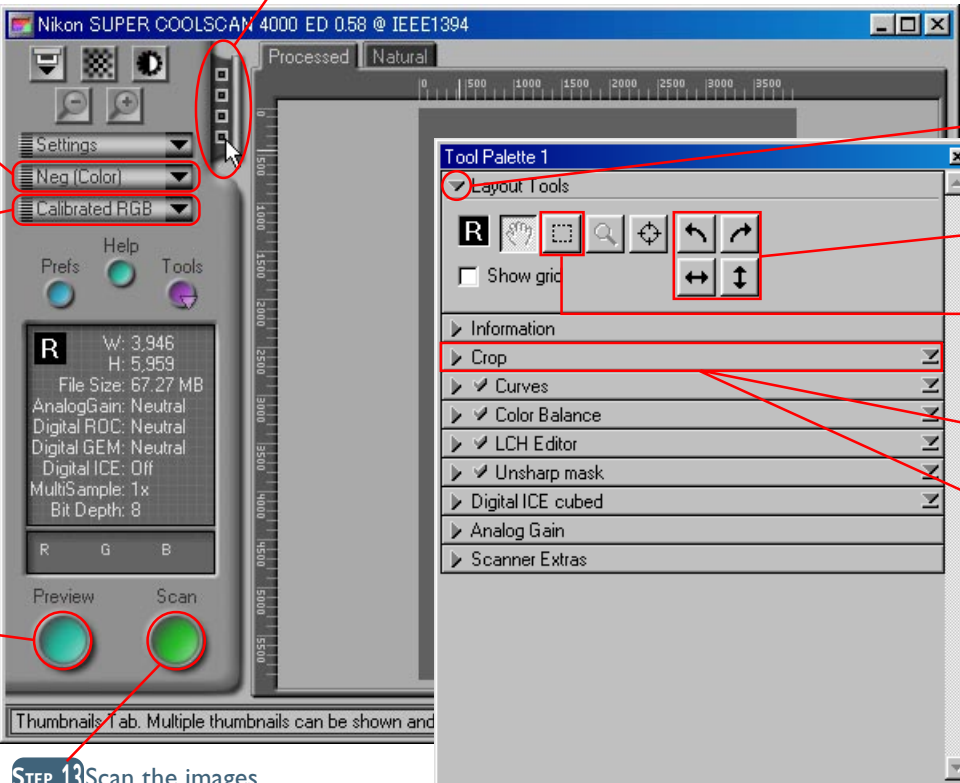
STEP 2 Insert the medium in the scanner (📍 27)

STEP 5 Select the frames to be scanned (📍 29)

STEP 3 Select the media type (📍 27)

STEP 4 Select the color model (📍 28)

STEP 6 Preview the frames to be scanned (📍 31)



STEP 7 Open the Layout Tools palette (📍 32)

STEP 8 Adjust image orientation (📍 32)

STEP 9 Select the area to be scanned (📍 33)

STEP 10 Select an output resolution (📍 34)

STEP 11 Adjust the output size (📍 34)

STEP 12 Adjust settings for the remaining frames (📍 35)

STEP 14 Save the scanned images (📍 35)

Before making a scan, connect the scanner and turn it on as described in the scanner manual. You will also need to turn on your computer and wait for the operating system to start up.

Step 1—Open the scan window

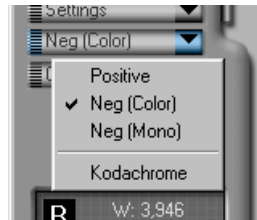
Open the scan window as described in the previous section under “Opening the Scan Window.”

Step 2—Insert the medium in the scanner

Insert the medium to be scanned in the scanner as described in the hardware documentation.

Step 3—Select the media type

Select the media type from the pop-up menu in the control area. The options available depend on the selected scanner.



Option	When to use it
Positive	Use when scanning most makes of positive slides or reversal film.
Neg (Color) (4000 ED/ COOLSCAN IV ED only)	Use when scanning color film negatives.
Neg (Mono) (4000 ED/ COOLSCAN IV ED only)	Use when scanning black-and-white negatives.
Negative (LS-2000/ COOLSCAN III only)	Use when scanning film negatives.
Kodachrome (4000 ED/ COOLSCAN IV ED only)	Use when scanning Kodachrome positives.



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19 Opening the scan window

Select **Positive** when scanning AGFA SCALA monochrome film, or when scanning prepared microscope slides using the FH-G1 medical slide holder (available separately).

Step 4—Select the color model

Select a color model according to how you intend to use the image. The options available depend on whether the Nikon Color Management system (CMS) is on (the default setting) or off.



Option	When to use it
Grayscale	Use for images that will be printed or displayed in monochrome
Calibrated RGB (CMS on)	Use for images that will be edited or displayed on a computer monitor
CMYK (CMS on)	Use for images destined for output on a four-color printer
RGB (CMS off)	Use to edit raw RGB data from the scanner



Nikon Color Management

The Nikon Color Management system (CMS) ensures that the colors from your scanner are reproduced accurately on different output devices such as printers and monitors. Accuracy is ensured by means of ICC profiles that provide information about the color space used for scanning and the characteristics of the video system, printer, or monitor. Profiles are available for RGB (for use when editing images or displaying them on a monitor) and CMYK (for professionals who wish to create a file ready for printing on a commercial four-color printing press).



Pg. For more information on:



[I07 Turning Nikon CMS on and off](#)



Pg. For more information on:



[I07 Nikon Color Management](#)

Step 5—Select the frames to be scanned



If you are using a multi-frame adapter, you can select the frames to be scanned from the thumbnail drawer. Click the thumbnail drawer tab to open the drawer as shown below.

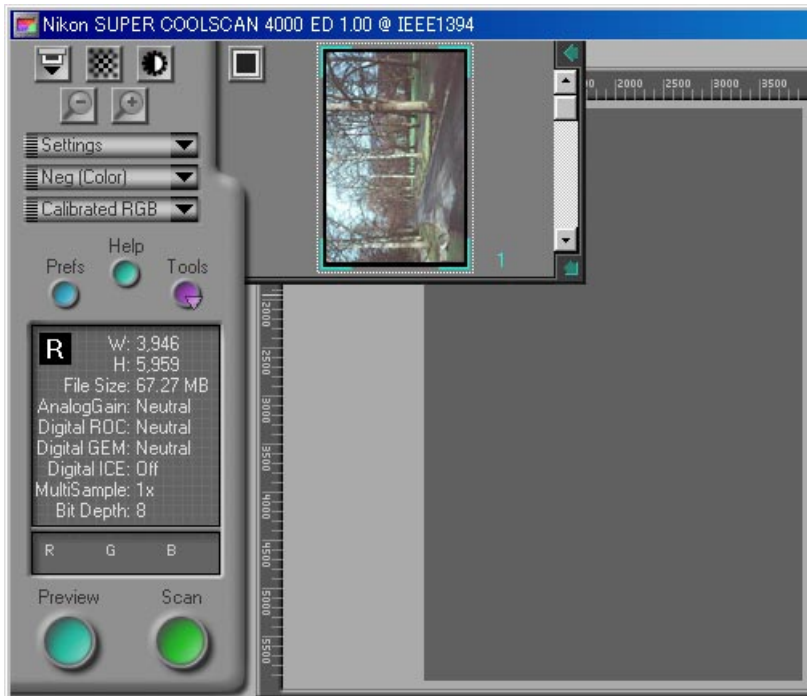


Multi-frame adapters

A multi-frame adapter is an adapter that allows you to scan more than one frame of a film roll or strip film without having to remove the media from the adapter between scans. The following multi-frame adapters are available for the Nikon scanners supported under Nikon Scan 3:

- the SA-21 (4000 ED/COOLSCAN IV ED) and SA-20 (LS-2000/COOLSCAN III) strip-film adapters
- the IA-20 (S) adapter for APS (IX-240) film (sold separately)
- the SA-31 film-roll adapter for the 4000 ED (sold separately)
- the SF-200 (S) slide feeder for the 4000 ED and LS-2000 (sold separately; note that because the SF-200 (S) can preview only one frame at a time, the thumbnail drawer is not available when this adapter is in use)


By default, frames are identified by number only. To view a small preview image (thumbnail) for each frame, click the  button. The button icon will change to ; click the button again to return to a frame number display.




If the thumbnails don't fit in the frame, use the **Strip Film Offset** control in the Scanner Extras palette to adjust their position.

The frame to be scanned can be selected by clicking the associated frame number or thumbnail. To select multiple frames, click each frame in turn while holding down the control (Windows) or command (Macintosh) key, or hold down the shift key while clicking two images to select the images and all frames between them.

Thumbnail drawer controls

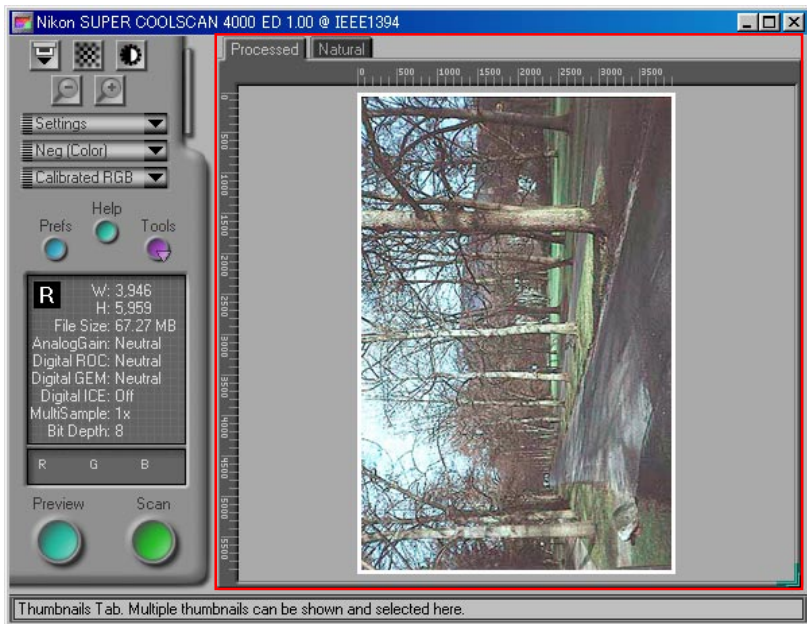
- **To hide the thumbnail drawer:** click the  button at the top right corner.
- **To adjust the size of the thumbnail drawer:** drag the bottom right corner (the thumbnail drawer can not be made larger than the scan window).



When film is inserted in the SA-21 strip-film adapter for 4000 ED/COOLSCAN IV ED film scanners, six frame numbers will be displayed in the thumbnail drawer regardless of the number of frames in the film. Similarly, when film is inserted in the optional SA-30 roll-film adapter for 4000 ED film scanners, forty frame numbers will be displayed regardless of the number of frames in the film. The correct number of frames will be displayed when the  button is clicked to create thumbnail previews.

Step 6—Preview the frames to be scanned

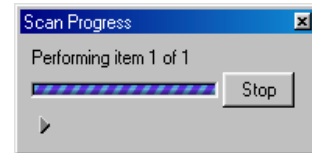
Click the **Preview** button. A preview of the image to be scanned will appear in the Natural and Processed tabs to the right of the control area.




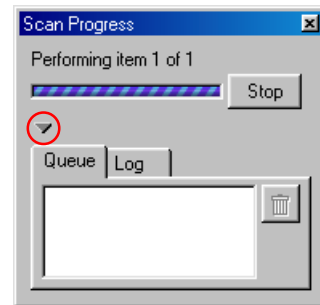
If you are using a multi-frame adapter, a preview of each of the selected frames will be created and stored in memory. You can switch between frames by opening the thumbnail drawer and clicking the frame you want to view. Note that the more previews stored, the greater the demands that will be made on your computer's memory.

The Scan Progress window

While scanning is in progress, the progress window will show the operation currently being performed. The current task can be cancelled by clicking the **Stop** button.



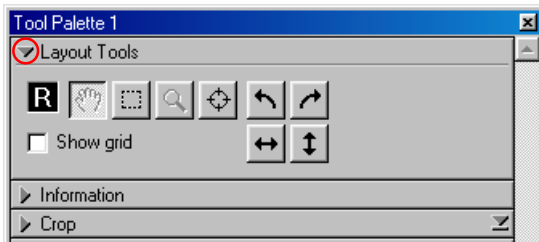
To view operations that have yet to be performed, first click the triangle under the progress meter, then click the Queue tab to display the Queue sheet listing unfinished tasks. Tasks can be cancelled by selecting the desired operation(s) and clicking the  icon.



Completed tasks are listed in the Log sheet.

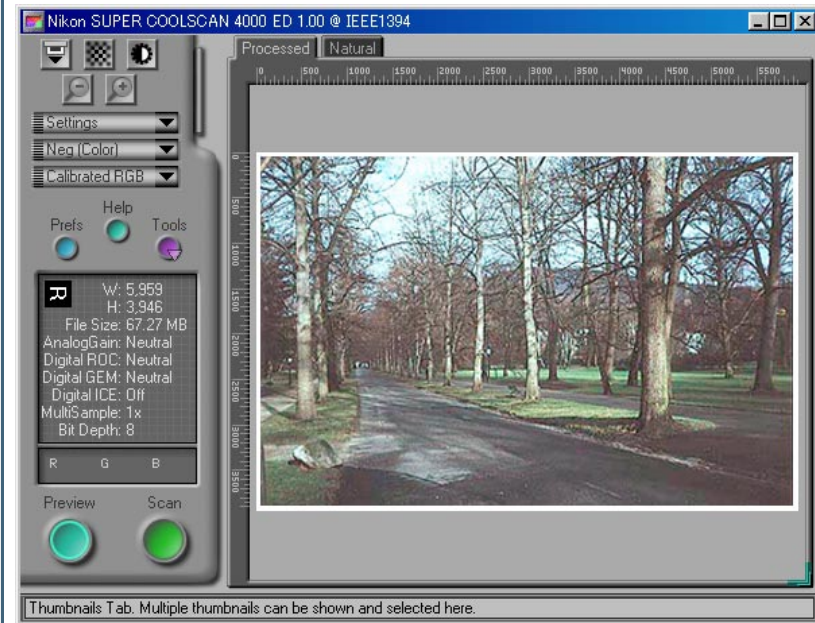
Step 7—Open the Layout Tools palette

Before scanning the image, you may need to use the Layout Tools in the Tool Chest to correct its orientation and select the area to be scanned. Click the triangle to the right of the palette to display the Layout Tools.



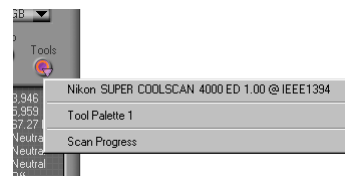
Step 8—Adjust image orientation

Depending on how the medium was inserted into the scanner, you may need to use the rotate and flip buttons in the Layout Tools palette to return the image to its original orientation.



Opening the Tool Chest

To display the Tool Chest, click the **Tools** button in the control area and select **Tool Palette 1** from the menu that appears.

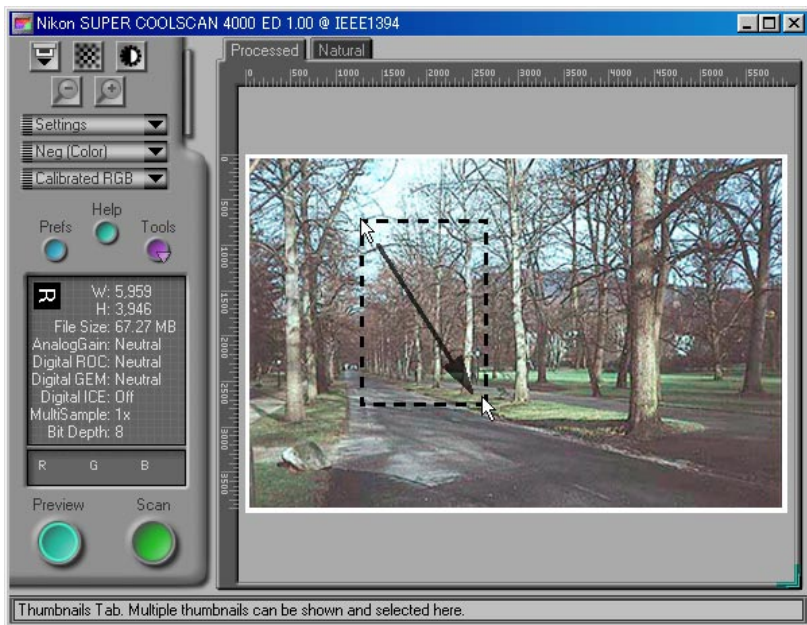
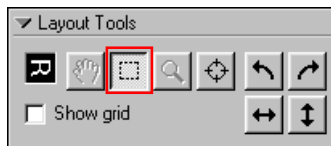


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 **43 Layout Tools**

Step 9—Select the area to be scanned

After confirming that the crop button in the Layout Tools palette is selected, drag the mouse over the image to select the area to be scanned, also known as the “crop.”



You can change the size of the crop by dragging its borders, or move the entire crop to a new location by placing the cursor within the crop frame and dragging it to another position.

To enlarge the crop to fill the preview area, click the  button. If desired, you can then select a smaller crop within the original crop and click the  button again to enlarge the image still further. To zoom out to the previous view, click the  button.



Changing the size of the preview area

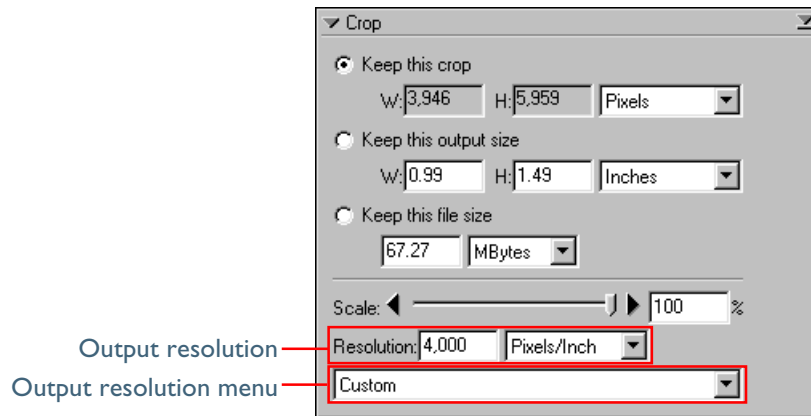
To adjust the size of the preview area, drag its bottom right corner (note that the preview area can not be enlarged beyond the borders of the scan window).



To speed processing, Nikon Scan does not create a new preview when the image is zoomed in, but instead simply enlarges the existing preview. For an accurate assessment of the effects of processing and film grain at higher zoom ratios, click the **Preview** button to create a new preview.

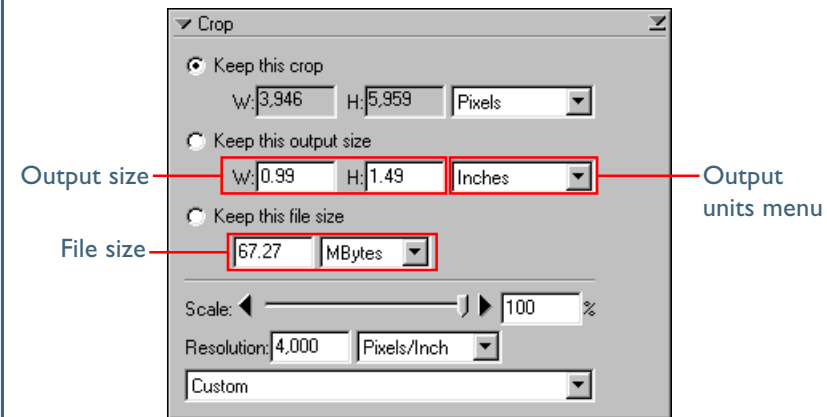
Step 10—Select an output resolution

Click the triangle next to Crop in the Tool Chest to open the Crop palette. Enter a value for **Resolution** that matches the effective resolution of the printer or monitor on which the image will be displayed after scanning. Resolution can also be set by selecting an output device from the output resolution pop-up menu.



Step 11—Adjust the output size

Before scanning, adjust the output size to determine the size of the image that will be produced, either in terms of the physical dimensions of the image when printed or displayed at the selected resolution, or in terms of the amount of space it will occupy when saved to disk. The Crop palette contains three options for determining output size: **Keep this crop**, **Keep this output size**, and **Keep this file size**.



Picking an output resolution

When scanning images for output on a household inkjet printer, keep in mind that unit “pixels per inch” (used on monitors and in image editing software) is not equivalent to the “dots per inch” used on inkjet printers. An output resolution of around 240 ppi is usually adequate for printers rated for 360, 720 or 1,440 dpi.

Computer monitors are usually considered to have resolutions of 96 ppi (Windows) or 72 ppi (Macintosh).



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46 The Crop palette

- **Keep this crop**

Choose this option when you want to select the precise area to be scanned using the mouse, then adjust the output resolution and size according to how the image will be used. Choose the units for output size from the output units menu and enter a value for either **Width** or **Height** in the output size text boxes. The other dimension will be adjusted automatically to maintain the crop selected in the preview area.

- **Keep this output size**

Choose this option when you want to select the general area to be scanned using the mouse, then specify the exact dimensions of the image to fit it into a pre-determined space, for example in a magazine or on a web page. Choose the units for output size from the output units menu and enter the desired **Width** and **Height** in the output size text boxes. The crop selected in the preview area will automatically be adjusted to maintain the crop at these proportions.

- **Keep this file size**

Choose this option when you want to select the general area to be scanned using the mouse and then specify the exact file size of the final image, for example to keep file sizes to a minimum for storage or electronic transfer, or because you have been asked for a file of a certain size. Enter a value for file size in the file size text box and select the units for file size from the menu to its right.

Step 12—Adjust settings for the remaining frames

If you selected multiple frames in the thumbnail drawer in Step 5, open the thumbnail drawer. The images selected in Step 5 will be shown with green frame numbers or a green border around the thumbnail; click the next of the images to display the associated preview. Repeat steps 8 through 11 to adjust settings for the selected image, and then display the preview for the next frame. Repeat until you have adjusted settings for all the selected frames.

Step 13—Scan the images

Click the **Scan** button to scan all the selected images and open them in separate windows in the host application. If Nikon Scan is being used as a stand-alone application, the images will be opened in windows within Nikon Scan.



Step 14—Save the scanned images

After editing, save the scanned images from the host application. If you are using Nikon Scan as a stand-alone application, choose **Save As...** from the **File** menu to save the images to disk.



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90 Using Nikon Scan as a stand-alone application

Reference

Getting the Most from Nikon Scan

Adjusting Focus and Exposure (pp. 37–39) 

The Tool Chest (pp. 40–87) 

Reusing Settings (pp. 88–89) 

The Nikon Scan Applet (pp. 90–104) 

Preferences (pp. 105–137) 





About This Chapter

This chapter covers scan window settings not detailed in the previous chapter, including contrast, color balance, sharpening, and Digital ICE³ controls. It also describes the options available in the settings menu and Preferences dialog, and details the options available when Nikon Scan is used as a stand-alone application.

Adjusting Focus and Exposure

Resetting Autofocus and Exposure

Under normal circumstances, the scanner will automatically adjust focus and exposure before an image is displayed in the preview area. If the film is warped or uneven, however, part of the image may not be in focus, making it necessary to select a new focus point to achieve satisfactory results. Because the autofocus operation works best on high contrast areas of the image, you may also need to select a new focus point if the default focus point at the center of the image lacks contrast. This operation can be performed using the  button in the scan window control area.

By default, the scanner adjusts exposure as necessary before previews or scans. Depending on the settings selected for the autoexposure options in the Preview Settings, Single Scan, or Batch Scan tabs of the Preferences dialog, you may however need to adjust exposure before scanning or preview using the  button in the scan window control area.



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135 Preferences—Preview Settings




126 Preferences—Single Scan

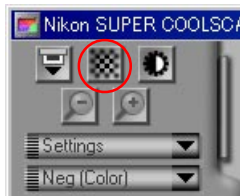


128 Preferences—Batch Scan



Selecting a New Focus Point

Manual Focus Point Selection


By default, clicking the  button focuses the scanner on a point in the center of the preview image. Two methods are available for selecting an alternate focus point:



- **Use the focus tool in the Layout Tools palette**

Click the focus tool () in the Layout Tools palette, then click on the image in the preview area to select a new focus point (we recommend that you choose a high contrast area of the image). Your selection will be used as the focus point the next time you click the  button in the scan window control area.

- **Control/option click the  button**

To perform an autofocus operation when the new focus point is selected, hold down the Ctrl (Windows) or option (Macintosh) key while clicking the  button. The cursor will take on the shape of a cross; move the cross-shaped cursor over the point in the preview image you want to use as the new focus point and click (we recommend that you choose a high contrast area of the image). An autofocus operation will be performed using the selected point as the focus point.



If **Perform auto focus when focus point is moved** is selected in the Automatic Actions tab of the Preferences dialog, an autofocus operation will be performed each time you change the focus point using the focus tool.

If **Auto focus** is selected in the Preview Settings tab of the Preferences dialog, an autofocus operation will be performed as necessary when the **Preview** button is clicked. Separate autofocus options are also available for single and batch scans.



Pg. For more information on:



44 The focus tool



132 Preferences—Automatic Actions



135 Preferences—Preview Settings



126 Preferences—Single Scan



128 Preferences—Batch Scan




58 Manual focus adjustment

Autoexposure

Performing an Autoexposure Operation

By default, an autoexposure operation is performed as necessary when the **Preview** button is clicked. If **Auto exposure for negative film** or **Auto exposure for positive film** is turned off in the Preview Settings tab of the Preferences dialog, however, autoexposure must be performed manually before previewing media of the selected type. Similarly, if **Auto exposure for negative film** or **Auto exposure for positive film** is turned off in the Single Scan or Batch Scan tab of the Preference dialog, autoexposure must be performed manually before scanning media of the selected type.

To adjust autoexposure manually, click the  button in the control area.



Pg. For more information on:



135 Preferences—Preview Settings



126 Preferences—Single Scan



128 Preferences—Batch Scan

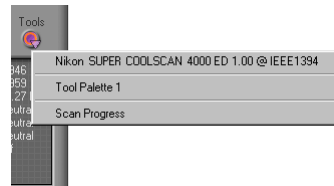
The Tool Chest

Setting up Scans and Enhancing Images

The Tool Chest contains the tool palettes you will use prior to scanning to select the area to be scanned, adjust the output size and resolution, and enhance images to correct common problems caused by scratches, dust, film grain, and fading. It can also be used to edit images for contrast, color balance, and sharpness, whether prior to scanning or—when using Nikon Scan as a stand-alone application—after scanning, when the image is opened in an image window within Nikon Scan.

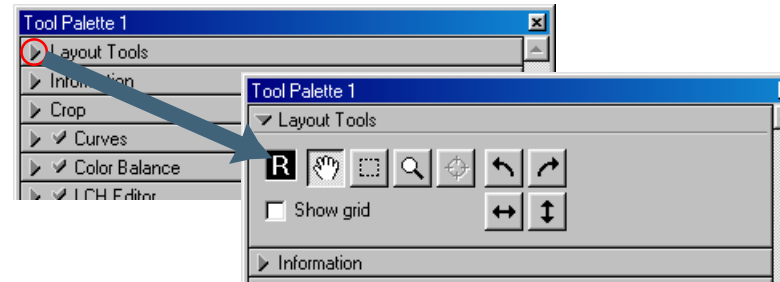
- **Opening the Tool Chest**

To display the Tool Chest, click the **Tools** button in the scan window control area and select **Tool Palette 1** from the menu that appears.



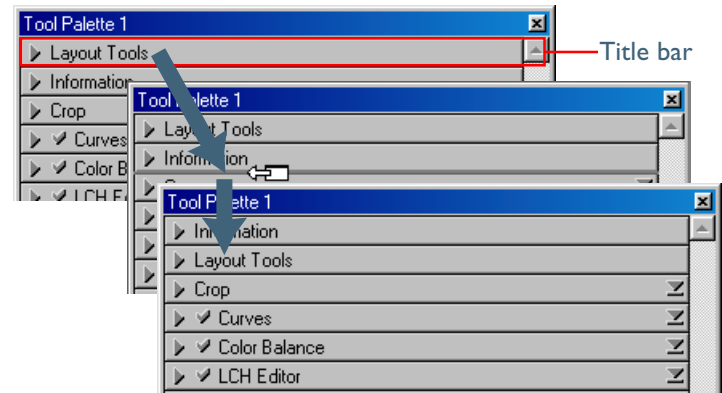
- **Displaying the contents of a tool palette**

To display or hide the contents of a tool palette, click the triangle to the left of the palette title.



