

Microtek ScanWizard Pro

Reference Manual

for Windows

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To obtain optimal results from the Microtek scanning software and user's manual, you should be familiar with such Windows concepts as pointing, clicking, dragging, and selecting from menus and dialog boxes. If these things are new to you, refer to your Microsoft Windows User's Guide. 031509

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Reference

This section is a listing of features found in the ScanWizard Pro for Windows scanning software.

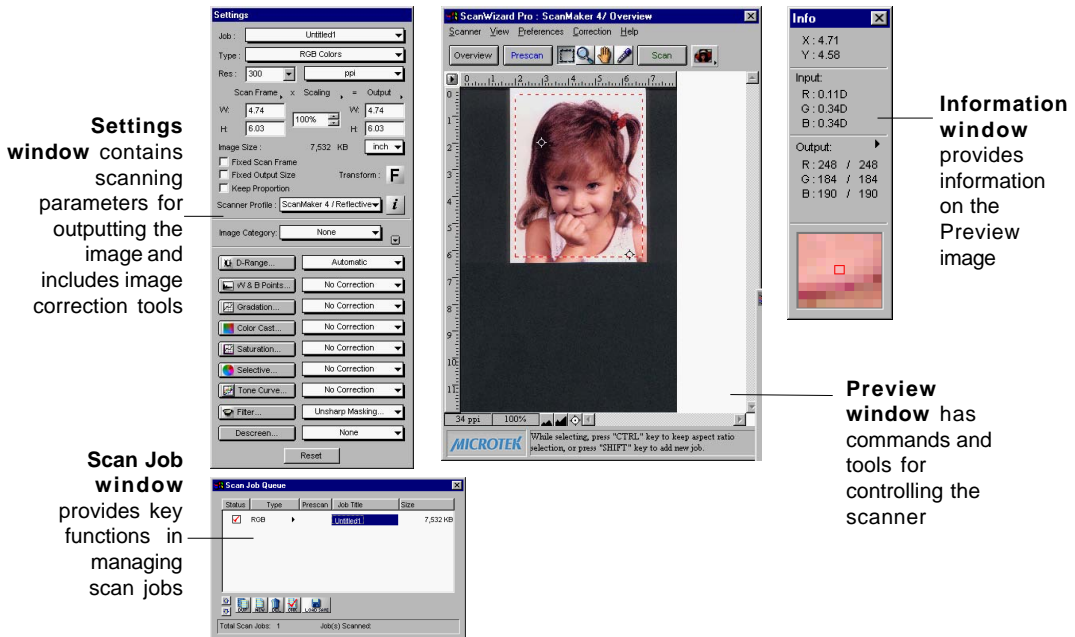
The reference information is organized in four parts, which shows the four major windows of the program:

- Preview
- Settings
- Information
- Scan Job Queue

ScanWizard Pro for Windows

ScanWizard Pro for Windows consists of four major windows: Preview, Settings, Information, and Scan Job.

The Preview and Settings windows appear automatically after the ScanWizard Pro is started up. The Scan Job and Information windows appear when you bring up ScanWizard Pro at the first time. You may hide or show them from the View menu and click on the commands *Show Scan Job Window* and *Show Info Window*.



Bringing up the ScanWizard Pro for Windows

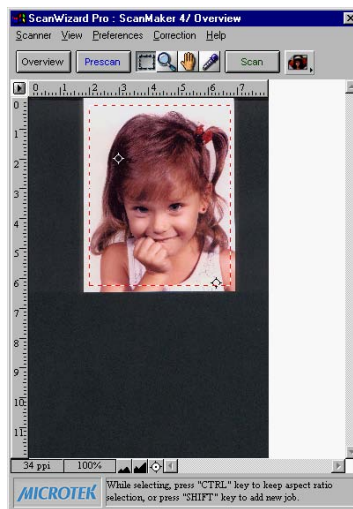
Click Start, Programs, select Microtek ScanWizard Pro for Windows, then Microtek ScanWizard Pro. Alternatively, you may start up your image-editing software first. When the application opens, choose the command for acquiring ScanWizard Pro.

The main screen will appear, but the very first time that ScanWizard Pro is started up, the 4 windows will all appear.

The next time you start up ScanWizard Pro, the main screen will look exactly like the last time you exited the software. This means that if you had all four windows open the last time you quit ScanWizard Pro, the same four windows will appear the next time you start it up.

Exiting ScanWizard Pro

To exit ScanWizard Pro for Windows, double click on the close box on the upper left side of the Preview window.

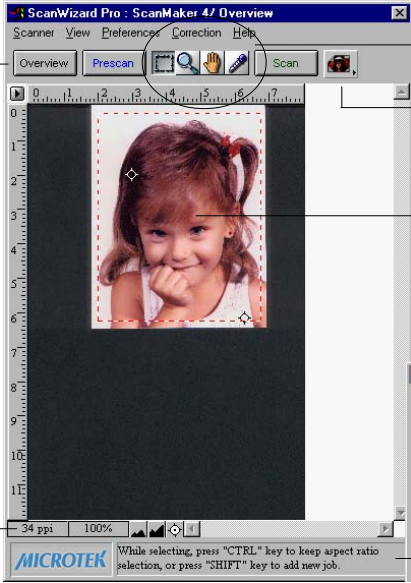


Double-click
here to exit
ScanWizard Pro

The Preview Window

The Preview window is the most prominent window of the four major windows, and it includes the various commands and tools for controlling the scanner.