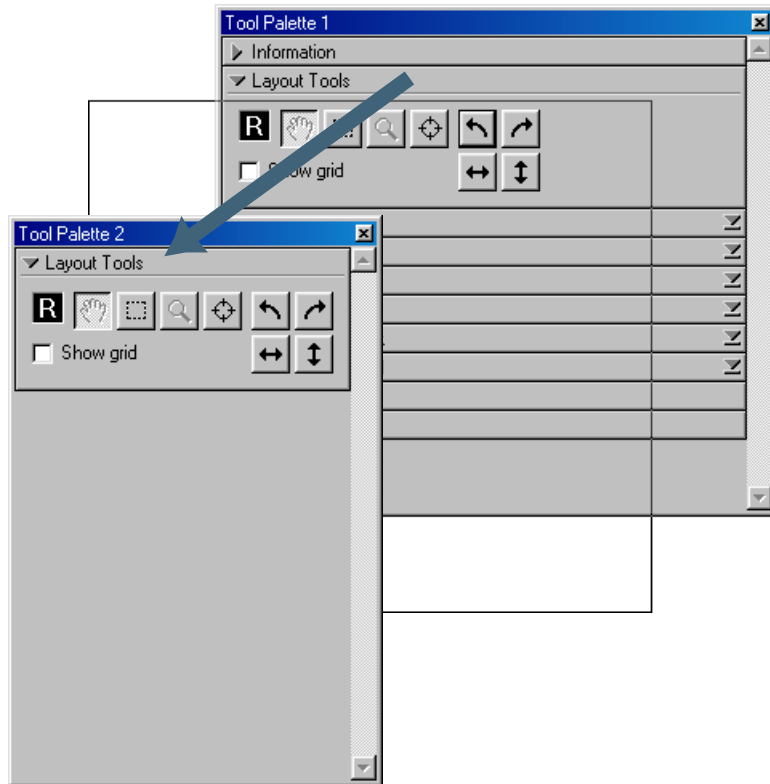
- **Changing the order of palettes in the Tool Chest**

To change the order of palettes in the Tool Chest, click a tool palette title bar and drag it into a new position.



- **Opening a tool palette in a separate window**






Tool palettes can be opened in a separate window by clicking the palette title and dragging it outside the Tool Chest window to create a new Tool Chest window containing only the selected palette.



Tools can be added to the new Tool Chest by dragging additional palettes into the window. The new Tool Chest will be added to the tools menu in the scan window. If you close the new Tool Chest by clicking the window close box, you can open it again by selecting the desired Tool Chest from the tools menu.

- **Using the Tool Chest**

Between previewing an image and saving it to disk in the host application, there are four distinct stages to scanning an image, each involving separate tools:

Stage	
Stage 1: Select a crop Use the Layout Tools to correct the orientation of the preview image and select the area to be scanned. The Information palette can be used to determine the size and location of the crop.	 43
Stage 2: Adjust resolution and size Use the tools in the Crop palette to adjust the output size and select a resolution suited to the device on which the image will be printed or displayed.	 46
Stage 3: Digital ICE ³ and scanner settings Use the tools in the Digital ICE Cubed (Digital ICE ³) palette to reduce the effects of scratches, dust, film grain, and fading. Adjust scanner settings using the Scanner Extras palette.	 51
Stage 4: Color enhancement and sharpening Use the tools in the Curves, Color Balance, LCH Editor, and Unsharp Mask palettes to adjust tone, colors, contrast, and sharpness.	 63



If you are using Nikon Scan as a stand-alone application, Stage 4 can be performed in the Nikon Scan applet after the image has been saved to disk. This allows you to make multiple copies of the same image, each edited for color and sharpness in a different way and saved in a separate file. Before scanning the image, you may want to increase the scan bit depth in the Scanner Extras drawer to preserve image quality. Once the image is opened in the Nikon Scan applet, save a copy in NEF format to store any changes to the image independently of the original image data. You can then edit the image in a number of different ways, saving the results in separate files.

Setting up a Scan




The Layout Tools, Information, and Crop Palettes






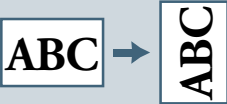

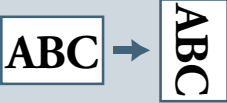




Layout Tools


The Layout Tools palette contains tools for use both in the scan window and in image windows opened in Nikon Scan applet when Nikon Scan is used as a stand-alone application. In the scan window, the layout tools are used to select the portion of the image to be scanned and to set the focus point for autofocus operations. In image windows, they are used to scroll the image, zoom it in and out, and select part of the image to be copied to the clipboard. The flip and rotate tools in the Layout Tools palette can be used to correct the orientation of images both in the scan window and in image windows.



The Layout Tools palette contains the following controls:

Control	Description
 Image Orientation	The image orientation display takes the form of a capital letter “R.” Any flips or rotations performed on the image are reflected in the orientation of the letter; if the letter is shown in red, the image has been flipped from its original orientation.
 Hand Tool	This tool is only available if Nikon Scan is being used as a stand-alone application and an image has been opened in the Nikon Scan applet, when it can be used to scroll images that are too big to fit in the image window. For details, see 95 . When the scan window is active, the hand tool is disabled.
 Crop Tool	When the crop tool is active, a selection can be made by dragging the cursor over an image. In the scan window, this tool is used to select a portion of the image to be scanned and opened in the host application (see 33). When Nikon Scan is used as a stand-alone application and an image window is active in the Nikon Scan applet, it duplicates the function of the Selection Cursor. For details, see 96 .

Control	Description
 Zoom Tool	This tool is only available if Nikon Scan is being used as a stand-alone application and an image has been opened in the Nikon Scan applet, when it duplicates the function of the Zoom Cursor. For details, see  95. When the scan window is active, the zoom tool is disabled.
 Focus Tool	When this tool is active, you can select the point that will be used for subsequent autofocus operations. For details, see  38. The focus tool is only available when the scan window is active.
 Rotate 90° counter-clockwise	Rotates the image in the active window ninety degrees to the left. 
 Rotate 90° clockwise	Rotates the image in the active window ninety degrees to the right. 
 Flip horizontal	Flips the image in the active window horizontally. 
 Flip vertical	Flips the image in the active window vertically. 

Control	Description
Show grid	When this box is checked, a layout grid is displayed superimposed over the image in the active window. The grid spacing and color can be set in the Grid panel of the Preferences dialog (see  137).



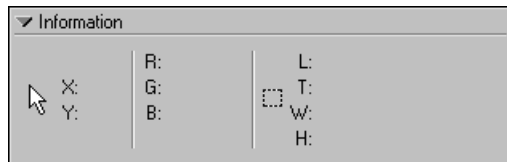
If you are using Nikon Scan as a stand-alone application, you can select the hand, crop, zoom, and focus tools using the **Hand Cursor**, **Selection Cursor**, **Zoom Cursor**, and **Focus Cursor** commands in the **View** menu.

 **Pg. For more information on:**

 90 Using Nikon Scan as a stand-alone application

Information

This palette provides information about the size and location of the current crop, the position of the cursor within the active image, and the color of the pixel under the cursor.



The Information palette display will be updated automatically to reflect changes to the crop in the Crop palette. All measurements in the Information palette are in pixels.



Pg. For more information on:




46 The Crop palette



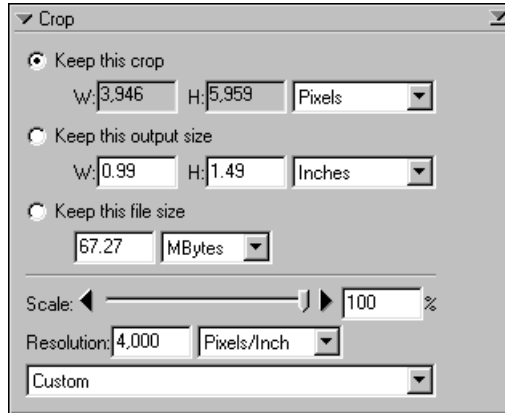
134 Preferences—Advanced Color

The Information palette contains the following items:

Item	Description
X: Y:	The vertical (Y) and horizontal (X) distance of the cursor from the top left corner of the image.
L: R: G: B:	The color values for the pixel under the cursor. If the selected color model is grayscale, values for only one channel (L) will be displayed. If the selected color model is RGB, separate values will be displayed for each of the Red , Green , and Blue channels. If the selected color model is CMYK, separate values will be displayed for each of the Cyan , Magenta , Yellow , and black channels. If the image has been modified, two values will be shown for each channel: the value before the slash represents the color of the pixel before processing, the value after the slash the color after processing. The size of the area sampled to determine the color value can be changed using the Sample point size option in the Advanced Color tab of the Preferences dialog (see  135).
C: M: Y: K:	
L: T:	The coordinates of the Top Left corner of the current crop.
W: H:	The Height and Width of the current crop.

Crop

The Crop palette is where you specify the physical dimensions, or output size, of the image opened in the host application after scanning.



How you set the output size depends on how you intend to use the image.

- ***If the image will be printed or used in desktop publishing:*** After selecting a crop, choose a resolution suited to the device on which the image will be printed or displayed. Then set the output size in inches or metric either by direct entry or using the **Scale** slider (if you are using the image in a desktop publishing application, you may want to choose picas or points as the output units). Where the resolution of the printing press is not known, you may be requested to produce a file of a specific size. In this case, simply select **Keep this file size** and enter the file size directly.
- ***If the image will be displayed on a monitor or web page:*** After selecting a crop, set the output size in pixels using the **Scale** slider. Resolution in this case is not an issue. Where file sizes must be kept small to minimize transfer times, as when the image is to be sent by e-mail or used on a web page, you may want to select **Keep this file size** and enter the file size directly.

The Crop palette offers three methods for adjusting output size:

- **Keep this crop**

Choose this option when you want to select the precise area to be scanned using the mouse, then adjust the output resolution and size according to how the image will be used. When using this option, first select the area to be scanned using the mouse, then enter the desired output resolution in the **Resolution** text box. After choosing the units for output size from the menu to the right of the output size text boxes, you can either adjust output size using the **Scale** slider, or enter the output size directly in either the **Width** or **Height** text boxes (the other dimension will change automatically to maintain the same proportions as the crop selected in the preview area).

- **Keep this output size**

Choose this option when you want to select the general area to be scanned using the mouse, then specify the exact dimensions of the image to fit it into a pre-determined space, for example in a magazine or on a web page. When using this option, select a resolution and enter the desired output size in the **Width** and **Height** text boxes after choosing a unit other than pixels for output size. You can then select the area to be scanned using the mouse (the proportions of the crop will be adjusted to match the values entered for output size). This option is useful when the image has to print at a specified size.

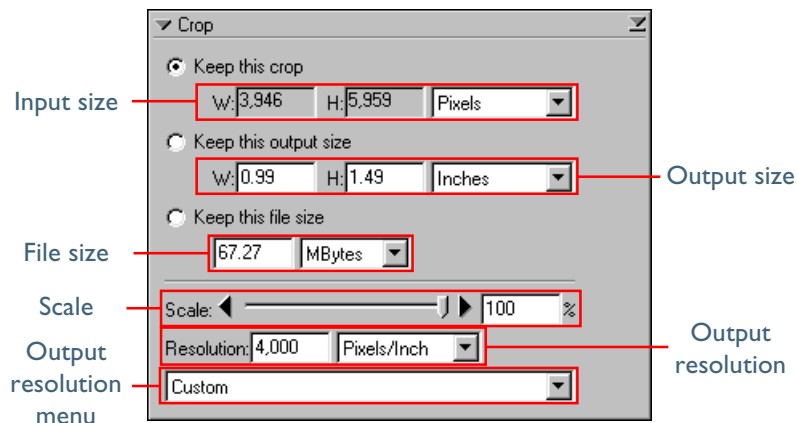
- **Keep this file size**

Choose this option when you want to specify the exact file size of the final image, for example to keep file sizes to a minimum for storage or electronic transfer, or because you have been asked for a file of a certain size. When using this option, first enter the desired file size and then select the area to be scanned using the mouse. This option is most useful when scanning images for e-mail or the web.



Selecting **Keep this output size** fixes the physical dimensions of the image when output on a printer or monitor. Consequently, when **pixels** is selected as the units for output size, adjusting resolution will cause the values shown in the output size text boxes to change. The physical dimensions of the image will however remain constant.

The other items in the Crop palette are described below:



Item	Description
Input size	This display shows the dimensions of the current crop. The units for input size can be chosen from the menu to the right of the display; the units chosen are used for the rulers in the preview area.

Item	Description
Output size	The output size can be entered in these text boxes. The units for output size can be chosen from the menu to the right of the display. When Keep this crop is selected , changing the height or width will result in the other value be adjusted automatically to maintain the height-width aspect ratio at the proportions of the current crop. When Keep this file size is selected, changing one of dimension will result in the other being adjusted to maintain a constant file size, changing the proportions of the crop.
File size	The size of the file that will be produced when the input crop is scanned at current settings, before JPEG compression (if applicable) and not including file headers (which typically increase file size by about 10 KB). In addition to output size and resolution, file size is determined by the scan bit depth (see 57) and the selected color model.

Item	Description
Scale	Scale (the output size relative to the size of the original) can be set by direct entry or using the Scale slider.
Output resolution	Output resolution can be entered in this text box or set to match a particular output device by selecting the device from the output resolution menu. The units for resolution can be chosen from the menu to the right of the text box.

Adding resolution menu options (Macintosh only)

In the Macintosh version of Nikon Scan, options can be added to the resolution menu by selecting **Add Resolution...** from the output resolution menu and entering a name and resolution. Options can be deleted from the output resolution menu using the **Delete Resolution...** option.

Choosing a resolution

- Inkjet printer**

Most inkjet printers require three or four dots of different colors to reproduce a single pixel (simulated halftone). The target resolution for an inkjet printer (in pixels per inch, or ppi), is therefore less than the printer's catalogue resolution (in dots per inch, or dpi). In general, resolutions of 180–240 ppi will produce acceptable results on printers with catalogue resolutions of 360, 720 or 1,440 dpi. (Note that although the terms used differ, both pixels and dots refer to the individual elements used to make up a picture—pixels in the case of monitors, dots in the case of printers.)
- Dye-sublimation printer**

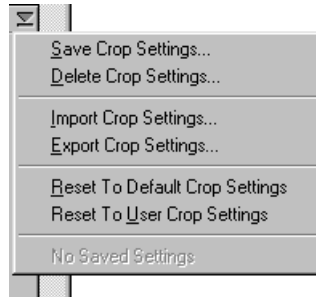
Printers that use photographic or dye-sublimation processes reproduce each pixel with a single dot (continuous halftone). The target resolution for these devices is therefore the same as the printer resolution.
- Commercial printing**

Commercial printing processes typically use from 150 to 300 lines per inch (lpi). As a rule of thumb, resolution for output on a commercial printer (in ppi) should be about twice the number of lines per inch.
- Monitor**

Computer monitors are usually considered to have resolutions of from 72 ppi (Macintosh) to 96 ppi (Windows).


The Crop Settings Menu

Clicking the triangle at the top right of the Crop palette displays the Crop settings menu, where you can save or export crop settings and recall them as desired. The information saved includes scale, output resolution and size, and the size and location of the current crop.



The Crop settings menu contains the following options:

Item	Description
Save Crop Settings...	Saves the current crop settings under a user-specified name. These settings will be added to the end of the Crop settings menu, where they can be recalled by selecting the desired settings by name.
Delete Crop Settings...	Displays a dialog where you can select for deletion settings saved using the Save Crop Settings... option.
Import Crop Settings...	Imports settings saved using the Export Crop Settings... option.
Export Crop Settings...	Exports the current crop settings to a separate file in the folder of your choice.

Item	Description
Reset to Default Crop Settings	Sets the crop to include the entire image and restores the default resolution and scale settings.
Reset to User Crop Settings	Restores the user default settings created with the Set User Settings option in the scan window settings menu (see  88).

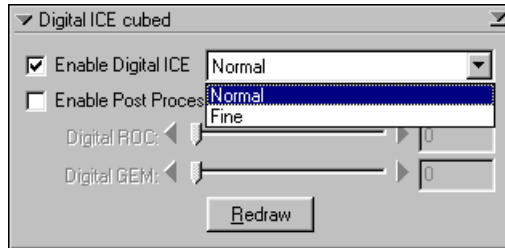
Retouching Photographs

Digital ICE, Digital ROC, and Digital GEM (Digital ICE³)

Nikon Scan is equipped with three photo retouch tools: **I**mage **C**orrection and **E**nhancement (ICE), **R**estoration of **C**olor (ROC), and **G**rain **E**qualization and **M**anagement (GEM). These tools can be used to help repair defects caused by faults in the original image, including dust, scratches, fading, and film grain.

Digital ICE

Digital ICE (**I**mage **C**orrection and **E**nhancement) is built into 4000 ED, COOLSCAN IV ED, LS-2000, and COOLSCAN III film scanners, where it is used to remove the effects of dust and scratches from images during scanning. To use Digital ICE, check the **Enable Digital ICE** box and choose a mode from the menu shown below.



Item	Description
4000 ED/COOLSCAN IV ED	
Normal	The image is processed digitally to remove the effects of scratches and dust. The effects are reflected in the Natural tab in the preview area.
Fine	This setting is effective in removing the effects of very thin scratches or dust that is barely visible. It may, however, result in reduced sharpness. The effects are reflected in the Natural tab in the preview area.
LS-2000/COOLSCAN III	
Normal	The image is processed digitally to remove the effects of scratches and dust. The effects are reflected in the Natural tab in the preview area.
Sharpen	The image is processed digitally to remove the effects of scratches and dust. Edges are sharpened while defects are corrected. The effects are reflected in the Natural tab in the preview area.



When the **Enable Digital ICE** check-box is on, the information display in the scan window shows the option selected in the Digital ICE menu.

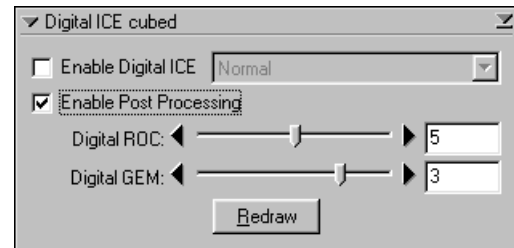
Digital ICE is equivalent to the “Defect Correction” function in Nikon Scan 2.

Digital ICE does not perform equally well with all types of film. If you are using Kodachrome film, you may find that Digital ICE does not have the desired effect, or that there is an overall degradation in image quality when Digital ICE is in effect. We recommend you turn Digital ICE off when using black-and-white (color monochrome film excepted) or Kodachrome film.

Because of the complexity of the processing involved, scans performed using Digital ICE requires longer scanning times.

Restoration of Color (ROC)

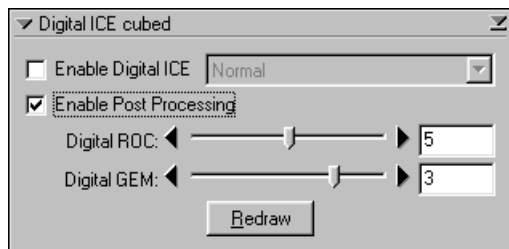
Digital ROC, a tool for digitally restoring colors lost through fading of the original media, is built in to 4000 ED and COOLSCAN IV ED film scanners. To use Digital ROC, turn the **Enable Post Processing** check-box on and then select the amount of correction to be performed using the **Digital ROC** slider or by entering a value in the text box to its right. The default setting is “5”; move the slider to the right to increase the effect of Digital ROC, or to the left to decrease its effect. Choose “0” to turn Digital ROC off. To view the results in the Natural tab prior to scanning, click the **Redraw** button.



Post-processing using Digital ROC and Digital GEM is not available with the LS-2000 and COOLSCAN III.

Grain Equalization and Management (GEM)

Digital GEM, a tool for digitally reducing the effects of film grain, is built in to 4000 ED and COOLSCAN IV ED film scanners. To use Digital GEM, turn the **Enable Post Processing** check-box on and then select the amount of correction to be performed using the **Digital GEM** slider or by entering a value in the text box to its right. The default setting is “3”; move the slider to the right to increase the effect of Digital GEM, or to the left to decrease its effect. Choose “0” to turn Digital GEM off. To view the results in the Natural tab prior to scanning, click the **Redraw** button.



Digital ROC and Digital GEM

The current status of the **Digital ROC** and **Digital GEM** check-boxes is shown in the information display in the scan window. If changes are made to these settings without redrawing the preview image, a warning icon will appear in the information display.

Digital ROC and Digital GEM

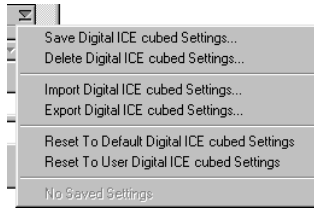
Because of the complexity of the processing involved, Digital ROC and Digital GEM require a substantial amount of time to perform. To speed scanning, you can disable these features before making a scan by turning **Enable Post Processing** off. You can also save time by making a scan without first clicking **Redraw** to preview the effects of Digital ROC and Digital GEM.

Note that if the color model is not set to grayscale, using Digital ROC with monochrome film may introduce colors into the image.

We recommend that you increase the amount of memory available to Nikon Scan or the host application to at least 128 MB when using Digital ROC or Digital GEM on a Macintosh.


The Digital ICE³ Settings Menu

Clicking the triangle at the top right of the Digital ICE Cubed palette displays the Digital ICE³ settings menu, where you can save or export image Digital ICE³ settings and recall them as desired.



The Digital ICE³ settings menu contains the following options:

Item	Description
Save Digital ICE Settings...	Saves the current settings under a user-specified name. These settings will be added to the end of the Digital ICE ³ settings menu, where they can be recalled by selecting the desired settings by name.
Delete Digital ICE Settings...	Displays a dialog where you can select settings saved using the Save Digital ICE Settings... option for deletion.
Import Digital ICE Settings...	Imports settings saved using the Export Digital ICE Settings... option.
Export Digital ICE Settings...	Exports the current settings to a separate file in the folder of your choice.

Item	Description
Reset to Default Digital ICE Settings	Turns all Digital ICE ³ settings off.
Reset to User Digital ICE Settings	Restores the user default settings created with the Set User Settings option in the scan window settings menu (see  88).

Getting the Most from Your Scanner

Scanner Extras and Analog Gain

The Analog Gain and Scanner Extras palettes give you direct control over the following elements of the scanner firmware:

4000 ED, COOLSCAN IV ED, LS-2000, COOLSCAN III

Option	Description
Analog gain	Adjusts exposure for each of the colored elements in the scanner's light source.
Pixel data size	Controls the amount of color information, or bit depth, for each pixel in the image. Bit depth for the COOLSCAN III can not be adjusted.
Manual focus adjustment	Allows you to adjust scanner focus manually using a slider or by direct text entry.
Calibration	Re-calibrates the scanner after media have been left in the film slot for an extended period.
Crop choices (IA-20 (S) only)	Adjusts crop settings for a variety of APS (IX-240) aperture settings.
Strip film offset (SA-21/20, SA-30 only)	Adjusts the position of the film to match the scan position.

4000 ED/COOLSCAN IV ED only

Option	Description
Perform autofocus when film is inserted (MA-20 (S) only)	If this option is checked, an autofocus operation will be performed when a slide is inserted in the MA-20 (S) strip-film adapter.

LS-2000/COOLSCAN III only

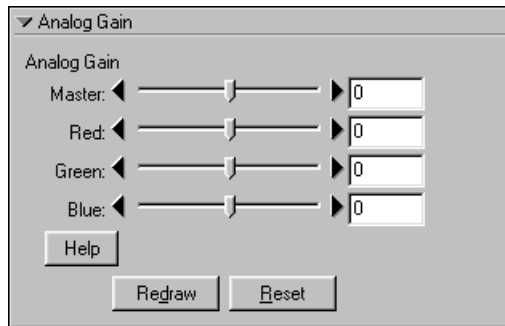
Option	Description
Interpolation method	Controls how the scanner generates "extra" pixels not included in the information from the scanning element.
Negative prescan mode	Controls the autoexposure operation performed before scanning negatives, producing excellent results even with low-contrast originals.

4000 ED/LS-2000 only

Option	Description
Multi-sample scanning	Controls the number of passes the scanner makes over the image to increase accuracy.
Slide-feeder scan (SF-200 (S) only)	Sets the number of slides to be scanned each time the Scan button is clicked.

Analog Gain

The controls in the Analog Gain palette are used to adjust colors by modifying exposure for each of the colored elements in the scanner's light source. Gain is measured in Exposure Values (EVs), the same unit used for exposure compensation on many cameras. The controls for analog gain consist of four sliders: a master slider that adjusts exposure for all elements in the scanner's light source, and separate red, green, and blue sliders for independent adjustments to the red, green, and blue LEDs.



To view the effects of analog gain on the image in the preview area, click the **Update** button. To return the exposure value for all LEDs to ± 0 , click **Reset**.



Exposure Value

Exposure Values are a measure of the quantity of light that falls on the scanning element (Charge-Coupled Device, or CCD). At +1 EV, the CCD is exposed to twice the normal amount of light, while at -1 EV, the amount of light is halved. EVs are sometimes referred to as "steps."



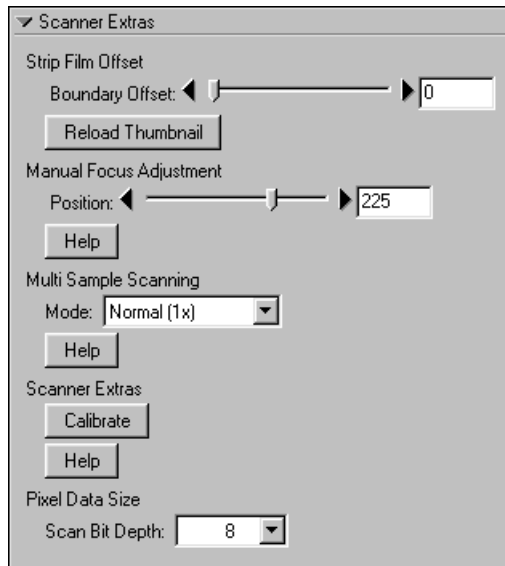
The current status of analog gain is shown in the information display in the scan window. If changes are made to analog gain without redrawing the preview image, a warning icon will appear in the information display.



Choosing too high a value for exposure may produce "smear" or other defects in the scanned image.

Scanner Extras

The options available in the Scanner Extras palette depend on the device selected in the active scan window, the scanner firmware version, and the film adapter in use. This section lists the options available for the scanners and adapters supported under Nikon Scan 3.



Pixel Data Size

The **Scan Bit Depth** menu controls the amount of color information in each pixel scanned.



Bit Depth, Color, and File Size

Scanning at a bit depth of eight bits yields 256 shades per pixel for each color in the image (if the image is three-color RGB, the result is 24-bit color, capable of expressing roughly 16.7 million colors). Scanning at a bit depth of twelve bits (COOLSCAN IV ED and LS-2000 only) yields 4,096 shades per color, while scanning at a bit depth of fourteen bits per pixel (4000 ED only) generates 16,384 shades per color. RGB and grayscale images scanned at twelve and fourteen bits are converted to sixteen bits before being opened in the host application, effectively doubling file size. CMYK images are converted to eight bits, but the extra channel produces images one third larger than RGB images scanned at a depth of eight bits.

Firmware

“Firmware” is software built into a hardware device. In the case of Nikon film scanners, firmware upgrades may be available on the web or from your nearest Nikon-authorized service center. For details, contact your Nikon representative or see the following URLs:

North and South America: <http://www.nikontechusa.com>

Europe: <http://www.nikon-euro.com>

The latest firmware for the LS-2000 and COOLSCAN III is also available on the Nikon Scan 3 CD.

Manual Focus Adjustment

Manual focus adjustment can be used when you are unable to obtain the desired results using autofocus. Adjust focus using the **Position** slider or enter a value in the text box to its right. Once set, this focus position will be used until the next time film is inserted in the scanner or Nikon Scan is restarted. To focus the scanner automatically, use the autofocus button in the control area of the scan window.



Multi-Sample Scanning (4000 ED/LS-2000 only)

In “multi-sample scanning,” the scanner makes multiple passes over the image and averages the results to reduce the effects of electronic “noise,” producing more accurate reproductions with smoother changes in tone.



To use multi-sample scanning, select the desired setting from the **Mode** menu. The menu contains the following items:

Mode	Number of passes	Description
Normal (1x)	1	Multi-sample scanning off.
Good (2x)	2	Increases precision by the equivalent of one bit per channel.
Fine (4x)	4	Increases precision by the equivalent of two bits per channel.
More Fine (8x)	8	Increases precision by the equivalent of three bits per channel.
Super Fine (16x)	16	Increases precision by the equivalent of four bits per channel.

Calibration

Under most circumstances, calibration is performed automatically at intervals when no media are inserted in the scanner. If film has been left in the scanner for a long period of time, you may need to remove the film and click the **Calibrate** button to recalibrate the scanner.



If you are using the MA-20 (S), remove the media from the adapter before clicking **Calibrate**. If you are using the SA-21/SA-20 or SA-30, the film will automatically be ejected during calibration and feed back into the scanner when calibration is complete. In the case of the IA-20 (S), you will be prompted to rewind the film before calibration begins.

Interpolation Method (LS-2000/COOLSCAN III only)

Your scanner can scan at 2,700 ppi and at any resolution below this value that can be produced by dividing 2,700 by a whole number (1,350 ppi, 900 ppi, 675 dpi, etc.). At other resolutions, pixels must be calculated by computer algorithm to make up the specified number of pixels per inch. The interpolation method is the algorithm used in generating these extra pixels.

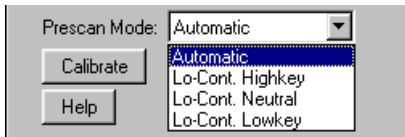


The following interpolation methods are available:

Method	Description
Bilinear	Extra pixels are generated using a bilinear algorithm.
Neighbor	Extra pixels are generated using a “nearest neighbor” algorithm.
None	No interpolation is performed. Note that this may result in the output size for the scanned image being larger than that specified in the Crop palette.