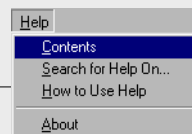
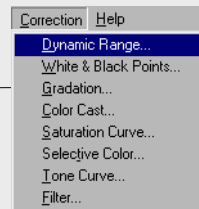
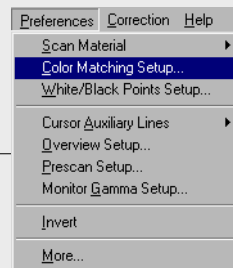
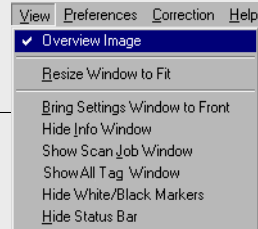
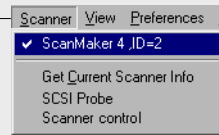
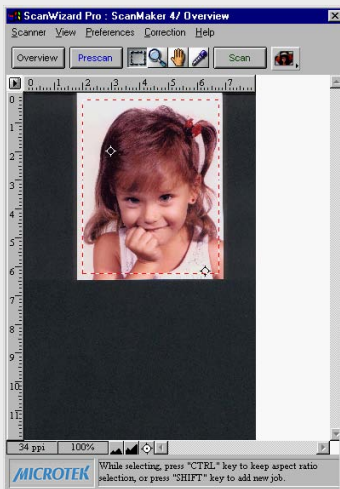
Elements of the Preview window



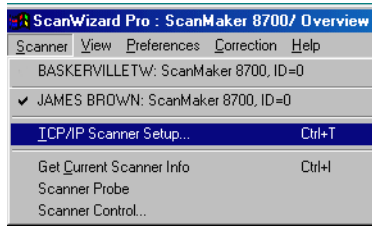
The screenshot shows the 'ScanWizard Pro: ScanMaker 4/ Overview' window. It features a menu bar at the top with 'Scanner', 'View', 'Preferences', 'Correction', and 'Help'. Below the menu bar is a toolbar with buttons for 'Overview', 'Prescan', 'Frame', 'Magnify Glass', 'Pane', and 'Drop'. The main area displays a preview of a scanned image of a young girl with pigtails, framed by a dashed red border. Rulers are visible on the left and top edges. At the bottom, there is a status bar showing '34 ppi', '100%', and a 'MICROTEK' logo. A small text box at the bottom right provides instructions: 'While selecting, press "CTRL" key to keep aspect ratio selection, or press "SHIFT" key to add new job.'

- 1 The **Menu Bar** includes the different menus for setting up the scanner (Scanner menu), controlling view options (View menu), customizing the software (Preferences menu), Image Correction function (Correction menu), and accessing on-line help (Help menu).
- 2 The **Tool buttons** simplify the performance of certain tasks. The Tool buttons are (left to right) Frame, Magnify Glass, Pane, and Dropper.
- 3 The **Action buttons** generate a specific action from the scanning software. The Action buttons include Overview, Prescan and Batch/Scan.
- 4 The **Scan Material Status icon** shows your scan material, whether it's reflective, positive, or negative.
- 5 The **Preview window** is where the Overview or Prescan image appears after you click on the Overview or Prescan button.
- 6 **Rulers** are located on both sides of the window to help you with measurement and alignment. The **ruler unit** can be selected by clicking on the arrow at the 0,0 point of the rulers.
- 7 The **Status bar** shows you some information for easier operation.
- 8 The **Auxiliary bar** shows 1) The screen resolution of the preview image. 2) Zoom scale 3) Zoom out 4) Zoom in 5) Black/white markers indicator

The Menu Bar



The Scanner Menu



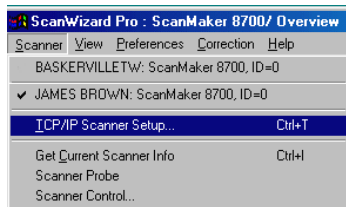
The Scanner Menu lets you:

- Select your scanner model or select a shared scanner on the local area network
- Set up TCP/IP scanners
- Get information about current scanner
- Probe both the local and network scanners
- Set idle time for saving power

Scanner Model

The top of the scanner menu displays all the scanners with their respective SCSI IDs. The shown scanners are either your locally connected scanners or the network scanners; the current scanner is indicated by a check.

Only one scanner can be accessed at a time. To switch among various scanners, select the scanner to be used.



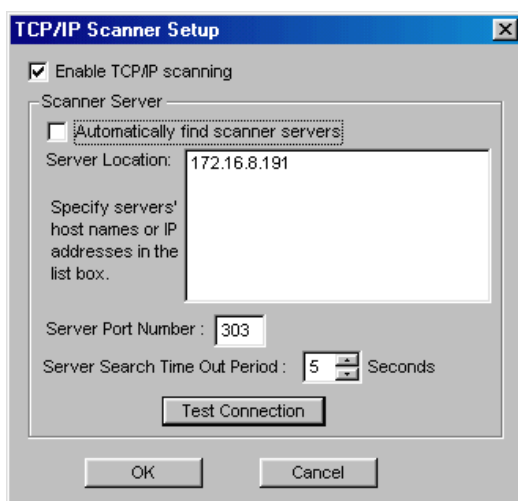
The scanner with its SCSI ID is displayed. The current scanner is marked by a check.

If you cannot locate a scanner for use, perform a new search for available scanners. The next time you launch ScanWizard Pro, the connected scanners will be available for choosing.

Some scanner models feature multiple scanning lenses (one for high-resolution scanning and one for low-resolution scanning). If the multiple-lens scanner is detected, a submenu appears for lens selection, and you can choose the option you want.

TCP/IP Scanner Setup

This window is the control panel for managing scanner servers. Choose the “TCP/IP scanner setup” command from the Scanner menu; the following dialog box appears.



Enable TCP/IP scanning

If checked, your computer is enabled to access remote scanners (scanner servers) on the network. If unchecked, remote access is disabled.

Auto-search scanner servers

If checked, clicking the Test Connection button displays the IP addresses of connected scanners. If unchecked, you can type either the host names or the corresponding IP addresses in the Server Location edit box, then click the Test Connection or OK button. The Test Connection button lists the information of the detected scanner servers; while the OK button performs auto searching of scanner servers without showing information on the detected scanners. The detected scanners can be selected from the Scanner menu of the ScanWizard Pro Overview window.

Server Location

When the “Auto-search scanner servers” option is checked, the Test Connection window lists the detected computers with their corresponding scanner IP addresses. If the option is unchecked, you can type the IP address or the host computer names. In a local area network, each computer has a unique name for identifying itself from the others.