Prescan Mode (LS-2000/COOLSCAN III only)

With low-contrast images, autoexposure may sometimes fail to produce the correct results. Three options are avail-



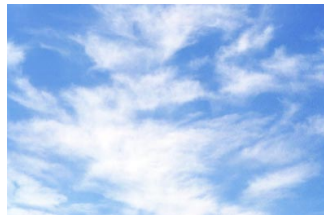
able that allow the autoexposure operation to be adjusted for different types of low contrast image, potentially producing better exposure. Selecting “negative” as the media type activates a menu of autoexposure options in the Scanner Extras palette (see above). Four options are available:

- **Automatic**

This is the recommended setting in most circumstances, suited to images that show a normal balance among shadows, mid-tones, and highlights. Use a different setting only if you experience problems scanning negatives using the automatic setting.

- **Lo-Cont. Highkey**

This setting is suited to low-contrast images with clearly-defined white areas, but no clear shadows, for example a photograph of white clouds in a blue sky.



- **Lo-Cont. Neutral**

This setting is suited to low-contrast images in which mid-tones predominate, with no clearly-defined areas of black or white, for example a photograph of red rose against a green background.



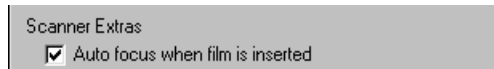
- **Lo-Cont. Lowkey**

This setting is suited to low-contrast images with clearly-defined black areas, but no clear highlights, for example a photograph of the night sky.



Perform autofocus when film is inserted

This check box is available only when the MA-20 (S) slide-mount adapter is inserted in a 4000 ED or COOLSCAN IV ED film scanner. When this option is checked, an autofocus operation will be automatically performed when a slide is inserted in the adapter film slot.

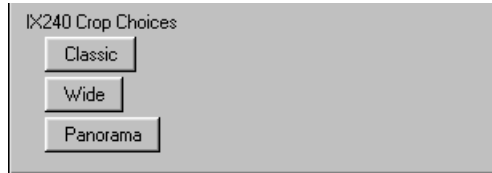


Strip Film Offset

This option is available when a strip-film adapter (SA-21/SA-20 or SA-30) is inserted in the scanner, when it allows you to adjust the position of the film. To use this option, the thumbnail drawer must be open with thumbnails displayed. Select the desired thumbnail and adjust its position using the **Boundary Offset** slider or by entering a value in the text box to its right. In the case of the 4000 ED and COOLSCAN IV ED, the maximum and minimum values are 0 and 144 respectively for the first frame and -144 and 144 for all subsequent frames, while in the case of the LS-2000 and COOLSCAN III, the offset ranges from -127 to 127 for all frames). If the bottom of the thumbnail is cut off, move the slider to the right to bring it into position; if the top is cut off, move the slider to the left (note that the direction of adjustment changes when the thumbnails are flipped or rotated). Click the **Reload Thumbnails** button to view the effects of any adjustments in the thumbnail drawer.

IX240 Crop Choices

IX240 crop choices for APS (IX240) film are available when the IA-20 (S) adapter (sold separately) is inserted in the 4000 ED, COOLSCAN IV ED, LS-2000, or COOLSCAN III.



The following crop choices are available:

Method	Description
Classic	The initial crop is adjusted to suit the “classic” setting for APS (IX240) cameras.
Wide	The initial crop is adjusted to suit the “wide” setting for APS (IX240) cameras.
Panorama	The initial crop is adjusted to suit the “panorama” setting for APS (IX240) cameras.

Slide Feeder Scan (4000 ED/LS-2000 only)

This option is available when the SF-200 (S) slide feeder (sold separately) is inserted in the 4000 ED or LS-2000. To specify the number of slides scanned when the **Scan** button is clicked, enter the desired number in the **Feed Images** text box. To scan all slides in the feeder, enter a large value, for example “999.”



Getting the Colors You Want:

The Curves, Color Balance, and LCH Editor Palettes

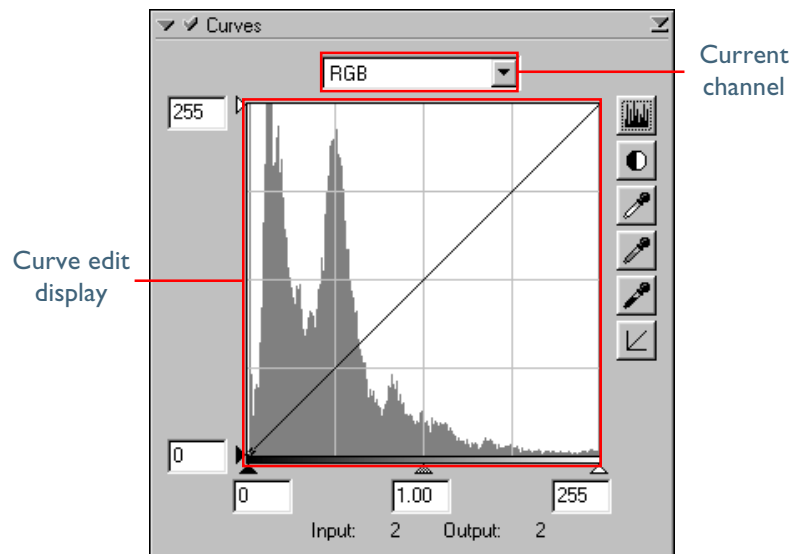
When scanning, you may come across images that are over- or under-exposed, obliterating details in highlights or shadows, or that show a general lack of contrast. You may also find that the colors are “flat” or unnaturally vivid, or that fluorescent lighting has given your photograph a greenish tinge. These flaws can be corrected using Nikon Scan’s three color enhancement tools: Curves, Color Balance, and the LCH Editor.

Of the three, the Color Balance palette is most useful when you want to make changes to brightness, contrast, and color balance that affect the entire image. This kind of adjustment may, however, result in loss of detail in highlights or shadows. The Curves tool, in contrast, allows adjustments to be made to specific portions of the tone range in highlights, mid-tones, and shadows.

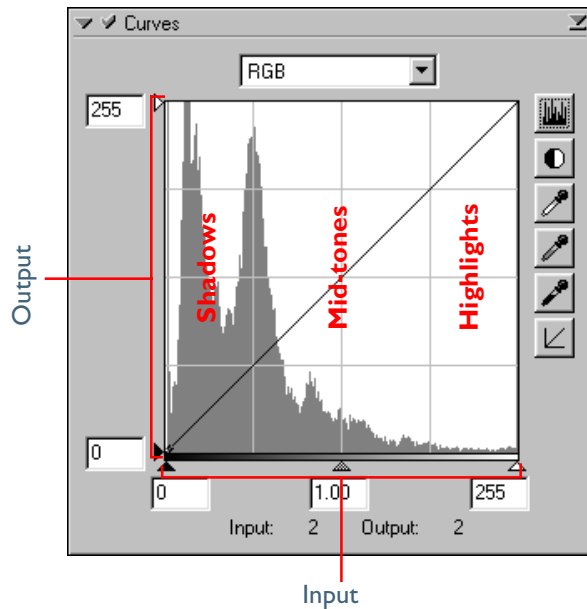
The LCH Editor is useful when adjusting the vividness, or saturation, of colors. It can also be used to map a specific range of colors in the original image to a different range of colors in the output.

Curves

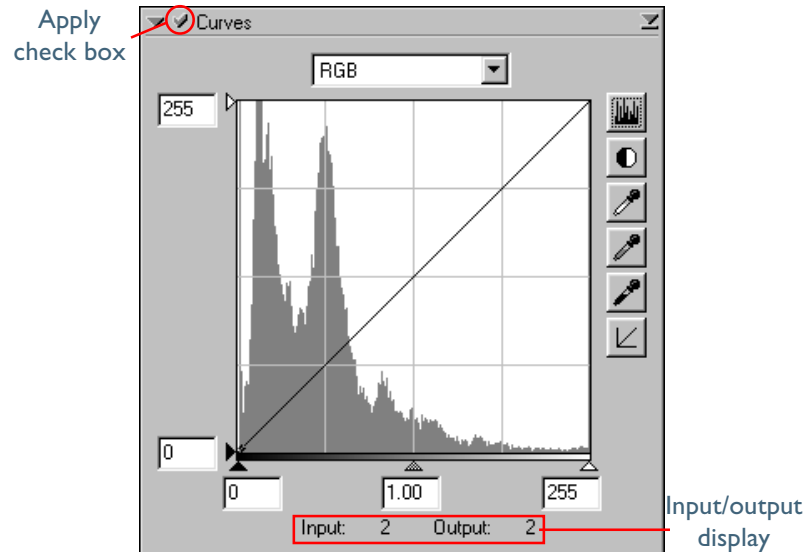
The main editing tool in the Curves palette is the curve edit display, which contains a curve showing the relationship between input (the tone information in the image prior to editing) and output (how these tones will be represented after changes to curves are applied). Separate curves control the relationship between input and output for the image as a whole (the “master curve”) and for each of the components, or “channels,” in the current color model (red, green, and blue in the RGB model, or cyan, magenta, yellow, and black in the CMYK model; only one channel is available in the case of grayscale images). The default curve in each case is linear, meaning that tones will be output exactly as they are input.



Input is plotted along the horizontal axis, with shadows (the dark areas of the image) to the left, highlights (the bright areas of the image) to the right, and mid-tones in between. The left end of the axis marks the minimum possible value for colors in the selected channel (zero, or no color), the right end the maximum value. In the case of the master curve, the minimum value represents areas of the input image that are a true black; the maximum value represents areas that are a true white. Output is plotted along the vertical axis, with the minimum possible output value (again, zero, or no color) at the bottom and the maximum output value at the top.



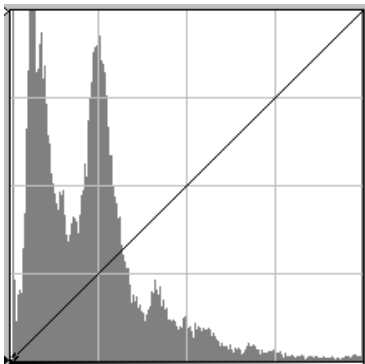
When the cursor is moved over the curve edit display, the input and output values for the point under the cursor are shown in the input/output display. The input value represents the level of the pixel in the original image, the output value the level of the pixel after any changes to the curve have been applied.



Changes to curves only apply when the check-box at the top left of the Curves palette is checked. When this box is checked, changes to curves will be visible in the image being edited. The box can be checked and unchecked for a quick “before-and-after” comparison, allowing you to see whether changes to curves are having the desired effect.


Step 1—Viewing the Histogram

The first step in adjusting tone levels and color balance in the Curves palette is to view the histogram displayed in the background of the curve edit display. The histogram provides information on what tones are present in the image and in what amounts, information that you will use when editing curves to make the most of the tone range in the original image. By studying the histogram, you can determine the distribution of tones within the image.



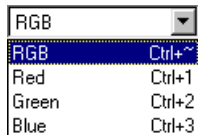
Although values for input and output in the Curves window range from zero to 255 (eight-bit precision, familiar to users of other image editing software), the results of any changes to curves are calculated at a precision of sixteen bits. This makes it possible to modify images scanned at bit depths of twelve and fourteen bits without lowering the quality of the output.

The histogram takes the form of a bar graph. The horizontal axis shows the tone level (pixel brightness) as a value from 0 to 255, with the minimum possible value for colors in the selected channel at the left end of the axis and the maximum value to the right (if the selected color model is RGB, calibrated RGB, or grayscale, shadows are to the left and highlights to the right, while when CMYK is selected highlights are to the left and shadows to the right). The vertical axis gives the number of pixels of each tone level found in the image, scaled to fit in the curve edit display. The histogram bears no relation to the position of the individual pixels within the image.

To view the distribution of tones in the final, output image after changes to curves, click the histogram button (). Click again to view the distribution of tones in the original image.

Step 2—Channel Selection

You can modify tones for all colors in the image using the master curve, or select any of the red, green, and blue or cyan, magenta, yellow, and black curves for editing using the channel menu (see right; when grayscale is selected, only the master curve [L] is displayed). The histogram shows tone levels for the selected channel only.



When the master curve is selected, the auto-contrast button and white-point and black-point eyedropper tools (see below) apply simultaneously to all of the component channels (the master curve is unaffected). When one of the component channels is selected, these controls can be used to edit the chosen curve only.

The current channel can also be selected using the following shortcuts:

- Ctrl 1 (Windows)/⌘ 1 (Macintosh)
Red channel (RGB)/Cyan channel (CMYK)
- Ctrl 2 (Windows)/⌘ 2 (Macintosh)
Green channel (RGB)/Magenta channel (CMYK)
- Ctrl 3 (Windows)/⌘ 3 (Macintosh)
Blue channel (RGB)/Yellow channel (CMYK)
- Ctrl 4 (Windows)/⌘ 4 (Macintosh)
Black channel (CMYK)

Step 3—Setting the White Point and Black Point

The endpoints of the curve are referred to as the “white point” and the “black point.” The black point for a given channel represents the darkest shade (minimum value) for that color; the white point, the brightest shade (maximum value). In the CMYK color model, the black point is at the right end of the curve and the white point at the left, while in all other color models the white point is at the right end of the curve and the black point at the left.

By default, the input and output values for the black point are zero. The darkest shade in the input image may however be greater than zero, with the result that a portion of the curve is dedicated to reproducing tones not actually present in the image. Increasing the input value for the black point until it matches the darkest shade in the image will steepen the curve, enhancing overall contrast without causing a corresponding loss of detail in shadows. Similarly, if the original image does not actually contain shades corresponding to the maximum value, the white point can be lowered to match the brightest shade in the image.

There are two steps to selecting a white point and black point for the final image: choosing the white-point and black-point input levels, and selecting output levels.


White-Point and Black-Point Input Levels

Input levels for the white point and black point can be set using any of the following three methods:

- automatic contrast adjustment
- white-point and black-point sliders
- direct sampling using the white-point and black-point eyedropper tools

Automatic Contrast Adjustment

In automatic contrast adjustment, Nikon Scan automatically selects white and black points that exclude a certain percentage of the brightest and darkest pixels in the image, steepening curves for enhanced contrast (the exact percentage of pixels excluded can be specified in the Preferences dialog). By default, 0.5% of the brightest and darkest pixels are excluded, producing a curve that makes optimal use of the output tone range while preserving details in shadows and highlights.

To perform an auto contrast operation, click the auto contrast button (). The white and black points for each of the red, green, and blue channels will be modified simultaneously (the master curve is unaffected). Clicking the button with the Ctrl (Windows) or option (Macintosh) key held down adjusts contrast only for the channel currently selected in the channel menu. If both the brightness and color balance of the image seem to require adjustment, click the auto contrast button to adjust both brightness and color by creating new black and white points based on tone information for the current crop. If you are satisfied with color balance but feel that brightness and contrast require adjustment, select the master channel and click the auto contrast button while holding down the Ctrl (Windows) or option (Macintosh) key. This will adjust brightness without affecting the curves for the component colors.



Pg. For more information on:

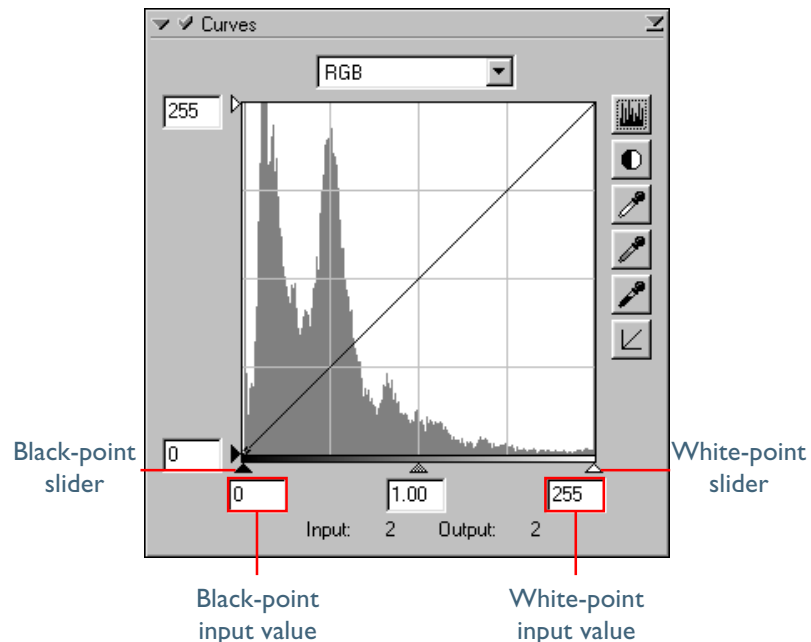


134 Preferences—setting the “excluded” value for auto contrast operations

White-Point and Black-Point Sliders

The white-point and black-point sliders can be used to match the white and black points to the histogram displayed in the curve edit display.

To edit the white point or black point, click the corresponding slider once to activate it, then drag it to the right or left (a value can also be entered directly in the text box underneath the slider). Matching the black-point slider with the lowest input value displayed in the histogram will set the minimum output value for the selected channel to the darkest pixel actually present in the image, steepening the curve and enhancing contrast without sacrificing detail in shadows. Similarly, matching the white-point slider with the highest input value displayed in the histogram will set the maximum output value for the selected channel to the brightest pixel present in the image, enhancing contrast without loss of detail in highlights. Any changes are applied instantly to the active image.




Sampling the Image for White Point or Black Point


The white point or black point can be set by directly sampling the image, allowing you to choose the pixels that will be used to set the maximum (white point) or minimum (black point) output value. This makes it possible to set the black point by matching it to a pixel in the darkest part of the image containing detail you want to preserve, eliminating details in darker areas that are not important to the final image. Similarly, you can match the white point to a pixel in the brightest area of the image containing details important to the final image. While direct sampling can be used with any channel, it is most effective when used with the master curve. When the master curve is selected, sampling will set the white or black point for red, green, and blue curves simultaneously; the master curve itself is unaffected.



Setting white/black points for the current channel

By default, sampling sets the white point or black point for all channels. To set the white point or black point for the current channel only, sample the image while holding down the Ctrl key (Windows) or option key (Macintosh) on the keyboard. To adjust brightness and contrast without affecting color, select the master channel and sample the image while holding down the Ctrl key (Windows) or option key (Macintosh) on the keyboard.

To sample the white point, click the  button. When the cursor is moved over the active image, it will take the shape of an eyedropper. Move the cursor over the image to find the pixel that you want to use to set the white point, keeping an eye on the color value display in the Information palette to identify the pixel with the highest input value. With the cursor over the target pixel, click the mouse button. The input value for the selected pixel will be used as the input value for the white point. The cursor will return to its original shape, and the image will automatically be altered to reflect the new value for white point.

To sample the image for the black point, click the  button and move the eyedropper cursor over the image until you find the point that you want to use to set the minimum input value, then click the mouse button to select the black point.



Pg. For more information on:

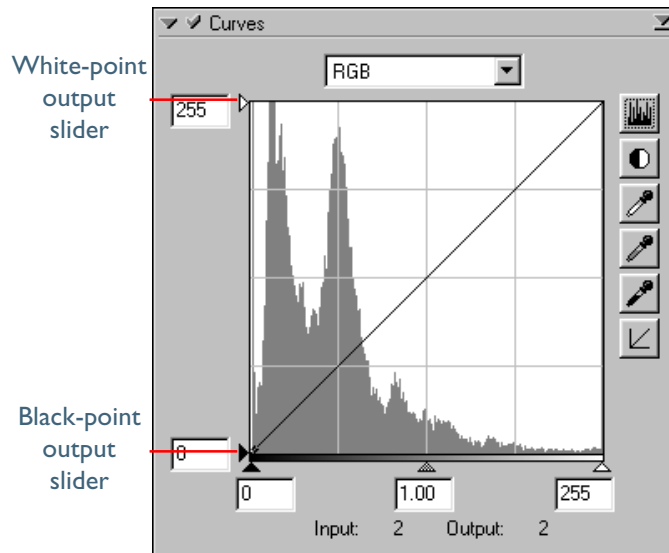


135 [Setting the sample-point size](#)

White Point and Black Point Output Levels

Once you have set the input level for the black point and white point, output levels can be altered to reflect the actual shade of the darkest and brightest pixels in the image. If the darkest shade in the image represents a true black, for example, the output level for the black point can be left at zero. If, however, darkest shade present in the image is a lighter color, the output level for the black point can be raised to achieve more natural coloration.

The output levels for the white point and black point are set using the white-point and black-point output sliders on the left side of the curve edit display.



To set the output level, click the slider once to activate it, then drag it up or down until you have found the desired output level (the output level can also be set by entering a value directly in the text box to the left of the slider). The effects of the change will be reflected in the active image.



It is sometimes the case that the darkest and lightest points of the image should not be displayed or printed as a saturated black or white, even where the colors in the original image represent a true black or true white. The reasons for this are varied, but include:

- The need to reduce the amount of ink consumed by making blacks less saturated
- The need to prevent an undesirable line from appearing when a true white is printed using ink (for example, when printing whites on a colored background)
- The need to prevent distortion on monitor or television sets caused by very strong or very weak signals at the edges of the screen

 **Pg. For more information on:**

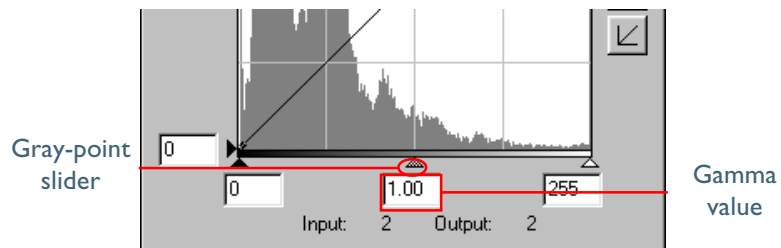
 [134 Setting default output values for the eyedropper tools](#)

Step 4—Setting the Gray Point

The point midway between the maximum and minimum input values is known as the “gray point” (or “midpoint”). This point represents a neutral shade corresponding to an output level of 128. The gray point is controlled by a gray-point slider at the bottom of the curve edit display. Moving the gray-point slider to the left increases the brightness of mid-tones without “washing out” details in highlights. Moving the slider to the right darkens mid-tones without obliterating detail in shadows.

The Gray-Point Slider

The gray-point slider is located at the bottom of the curve edit display.



After clicking the slider once to activate it, move it to the left to increase the brightness of mid-tones in the selected channel, or move it to the right to decrease brightness. Alternatively, you can enter a value for gamma directly in the text box under the slider. The effects of changes to the gray point can be seen in the active image.




Gamma

Gamma (also written “ γ ”) is a fundamental property of video systems, one that determines the intensity of the output signal relative to the input. When calculating gamma, the maximum possible input intensity is assigned a value of one, and the minimum possible intensity (no input) is assigned a value of zero. Output is calculated by raising input to a power that is the inverse of the gamma value (output = input^(1/ γ)). In practical terms, raising the gamma value has the same effect as moving the gray-point slider to the left, raising mid-tone output values and brightening the image while leaving the maximum and minimum values untouched. Lowering the gamma value has the same effect as moving the gray-point slider to the right, lowering mid-tone output values and darkening the image. The default value for gamma is one, which produces a linear curve. Gamma can be set to any value between 0.45 and 3.00.

Sampling the Image for Gray Point

The gray point can also be set by direct sampling. Sampling the image leaves the selected pixel at its current brightness while adjusting color balance by altering the gray point for each of the component channels in the image.

To sample the gray point, click the  button. When the cursor is moved over the active image, it will take the shape of an eyedropper. Move the cursor over the image to find the pixel that you want to use to set the gray point, keeping an eye on the color value display in the Information palette to identify pixels with a neutral input value (look for pixels that you think should be a neutral gray color in the final image). With the cursor over the target pixel, click the mouse button. The average of the input values for each of the channels in the selected pixel will be used as the reference value for the gray point. The cursor will return to its original shape, and the image will automatically be altered to reflect the new value for gray point (the weight assigned to each channel when determining the average value can be set using the “Gray point target” option in the Advanced Color tab of the Preferences dialog).



Pg. For more information on:



134 Preferences—Advanced Color

Step 5—Editing Curves Directly

Fine adjustments can be made to brightness and contrast in specific portions of the tone range by adding additional points to the curves for each channel. These points can be freely adjusted by dragging them into new positions, changing the shape of the curve. Steepening the slope in a given portion of the curve will enhance detail in that portion of the tone range. Changing the curve so that input levels in a given portion of the tone range are mapped to higher output levels will brighten tones in the affected tone range; similarly, changing the curve to map input levels to lower output levels will darken tones in the affected range.



The Tool Chest can be resized by dragging its borders (Windows) or by dragging the handle at its lower right corner (Macintosh). The curves edit display changes with the size of the window, allowing you to enlarge the display to a maximum of 256 × 256 pixels. At this size, each of the 256 points on the curve is represented by a separate pixel, granting maximum precision when editing curves.



Adding New Points to the Curve

Move the cursor over the curve edit display and click once to enter curve edit mode. Move the cursor to the position where you would like to add a new point, then click. A new point will be added at this position and the curve will automatically be adjusted to pass through this point. The position of the point can be adjusted by dragging it to a new location within the curve edit display. The image in the active window will automatically be adjusted to reflect changes to the curve.

Removing Points from the Curve

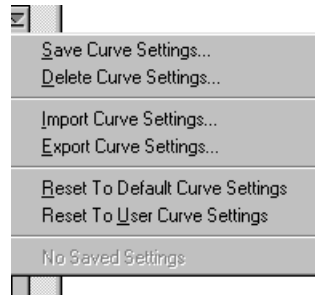
Points can be removed from the curve by dragging them out of the curve window.

Resetting Curves to Linear

The default linear curve for the current channel can be restored by clicking the  button in the Curves palette. To return all curves to linear, hold down the Ctrl (Windows) or option (Macintosh) key on the keyboard while clicking the  button.


The Curves Settings Menu

Clicking the triangle at the top right of the Curves palette displays the Curves settings menu, where you can save or export curve settings and recall them as desired.



The Curves settings menu contains the following options:

Item	Description
Save Curve Settings...	Saves the current curves under a user-specified name. These settings will be added to the end of the Curves settings menu, where they can be recalled by selecting the desired settings by name.
Delete Curve Settings...	Displays a dialog where you can select settings saved using the Save Curve Settings... option for deletion.
Import Curve Settings...	Imports settings saved using the Export Curve Settings... option.
Export Curve Settings...	Exports the current curves to a separate file in the folder of your choice.

Item	Description
Reset to Default Curve Settings	Resets all curves to linear.
Reset to User Curve Settings	Restores the user default settings created with the Set User Settings option in the scan window settings menu (see  88).

Color Balance

The Color Balance palette offers simple controls for adjusting overall brightness, contrast, and color balance for the entire image. Unlike the Curves palette, the Color Balance palette does not allow you to make changes that affect only a portion of the tone range.

The controls available in the Color Balance palette are detailed below. Note that when the selected color model is “grayscale,” the Color Balance palette contains only brightness and contrast controls, while when “CMYK” is selected the palette contains a slider for each of the cyan, magenta, yellow, and black channels in addition to brightness and contrast controls.



Item	Description
Brightness	The brightness slider adjusts brightness for the entire image. Dragging the brightness slider in the + direction brightens all the colors in the image. Dragging the slider in the – direction darkens all the colors in the image. A value for brightness between –100 and +100 can be entered directly in the text box to the right of the slider.
Contrast	Dragging the contrast slider in the + direction heightens the difference between highlights and shadows in the image, increasing contrast. Dragging the slider in the – direction decreases the difference between light and dark portions of the image, lowering contrast. A value for contrast between –100 and +100 can be entered in the text box to the right of the slider.

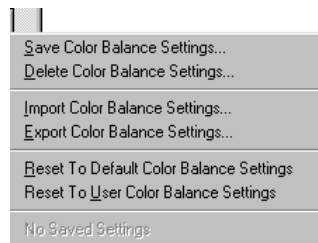


Changes to color balance only apply when the check-box at the top left of the Color Balance palette is checked. When this box is checked, changes will be visible in the image being edited. The box can be checked and unchecked for a quick “before-and-after” comparison, allowing you to see whether changes to color balance are having the desired effect.

Item	Description
Color balance (not available when grayscale is selected)	While the brightness slider adjusts brightness for the image as a whole, the color-balance sliders (one for each channel in the current color model) allow the user to adjust brightness for each color individually. For example, when the RGB color model is selected, dragging the red slider in the + direction brightens the red portions of the image, making the image as a whole more red. Dragging it in the – direction dims the red elements in the image, bringing out the remaining colors. Color balance can also be set by entering values directly in the text boxes to the right of the sliders.

The Color Balance Settings Menu

Clicking the triangle at the top right of the Color Balance palette displays the Color Balance settings menu, where you can save or export color-balance settings and recall them as desired.



The Color Balance settings menu contains the following options:

Item	Description
Save Color Balance Settings...	Saves the current color-balance settings under a user-specified name. These settings will be added to the end of the Color Balance settings menu, where they can be recalled by selecting the desired settings by name.
Delete Color Balance Settings...	Displays a dialog where you can select settings saved using the Save Color Balance Settings... option for deletion.
Import Color Balance Settings...	Imports settings saved using the Export Color Balance Settings... option.
Export Color Balance Settings...	Exports the current settings to a separate file in the folder of your choice.
Reset to Default Color Balance Settings	Resets all brightness, contrast, and color-balance settings to zero.
Reset to User Color Balance Settings	Restores the user default settings created with the Set User Settings option in the scan window settings menu (see  88).

The LCH Editor

The LCH Editor models color using three components, **L**uminosity (brightness), **C**hroma (color saturation, or vividness), and **H**ue, each with its own edit display. The luminosity and chroma displays take the same form as the curve edit display in the Curves palette. By steepening the curve in the luminosity display, you increase the difference between the bright and dark portions of the image, increasing contrast. Steepening the curve in the chroma window increases color saturation, making colors more vivid. Both editors feature a histogram display, auto contrast, and white point, black point, and gray point sliders, allowing you to match the maximum, minimum, and mid-range output levels for luminosity and chroma to the values actually present in the input, making the maximum use of the scanner's dynamic range. They also incorporate output level sliders, making it possible to edit the maximum and minimum values for output.



Changes made in the LCH Editor only apply when the checkbox at the top left of the palette is checked. When this box is checked, changes will be visible in the image being edited. The box can be checked and unchecked for a quick “before-and-after” comparison, allowing you to see whether changes are having the desired effect.

The hue editor features unique controls that grant unparalleled flexibility when editing colors. Using this tool, you can map a specific range of colors in the input to a different range of colors in the output, allowing you to make the reds in the image more orange, for example, or even green or blue.



The LCH Editor can only be used when the Nikon Color Management system (CMS) is on. If Nikon CMS is off, the tools in the editor will be disabled. To use the LCH Editor with a color space that has the same gamut as uncalibrated RGB data obtained directly from the scanner, turn CMS on and select Scanner RGB as the color-space profile for the RGB color model.

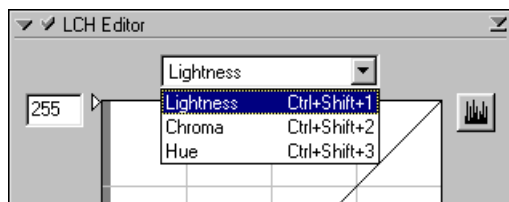


Pg. For more information on:



[107 Nikon CMS](#)

The desired editor can be chosen from the menu at the top the LCH Editor palette (see below).



The Luminosity Editor

Although it affects brightness rather than color, editing luminosity has a similar effect to editing the master curve in the Curves palette. Steepening the curve by, for example, lowering the maximum value for input and raising the minimum value increases the difference between light and dark areas of the image, increasing contrast. Changing the gray point alters the brightness of mid-tones while preserving details in highlights and shadows. You can also edit specific portions of the curve for more precise control.



The editor can also be selected using the following shortcuts:

- Ctrl Shift 1 (Windows)/⌘ option 1 (Macintosh)
Luminosity editor
- Ctrl Shift 2 (Windows)/⌘ option 2 (Macintosh)
Chroma editor
- Ctrl Shift 3 (Windows)/⌘ option 3 (Macintosh)
Hue editor

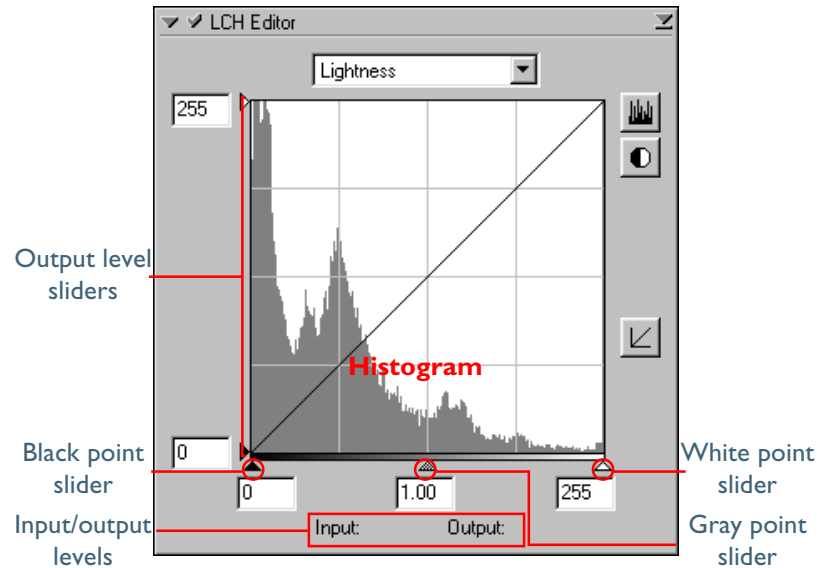


Pg. For more information on:






63 Using the curves editor

The luminosity editor is shown below.



Item	Description
Histogram	Shows the distribution of pixels of different luminosities in the input image. The horizontal axis shows luminosity (0–255), the vertical axis the number of pixels.
Output level sliders	Sets the maximum and minimum values for output.
Black point slider	Sets the minimum input level.

Item	Description
Gray point slider	Sets the gray point (gamma value) for luminosity
White point slider	Sets the maximum input level.
Input/output levels	Luminosity input and output levels for the point under the cursor in the edit display.
	The distribution of pixels of different luminosities in the output image are displayed when this button is clicked. Click again to view the luminosity distribution for the input image.
	Restores the luminosity curve to linear. Control-click (Windows) or command-click (Macintosh) to restore the curves for luminosity, chroma, and hue to linear.
	Sets the maximum and minimum values for input to values that exclude 0.5% of the brightest and darkest pixels in the crop. The percentage of pixels excluded can be adjusted using the Advanced Color tab in the Preferences dialog.

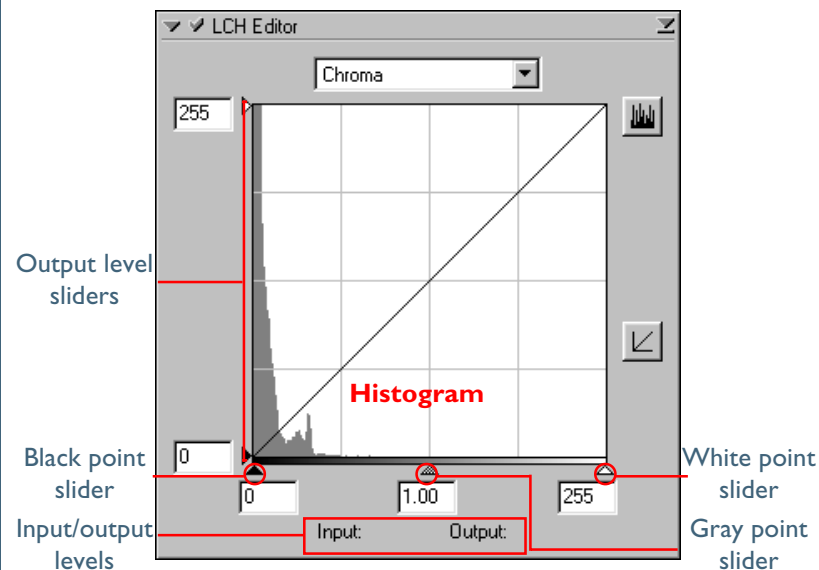
 *Pg. For more information on:*

 [I34 Preferences—Advanced Color](#)

The Chroma Editor

The chroma editor is a useful tool for adjusting color saturation. Steepening the curve increases saturation in the affected range, making colors more vivid. Flattening the curve results in flatter, less vivid colors. Moving the gray point to the left makes the image as a whole more vivid, while moving it to the right “averages out” the differences between colors in the image, making the image grayer overall. In general, the most effective use can be made of the scanner’s dynamic range by steepening the curve in the portions of the histogram that contain the greatest number of pixels while leaving colors corresponding to a neutral gray unaffected.

The chroma editor is shown below.





Item	Description
Histogram	Shows the distribution of pixels of different chromas in the input image. The horizontal axis shows chroma, the vertical axis the number of pixels.
Output level sliders	Sets the maximum and minimum values for output.



Pg. For more information on:



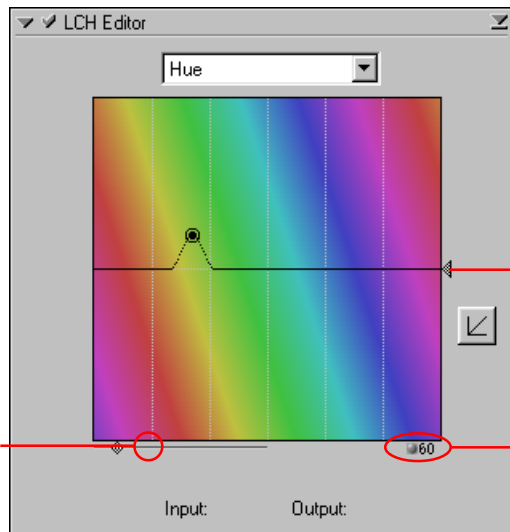
63 Using the curves editor

Item	Description
Black point slider	Sets the minimum input level.
Gray point slider	Sets the gray point (gamma value) for chroma.
White point slider	Sets the maximum input level.
Input/output levels	Chroma input and output levels for the point under the cursor in the edit display.
	The distribution of pixels of different chromas in the output image are displayed when this button is clicked. Click again to view the chroma distribution for the input image.
	Restores the chroma curve to linear. Control-click (Windows) or command-click (Macintosh) to restore the curves for luminosity, chroma, and hue to linear.

The Hue Editor

When **Hue** is selected from the menu at the top of the LCH Editor palette, the editor takes on the appearance shown on the following page. The controls for editing hue are unique, consisting of a rainbow-colored background bisected by a straight line, representing the hues (colors) in the original image. Superimposed on this line is another representing the colors in the image after editing. Before editing, the output line is the same as the input line, so that, for example, reds in the input will be represented as red in the final image. By changing the shape of this line, you can change the relationship between input and output colors over a portion of the color range, with the result that colors that are red in the original might be output as orange, or even green or blue.

The hue editor is shown below.




Width slider

Output slider

Scale button

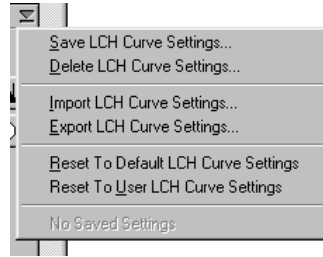
To edit the hue curve, click once in the edit window to activate the hue editor, then click the point on the curve where it intersects with the portion of the background showing the hue you want to edit. To determine the hue of a specific pixel in the input image, move the cursor over the pixel. The point corresponding to the hue of the selected pixel will be highlighted in the hue editor. You can then drag this point up or down until it intersects with the background color that coincides with the hue you want to appear in the output.

The other controls in the hue editor are described below.

Item	Description
Width slider	Adjusts the width of the curve that passes through the selected point, enabling you to determine what hues in the vicinity of the selected point are affected by the change.
Scale button	Changes the vertical scale from 60° through 120° to 180° and back again (the vertical scale indicates what portion of the hues in the full range of 360° range are displayed on the vertical axis). Increasing the scale gives you more hues from which to choose when editing hue, while lowering the scale increases precision.
Output slider	Maps all hues in the input to different output hues.
	Restores the hue curve to linear. Control-click (Windows) or command-click (Macintosh) to restore the curves for luminosity, chroma, and hue to linear.


The LCH Editor Settings Menu

Clicking the triangle at the top right of the LCH Editor displays the LCH Editor settings menu, where you can save or export LCH settings and recall them as desired.



The LCH Editor settings menu contains the following options:

Item	Description
Save LCH Curve Settings...	Saves the current LCH settings under a user-specified name. These settings will be added to the end of the LCH Editor settings menu, where they can be recalled by selecting the desired settings by name.
Delete LCH Curve Settings...	Displays a dialog where you can select settings saved using the Save LCH Curve Settings... option for deletion.
Import LCH Curve Settings...	Imports settings saved using the Export LCH Curve Settings... option.
Export LCH Curve Settings...	Exports the current settings to a separate file in the folder of your choice.

Item	Description
Reset to Default LCH Curve Settings	Resets the luminosity, chroma, and hue curves to linear.
Reset to User LCH Curve Settings	Restores the user default settings created with the Set User Settings option in the scan window settings menu (see  88).

Making Edges More Distinct

Unsharp Mask

Unsharp Mask is used to increase the sharpness of images by making edges more distinct. Unsharp Mask works by increasing the contrast of the edges in the image while leaving other areas untouched. The degree of sharpness is determined by three factors: intensity, halo width, and threshold.

- **Intensity...**

...is the amount the contrast of edges will be increased.

- **Halo width...**

...controls the width of the edges in the image after editing. The greater the halo width, the wider the edges in the sharpened image will appear. Too large a value for halo width will produce a “halo” along edges in the image.

- **Threshold...**

...defines the limit at which sharpening will be applied. If the threshold is zero, sharpening will apply to all edges in the image. Increasing the threshold increases the amount of contrast that must be present between pixels before Unsharp Mask will be applied, with the result that only more distinctly contrasting edges will be affected.

Unsharp Mask sharpens edges without affecting color balance by making adjustments only to luminosity (brightness). The effect is the same as performing Unsharp Mask with the Luminosity channel selected in the Adobe Photoshop Lab color model.

Unsharp Mask can be applied to all the colors in the image or selectively to areas of the image in which red, green, blue, cyan, magenta, or yellow are judged to predominate based on the color information for each pixel. The brightness (luminosity) of the affected pixels is adjusted to sharpen edges without altering color balance. Using the controls in the Unsharp Mask palette, you can create multiple masks, one for each color or all colors and each with different values for intensity, halo width, and threshold.



The amount of Unsharp Mask you will need depends on the size and resolution of the final image. The more pixels in the image, the greater the amount of Unsharp Mask you will need to achieve the same degree of apparent sharpness. Before applying an Unsharp Mask, scale the image to the desired size and resolution.



Unsharp Mask can only be used when the Nikon Color Management system (CMS) is on. If Nikon CMS is off, the tools in the Unsharp Mask palette will be disabled.



Pg. For more information on:



46 Resolution and size

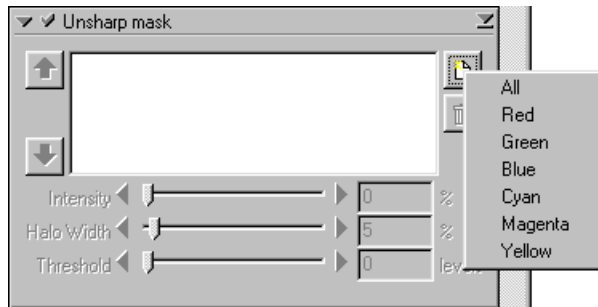


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Creating Unsharp Masks

Step 1—Select a color

Select a color from the color pop-up menu. The mask you create will be applied only to edges where the selected color predominates. To create a mask that applies to all colors, select **All**.




Step 2—Set intensity, halo width, and threshold

Select values for intensity, halo width, and threshold using the sliders, or enter values directly in the text boxes to their right.

Step 3—Check the results

To compare the effects of the Unsharp Mask with the unmodified image, click the check box at the top left of the Unsharp Mask palette to turn the effects of Unsharp Mask on or off.

Step 4—Create additional masks

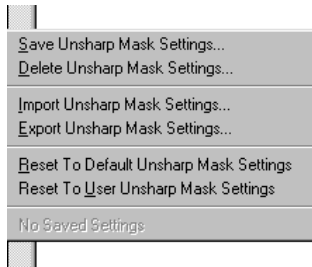
Repeat steps 1–3 to create additional masks for different colors. As new masks are created, they will be added to the end of the Unsharp Mask list. Masks will apply in the order listed. To change the order in which the masks apply, select a mask in the Unsharp Mask list and click the up arrow to move it up in the list, or the down arrow to move it down. To delete an Unsharp Mask from the list, select it and click the  button.



Changes made in the Unsharp Mask palette only apply when the check-box at the top left of the palette is checked.


The Unsharp Mask Settings Menu

Clicking the triangle at the top right of the Unsharp Mask palette displays the Unsharp Mask settings menu, where you can save or export masks and recall them as desired.



The Unsharp Mask settings menu contains the following options:

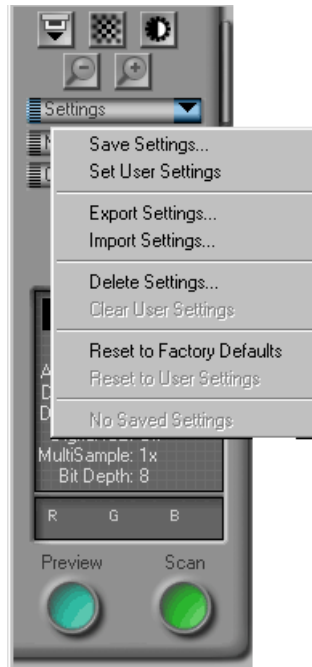
Item	Description
Save Unsharp Mask Settings...	Saves the current masks under a user-specified name. These settings will be added to the end of the Unsharp Mask settings menu, where they can be recalled by selecting the desired settings by name.
Delete Unsharp Mask Settings...	Displays a dialog where you can select settings saved using the Save Unsharp Mask Settings... option for deletion.
Import Unsharp Mask Settings...	Imports settings saved using the Export Unsharp Mask... option.

Item	Description
Export Unsharp Mask Settings...	Exports the current masks to a separate file in the folder of your choice.
Reset to Default Unsharp Mask Settings	Deletes all masks currently displayed in the Unsharp Mask palette.
Reset to User Unsharp Mask Settings	Restores the user default settings created with the Set User Settings option in the scan window settings menu (see  88).

Reusing Settings

The settings menu in the scan window control area allows you to save or export settings and recall them as desired. You can also create, restore, and delete default settings for multi-frame adapters.

The Settings Menu



The following settings can be saved and recalled using the options in the settings menu:

- the current scanner, media type, color model, and the dimensions and location of the current crop
- all settings in effect in the Tool Chest, including image orientation and crop, curves, color balance, LCH, Unsharp Mask, and Digital ICE³ settings.



The settings for the Crop, Curves, Color Balance, LCH Editor, Unsharp Mask, Nikon Enhancement, and Image Enhancement palettes can be saved and recalled separately using the palette settings menu.

The options in the settings menu are described below.

Option	Description
Save Settings...	Saves the current settings under a user-specified name. These settings will be added to the end of the settings menu, where they can be recalled by selecting the desired settings by name.
Set User Settings	Saves the current settings as user default settings. These settings can be recalled by selecting the Reset to User Settings . Settings for a selected palette can be recalled by selecting the “reset to user options” from the palette settings menu. Settings created with the SA-21/SA-20, IA-20 (S), or SA-30 can be used whenever any of these adapters is in place.
Export Settings...	Exports current settings to a separate file in the folder of your choice.
Import Settings...	Imports settings saved using the Export Settings... option.
Delete Settings...	Displays a dialog box where you can select settings saved using the Save Settings... option for deletion.

Option	Description
Clear User Settings	Deletes user settings created with the Set User Settings option.
Reset to Factory Defaults	Restores the settings in effect at installation.
Reset to User Settings	Restores the user default settings created with the Set User Settings option. Settings created with the SA-21/SA-20, IA-20 (S), or SA-30 can be recalled whenever any of these adapters is in place.
Last Saved Settings	Restores the settings most recently saved using any of the Save Settings... , Set User Settings , or Export Settings... options.



The maximum crop size and other settings differ depending on the adapter and scanner used. When settings for a different scanner or adapter are selected from the settings menu, only those options that apply to the current adapter are affected.

The Nikon Scan Applet

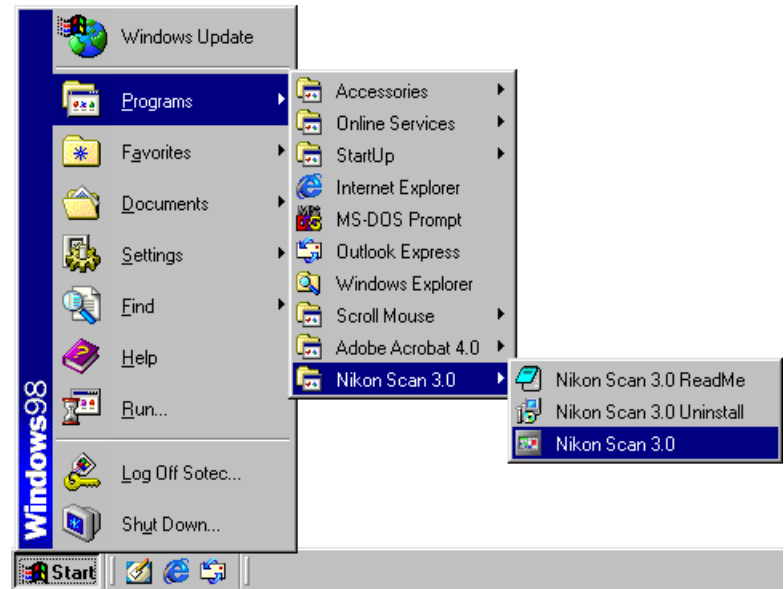
Using Nikon Scan as a Stand-Alone Application

When Nikon Scan is used as a TWAIN source or acquire plug-in for another program such as Adobe Photoshop, its role is complete when the **Scan** button is clicked to scan the image into the host application. Any further operations performed on the scanned image, such as making additional adjustments to color or saving the image to disk, must be performed in the host application.

To make it possible to save or print images without the intervention of a third-party program, a mini-program, or “applet,” is included with Nikon Scan. This applet, which starts automatically when you double-click the **Nikon Scan 3.0** icon or select **Nikon Scan 3.0** from the Windows **Start** menu, can be used to edit images after scanning, save images in a variety of formats, open previously saved images, and print images.

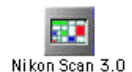
Starting the Nikon Scan Applet (Windows)

To start the Nikon Scan applet, click **Start** and select **Nikon Scan 3.0** from **Programs > Nikon Scan 3.0**.



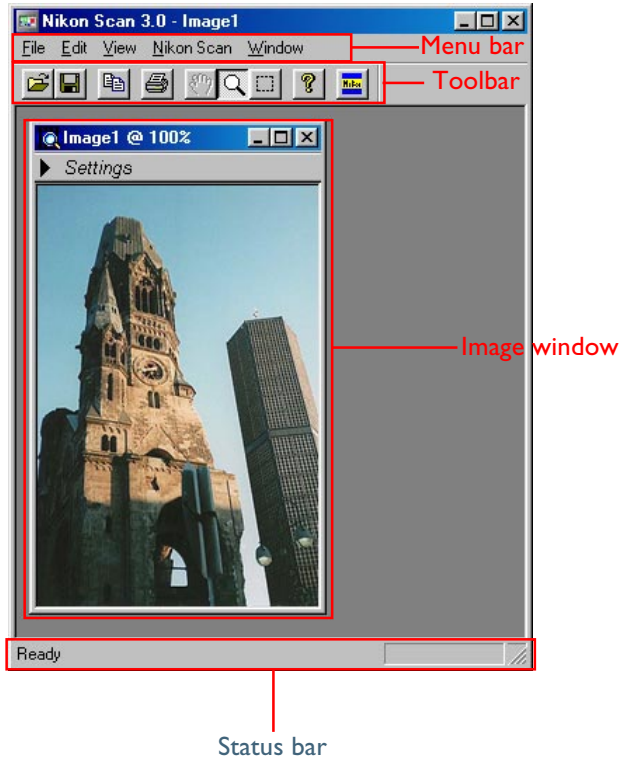
Starting the Nikon Scan Applet (Macintosh)

To start the Nikon Scan applet, double click the **Nikon Scan 3.0** icon in the folder to which you installed Nikon Scan (the default location is System Disk : Nikon Software : Nikon Scan 3.0).



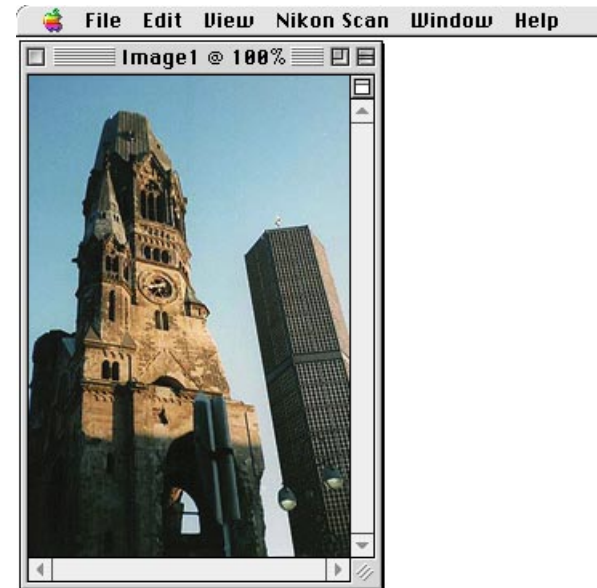
The Nikon Scan Window (Windows)

When you start the Nikon Scan applet in Windows, the Nikon Scan 3.0 window, containing a menu bar and toolbar, will open on the desktop. When you click the **Scan** button in the scan window, the resulting images will be opened separate image windows within the Nikon Scan 3.0 window.



The Menu Bar (Macintosh)

When you start the Nikon Scan applet on your Macintosh, Nikon Scan's menus will appear in the menu bar. When you click the **Scan** button in the scan window, the resulting images will be opened in separate image windows on the desktop.












The Toolbar (Windows)

The Windows version of Nikon Scan includes a toolbar that allows access to many commonly used commands with a single click. The toolbar can be dragged out of the menu bar to a new position anywhere within the Nikon Scan window, where it will “float” in an independent window.



The toolbar contains the following buttons:

Button	Description
 Open	Duplicates the effects of the O pen... command in the F ile menu.
 Save	Duplicates the effects of the S ave command in the F ile menu.
 Copy	Duplicates the effects of the C opy command in the E dit menu.
 Print	Duplicates the effects of the P rint... command in the F ile menu.
 Hand	Duplicates the effects of the H and C ursor command in the V iew menu.

Button	Description
 Zoom	Duplicates the effects of the Z oom C ursor command in the V iew menu.
 Selection	Duplicates the effects of the S election C ursor command in the V iew menu.
 Help	Click to open the Nikon Scan help file in your web browser.
 Open Source	Opens the scan window.

To display or hide the toolbar, select **Toolbar** from the **V**iew menu.

The Status Bar (Windows)

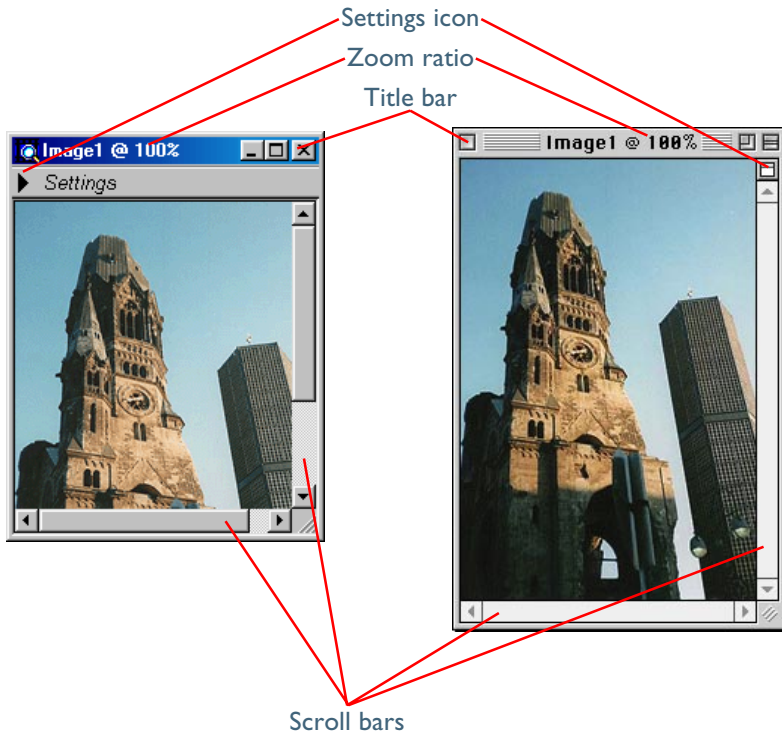
When the cursor is moved over a button or menu, a brief description of its function will appear in the status bar at the bottom of the Nikon Scan 3.0 window. The status bar can be displayed or hidden by selecting **Status Bar** from the **V**iew menu.

Image Windows

Unless **Save to Disk** is selected in the Preferences dialog, images scanned when Nikon Scan is used as a stand-alone application will be opened in separate image windows within the Nikon Scan applet. An image window is shown below.

Windows

Macintosh



Selecting the active window

If you have multiple windows open in the Nikon Scan applet, you can activate a window and bring it to the front by clicking the window or by choosing it from the windows listed at the bottom of the **Window** menu.



Image windows

Many of the tools in the Tool Chest can be applied to images in image windows. If multiple images are opened in image windows in the Nikon Scan applet, settings can be adjusted and saved separately for each image. With the exception of images saved in NEF format, the settings in each tool palette will be reset to default values when an image is opened. When an image saved in NEF format is opened, the settings in each tool palette will be reset to the values in effect when the image was saved.