Note: The IP address is identified by dot-segregated four-position numbers (e.g., 172.16.17.135). The four number should be within 0 to 255. The left three numbers of the connected scanner are the same, in other words, all of the connected scanners appear as “172.16.17”, but the last number is unique to the respective scanner.

To know the name of the host computer:

- For Windows 95/98/Me users:
Right-click the **Network Neighborhood** on the Windows desktop; select **Properties**, then click the **Identification** tab on the server station. The computer name is shown.
- For Windows 2000/NT users:
Right-click the **My Computer** on the Windows desktop; select **Properties**, then click the **Network Identification** tab on the server station. The computer name is shown.

Server Port Number

In a local area network, all connected scanners should use the same server port number; otherwise, the scanners cannot be found. The default and recommend port number is 303.

Server Search Timeout Period

This edit box allows you to set the timeout period, after which the scanner server stops its search. Use the up/down button to increase/decrease the timeout period or input an acceptable period (1 to 60 seconds).

Test Connection

When you click on this button, based on the settings you have made on the TCP/IP Scanner Setup window, ScanWizard Pro starts to probe the connected scanner servers on the network, then lists the detected scanner servers in the Test Connection window.

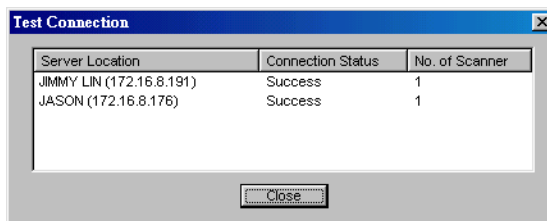
Get Current Scanner Info

This command provides information about your current scanner. When you choose this command, a dialog box appears showing the scanner model, SCSI ID number, and firmware version.



Scanner Probe

This command detects both the local and remote scanners on the network. When scanners are detected, the window below appears.

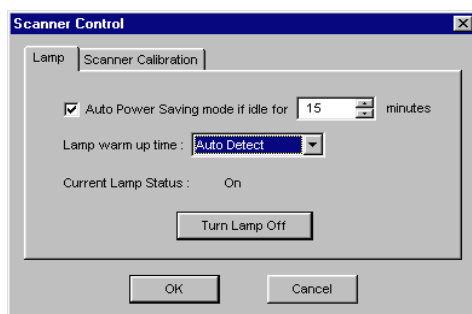


To select a connected scanner for use, choose it from the Scanner menu of the ScanWizard Pro Overview window. The selected scanner is shown with a check mark.

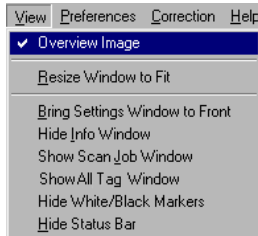
Scanner Control (Power Saving Control)

Not all Microtek scanner models support scanning lamp power saving feature. If your Microtek scanner is implemented with this function, you can set the time for scanning lamp time-out. By default, if the scanner is idled for 15 minutes, the scanning lamp turns off. The power saving feature extends the service life of the scanning lamp. To disable power saving function, uncheck the “Auto Power Saving mode” lamp control check box.

Not all Microtek scanner models support Scanner Control function. If your scanner is implemented with these functions.



The View Menu



The View menu lets you:

- Get an overview or prescan view of an image
- Resize the Preview window
- Show or hide the Information and Scan Job windows
- Show or hide Status Bar

Overview Image

This command switches to Overview mode, lets you view the Overview image among the scan jobs.

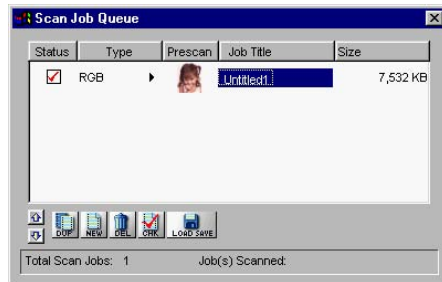
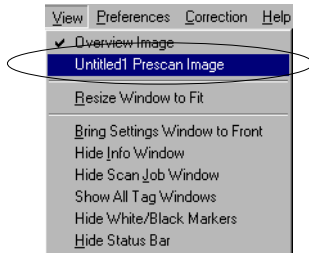
The Overview is a preview of your image as defined by the parameters set in the Overview Setup command (in the Preferences menu). For instance, if your image is 8" x 5" but the dimensions in the Overview Setup are 4" x 3", your overview will be 4" x 3".

The maximum size of the Overview varies, depending on your scanner model. For example, if the scan bed (the glass surface) of your scanner has a maximum size of 8.5" x 11", the maximum Overview will be limited to those dimensions.

The size of the Overview can be changed by setting new dimensions in the *Overview Setup* command. The new dimensions will take effect, however, only with the next Overview. This means you need to click on the Overview button so that the scanner does a new Overview; only then will you see the new dimensions of the Overview.

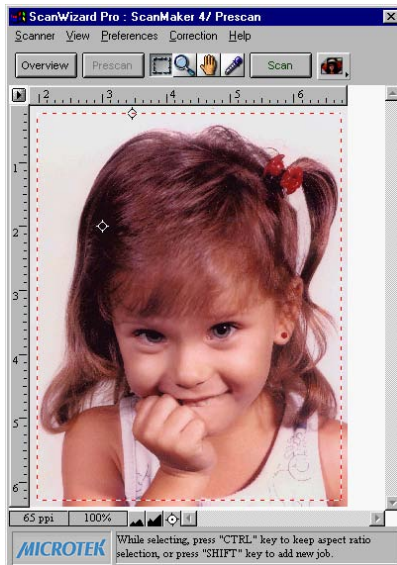
Prescan Image

By default, the Prescan Image Command does not exist, unless you press the Prescan button. Each prescan image belongs to the respective scan job.