Pg. For more information on:



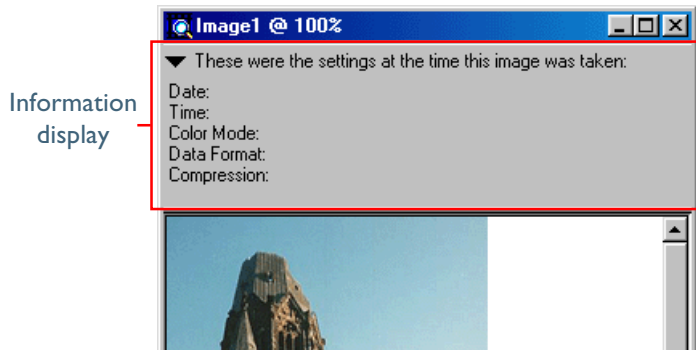
97 Editing images in the Nikon Scan applet



98 Nikon Electronic image Format (NEF)

Viewing Information about the Image

To view information about the image in an image window, click the settings icon, or select **Settings Section** from the **View** menu.



The information display shows the date and time the image was created, the color model, file type and compression, and image size and resolution. To hide the information display, click the settings icon a second time, or select **Settings Section** from the **View** menu.



Displaying the layout grid

A layout grid can be displayed on the active window by checking **Show Grid** in the Layout Tools palette, or by selecting **Show Grid** from the **View** menu.

Rotating and Flipping the Image



The image in the active image window can be rotated or flipped using the tools in the Layout Tools palette, or by selecting **Rotate CW** (rotate clockwise), **Rotate CCW** (rotate counter-clockwise), **Flip Horizontal**, or **Flip Vertical** from the **Transform** sub-menu in the **View** menu. To flip the image both horizontally and vertically, select **Flip Both Axes** from the **Transform** sub-menu.

Zooming the Image In or Out

You can zoom the image in the image window in or out using either of the methods described below.

The Zoom Tool

To select the zoom tool, either:

- click the  button in the Layout Tools palette, or
- select **Zoom Cursor** from the **View** menu or using the  button in the toolbar (Windows only)

You can then zoom the image in by clicking anywhere within the image window, or zoom the image out by clicking on the image while holding down the Ctrl (Windows) or option (Macintosh) key.




Pg. For more information on:



43 Flipping and rotating images

The View Menu

To zoom in on the image in the active image window, select **Zoom In** from the **View** menu. Select **Zoom Out** to zoom the image out.

If the image no longer fits in the image window, you can scroll it using the image window scroll bars. Alternatively, you can select the hand tool using the **Hand Cursor** command in the **View** menu or by clicking the  button in the toolbar (Windows only) or Layout Tools palette, and then drag the image in the image window. To view the entire image at the maximum possible zoom ratio, select **Fit to Screen** from the **Window** menu. The image can be viewed at a zoom ratio of 1 : 1 by selecting **Actual Size** from the **Window** menu.



Undoing Changes (Macintosh Only)

To undo all changes made to the image since it was last saved, select **Revert** from the **File** menu. If the image has yet to be saved, it will be restored to the condition it was in immediately after scanning.


Changing the Bit Depth and Color Model

In the Windows version of Nikon Scan, you can change the color model and bit depth after scanning the image by selecting a new combination of color model and bit depth from the **Document Color Space** sub-menu in the **Nikon Scan** menu. The following options are available:

Option	Description
8-bit Grayscale	Converts the image to eight-bit grayscale capable of expressing 256 shades of gray. Note that color information lost in the conversion can not be restored by converting the image back to RGB or CMYK.
16-bit Grayscale	Converts the image to sixteen-bit grayscale capable of expressing 65,536 shades of gray. Color information lost in the conversion can not be restored by converting the image back to RGB or CMYK.
24-bit RGB	Converts the image to RGB at a bit-depth of eight bits per color (twenty-four bit RGB).
48-bit RGB	Converts the image to RGB at a bit-depth of sixteen bits per color (forty-eight bit RGB).
32-bit CMYK	Converts the image to CMYK at a bit-depth of eight bits per color (thirty-two bit CMYK).

In the Macintosh version of Nikon Scan, you can change the bit depth of images in the active image window by selecting the desired setting from the **Bit Depth** sub-menu in the **Nikon Scan** menu. This can be used, for example, to scan images at a bit depth of more than eight bits, edit them in Nikon Scan, and then convert them to eight bit before saving them in JPEG format.

Copying a Selection to the Clipboard

To select an area of the image and copy it to the clipboard, first activate the selection cursor by clicking the  button in the Layout Tools palette or choosing **Selection Cursor** from the **View** menu, then drag the cursor over the image to select a rectangular area. While the selection cursor is active, you can change the size of the selected area by dragging its borders, or move it by placing the cursor inside the selected area and dragging it to a new location. Once you have adjusted the selected area to your satisfaction, select **Copy** from the **Edit** menu to copy the selection to the clipboard.

Editing Images in the Nikon Scan Applet

Images opened in image windows within the Nikon Scan applet can be edited using many of the tools available in the scan window, including the following tool palettes:

- **Layout Tools**

Flip, rotate, and scroll images, zoom images in or out, select an area to be copied to the clipboard, and display and hide the layout grid

- **Information**

View information about the color of the pixel under the cursor and the size and location of the current selection

- **Curves**

Adjust contrast and color balance in specific portions of the tone range (shadows, mid-tones, and highlights).

- **Color Balance**

Adjust contrast, brightness, and color balance for the entire image



The image opened in the host application after scanning is the image after any changes made in the scan window to curves, color balance, LCH settings, and Unsharp Mask have been applied. As a result, the controls in these palettes will be restored to their default values when the image is opened in an image window in the Nikon Scan applet.

- **LCH Editor**

Make precise adjustments to brightness, color saturation, and hue

- **Unsharp Mask**

Increase the sharpness of images by making edges more distinct, either over the entire image or where a selected color predominates



Pg. For more information on:



95 Flipping and rotating images



95 Zooming images in and out



96 Copying selections to the clipboard



45 The Information palette



63 Curves



76 Color Balance



78 The LCH Editor



85 Unsharp Mask

Saving and Opening Images

The image in the active image window can be saved under a new name by selecting **Save As...** from the **File** menu. The Save As dialog for your operating system will be displayed; after navigating to the desired drive and folder, enter a name for the image, and select a file type from the options available, then save the image. Files saved in a format supported by Nikon Scan can be opened in the Nikon Scan applet using the **Open...** option in the **File** menu.



Choosing a Compression Ratio

JPEG and PICT images can be compressed using JPEG compression, in which images are divided into blocks eight pixels on a side and detail within each block selectively reduced. Although raising the compression ratio decreases the file size, it also makes the block pattern more visible and may result in noticeable loss of detail (the actual effect depends on the output scale and the type of subject). It is recommended that you save files at the lowest compression ratio possible; if necessary, you can always save them again at a higher compression ratio.

The compression ratio can be chosen using the compression type menu in the Save As dialog. Five options are available, ranging from **Excellent Quality**, which offers the lowest compression and highest image quality, to **High Compression**, which offers the highest compression and lowest image quality.



Choosing a File Type

Nikon Scan supports the following file types:

Format	Description
NEF	NEF, or Nikon Electronic image Format , allows information on curves, color balance, LCH settings, and Unsharp Mask to be saved separately from the image data. You can view the unmodified image data at any time by opening the image in Nikon Scan and hiding changes to settings by clicking the check mark at the top left corner of the appropriate tool palette. NEF can be used to scan images at bit depths of twelve or fourteen bits, with settings in the Digital ICE Cubed (Digital ICE ³), Analog Gain, and Scanner Extras palettes adjusted before the image is scanned. You can then save the image in NEF format after adjusting brightness, contrast, color balance, and sharpness in the Nikon Scan applet. You can later open the image, undo the changes or make further adjustments as desired, and then save the results in a different format and in a separate file, repeating the process as often as necessary. NEF is supported only in Nikon Scan and Nikon Capture camera control software for Nikon DI digital cameras.



Choosing a File Type (continued)

Format	Description
JPEG (EXIF)	<p>JPEG is adequate for images that will be output at low resolution or distributed in electronic form. Images can be compressed, allowing more images to be saved in the same amount of disk space. Note, however, that JPEG compression results in loss of information that can not afterwards be restored. Save files at the lowest compression ratio possible; if necessary, you can always save them again at a higher compression ratio. This format is not available when saving CMYK images or images with a bit depth of sixteen bits per channel. JFIF is the standard JPEG format, widely used in imaging software and web browsers. EXIF is an extension of the JPEG format that allows thumbnail data and information about the image to be included in a JPEG file. This format can be read by most applications that support the JPEG format.</p>
JPEG (JFIF)	



Choosing a File Type (continued)

Format	Description
TIFF	<p>Use TIFF when saving images for high-quality output or publishing. Images scanned at a bit depth of twelve or fourteen bits or that have been converted to sixteen bits after scanning will be saved as sixteen-bit TIFF, eight-bit images as eight-bit TIFF. CMYK images will be saved as CMYK TIFF. Although the lack of compression will result in larger files, a high level of image quality will be maintained. This file type is supported by a wide variety of applications on a variety of computer platforms.</p>
PICT (Macintosh only)	<p>PICT, the generic format used on the Macintosh, supports JPEG compression. Most Macintosh users will be able to view files of this type. This format is not available in the Windows version of Nikon Scan, and does not support CMYK, sixteen-bit grayscale, or sixteen-bit RGB.</p>
BMP (Windows only)	<p>This is the generic format used on Windows systems. Most Windows users will be able to view files of this type. This format is not available in the Macintosh version of Nikon Scan, and does not support CMYK, sixteen-bit grayscale, or sixteen-bit RGB.</p>

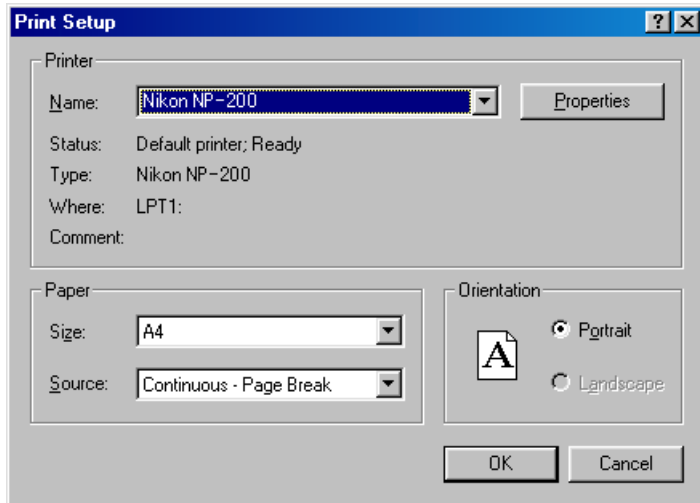
Printing Images

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

Windows

Step 1—Set up your printer

Before printing, select **Print Setup...** from the **File** menu to display the dialog shown below.

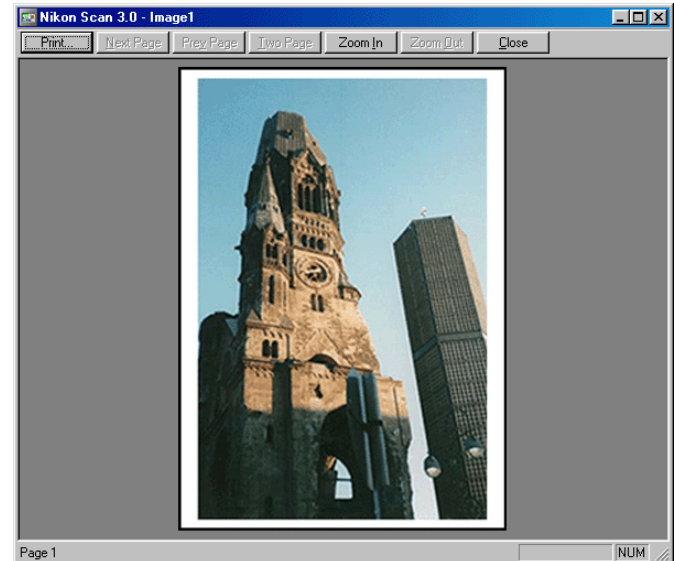


The Print Setup dialog contains the following options:

Option	Description
Name	Select the destination printer from this drop-down list.
Properties	Change settings for the selected printer.
Size	Choose a paper size.
Source	Choose a paper tray.
Orientation	Choose from Portrait (tall) or Landscape (wide).

Step 2—Preview how the image will print


Choose **Print Preview...** from the **File** menu for a preview of how the image will print at current settings.

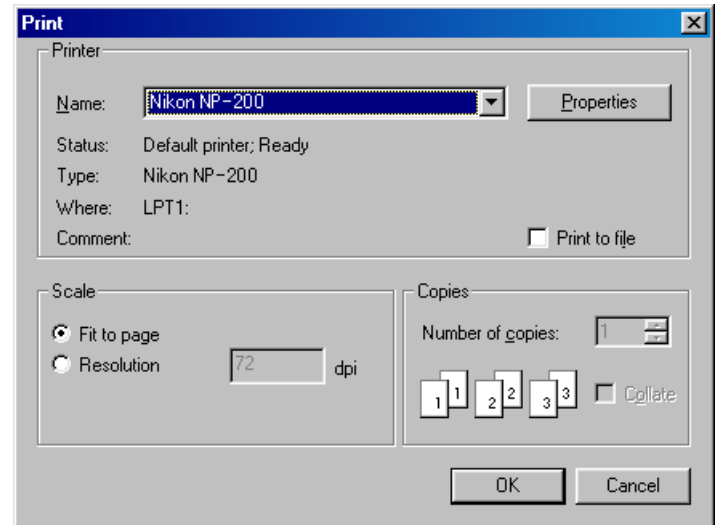


Step 3—Print the image

The Print Preview window contains the following buttons:

Button	Description
<u>P</u>rint	Displays the Print dialog (see below).
<u>N</u>ext Page	Previews the next page of a multi-page document.
<u>P</u>rev Page	Previews the previous page of a multi-page document.
<u>T</u>wo Page	Displays a multi-page document two pages at a time.
<u>Z</u>oom <u>I</u>n	Zooms the preview image in. You can also zoom in by clicking on the preview image.
<u>Z</u>oom <u>O</u>ut	Zooms the preview image out.
<u>C</u>lose	Closes the Print Preview window.

To print the image, click the **Print** button in the Print Preview window, or select **Print...** from the **File** menu (you can also print the image in the active window by clicking the  button in the toolbar). The Print dialog will be displayed.



The Print dialog contains the following options:

Option	Description
Name	Select the destination printer from this drop-down list.
Properties	Change settings for the selected printer.
Print to file	Check this box to print the image to disk.
Scale	If the image is larger than the current page size, Select Fit to Page to scale it to fit. Select Resolution to print at a specified resolution.
Copies	Enter the number of copies of the image to be printed.
OK	Click this button to print the image.

* If you select the Resolution option for Scale, you can use the following formula to calculate the size of the image when printed:

$$\text{height or width (in pixels)} \div \text{output resolution (in ppi)} \\ = \text{output dimensions (in inches; multiply this value by 2.54 to obtain output dimensions in centimeters)}$$

After adjusting settings, click **OK** to print the image.

Step 1—Set up your printer

Before printing, choose a printer, select a page size, and make adjustments to other settings for your printer using the **Page Setup...** option in the **File** menu. The options available in the Page Setup dialog depend on the printer currently selected in the Chooser; see your printer documentation for details.

Step 2—Print the image

To print the image, select **Print** from the **File** menu to display the Print dialog for the type of printer selected in the Chooser. After choosing a printer, specifying the number of copies to be printed, and adjusting the resolution to match resolution of the image, click **Print** to print the image.

Scan Window Operations

After editing an image in the Nikon Scan applet and saving it to disk, you may want to open the scan window and adjust settings for another scan.


Opening the scan window

Depending on your platform, one of the following two methods can be used to open the scan window:

- **The Tools Sub-Menu**

Selecting a scanner from the **Tools** sub-menu in the **Nikon Scan** menu opens the scan window for the device.






- **Open Source (Windows only)**







In the Windows version of Nikon Scan, you can open the scan windows for all connected scanners by selecting **Open TWAIN Source** from the **File** menu or by clicking the  button in the toolbar.

Nikon Scan does not support simultaneous connection of more than one 4000 ED or of more than one COOLSCAN IV ED. If more than one scanner of the same type is connected, only one of the devices will appear in the **Tools** menu.

Adjusting scan window settings

When Nikon Scan is used as a stand-alone application, the **Nikon Scan** menu can be used to adjust a variety of scan window settings. The following options are available:

Option	Description
Preferences... (Windows only)	Opens the Preferences dialog (see  105).
Tools	Like the Tools button in the scan window, this sub-menu can be used to open the Tool Chest, Scan Progress window, or the scan window for a selected device (see  40).
Settings...	When a scan window is active, this sub-menu offers the same commands as the scan window settings menu (see  88).
Color Space (Macintosh) Scan Color Space (Windows)	When a scan window is active, this sub-menu offers the same commands as the scan window color-model menu (see  28).
Document Color Space (Windows only)	Choose a new bit-depth and color model for the image in the active image window. For details, see  96.



Option	Description
Bit Depth (Macintosh only)	If the scan window is active, this command can be used to choose a new setting for the Scan Bit Depth option in the Scanner Extras palette (see  57). If an image window is active, you can change the bit depth of the image in the window. For details, see  96.
Film Type	When a scan window is active, this sub-menu offers the same commands as the scan window media-type menu (see  27).
Eject	When a scan window is active, this item performs the same function as the  button in the scan window (see  21).
Slide Feeder...	When a scan window is active and the SF-200 (S) slide feeder (available separately for the 4000 ED and LS-2000) is inserted in the scanner, this command opens a dialog that mirrors the functions of the slide feeder options in the Scanner Extras palette (see  62).

Quitting Nikon Scan

To quit Nikon Scan, choose **Exit** (Windows) or **Quit** from the file menu. If changes to the image have yet to be saved, you will be prompted to save the image before the program terminates.



When the scan window is active, the **View** menu offers access to the following scan window controls:

- **Show Natural Pane/Show Processed Pane:** switches back and forth between the Natural and Processed panes in the preview area.
- **Selection Cursor:** has the same effect as clicking the  button in the Layout Tools palette.
- **Focus Cursor:** has the same effect as clicking the  button in the Layout Tools palette.



Other menu options

For more information on the menu options not covered in this chapter, see the “Nikon Scan Visual Index” in [Appendix A](#).



Pg. For more information on:

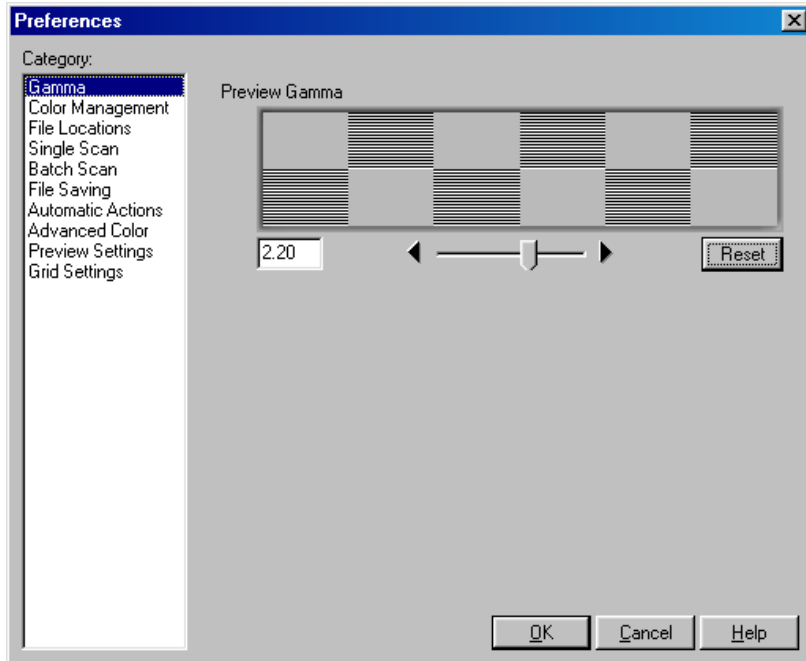


43 The Layout Tools palette

Preferences

Fine Tuning Nikon Scan

The settings in the Preferences dialog are used to modify the behavior of the controls in the scan window.



- **Viewing the Preferences Dialog**

To display the Preferences dialog, click the **Prefs** (Preferences) button in the scan window.



If you are using Nikon Scan as a stand-alone application, you can also open the Preferences dialog by selecting **Preferences...** from the **Nikon Scan** menu (Windows) or **Edit** menu (Macintosh).

The Preferences dialog contains separate tabs controlling:

- The compensation performed when displaying images on the monitor (Gamma)
- The profiles used to ensure consistent color reproduction across applications, as well as on your monitor and printer (Color Management)
- The disk used for temporary storage while Nikon Scan is in operation (File Locations/Scratch Disks)
- The operations performed automatically when scanning images one at a time (Single Scans)
- The operations performed automatically when scanning multiple selected images (Batch Scans)
- The default format for saving images (File Saving)
- The operations performed automatically when film is inserted in the scanner (Automatic Actions)
- White point, gray point, and black point selection (Advanced Color)
- The operations performed automatically during preview (Preview Settings)
- The color and spacing of the grid displayed when **Show grid** is checked in the Layout Tools palette (Grid Settings)

Sheets can be displayed by clicking the title of the tab in the list at the left side of the Preferences dialog. After completing changes to settings, click **OK** to put the changes into effect or **Cancel** to exit without saving changes.

Keeping Colors True

Nikon Color Management

The Nikon Color Management System, or Nikon CMS, ensures that the image data from your Nikon scanner are reproduced consistently and accurately on your system's monitor or printer. With this powerful tool, you can manipulate colors using either a CMYK or calibrated RGB color model before the data are passed to your imaging application. Profiles detailing the color characteristics of the chosen color model and the output device (monitor or printer) ensure that colors will be reproduced accurately in almost any operating environment.

Nikon CMS involves two preferences tabs, one (the Gamma sheet) for use when Nikon CMS is off and the other (Color Management) for use when Nikon CMS is on. The Gamma tab is where you specify how data from the scanner will be modified for display on your monitor. Because the monitor profile can not be used when Nikon CMS is off, this adjustment must be made manually. The Color Management tab is where you turn Nikon CMS on and off and select the profiles for use with your monitor and the CMYK and calibrated RGB color models.



When to use Nikon CMS

In general, you can expect much better results with Nikon CMS on. You may however want to turn color management off if:

- **your computer has a slow CPU**
On computers with a fast CPU, the processing required for Nikon CMS consumes less time than the scanner needs to scan an image. Consequently, turning Nikon CMS off will have no effect on overall scanning speed. On computers with a slow CPU, however, the scanner will have to stop and wait while Nikon CMS processes the image. If your computer has a slow CPU, you can try turning color management off to speed scanning.
- **you want to edit data from the scanner directly**
Advanced users may want to turn Nikon CMS off to edit uncalibrated RGB data from the scanner.

How Nikon CMS Works

When image data are passed from an input device, such as a scanner, to an output device, such as a monitor or printer, color management ensures that the image displayed on the output device “looks the same” as the original. To accomplish this task, the color management system must have information about the color characteristics of both the input and output devices, as well as the color space used for editing. The files containing this information are called “ICC profiles.” Nikon Scan uses the following three types of profile:

- **Input Profiles**

Input profiles provide information on the input device, i.e., your Nikon scanner. Fixed profiles detailing the color characteristics of supported Nikon scanners are provided with Nikon Scan. An input profile is selected automatically based on the model of scanner used and the type of media (positive or negative) being scanned.

- **Color-Space Profiles**

Separate profiles are available for the RGB and CMYK color models. Nikon Scan comes with a selection of profiles for the RGB color model, while CMYK profiles for color printers are usually provided by the manufacturer. Color-space profiles are used when editing images in the scan window and when making the final scan.

- **Monitor Profiles**

Monitor profiles are usually provided by the manufacturer, although profiles for some common monitor types may be included with your operating system. Monitor profiles apply when images are displayed on a monitor, for example when an image is displayed in the preview area or an image window.



Creating a monitor profile

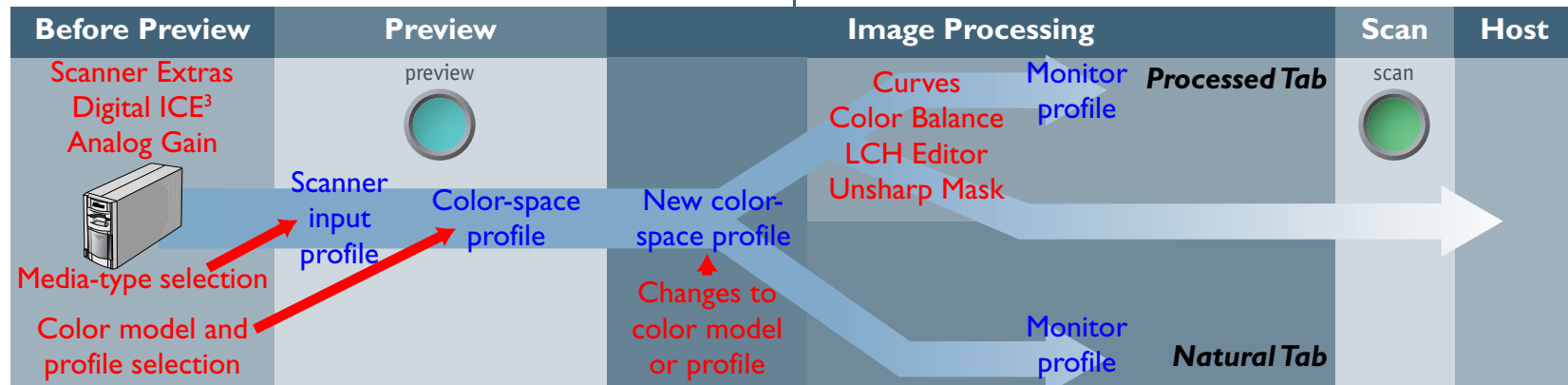
If desired, you can create a monitor profile suited to your operating environment in Adobe Photoshop and use it in Nikon Scan. For information on creating monitor profiles, see the documentation provided with Adobe Photoshop. This option is not available in Adobe Photoshop LE.

The Scanning Process

The illustration below shows the role Nikon CMS plays in the scanning process. CMS profiles are shown in blue, user operations in red.

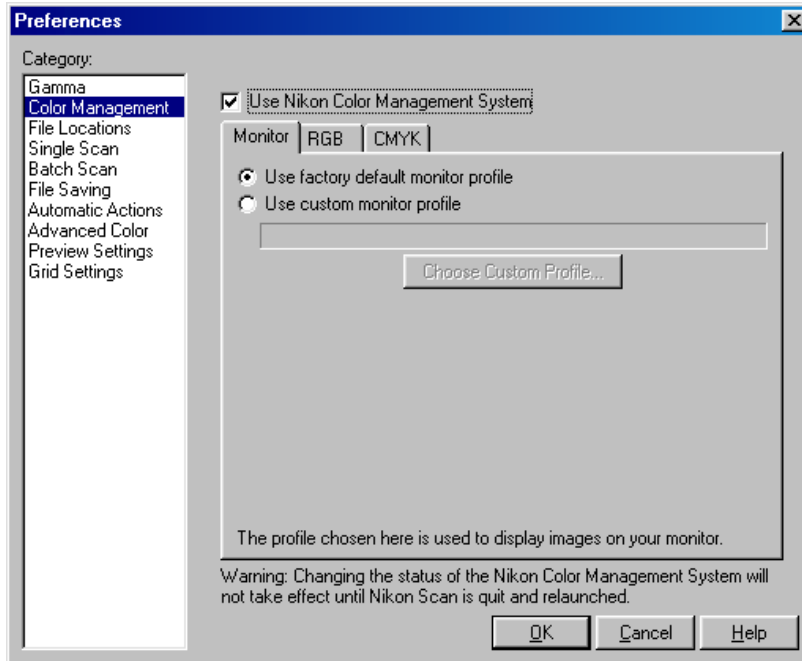
When Nikon CMS is on, uncalibrated RGB image data from the scanner are converted to grayscale, CMYK, or calibrated RGB, depending on the color model selected in the scan window. CMYK data are processed according to a user-specified CMYK profile, while RGB data are processed according to the profile selected for the calibrated RGB color space. These data are stored in memory so that the color model can be changed without performing another preview scan. Any changes you make using the color enhancement and Unsharp Mask tools also apply to these data. When the image is displayed in the preview window, the monitor profile is used to ensure that the preview image is as true as possible to the data in memory.

When the **Scan** button is clicked to perform the final scan, the scan data are processed according to the selected color-space profile and any changes that were made using the color enhancement and Unsharp Mask tools in the scan window. The data are then transferred to the host application or opened in image windows in Nikon Scan. Where possible, the color-space profile is transferred to the host application together with the image data. The TWAIN interface used in Windows, however, does not allow profiles to be passed to another application, with the result that under Windows the profile is only transferred to the host when Nikon Scan is used as a stand-alone application. (note that profile information is lost when the image is saved in a format such as BMP that does not allow the profile to be recorded). When images are displayed in Nikon Scan image windows, the monitor profile is used to ensure that the image on the screen reflects the original as closely as possible.



Color Management Preferences

The profiles used by the Nikon Color Management System are specified by means of the Color Management tab in the Preferences dialog, shown below.



- **Use Nikon Color Management System**

This check-box turns the Nikon Color Management System on and off. Changes to this setting only take effect after you have quit and restarted Nikon Scan.

When the check-box is on...

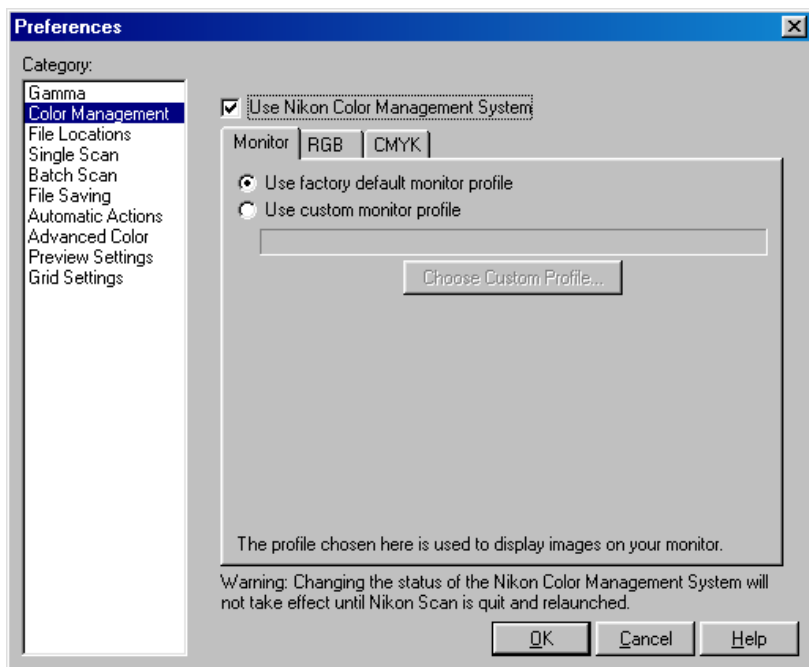
...images are processed to ensure consistent color reproduction, as described above under the heading “How Nikon CMS Works.” Because color management profiles typically contain their own settings for gamma, the controls in the Gamma tab are dimmed and inactive.

When the check-box is off...

...monitor and color-space profiles are not used, and the controls in the Color Management tab are dimmed and inactive. The only tool available for ensuring that colors from the scanner will be displayed accurately on the monitor is the Gamma tab (see below). The only adjustments made to the image before it is passed to the host application are the gamma adjustment and changes to curves and color balance made in the scan window.

The Monitor Sheet

The Monitor sheet is where you can select the profile that will be used when images are displayed on your monitor, either in the scan window preview area or a Nikon Scan image window. Monitor profiles contain information about the color and gamma characteristics of your monitor, allowing images to be adjusted for more accurate color reproduction.



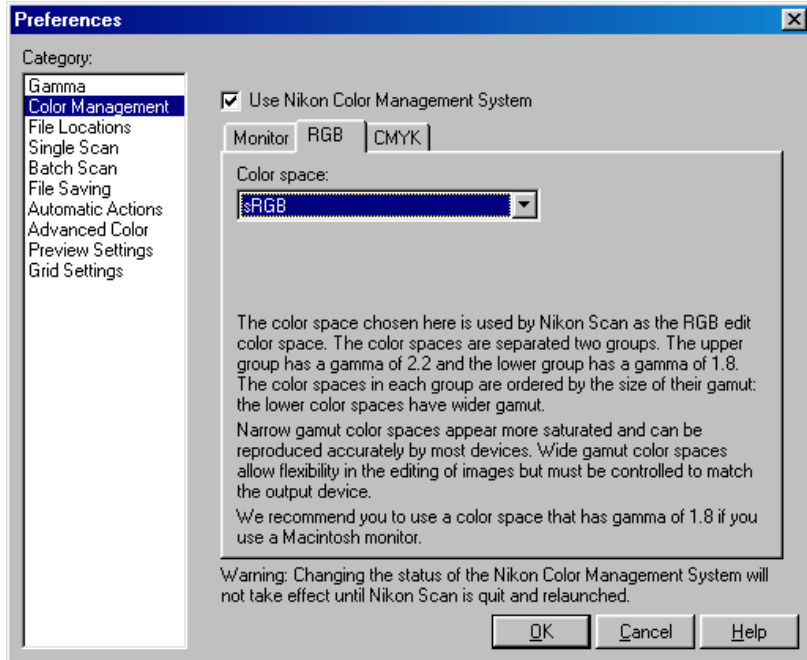
- **Use factory default monitor profile (default)**

Nikon Scan is supplied with default monitor profiles for use when no other profile is available. The default for the Windows version of Nikon Scan is an sRGB profile, that for the Macintosh version a profile designed for Apple 17" monitors with D₅₀ white (see [below](#) for details). To use the default profile for your platform, select **Use factory default monitor profile**.

- **Use custom monitor profile**

Use this option to select a profile supplied by the company that manufactured your monitor. When this option is selected, the **Choose Custom Profile...** button will be active. Clicking this button displays a standard "open file" dialog, where you can navigate to the disk and folder containing the manufacturer's profile. The path to the selected profile will appear in the text box below the **Use custom monitor profile** radio button.

The RGB sheet is where you select the color-space profile used for the calibrated RGB color model. The profile used can be selected from the **Color space** menu.

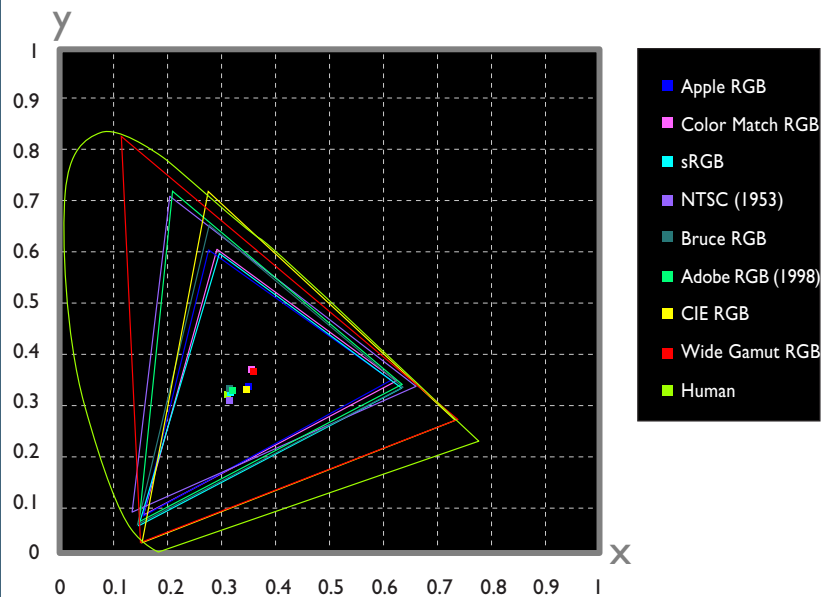


Each of the profiles listed may be classified according to its gamma value and gamut. *Gamma* is a fundamental characteristic of imaging systems which determines the intensity of the output signal relative to the input; in human terms, gamma controls the subjective brightness of images through alterations to the output level for mid-tones. Windows and Macintosh systems process video signals differently, and these differences are reflected in the difference in the standard gamma values for these platforms. The default system gamma for Macintosh computers is 1.8, the *de facto* standard for Windows systems, 2.2. Nikon CMS includes eight RGB profiles with a Windows gamma of 2.2 (sRGB, Bruce RGB, NTSC [1953], Adobe RGB [1988], CIE RGB, Wide Gamut RGB, compensated Wide Gamut RGB, and Scanner RGB), and three profiles with a gamma value of 1.8 (Apple RGB, ColorMatch RGB, and compensated Apple RGB), for use on the Macintosh. When scanning images, choose a profile with a gamma value suited to the system on which the image will be edited.

Profiles can be further classified according to their *gamut*, or the range of colors that can be expressed using the profile. Gamut is conventionally expressed by means of *chromaticity*, a measure of color developed by the Commission Internationale de l'Éclairage (CIE). The CIE system, which is modeled on human color perception, maps the physical wavelengths of light to three coordinates (known as CIE X, Y, and Z) that give unique numerical expression to the full range of color differences that can be perceived by humans. Chromaticity is a measure of color from which considerations of brightness have been factored out, giving a two-coordinate system.

In the chromaticity diagram at right, the complete gamut of colors visible to humans is in the area enclosed by the green line. The curved portion of the line gives the chromaticity of “pure,” unmixed colors with wavelengths in the visible spectrum of 380–780 nm. The blue end of the spectrum (380 nm) is at the bottom left corner, the red end of the spectrum (780 nm) at the bottom right corner. The straight diagonal line connecting these two points represents the different shades of purple created by combining red and blue light. The colors inside the area enclosed by these lines are created by mixing light of different wavelengths.

No color profile is capable of expressing the full range of colors visible to the human eye. The diagram below compares the gamut of colors visible to the eye with the colors that can be expressed in each of the RGB profiles provided with Nikon CMS. The gamut for each profile is contained in the triangle defined by the three points that mark the extremes of red, green, and blue for that profile (red is at the bottom right corner, green at the top of the triangle, and blue at the bottom left corner). The white point for each profile is shown by the symbol in the center of the triangle.



The following table shows the gamma values for the profiles included with Nikon CMS, together with the chromaticity values for the white point and for red, green, and blue.

Profile	White Point		Gamma Value	Chromaticity (x,y)			
	Name	Value		Name	R	G	B
Apple RGB	6500K (D ₆₅)	x 0.3127159	1.8	Trinitron	x 0.625	x 0.28	x 0.155
		y 0.3290015			y 0.34	y 0.595	y 0.07
ColorMatch RGB	5000K (D ₅₀)	x 0.3457029	1.8	P22-EBU	x 0.63	x 0.295	x 0.155
		y 0.3585386			y 0.34	y 0.605	y 0.077
Apple RGB (Compensated)	6500K (D ₆₅)	x 0.3127159	1.8	Custom	x 0.65	x 0.265	x 0.14
		y 0.3290015			y 0.341	y 0.717	y 0.0454
sRGB	6500K (D ₆₅)	x 0.3127159	2.2	HDTV (CCIR 709)	x 0.64	x 0.3	x 0.15
		y 0.3290015			y 0.33	y 0.6	y 0.06
NTSC (1953)	Std Illuminant C	x 0.3101	2.2	NTSC (1953)	x 0.67	x 0.21	x 0.14
		y 0.3162			y 0.33	y 0.71	y 0.08
Bruce RGB	6500K (D ₆₅)	x 0.3127159	2.2	Bruce RGB	x 0.64	x 0.28	x 0.15
		y 0.3290015			y 0.33	y 0.65	y 0.06
Adobe RGB (1988)	6500K (D ₆₅)	x 0.3127159	2.2	Adobe RGB (1998)	x 0.64	x 0.21	x 0.15
		y 0.3290015			y 0.33	y 0.71	y 0.06
CIE RGB	Std Illuminant E	x 0.3333333	2.2	CIE RGB	x 0.735	x 0.274	x 0.167
		y 0.3333333			y 0.265	y 0.717	y 0.009
Wide Gamut RGB	5000K (D ₅₀)	x 0.3457029	2.2	700/525/450nm	x 0.7347	x 0.1152	x 0.1566
		y 0.3585386			y 0.2653	y 0.8264	y 0.0177
Default Windows Monitor	6500K (D ₆₅)	x 0.3127159	2.2	HDTV (CCIR 709)	x 0.64	x 0.3	x 0.15
		y 0.3290015			y 0.33	y 0.6	y 0.06
Default Macintosh Monitor	5000K (D ₅₀)	x 0.34570291	1.8	Trinitron	x 0.625	x 0.28	x 0.155
		y 0.3585386			y 0.34	y 0.595	y 0.07

Notes on RGB Profiles Provided with Nikon Scan

Apple RGB (gamma 1.8)

This profile is used in desk-top publishing applications and in Adobe Photoshop versions 4.0 or earlier, and is the typical RGB profile for Macintosh monitors. The corresponding RGB setting in Photoshop 5.0 is “Apple RGB.” This profile is suitable for working with images displayed on the Macintosh.

ColorMatch RGB (gamma 1.8)

The ColorMatch profile is native to Radius PressView monitors. It has a wider gamut than Apple RGB, with a particularly wide area devoted to the reproduction of blues. The corresponding RGB setting in Photoshop 5.0 is “Color Match RGB.”

Apple RGB (compensated) (gamma 1.8)

This profile defines tristimulus (red, green, and blue) chromaticity as the intersection of the curve that marks the limits of the visible gamut with lines drawn from the Apple RGB white point and passing through the points that define tristimulus chromaticity in the Apple RGB color-space profile. This profile is unique in that it preserves the characteristics of Apple RGB while allowing more saturated colors. It is not provided in the standard install of Photoshop 5.0, but can be selected as the RGB color-space profile for Photoshop by importing the profile “NKApple_CPS.icm”.

sRGB (gamma 2.2)

This RGB profile is used in the majority of Windows monitors. It closely resembles the RGB commonly used in color television, and is also used in the digital television broadcasting system that is on its way to becoming the industry standard in the United States of America. Software and hardware manufacturers use it as a default color profile and guarantee operation when it is used. It is also on its way to becoming the standard for images on the web. This profile is suited to users who plan to use their digital images “as is,” without editing or printing them. It however suffers from the drawback of a narrow gamut with a limited area available for reproducing blues. The corresponding RGB setting in Photoshop 5.0 is “sRGB.”

Bruce RGB (gamma 2.2)

This color profile attempts to expand on the ColorMatch RGB gamut by defining the chromaticity for G as lying between the values for G in the Adobe RGB and ColorMatch color-space profiles. It was proposed by Bruce Fraser, who claims that it includes most of the colors in the SWOP CMYK gamut. It is not provided in the standard install of Photoshop 5.0, but can be selected as the RGB color-space profile for Photoshop by importing the profile “NkBruce.icm”.

NTSC (1953) (gamma 2.2)

This is the color space for video defined by the National Television Standards Committee (NTSC) in 1953 and used in early color televisions. This color space is also used in some Far-East newspaper and printing organizations. The corresponding RGB setting in Photoshop 5.0 is “NTSC (1953).”

Adobe RGB (1988) (gamma 2.2)

A color-space profile defined in Photoshop 5.0. It has a wider gamut than sRGB and includes the colors found in most CMYK gamuts, making it suitable for users involved in desktop publishing. The corresponding RGB setting in Photoshop 5.0 is “Adobe RGB (1988).”

CIE RGB (gamma 2.2)

A video color-space profile established by the CIE. While it boasts a fairly wide gamut, it suffers from the drawback that the area devoted to the reproduction of cyan is relatively small. The corresponding RGB setting in Photoshop 5.0 is “CIE RGB.”

Wide Gamut RGB (gamma 2.2)

This color-space profile, designed by Adobe, incorporates most of the visible colors. This however has the consequence that most of the colors it can express can not be reproduced on standard monitors and printers. The corresponding RGB setting in Photoshop 5.0 is “Wide Gamut RGB.”

Wide Gamut RGB (compensated) (gamma 2.2)

Nikon scanners can scan some colors that cannot be expressed using the Wide Gamut RGB color-space profile. The compensated Wide Gamut RGB profile redefines Wide Gamut RGB to include all the colors that can be output from the scanner. Because many of the colors that can not be expressed in Wide Gamut RGB occur in the blue portion of the gamut, the level of detail in the blue area has been greatly increased (because the gamut has been expanded in a nonlinear fashion to incorporate just those colors that could not otherwise be expressed, it can not be represented in chromaticity diagrams using a standard RGB triangle). As is the case with Wide Gamut RGB, most of the colors defined in this profile can not be reproduced on monitors and printers. It is output to the host application as Wide Gamut RGB. If you are scanning images into Photoshop 5.0 using this profile, you can set the Photoshop RGB profile to “Wide Gamut RGB.”

Scanner RGB (gamma 2.2)

This profile replicates the color space achieved when scanning with Nikon CMS off. It is used when you want to use the LCH editor and Unsharp Mask tools, which are not available when Nikon CMS is off, to edit the colors produced by the scanner. In order to produce the effect achieved by turning Nikon CMS off, the monitor profile is not used, nor is an ICC profile included with the image when it is opened in the host application.

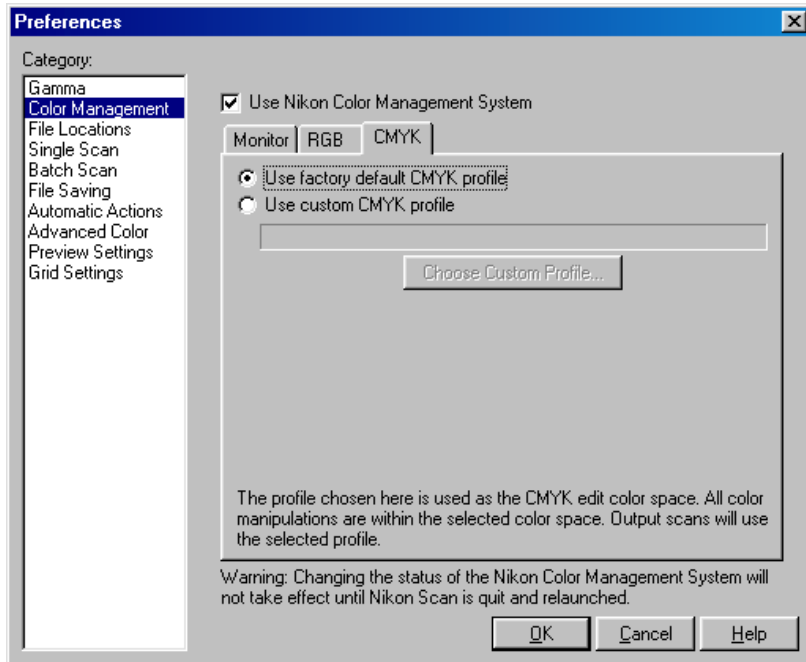
Default Windows Monitor Profile (gamma 2.2)

The default Windows monitor profile (“NkMonitor_Win.icm”) is identical to the sRGB profile.

Default Macintosh Monitor Profile (gamma 1.8)

The default Macintosh monitor profile (“NkMonitor_Mac.icm”) is identical to the profile used for Apple 17” monitors with a D_{50} white point (see [table](#) for details).

The CMYK sheet, shown below, is where you select a profile for use with the CMYK color model.



- **Use default CMYK (default)**

Nikon Scan is supplied with a default CMYK profile (the SWOP color library) for use when no other profile is available. This profile is used when **Use default CMYK** is selected.

- **Use custom profile**

Use this option to select a profile supplied by the company that manufactured your printer. When this option is selected, the **Choose Custom Profile...** button will be active. Clicking this button displays a standard open-file dialog, where you can navigate to the disk and folder containing the manufacturer's profile. The path to the selected profile will appear in the text box below the **Use custom profile** radio button.



Keeping colors true in other applications

When an image is scanned in the Nikon Scan TWAIN source or acquire plug-in and opened in another application, or when an image saved using Nikon Scan is opened in another application, before being displayed on the monitor the image will be processed according to the color-space and monitor profiles selected in the application. If the profiles used in the application do not match those used in Nikon Scan, colors may not be the same as those in the original image.

- **when using the RGB color model:** Choose a monitor profile that matches that chosen in the monitor sheet and a color-space profile that matches that selected in the RGB sheet (the Photoshop profiles corresponding to those used in Nikon Scan are listed on the preceding pages). If no matching RGB profile exists, you can use the Nikon Scan profiles in the path Program Files\Common Files\Nikon\Profiles (Windows) or System Folder : Preferences : Nikon MAID : Profiles (Macintosh). The files containing the profiles listed in the RGB sheet are given below.

Profile	File name
sRGB	NKsRGB.icm
Bruce RGB	NKBruce.icm
NTSC (1953)	NKNTSC.cim
Adobe RGB (1998)	NKAdobe.icm
CIE RGB	NKCIE.icm

Profile	File name
Wide Gamut RGB	NKWide.icm
Apple RGB	NKApple.icm
Color Match RGB	NKMatch.icm
Apple RGB (compensated)	NKApple_CPS.icm

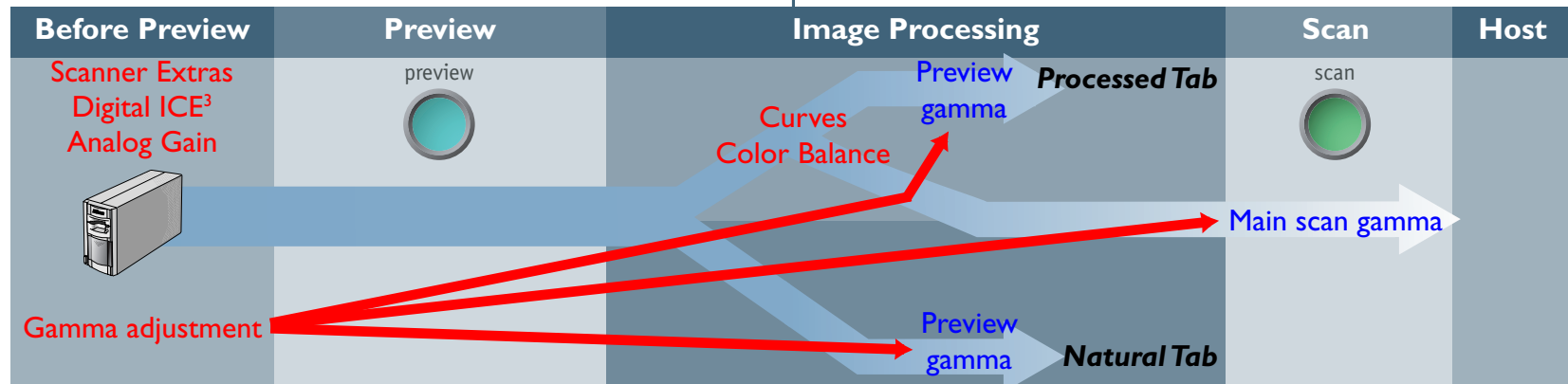
**Do not use the Scanner RGB profile when scanning images for use in a third-party application.*

- If you are using Nikon Scan as an acquire plug-in for the Macintosh version of Adobe Photoshop 5 or later (full version), the RGB profile will automatically be passed to Photoshop when the image is scanned. You need only ensure that the monitor profile matches that used in Photoshop by selecting the Photoshop monitor profile in the monitor sheet of the Nikon Scan color management tab.
- **when using the CMYK color model:** Choose a monitor profile that matches that chosen in the monitor sheet and a color-space profile that matches that selected in the CMYK sheet. If you are using Nikon Scan as an acquire plug-in for the Macintosh version of Adobe Photoshop 5 or later (full version), the CMYK profile will automatically be passed to Photoshop when the image is scanned. You need only ensure that the monitor profile matches that used in Photoshop by selecting the Photoshop monitor profile in the monitor sheet of the Nikon Scan color management tab.

Scanning with Nikon CMS Off

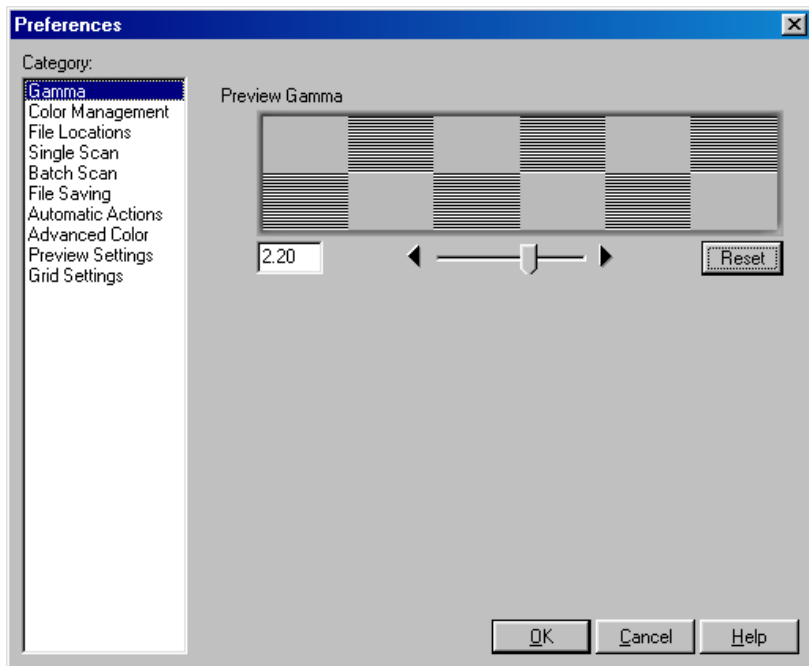
If the **Use Nikon Color Management System** check-box in the Color Management tab is off, profiles can not be used to ensure that the data from the scanner are reproduced accurately when passed to another application or displayed on the monitor. Because the color profiles required for a calibrated RGB or CMYK color space are not available when Nikon CMS is off, images can only be scanned as uncalibrated RGB or grayscale. Similarly, the absence of a monitor profile means that gamma adjustment must be used to correct the image for display on your monitor or for editing in another application. These adjustments to gamma are made in the Gamma tab of the Preferences dialog (see below).

The illustration below shows how scanning proceeds when Nikon CMS is off. The image shown in the preview window is adjusted for display on the monitor according to the value chosen for preview gamma in the Gamma tab. When the **Scan** button is clicked, the main scan gamma and any changes to curves and color balance are passed to the scanner, where they are applied to scan data before the image is transferred to the host application (if Nikon Scan is used as a “stand-alone” application, the value for preview gamma is passed to the scanner instead of main scan gamma). The LCH Editor and Unsharp Mask tools can not be used when Nikon CMS is off.



The Gamma Tab

The controls in the Gamma tab are only active if Nikon CMS is off, when they are used to adjust data from the scanner so that they display correctly when previewed on your monitor or opened in another application.



- **Preview gamma**

Preview gamma applies to the image displayed in the preview area of the scan window. In general, preview gamma is solely for display in the preview area and does not apply to the image data that are passed to the host application when the **Scan** button is clicked. There are two exceptions to this rule, however. The first is when Nikon Scan is used as a stand-alone application, the second when **Use preview gamma** is selected as the main scan gamma option. In these cases preview gamma is applied to image data passed to the host application.

Preview gamma defaults to a value of 1.8 on the Macintosh, 2.2 on Windows computers. To choose a setting suited to your monitor, adjust the value so that the patterns of gray lines and dots above the slider match in density. Gamma can be set by entering a value directly into the text box or by moving the slider. When making this adjustment, set the resolution on your monitor to a low value such as 640 × 480 and sit as far away from the monitor as possible. To restore the default setting for your platform, click the **Reset** button.

- **Main scan gamma**

Main scan gamma options are only visible when Nikon Scan is being used as a TWAIN source or acquire plug-in for another program (when Nikon Scan is used as a stand-alone application, preview gamma automatically applies both to the preview image and to the final scan). Image data passed to the host application are modified according to the option chosen here. Three options are available:

Use preview gamma

The gamma value chosen for preview gamma is applied before the data are passed to the host application. Use this setting when the host application does not support independent gamma settings and you want the final image to be modified for display on your monitor.

Use application gamma

In some environments, a value for gamma can be chosen in the host application and passed to the Nikon Scan plug-in. When **Use application gamma** is selected, this value is applied to the main scan data before they are passed to the host application.

Two conditions must be fulfilled if this option is to be effective. First, the interface between the application and Nikon Scan must allow the gamma value to be passed to the Nikon Scan plug-in. The TWAIN interface used under Windows does not, however, allow the gamma value to be passed to the TWAIN source (i.e., to Nikon Scan). Consequently, in the Windows version of Nikon Scan a default value of 2.2 is used for main scan gamma whenever **Use application gamma** is selected. Second, the application must support gamma transfer. If **Use application gamma** is selected with a Macintosh application that does not support this feature, Macintosh system gamma (1.8) will be used.

Use custom gamma

When this option is selected, a value for main scan gamma can be entered in the text box.

System Settings

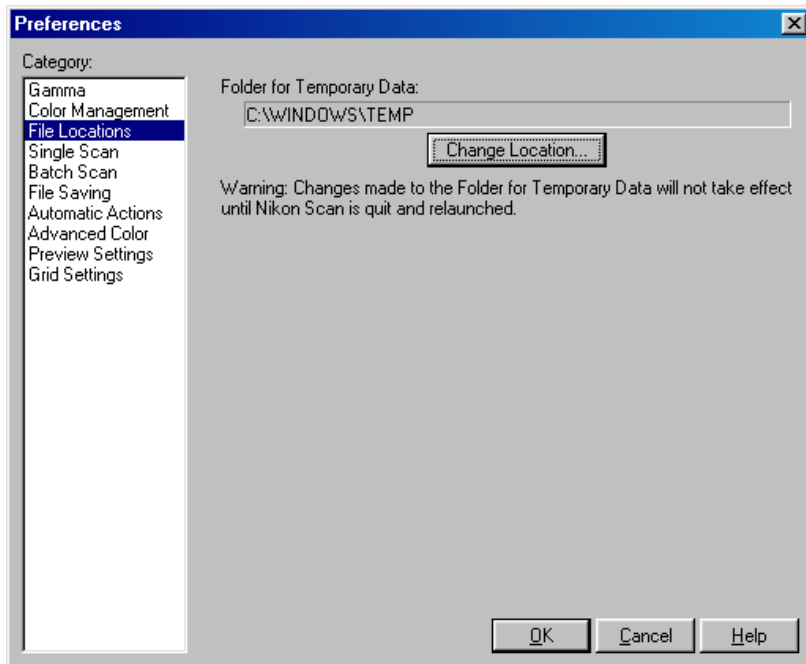
Choosing File Locations/Scratch Disks and File Types

The File Locations/Scratch Disk and File Saving tabs allow you to adjust settings to suit your particular operating environment. The File Locations (Windows) or Scratch Disk (Macintosh) tab is where you choose the folder or disk used for temporary storage while Nikon Scan is in operation. In the File Saving tab, you choose the default file type and, in the Macintosh version of the program, creator.