In the above screen, the Untitled 1 Prescan Image is resulted ever since you clicked the Prescan button for a scan job named Untitled 1

When you select the prescan image item (e.g., Untitled 1 Prescan Image), the preview window switches to the Prescan mode.

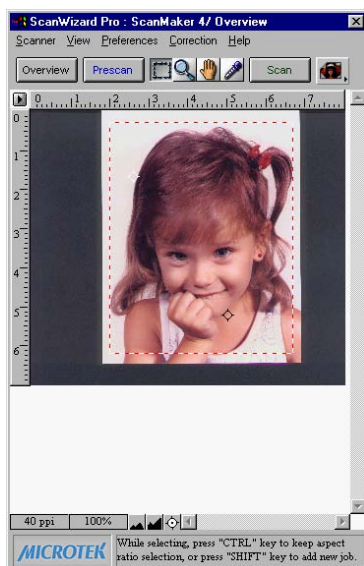


Resize Window to Fit

This command adjusts the Preview window to fit the Overview area.

In the example below, the Preview window is larger than the Overview area, as denoted by the empty space below the vertical ruler. In other instances, the Preview window may also exceed the Overview area if you manually enlarged the Preview window (by dragging on the resize box).

To utilize window space more efficiently, use this command to resize the Preview window.



Before resizing



After resizing

To use this feature:

Choose the command *Resize Window to Fit* in the View menu or enter “Ctrl+r” key.

This command is available only if the current zoom level is 100%, and is disabled if zoom is set to other levels.

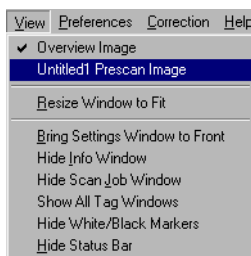
Bring Settings Window to Front

This command brings the Settings window to the forefront, which is useful if you have the Settings window hidden behind other windows or if you have a expanded your Preview window such that it covers the Settings window.

Show/Hide commands

These commands allow you to switch between showing or hiding the Scan Job, Information windows, Tag window, White/Black Markers, and Status Bar on your screen.

To use this feature, choose the correct command from the View menu for viewing a window. When the window appears, you can hide it by choosing the particular *Hide* command for it.



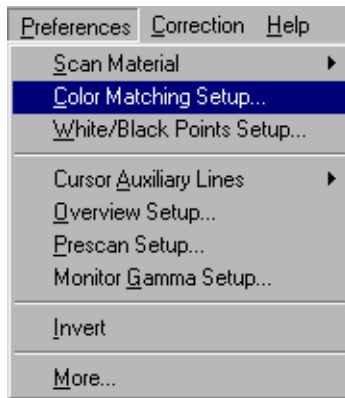
Show/Hide All Tag Windows

When you click any location on the preview image, the Information window will display a tag window to show the information of the clicked pixel color. You may choose to hide All Tag Windows, if the tag information is of no use to you.

Show/Hide White/Black Markers

This command allows you to show or hide the White and Black Markers in the Preview window. By default, the White and Black Markers are shown in the form of a circular cross bar. A white circle in the middle represents the black marker, and a black circle in the middle represents the white marker.

The Preferences Menu



The Preferences menu lets you:

- Choose the correct scan material
- Set up color matching system
- Set up White/black point parameters
- Hide/show auxiliary cursor lines
- Set up Overview mode parameters
- Set up Prescan mode parameters
- Fine-tune monitor gamma values
- Invert images on the screen
- Further settings

Scan Material

This command allows you to select the correct scan material. Scan materials can be classified into three types:

- Reflectives, such as photographs or prints.
- Positives, such as slides.
- Negatives, such as the negative film you use for your camera.

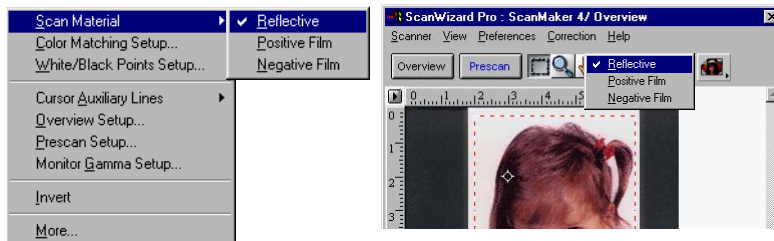
The default scan material depends upon the scanner you're using, and the choices available to you in the Scan Material submenu will also depend on your equipment.

For instance, the positive option appears only if you're using a Transparent Media Adapter (TMA) with your scanner. Some scanners, such as ScanMaker 5 and ScanMaker 2000, include a built-in TMA.

If you are scanning negatives or positives, make sure you specify the correct scan material, or you will get inaccurate scanning results.

To use the scan material feature:

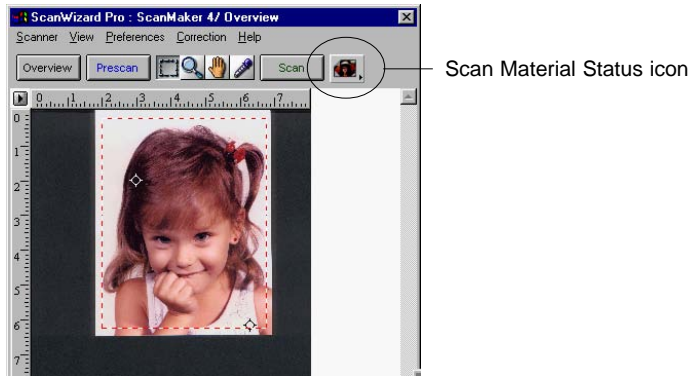
Choose the *Scan Material* command in the Preferences menu. From the submenu that appears, select your scan material; a check will appear next to the selected option. The selected option will also be shown in the Scan Material Status icon (discussed below).



Note: If your Preview window is close to the right edge of your monitor, the Scan Material submenu may appear on the left side instead of on the right (as shown above). To resolve this, move the Preview window towards the left to create enough room for the submenu to drop down on the right.

The Scan Material Status icon

Another way to access the Scan Material menu is to use the Scan Material Status icon, located to the right of the Scan button.