The File Locations/Scratch Disks Tab

The File Locations (Windows) or Scratch Disks (Macintosh) tab is where you choose the folder or volume (disk) that will be used for temporary storage, or “virtual memory,” while Nikon Scan is in operation. While Nikon Scan requires a minimum of twenty MBs of free hard disk space for temporary storage while in operation, it is recommended that the amount of free disk space on the volumes you select total two hundred MBs or more. It is also recommended that you select only disks with a high data transfer rate, such as hard disks, for temporary storage.

The File Locations tab is shown below.

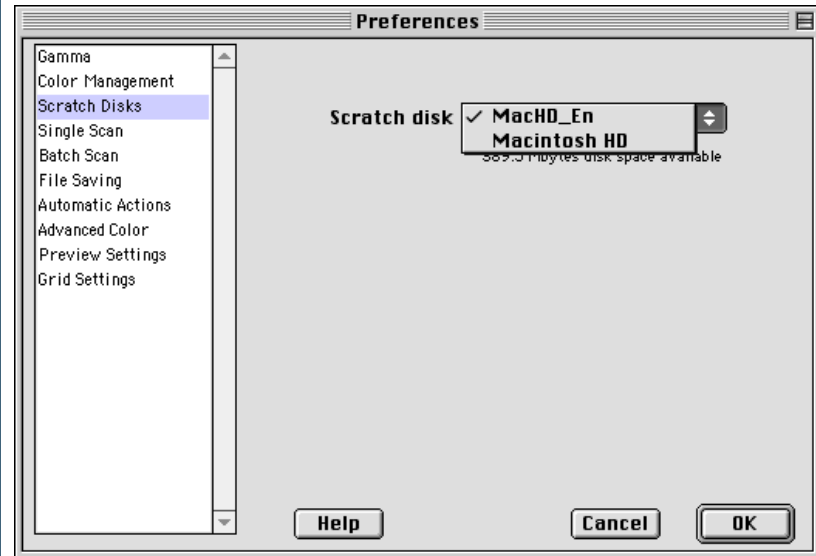


The folder currently selected for temporary storage is shown under **Folder for Temporary Data**. To choose a different location, click the button to the right of the text box and navigate to the desired drive and folder.



Changes to File Locations settings only take effect after you have quit and restarted Nikon Scan.

The Scratch Disks tab is shown below.



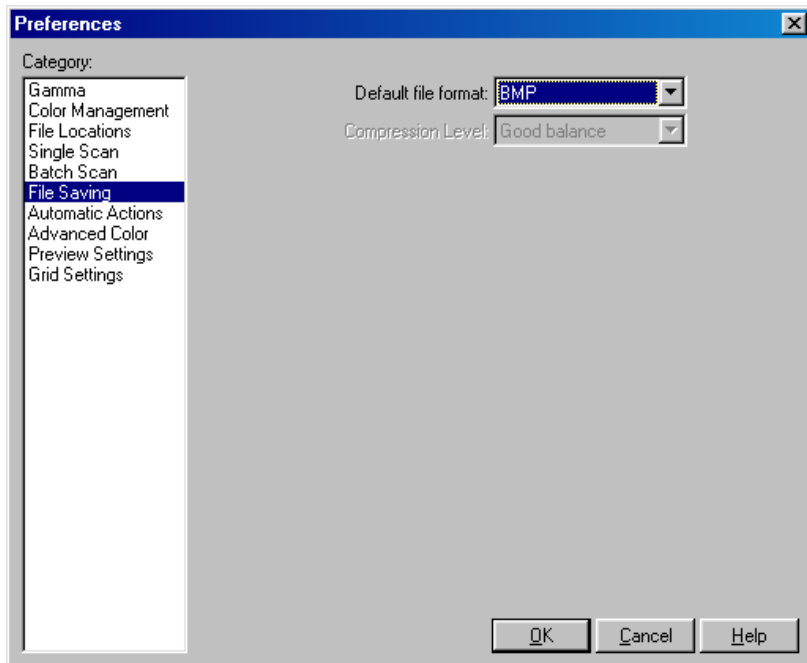
The volume used for temporary storage can be chosen from the **Volume Name** pop-up menu. The amount of space available on the selected disk is shown under the menu.



Changes to Scratch Disks settings only take effect after you have quit and restarted Nikon Scan.

The File Saving Tab

The File Saving tab allows you to choose the default file type for images saved when Nikon Scan is used as a stand-alone application. By altering the creator in the Macintosh version of the program, you can also choose the application that will start when files saved using Nikon Scan are double-clicked.



The File Saving tab contains the following items:

Item	Description
Default file format	Select the default file format from NEF, TIFF, JPEG, PICT (Macintosh only), and BMP (Windows only). Select Last used to choose the format most recently used to save images when Nikon Scan was used as a stand-alone application.
Compression Level	If the selected file type supports compression, you can control the amount using this menu.
Use alternate creator code (Macintosh only)	If this box is checked, you can choose a new creator type by clicking the Choose... button, navigating to the folder containing the application you wish to use as the creator, and selecting the application. This option is not available in the Windows version of Nikon Scan.



Pg. For more information on:



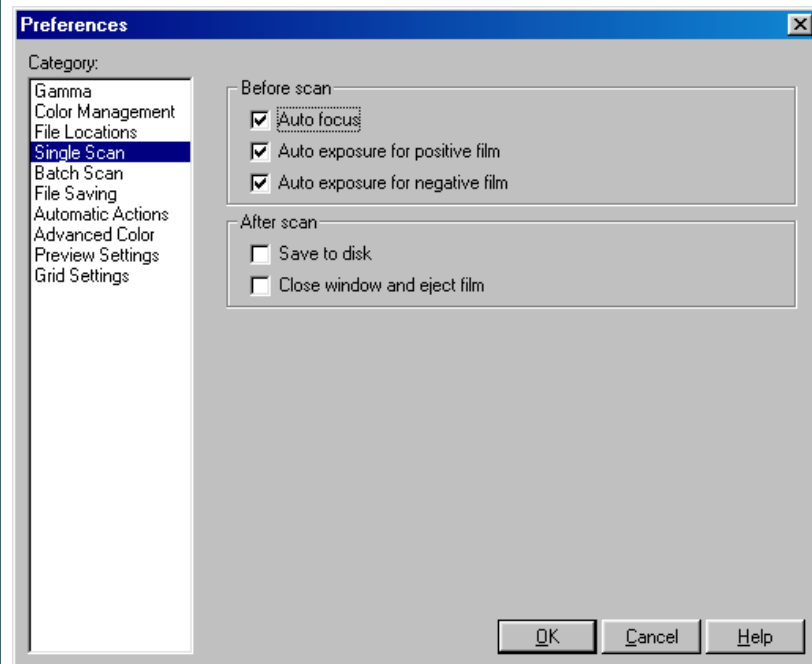
98 File types

Automating Tasks

Single Scans, Batch Scans, and Automatic Actions

Nikon Scan can be set to perform common tasks such as auto-focus and exposure before making a preview, or to automatically preview images when film is inserted in the scanner. When Nikon Scan is used as a stand-alone application, you can also set it to perform a variety of actions after scanning, such as saving the scanned images directly to disk. Separate settings are available for scanning images one at a time and for batch scans.

The Single Scan tab is used to specify the tasks performed automatically before and after single scans.



“Batch scan”

“Batch scanning” refers to automated scanning of multiple images. Batch scanning can be performed when multiple frames are selected in the thumbnail drawer or when the optional SF-200 (S) slide feeder (4000 ED/LS-2000 only) is used for automated sequential scanning of multiple slides.

The Single Scan tab contains the following options:

Before scan

Option	Description
Auto focus	If this item is checked (the default setting), an autofocus operation will be performed as necessary before making a scan.
Auto exposure for positive film	If this item is checked (the default setting), an autoexposure operation will be performed as necessary before scanning film positives.
Auto exposure for negative film	If this item is checked (the default setting), an autoexposure operation will be performed as necessary before scanning film negatives.

* Once an autofocus or autoexposure operation has been performed for the current frame, the operation will not be repeated before a preview or scan. If desired, you can use the autofocus and autoexposure buttons in the scan window to ensure that these operations are performed before previewing or scanning images. If **Perform auto focus when film is inserted** is selected in the Scanner Extras palette, an autofocus operation will automatically be performed when a slide is inserted in a slide-mount adapter, with the result that an autofocus operation will not be performed automatically before the image is scanned.

After scan

Option	Description
Save to disk	If this item is checked when Nikon Scan is used as a stand-alone application, the image created when the Scan button is clicked will be saved to disk instead of being opened in an image window in Nikon Scan. When the Scan button is clicked, a Save dialog will appear where you can specify a name, location, and file type for the image. This option has no effect when Nikon Scan is being used as a plug-in or TWAIN source for another application. The default option is off.
Close window and eject film	If this item is checked, the scan window will close automatically after scanning. Film will automatically be ejected from the SA-21/SA-20 and optional IA-20 (S), SA-30 (4000 ED only), and SF-200 (S) (4000 ED/LS-2000 only) adapters.



Pg. For more information on:



37 The autofocus and autoexposure buttons



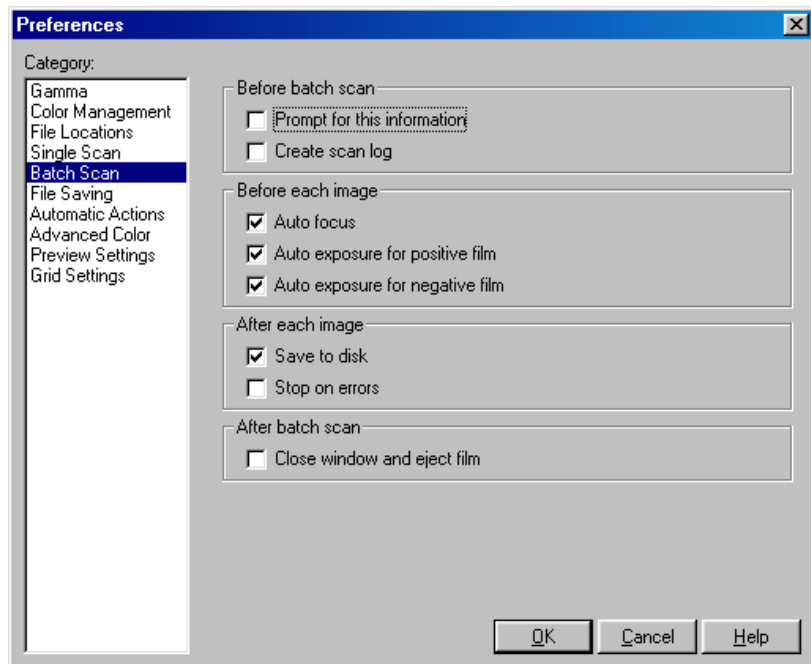
57 Scanner Extras



98 Saving images to disk

The Batch Scan Tab

The Batch Scan tab is used to specify the tasks performed automatically before, during, and after batch scans.



The Batch Scan tab contains the following options:

Before batch scan

Option	Description
Prompt for this information	If this item is checked (the default setting), a dialog containing the same options as appear in the Batch Scan tab will be displayed when the Scan button is clicked to begin a batch scan, allowing you to select the tasks that will be performed automatically.
Create scan log	If this item is checked, a log showing the operations performed and errors that occurred during the batch scan will be displayed in the Log tab of the Progress window. If Save to disk is selected under “after each image” (below), the log will be saved to the same folder as the scanned images.

Before each image

Option	Description
Auto focus	If this item is checked (the default setting), an autofocus operation will be performed as necessary before each scan.
Auto exposure for positive film	If this item is checked (the default setting), an autoexposure operation will be performed as necessary before scanning film positives.
Auto exposure for negative film	If this item is checked (the default setting), an autoexposure operation will be performed as necessary before scanning film negatives.

- * Once an autofocus or autoexposure operation has been performed for the current frame, the operation will not be repeated before a preview or scan. If desired, you can use the autofocus and autoexposure buttons in the scan window to ensure that these operations are performed before previewing or scanning images. If **Perform auto focus when film is inserted** is selected in the Scanner Extras palette, an autofocus operation will automatically be performed when a slide is inserted in a slide-mount adapter, with the result that an autofocus operation will not be performed automatically before the image is scanned.



Pg. For more information on:



37 The autofocus and autoexposure buttons



57 Scanner Extras

After each image

Option	Description
Save to disk	If this item is checked when Nikon Scan is used as a stand-alone application, the scanned images will be saved to disk instead of being opened in image windows in Nikon Scan. When the Scan button is clicked, a dialog will appear where you can specify a location and file type and choose how the files will be named. This option has no effect when Nikon Scan is being used as a plug-in or TWAIN source for another application. The default option is off.
Stop on errors	If this item is checked, scanning will stop when an error is encountered. If it is not checked, scanning will only stop when all the selected images have been scanned or the media jams in the adapter.

After batch scan

Option	Description
Close window and eject film	If this item is checked, the scan window will close automatically after scanning. Film will automatically be ejected from the SA-21/SA-20 and optional IA-20 (S), SA-30 (4000 ED only), and SF-200 (S) (4000 ED/LS-2000 only) adapters.



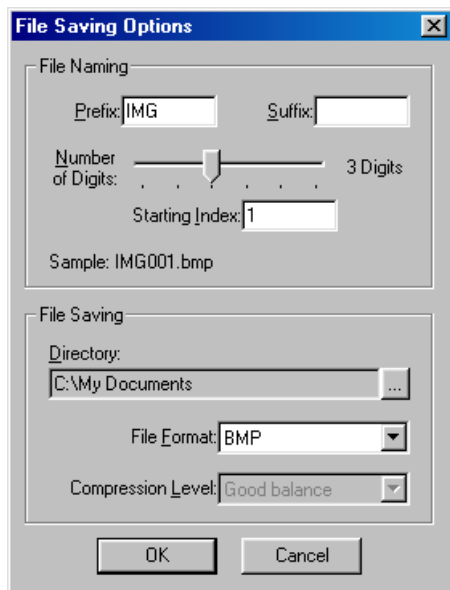
Pg. For more information on:



98 Saving images to disk

The File Save Dialog (Batch Scans)

When **Save to disk** is selected in the Batch Scan tab and Nikon Scan is used as a stand-alone application, the following dialog will appear when the **Scan** button is clicked.



The File Saving Options dialog contains the following items:

File Naming

Files saved during a batch scan are assigned names consisting of a prefix, a file number of from one to six digits, assigned in ascending order from a user-specified starting point, and a suffix. The options in the File Naming area control the prefix, file number and suffix.

Item	Description
Prefix	Enter the desired prefix (up to forty letters).
Suffix	Enter the desired suffix (up to forty letters).
Number of digits	Use this slider to select the number of digits for the file number (from one to six).
Starting Index	File numbers will be assigned in ascending order starting from this number.
Sample	Shows a sample of the file names that will be assigned using the selected options.



Pg. For more information on:



98 Saving images to disk

Item	Description
Browse	To choose the folder to which the images will be saved, click this button and navigate to the desired folder.
File Format	Select the format from NEF, TIFF, JPEG, PICT (Macintosh only), BMP (Windows only), and PICT JPEG (Macintosh only).
Compression Level	If the selected file type supports compression, you can control the amount using this menu.

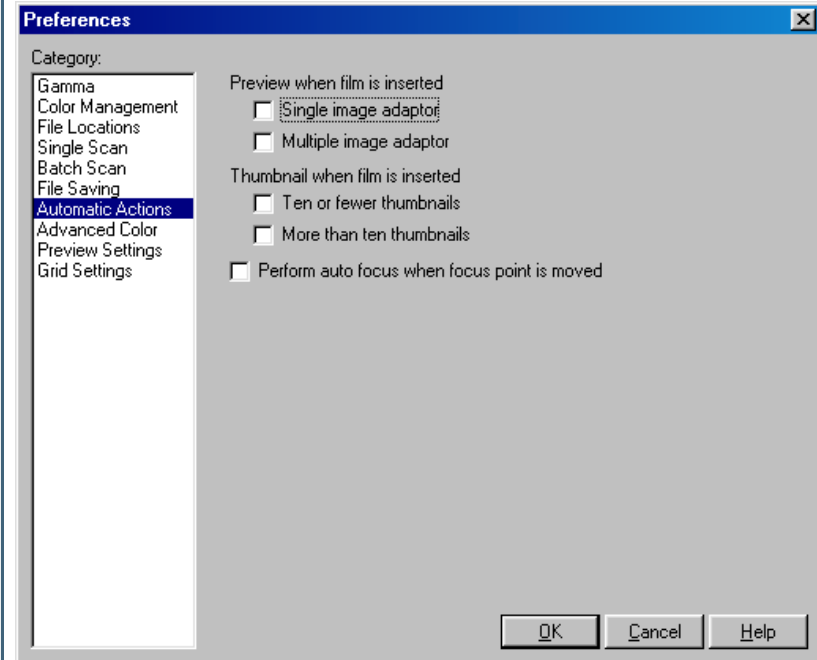
File-naming conventions

Macintosh: The maximum length for Macintosh file names is thirty-one characters. Colons (":") are not allowed.

Windows: *In environments that do not support long file names*, the maximum length is eight characters; file names may not contain spaces, quotes, or any of the following characters: "\ " / " : " ; " , " * " < " > " and |".


Where long file names are supported, the maximum length is 255 characters. File names may not contain quotes or any of the following characters: "\ " / " : " ; " , " * " < " > " and |".

The Automatic Actions tab sets the actions performed when media are inserted in the scanner or the focus point is adjusted using the focus tool in the Layout Tools palette.



The Automatic Actions tab contains the following options:

Option	Description
Preview when film is inserted	If Single image adaptor is checked, the scanner will automatically perform a preview when a slide is inserted in the MA-20 (S) slide-mount adapter or the optional SF-200 (S) slide feeder. If Multiple image adaptor is checked, the scanner will automatically perform a preview using user default settings when film is inserted in a multi-frame adapter (if no user defaults are defined, factory defaults will be used).
Thumbnail when film is inserted	If Ten or fewer thumbnails is checked, the scanner will automatically generate thumbnails when APS or strip film with ten or fewer frames is inserted in a multi-frame adapter. If More than ten thumbnails is checked, the scanner will automatically generate thumbnails when film is inserted in an adapter that supports more than ten frames.

Option	Description
Perform autofocus when focus point is moved	If this item is checked, the scanner will automatically perform an autofocus operation when the focus point is changed using the focus tool in the Layout Tools palette. If it is not checked, autofocus will only be performed when the  button is clicked in the scan window control area. The default option is off.



Pg. For more information on:

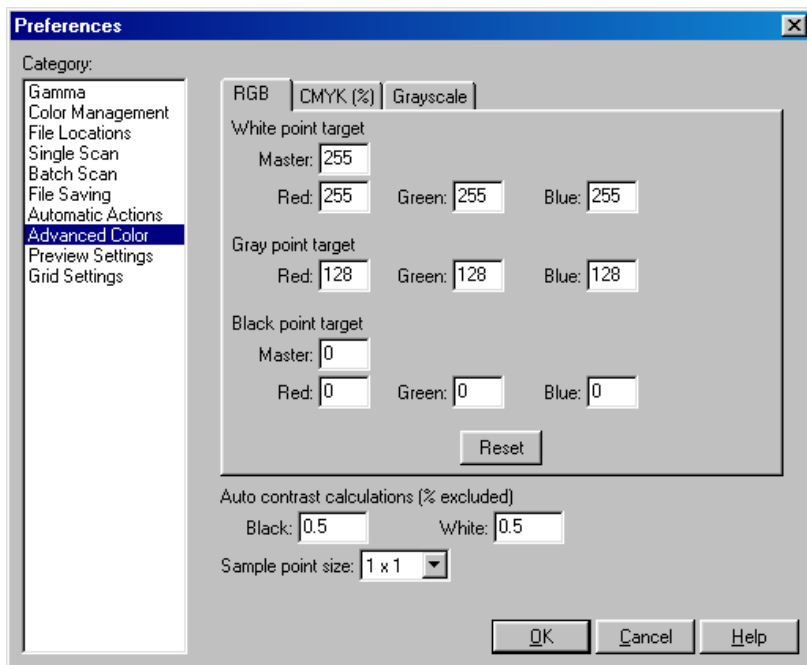


43 Layout Tools

Setting the Defaults for White Point, Gray Point, Black Point, and Auto Contrast

The Advanced Color Tab

Using the Advanced Color tab, you can specify output colors for the black, white, and gray points and change the size of the area sampled when the eyedropper tools in the Curves palette are used. You can also adjust the portion of the tone range excluded in autocontrast operations.



White-Point, Gray-Point, and Black-Point Calculations

Using the RGB, CMYK, and Grayscale sheets, you can specify default output values for white, gray, and black points in the Curves palette for each of the RGB, CMYK, and grayscale color spaces. The factory default settings for the white point in RGB and grayscale are 255 for each channel, which displays as white on most computer monitors. The factory defaults for the gray point are 128 for each channel, which displays as a neutral gray, while the defaults for the black point are zero for each channel, which displays as black. In the case of CMYK, the factory defaults for the white point are 0% for each channel, which means that true whites will be the same color as the paper when printed on a four-color printer. The gray point for CMYK defaults to 50% for each channel, the black point to 100% for each channel. To restore factory defaults for the color model in the selected sheet, click the **Reset** button.



Although values for RGB and grayscale range from zero to 255 (with larger values representing brighter shades), calculations are performed at a precision of sixteen bits. Values for CMYK range from 0%–100%, with smaller percentages representing brighter shades.

Sample Point Size

This setting determines the size of the area sampled when displaying the color value for the pixel under the cursor in the information window, or when the white-point, gray-point, and black-point tools are used in the Curves palette. You can select a sample sizes of 1×1 , 3×3 , and 5×5 pixels. When the sample size is set to 3×3 or 5×5 pixels, the average for the pixels sampled is used. Choosing a large sample size reduces precision, but also minimizes the effects of noise; choosing a small sample size has the opposite effect.

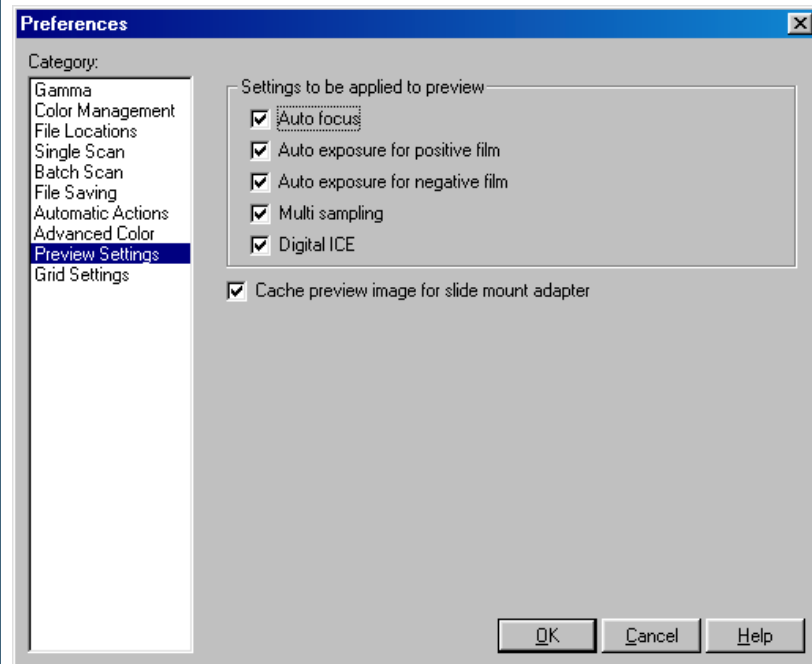
Auto Contrast Calculations

A further option in the Color sheet allows you to specify how auto contrast operations in the Curves and LCH Editor palettes calculate the input values for the white point and black point. By default, the white point is set to a value that excludes 0.5% of the brightest pixels in the current crop, the black point to a value that excludes 0.5% of the darkest pixels in the crop. This produces an optimal dynamic range, with minimum loss of detail in shadows and highlights. To preserve detail at the expense of dynamic range, lower the “excluded” value for auto contrast (a value of zero will set the black and white point respectively to the darkest and brightest pixel in the crop). To increase the dynamic range at the expense of detail, raise the “excluded” value.

Scan Window Settings

The Preview Tab

Using the Preview tab, you can select the settings that will automatically be applied to images when the **Preview** button is clicked.



The following options are available:

Option	Description
Auto focus	If this item is checked, an autofocus operation is performed as necessary when the Preview button is clicked.
Auto exposure for positive film	Check this item to perform an autoexposure operation as necessary when previewing film positives.
Auto exposure for negative film	Check this item to perform an autoexposure operation as necessary when previewing film negatives.
Multi sampling	Check this item to perform multi-sample scanning during the preview operation (4000/LS-2000 only). Multi-sample scanning will not be performed if Normal (1x) is selected for multi-sample scanning in the Scanner Extras palette. Note that selecting this option will increase the amount of time needed to make a preview, while the effects of multi-sample scanning may not be visible in the preview area at the normal zoom ratio.

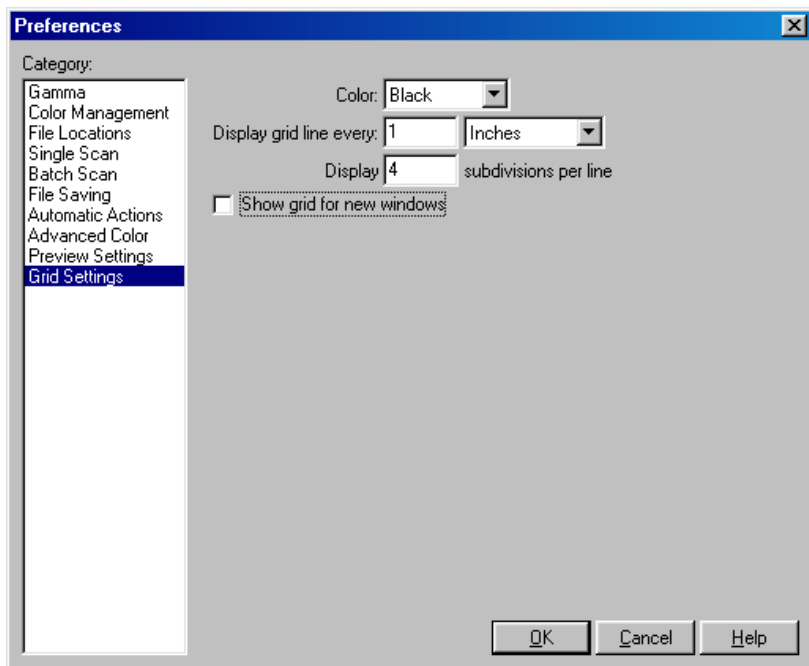
Option	Description
Digital ICE	Check this item to remove the effects of dust and scratches during the preview operation. This operation will only be performed when Enable Digital ICE is checked in the Digital ICE Cubed palette. Note that selecting this option will increase the amount of time needed to make a preview.
Cache preview image for slide mount adapter	Check this item to store the last preview created with the MA-20 (S) slide mount adapter. This preview will be displayed the next time Nikon Scan is started or when the MA-20 (S) is next inserted in the scanner.

* Once an autofocus or autoexposure operation has been performed for the current frame, the operation will not be repeated before a preview or scan. If desired, you can use the autofocus and autoexposure buttons in the scan window to ensure that these operations are performed before previewing or scanning images. If **Perform autofocus when film is inserted** is selected in the Scanner Extras palette, an autofocus operation will automatically be performed when a slide is inserted in a slide-mount adapter, with the result that an autofocus operation will not be performed automatically before the image is previewed.

Setting Up a Layout Grid

The Grid Tab

The Grid tab determines the color and spacing of the grid displayed on the image in the active window when **Show Grid** is selected in the Layout Tools palette.



The following options are available:

Option	Description
Color	The color of the grid is shown in the box next to this item. A new color can be selected by clicking this box (Macintosh) or by selecting a color from a pop-up menu (Windows).
Display grid line every	Enter the spacing for the layout grid. Units can be selected from the pop-up menu to the right of this text box.
Display <i>n</i> subdivisions per line	Enter the number of subdivisions into which each cell in the grid will be divided. The main grid is displayed as solid lines, the sub-grid as broken lines.
Show grid for new windows	If this item is checked, a layout grid will automatically be shown superimposed on the preview image and on images opened in the Nikon Scan applet.