The appearance of the Scan Material icon changes, depending on whether your scan material is reflective, positive, or negative.

- If you're scanning a reflective (such as a photo or print), this icon will appear in its normal form like an ordinary icon. When you click on the icon and hold down the mouse, you'll see the *Reflective* option checked.



— Appearance of the Scan Material Status icon when scanning reflective materials.

- If you're scanning a positive transparency or filmstrip, this icon will appear in the form of a positive. When you click on the icon and hold down the mouse, you'll see the *Positive Film* option checked.



— Appearance of the Scan Material Status icon when scanning a positive transparency or filmstrip. Notice the perforations on the top and bottom of the icon (characteristic of slides) to distinguish it from the reflective icon.

- If you're scanning a negative transparency or filmstrip, this icon will appear in the form of a negative. When you click on the icon and hold down the mouse, you'll see the *Negative Film* option checked.



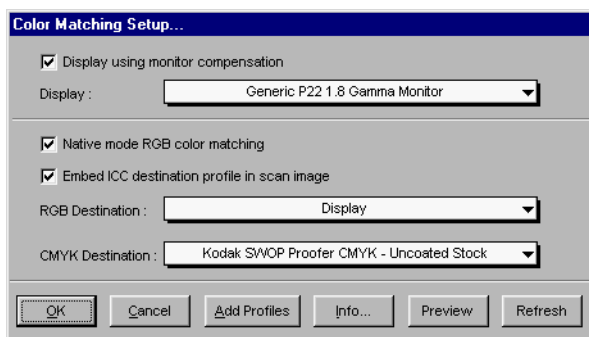
— Appearance of the Scan Material Status icon when scanning a negative transparency or filmstrip.

Color Matching Setup

To keep color consistency between the scanner, monitor, and printing device, ScanWizard Pro applies Kodak CMS (Color management system) with ICC (International Color Consortium) profile standards. For more information on Color Management System, see Appendix.

Color Matching Set Up command lets you select the correct ICC profile for matching with your color monitor and color printer.

When you install ScanWizard Pro, the CMS installer will prompt you to match your color monitor and printer with the provided list. You may, however, change and update your existing settings from this command. The default profile for color monitor is “Generic P22 1.8 Gamma Monitor” and printer will set to “Display”.

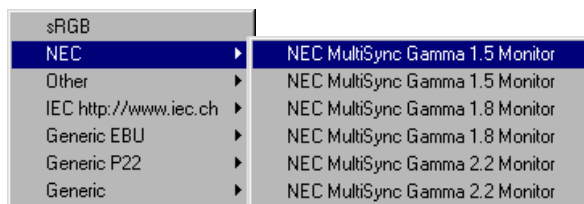


Display using monitor compensation

This option controls how the RGB destination data will be displayed. If this option is unchecked, the RGB data is displayed directly to the monitor. If checked, RGB destination data will be compensated to the selected monitor type before it is displayed on the monitor.

Display

This feature allows you select color monitor type that is used for displaying RGB data. The monitor profile will be applied only when “Display using monitor compensation” option is checked.



Note: If the available monitor types do not include the one you have, select Generic P22 or Generic EBU. These two profiles are suitable for most of the monitors.

Native mode RGB color matching (Native Color Mode only)

If unchecked, the ICC profile only applies to the RGB color for matching without applying to other output devices (e.g., printer or image typesetter). If checked the ICC profile applies to both the color monitor and output devices.

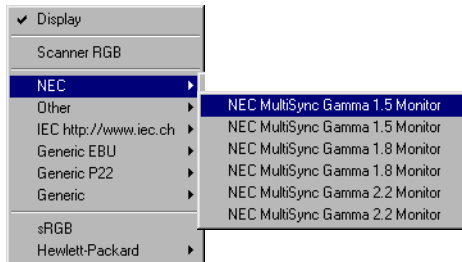
This check box should generally be checked unless you want to scan raw color data, in which case you lose the compensatory effects of the Color Matching system. Also note that it is not desirable to scan in raw data and then perform data conversion, which will not generate the correct CMS effect.

Embed ICC destination profile in scan image

If checked, the ICC information is saved into the image file. This option is useful especially for image application software, such as Photoshop.

RGB Destination

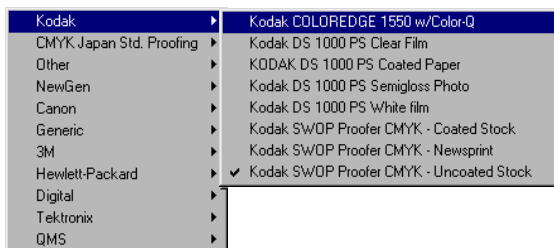
This feature lets you select the RGB output device (e.g., display monitor, or RGB-based printer) for matching RGB Color family images (including RGB colors, 48-bit RGB colors, and 256 colors image types).



A number of RGB profiles is supplied by ScanWizard Pro. If you do not see the ICC profile for your monitor or RGB device, contact your device manufacturer. To add a specific ICC profile, click "Add Profiles" button to load it from the floppy disk or CD-ROM that contains the ICC profile. Some device suppliers (e.g., Kodak) have placed the ICC profiles in their web site. You may require to download the ICC profile from their web sites.

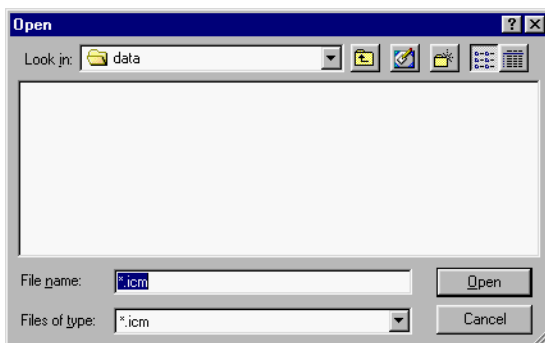
CMYK Destination

If your image type is CMYK color, this function lets you select the CMYK based color printer or commercial offset printing standards for color separation.



Add Profiles

This command allows you add additional ICC profiles normally came with your device (e.g., display monitor or printer).

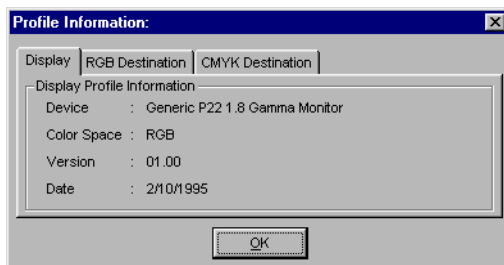


Select the profiles you need, then click on the Open button to load the profiles to ScanWizard Pro. This process takes a while for initialization.

Note: When you purchase color monitor or color printer, check to make sure your supplier provides the corresponding ICC profiles.

Info

This command displays basic profile information for the current selected devices



Preview

Clicking on the Preview button immediately updates the Preview window image when a new color profile is selected. This will reflect colors consistent with the newly selected profile.

Refresh

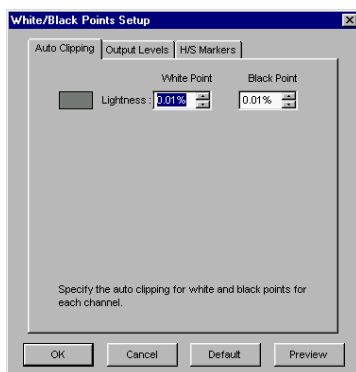
Clicking on the Refresh button updates the ICC profiles that have been stored in \Windows\System\color and \Windows\System32\color folder.

White/Black Points Setup

White point is a reference point that specifies the lightest area in an image, making other areas to be adjusted accordingly. Likewise, black point is the darkest reference area.

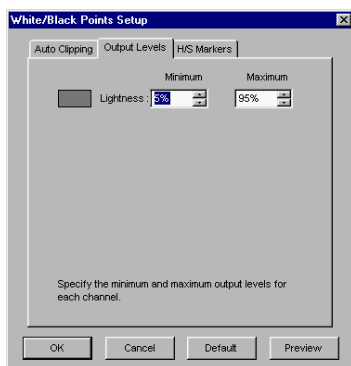
Auto Clipping

Auto white point clipping: For the lightness channel, you can assign black or white level for clipping. To the White Point, colors under the percentage you assigned are mapped to white; similar situation can be applied to the Black Point.



Output Levels

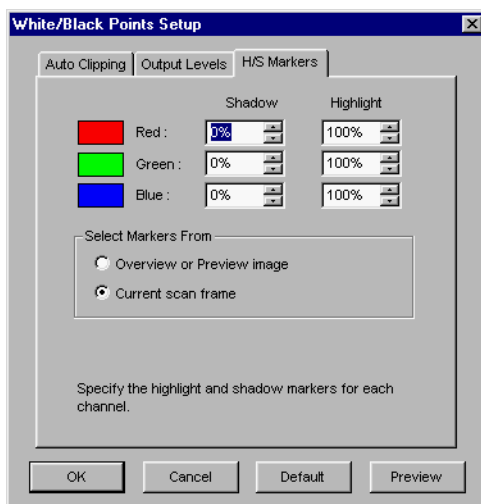
Minimum output level: For the lightness channel, you can assign minimum or maximum level for clipping. To the Minimum level, colors under the percentage you assigned are cropped out; similar situation can be applied to the Minimum level.



H/S Markers

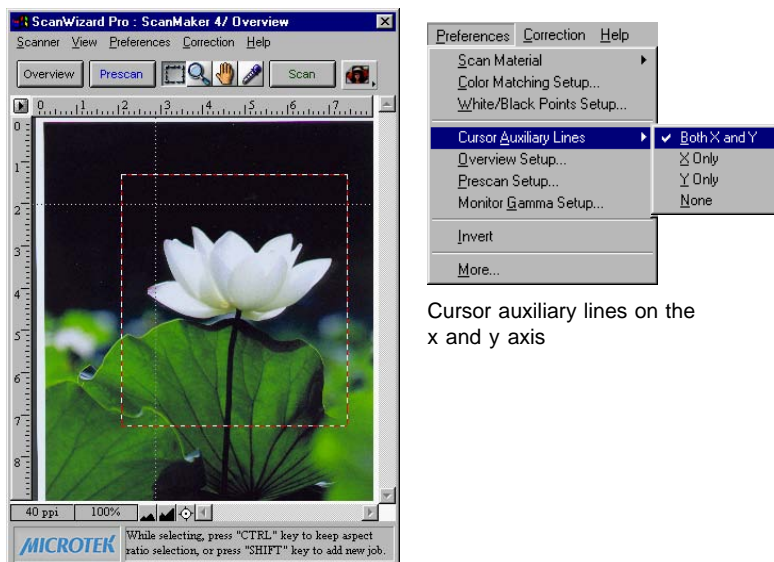
Let's you set the Highlight level (shown as a black circle) and Shadow level (shown as a white circle). You can specify the range of the Highlight/shadow markers to either the entire preview (selecting the "Overview or Preview image" option) or only within the scan frame (selecting the "Current Scan Frame").

In the White/Black Points Setup window, clicking the "Preview" button will get instant result; clicking the "OK" button will exit from the Setup window and apply the H/S markers setting you have made to the preview image.



Cursor Auxiliary Lines

This command allows you to create horizontal and vertical grid lines with your cursor to help define a scan frame precisely. Using the grid lines, you can also read the measurements off your ruler more easily.