Appendices

[Nikon Scan Visual Index \(pp. 139–145\)](#)

[Troubleshooting \(pp. 146–147\)](#)

[Reinstall/Custom Install \(pp. 148–152\)](#)



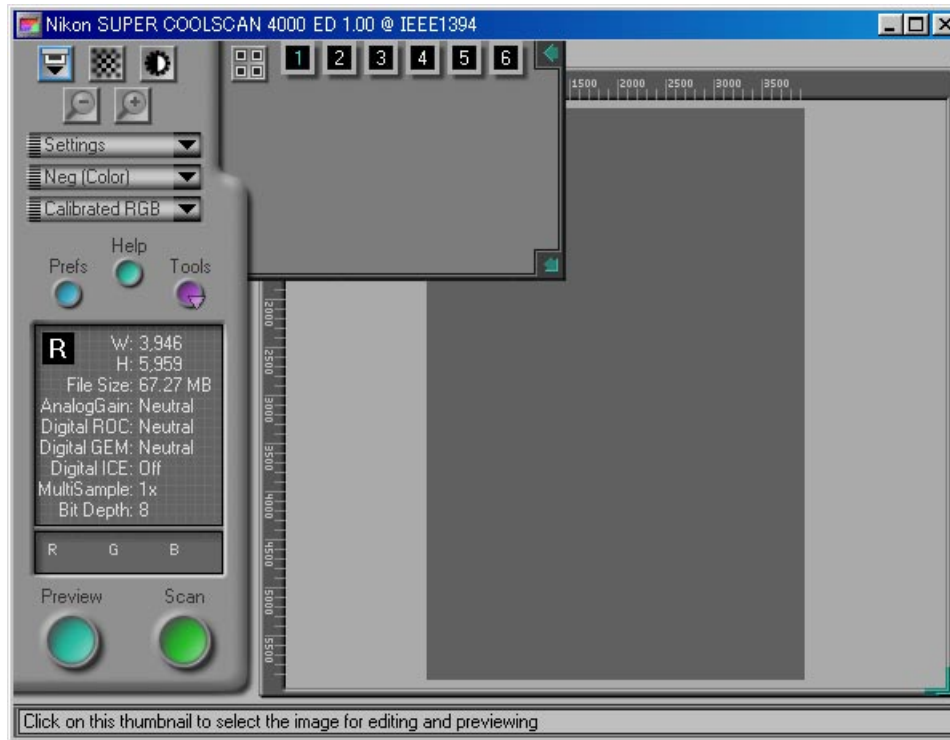
About This Section

The appendices provide:

- A clickable index to Nikon Scan's windows, menus, and buttons
- A guide to what to do when Nikon Scan does not function as expected
- Instructions on reinstalling Nikon Scan

The following pages provide a visual index to Nikon Scan's windows, menus, and palettes. For more information, click a menu option or tool button to open the manual to the page that explains its function. Information on menu commands not detailed elsewhere may be found in the notes on these pages.

The Scan Window

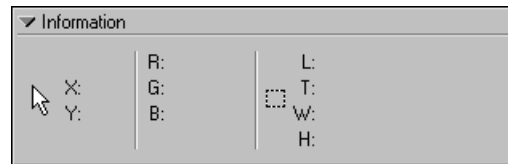


The Tool Chest

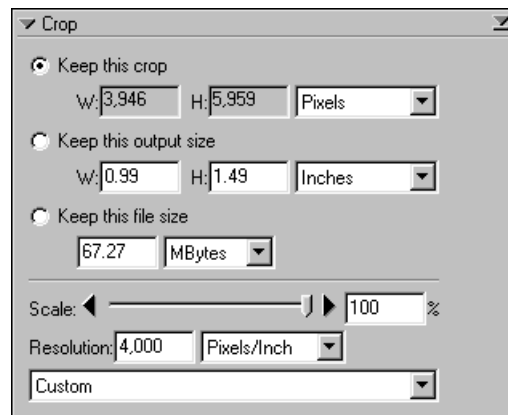
Layout Tools



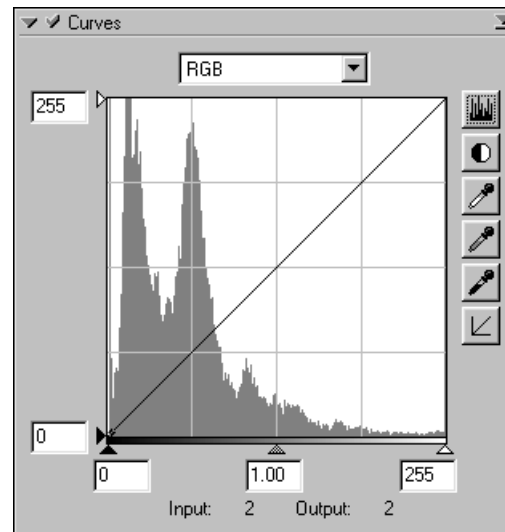
Information



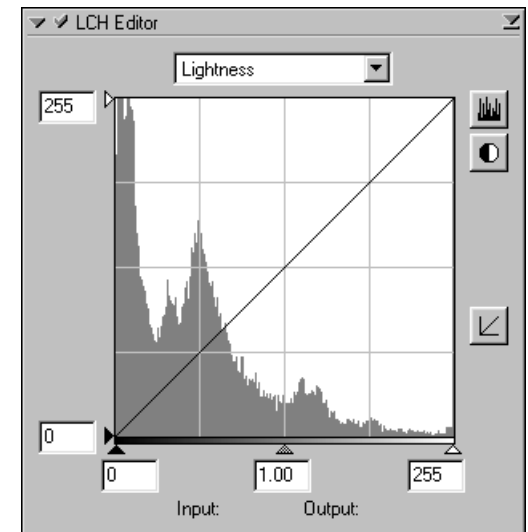
Crop



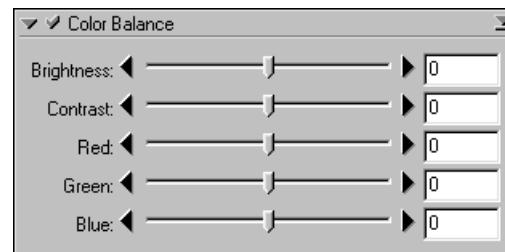
Curves



LCH Editor

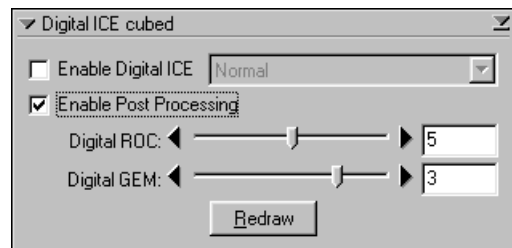


Color Balance

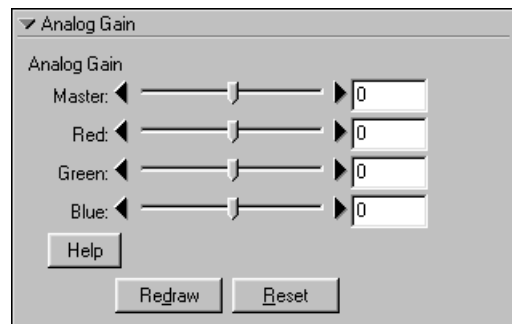


The Tool Chest (continued)

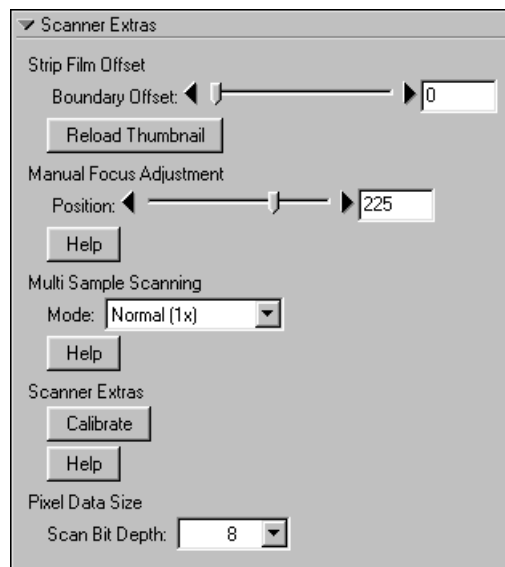
Digital ICE Cubed



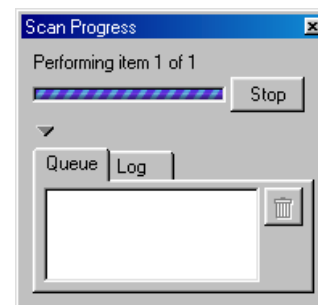
Analog Gain



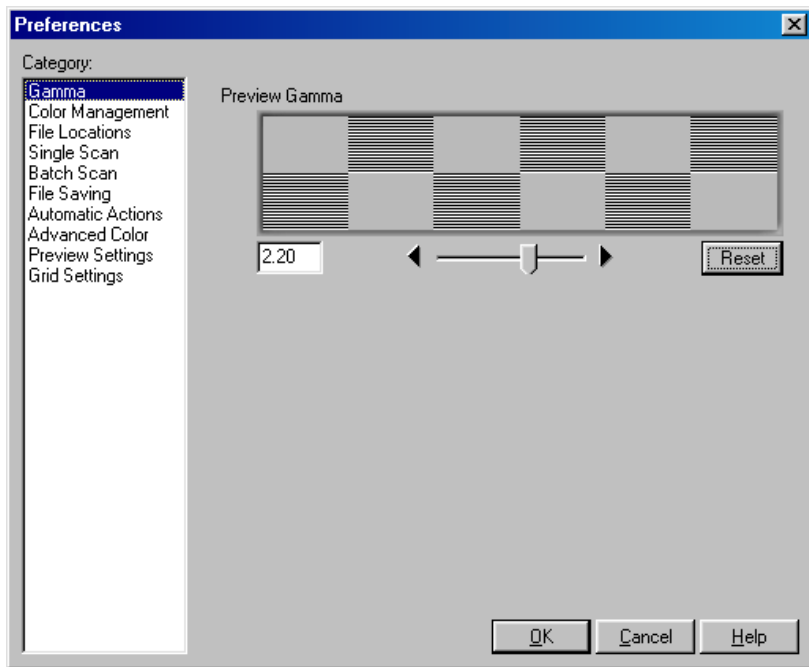
Scanner Extras



The Scan Progress Window



The Preferences Dialog



The Nikon Scan 3.0 Window (Windows)

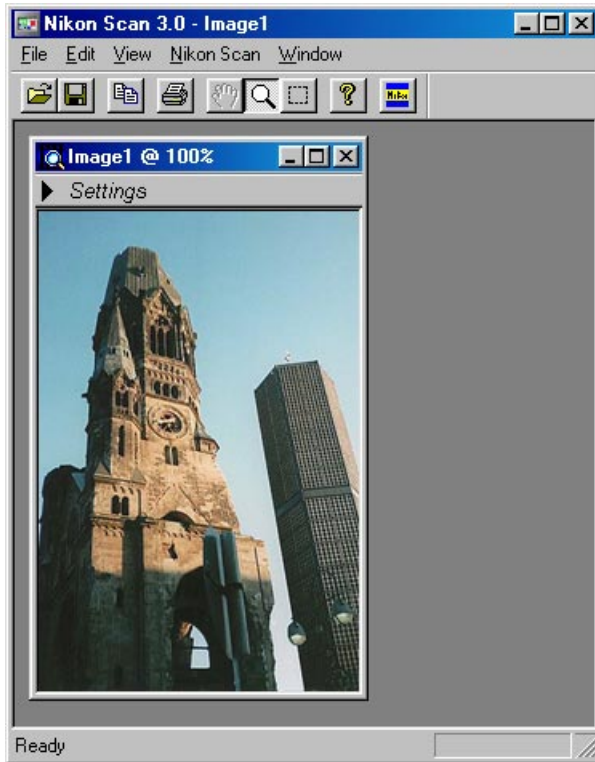
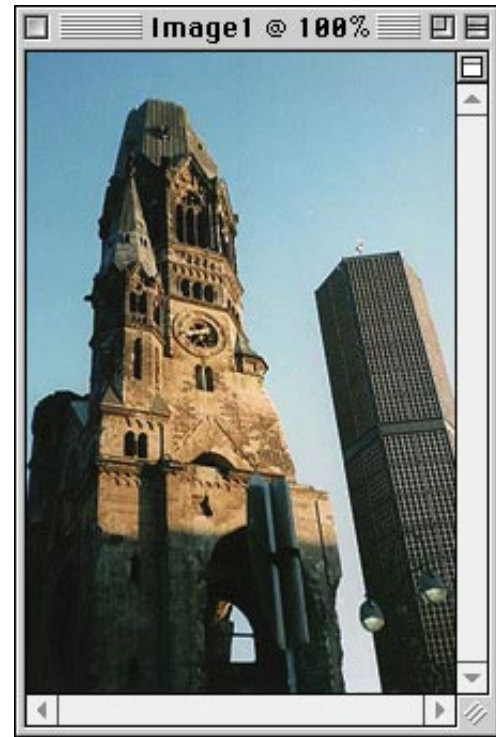
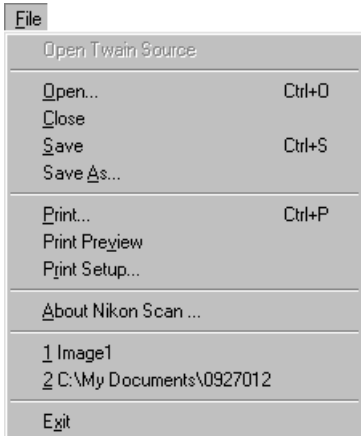


Image Window (Macintosh)



Nikon Scan Menus (Windows)



Close

Closes the active image window

Save

Saves the image in the active window under its existing name

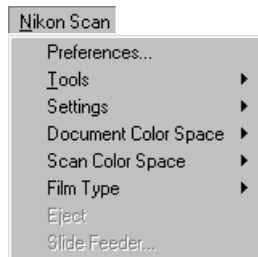
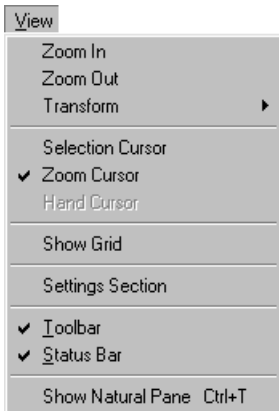
About Nikon Scan 3.0

Displays version information for Nikon Scan



Edit Menu Commands

The **Undo (Ctrl Z)**, **Cut (Ctrl X)**, and **Paste (Ctrl V)** commands are only active during text entry in dialogs such as the Save As dialog, when they allow you to use keyboard shortcuts to cut and paste text and undo copy, cut and paste commands. The **Copy (Ctrl C)** shortcut can be used to copy selected portions of an image as well as text.



Cascade

Arranges image windows so that they overlap.

Tile

Arranges image windows so that they do not overlap.

Arrange Icons

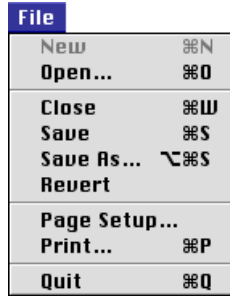
Arranges any minimized image windows along the bottom of the Nikon Scan 3.0 window.

Nikon Scan Menus (Macintosh)



About Nikon Scan

Displays version information for Nikon Scan



New

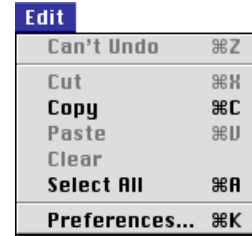
This command is always grayed out and unavailable.

Close

Closes the active image window

Save

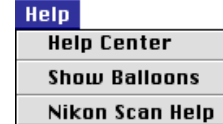
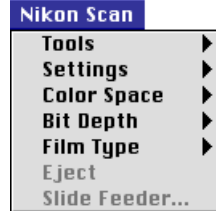
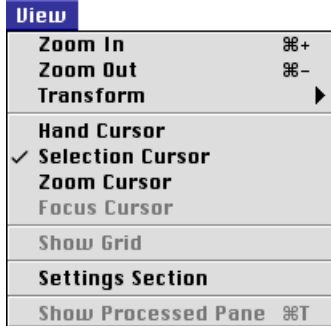
Saves the image in the active window under its existing name



Edit Menu Commands

The **Undo** (⌘ Z), **Cut** (⌘ X), **Paste** (⌘ V), **Clear** (Del), and **Select All** (⌘ A) commands are only active













during text entry in dialogs such as the Save As dialog, when they allow you to use keyboard shortcuts to cut, paste, and clear text, undo copy, cut, paste, and clear commands, and select all the text in the current text box. The **Copy** (⌘ C) shortcut can be used to copy selected portions of an image as well as text.


















Nikon Scan Help

Opens the Nikon Scan help file.

Should you encounter any problems using Nikon Scan, check the list below before contacting your retailer or Nikon representative.

Problem	Possible Cause	
<p>Nikon Scan displays the error, "Nikon Scan was unable to find any active devices."</p>	<ul style="list-style-type: none"> • If you are using a 4000 ED, COOLSCAN IV ED, LS-2000, or COOLSCAN III, the FH-2/FH-3 film holder may have been inserted in the scanner at start up. After removing the film holder, turn the scanner off and then on again. • The scanner is turned off or not connected. Connect the scanner as described in the hardware manual. • The interface extension board (SCSI or IEEE 1394) is not correctly installed, or the device drivers are missing or corrupted. See the manufacturer's manuals for details. • The scanner device drivers are not correctly installed (Windows only). See the scanner hardware manual for details. • Your computer does not meet the specifications given in the system requirements. • Nikon Scan is not correctly installed. Reinstall Nikon Scan as described in Appendix C. 	      5  7
<p>The host application does not recognize the Nikon Scan plug-in (Macintosh).</p>	<ul style="list-style-type: none"> • The plug-in has not been copied to the application's plug-ins folder. • The application does not support Adobe Photoshop 5.0 plug-ins. Use a different host application. 	 15 
<p>The film jams in the scanner.</p>	<ul style="list-style-type: none"> • See the scanner hardware manual for more information on resolving jams. 	
<p>The scanned image is out of focus.</p>	<ul style="list-style-type: none"> • You did not perform an autofocus operation before making a scan. • The focus point requires adjustment. 	 38  38

Problem	Possible Cause	
Colors do not match the original.	<ul style="list-style-type: none"> • The monitor profile chosen in the Color Management tab of the Preferences dialog does not match your monitor. • The CMYK profile chosen in the Color Management tab of the Preferences dialog does not match your printer. • The RGB color-space profile chosen in the Color Management tab of the Preferences dialog has too narrow a gamut (colors too vivid) or too wide a gamut (image lacks contrast). • Curves, color balance, or LCH settings are incorrectly adjusted. • The resolution setting in the Crop palette does not suit the output device. • You scanned negative media without performing an autoexposure operation. • The Prescan Mode setting in the Scanner Extras palette (LS-2000/COOLSCAN III only) requires adjustment. • Monitor settings require adjustment. 	 111  118  112  63  46  39  60 —
The scanned image is too dark.	<ul style="list-style-type: none"> • The monitor profile chosen in the Color Management tab of the Preferences dialog does not match your monitor. • The CMYK profile chosen in the Color Management tab of the Preferences dialog does not match your printer. • The RGB color-space profile chosen in the Color Management tab of the Preferences dialog has the wrong gamma value for your platform. • You need to adjust the gamma value chosen in the Gamma tab of the Preferences dialog for use when Nikon CMS is off. • The brightness setting on your monitor requires adjustment. 	 111  118  112  121 —
The scanned image has a rough, jagged appearance.	<ul style="list-style-type: none"> • The resolution setting in the Crop palette does not suit the output device. • The halo width or intensity settings in the Unsharp Mask palette are too high. 	 46  85
The file size is too large.	<ul style="list-style-type: none"> • The value for resolution in the Crop palette is too high. 	 47

When Nikon Scan does not function as expected (see [Appendix B, “Troubleshooting”](#)), it may indicate that you need to reinstall the program. This appendix describes how to uninstall and reinstall Nikon Scan on both the Macintosh and Windows platforms. It also explains the Custom Install option available in the Macintosh version of the Nikon Scan installer.

Reinstalling Nikon Scan

Before reinstalling Nikon Scan, you will need to uninstall the program.

Windows

Step 1—Export saved settings to a safe location

If you have saved settings using the **Save Settings** or **Set User Settings** options in the scan window or tool palette settings menus, load the settings by selecting the settings name from the end of the settings menu or, in the case of user settings, by selecting **Reset to User Settings**. Then, using the **Export...** option, save the settings to a new location outside the Nkscan30 folder. Repeat this process until all saved settings have been exported to a new location.

Click [here](#)  to proceed to the next step.

Macintosh

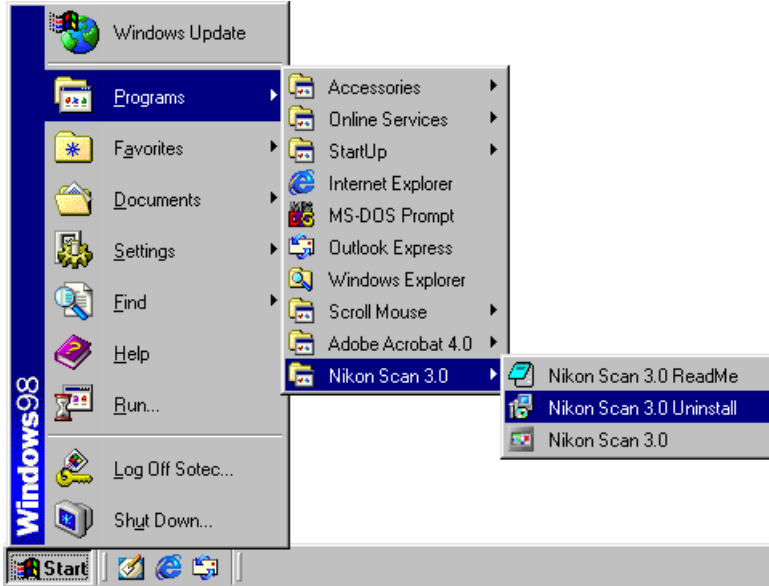
Step 1—Export saved settings to a safe location

If you have saved settings using the **Save Settings** or **Set User Settings** options in the scan window or tool palette settings menus, load the settings by selecting the settings name from the end of the settings menu or, in the case of user settings, by selecting **Reset to User Settings**. Then, using the **Export...** option, save the settings to a new location outside the Nikon Scan 3.0 folder. Repeat this process until all saved settings have been exported to a new location.

Click [here](#)  to proceed to the next step.

Step 2—Uninstall Nikon Scan

From the Start menu, select **Programs > Nikon Scan 3.0 > Nikon Scan 3.0 Uninstall**.



When the message, “Are you sure you want to completely remove Nikon Scan 3.0 and all of its components” appears, click **Yes** to begin deinstallation. If any of the components used by Nikon Scan are also used by another program, a confirmation dialog will be displayed. Follow the instructions in the dialog to remove the component or leave it untouched.

Click [here](#)  to proceed to the next step.

Step 2—Start the installer

Before starting the Nikon Scan installer, quit any other programs that may be running, including any virus-checking software. Insert the Nikon Scan 3 CD into the CD-ROM drive and double-click the installer icon. The window shown at right will be displayed; click **Continue....**



Click [here](#)  to proceed to the next step.

Depending on where you purchased your scanner, the Nikon Scan 3 CD will contain installers for from one to four language versions of Nikon Scan: English (EN), French (FR), German (DE), and Spanish (ES). Where installers for more than one language version are available, the installers may be found in separate folders; open the folder for the language of your choice and double-click the installer icon.

Step 3—Delete scanner settings

Delete all files in the following folders:

- Windows 98 Second Edition (SE)/Windows Me
Windows\Application Data\Nikon\MaidMods\Settings
Windows\Application Data\Nikon\Nikon Scan\3.0\Cache
Windows\Application Data\Nikon\Nikon Scan\3.0\Settings
- Windows 2000
Documents and Settings\All Users\Application Data\Nikon\
MaidMods\Settings
Documents and Settings\All Users\Application Data\Nikon\
Nikon Scan\3.0\Cache
Documents and Settings\All Users\Application Data\Nikon\
Nikon Scan\3.0\Settings

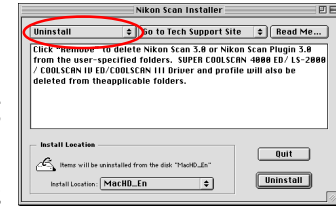
Click [here](#)  to proceed to the next step.

Step 3—Uninstall Nikon Scan

After you have accepted the license agreement and clicked **Continue...** to close the ReadMe file, the dialog shown at right will be displayed. To uninstall Nikon Scan, first select **Uninstall** from the pop-up menu in the top left corner of the installer dialog and then click the **Uninstall** button at the bottom right corner of the dialog.

When deinstallation is complete, a message will be displayed. Click **OK** to end deinstallation.

Click [here](#)  to proceed to the next step.



Step 4—Run RegSweeper

When Nikon Scan is installed, changes are made to the Windows registry, which records information about the system configuration. Any entries pertaining to Nikon Scan will remain after Nikon Scan is uninstalled, which may affect the operation of Nikon Scan after reinstallation. To prevent this problem, Nikon Scan comes with a special utility, called RegSweeper, which removes all registry entries created by Nikon Scan.

- 4-1 Read the RegSweeper manual, located on the Nikon Scan 3.0 CD in the folder NKScan\NikonScan3\Utilities\PDFfile. To view the manual using Adobe Acrobat Reader, double-click the **RegSweeper.pdf** icon.
- 4-2 Copy the files RegSweeper.exe, RemkeyList.txt, and ReadMe.txt to your hard drive from the directory NKScan\Utilities on the CD.
- 4-3 Read the ReadMe.txt file by double clicking on the **ReadMe.txt** icon to open the file in the Notepad. Close the Notepad after reading the file.
- 4-4 Double-click the **RegSweeper.exe** icon to run RegSweeper.

Step 5—Reinstall Nikon Scan

Reinstall Nikon Scan as described in “[Getting Started: Installation](#).”

Step 4—Delete scanner settings

Delete the file “MAIDDriverPrefs” from the Preferences folder in the System folder, and “Nikon Scan3Prefs” from the Nikon MAID folder in the Preferences folder.

Step 5—Delete copies of the Nikon Scan plug-in

Delete any copies of the Nikon Scan plug-in that may exist in the plug-ins folders of the programs you have been using as host applications for Nikon Scan.

Step 6—Reinstall Nikon Scan

Reinstall Nikon Scan as described in “[Getting Started: Installation](#).”

Custom Install (Macintosh Only)

The Macintosh version of the Nikon Scan installer comes with a custom install option that allows you to choose the components that will be installed. To perform a custom install:

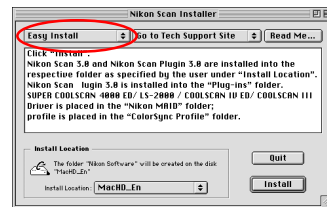
Step 1—Start the installer

Before starting the Nikon Scan installer, quit any other programs that may be running, including any virus-checking software. Insert the Nikon Scan 3 CD into the CD-ROM drive and double-click the installer icon for the language of your choice. The window shown at right will be displayed; click **Continue**....



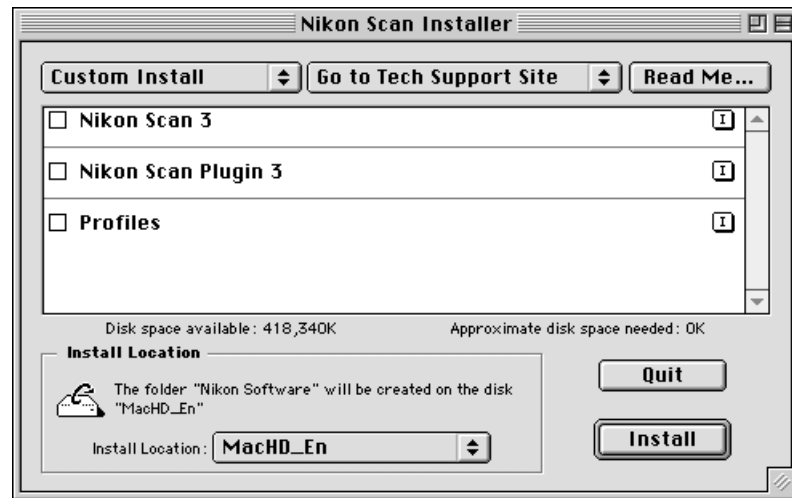
Step 2—Select Custom Install

After you have accepted the license agreement and clicked **Continue**... to close the ReadMe file, the installer dialog will be displayed. Select **Custom Install** from the pop-up menu in the top left corner of the dialog.



Step 3—Select components

The installer dialog will display the options shown below.



To select the components you want to install, check the box to the left of the item. If you intend to use Nikon Scan solely as a plug-in for another application, you can choose to install only the Nikon Scan plug-in. Note, however, that to use Nikon Scan as a stand-alone application you will need to install Nikon Scan, while the **Profiles** option is required to provide the ColorSync color management system with information about your scanner.