To use this feature:

1. Choose the *Cursor Auxiliary Lines* command in the Preferences menu. From the submenu that appears, select how the cursor lines will appear.
 - On both x (horizontal) and y (vertical) axes
 - On x axis only
 - On y axis only
 - None (no cursor lines)

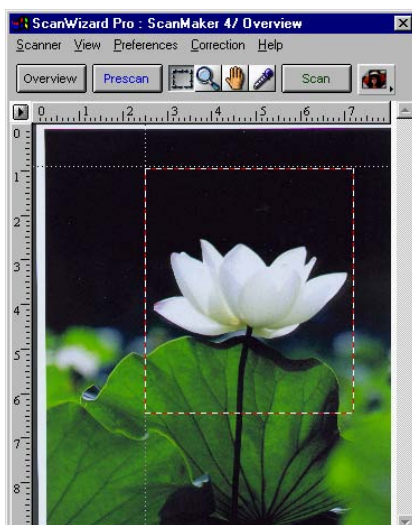
Note: If your Preview window is close to the right edge of your monitor, the Cursor Auxiliary Lines submenu may appear on the left side instead of on the right (as shown above). To resolve this, move the Preview window towards the left to create enough room for the submenu to drop down on the right.

2. Click on the Frame tool.

To see how the cursor lines work, draw a scan frame. Click on the top left corner of the image as your starting point, then drag down to form a scan frame.

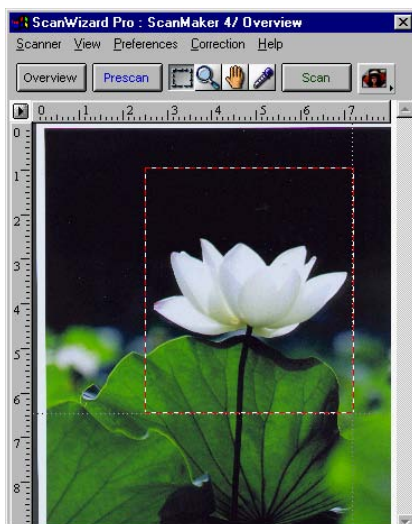
As you draw the scan frame, cursor lines will appear to help you draw the scan frame precisely.

When you release the mouse, your scan frame will be aligned with the cursor lines.



Click on the Frame tool, then define a starting point.

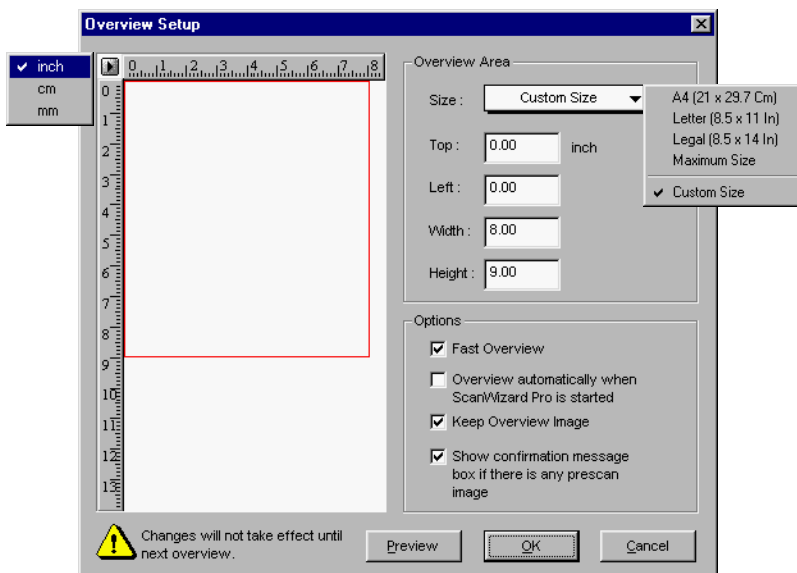
Cursor lines appear to the top and left of the image.



As you drag the mouse down, the scan frame is aligned with cursor lines on the x and y axis (based on your selected option in the submenu).

Overview Setup

Specifies overview scanning speed options and the overview area for executing the Overview command.



Overview Area

Choose Maximum Size, other fixed dimensions, or choose Custom Size then enter the required dimensions. You may also set the Overview Area by dragging the dotted borders.

Unit

Lets you set the ruler units such as inch, cm, and mm.

Fast Overview

The Fast option supports faster scanning with the sacrifice of overview image quality; on the contrary, if Fast Overview is unchecked, Overview scanning speed is slow, but it obtains better overview image quality.

Overview automatically when ScanWizard Pro is started

If this option is checked, when ScanWizard Pro is launched, your scanner automatically performs prescan, and shows the prescanned image in the preview window. If unchecked, auto-preview is disabled, you should click the Overview button to execute prescan.

Keep Overview image

If unchecked, the preview image will be cleared when you exit from ScanWizard Pro and re-launch ScanWizard pro. If checked, the preview image stays on the screen unless subsequent overview or prescan is performed.

Show confirmation message box if there is any prescan image

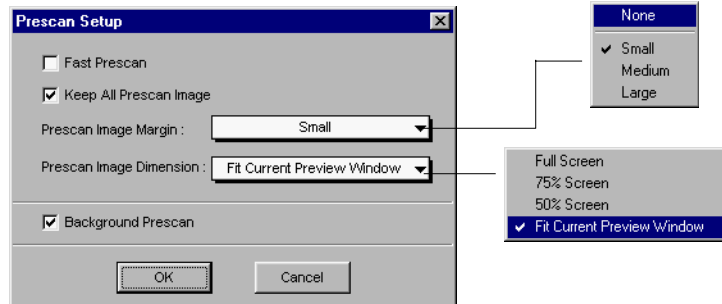
If this option is checked, a confirmation message appears, notifying you in the preview window, a previously prescanned image exists. If unchecked, there is no warning message in this occasion.

Preview

Click this button to get a scanning preview.

Prescan Setup

This command allows you to set the parameters of scanning a prescan image. Major difference between Overview and Prescan is, Overview button scans the area specified in the Overview Setup command getting a low resolution preview image; where Prescan button only scans the selected scanning frame, resulting a more detailed preview image. When the Prescan Setup dialog box (below) comes up, click on the option you need or specify your parameters.



Fast Prescan

If checked, you get an coarse image at a faster scanning speed; if unchecked, you get a quality image with the sacrifice of scanning speed.

Keep All prescan images

If unchecked, all of the preview images will be cleared when you exit from ScanWizard Pro and re-launch ScanWizard pro. If checked, the preview images stay on the screen unless subsequent overview or prescan is performed.

Prescan Image Margin

This option allows you to specify margin around the scan job in the first place, subsequently you can adjust the scan frame slightly in the Prescan mode. Available options are: None, Small, Medium (default), and Large.

Prescan Image Dimension

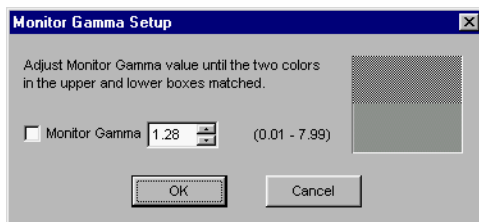
This option allows you to specify the size of the prescan image. Available options are: Full screen, 75% screen, 50% screen, and Fit Preview Window. Size of the Prescan image is not necessarily to fit into the specified option, it only is based on the height/width ratio to get the maximum covered area.

Background Prescan

If checked, the background prescan function is enabled. You can assign a number of scan jobs to execute prescan, in the mean time, carrying out other jobs. If unchecked, this function is disabled.

Monitor Gamma Setup

The Monitor Gamma Setup command lets you compensate linear intensity of the monitor, making them consistent between preview image and the final scanned image.



Monitor Gamma

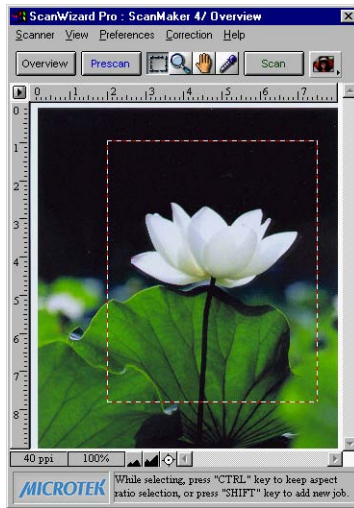
Check this box to enable monitor gamma value setting.

When the monitor gamma option is checked, click the up/down arrow buttons, making gray-level of the two boxes as close as possible. Click OK to confirm.

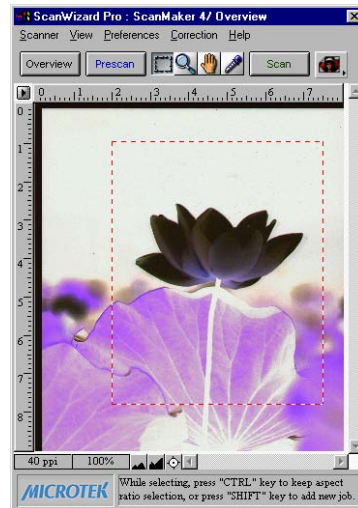
Invert

This command creates a negative of an image. The Invert effect is applied to all scan jobs, not just the selected scan job.

When an image is inverted, the brightness value of each pixel is converted to the inverse value on the 256-step color values scale. For example, a pixel in a positive image with a value of 255 is changed to 0, and a pixel with a value of 5 is changed to 250.



Original



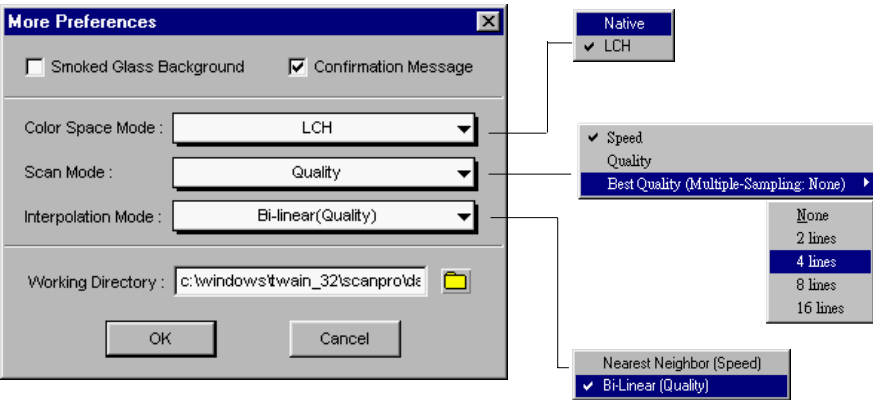
Invert

To use this feature:

Choose the *Invert* command in the Preferences menu. A check appears next to the command when it is enabled.

More command

The More command lets you specify less-frequently used, miscellaneous parameters.



Smoked Glass Background

This command helps you distinguish the current scan frame from the rest of the preview image for greater visibility of the current scan frame.

With the Smoked Glass feature turned on, the part of the image within the current scan frame will stand out, while the rest of the image (the “irrelevant” material) is relegated to a background resembling smoked glass.



Current scan frame
(with pulsing lines)

Part of image not in
any scan frame and
also hidden by smoked
glass background

Confirmation Message

If checked, a confirmation message appears when you set image effect functions such as Rotate or Flip. If unchecked, the message does not appear.

If checked, the image that is prescanned in the overview command remains on the screen until another image acquisition is performed. If unchecked, the overview image is deleted when you exit from ScanWizard Pro.

Color Space Mode

If LCH mode is selected, the color space is represented by Lightness, Chroma (saturation), and Hue. If Native mode is selected, color enhancements are performed in RGB, CMYK or Lab.

Scan Mode

During scan, you have these selections: Speed, Quality, and Best Quality.

The following selections are available as scan modes:

Speed	Higher scanning speed results in lower image quality.
Quality	With this option, the scan head remains stationary while the CCD is being exposed to light source, resulting in better images. Most scan materials can obtain a “quality” scan if this mode is chosen.
Best Quality	This option is available for 10-, 12- or 16-bit scanners only. The CCD exposure scheme is similar to that in the “Quality” option, but image correction is first applied on the 10- or 12-bit image, then converted to an 8-bit image. RGB Colors (48-bit) image is always scanned in Best Quality option regardless of any other option is selected. This option is useful for scanning originals that have deteriorated in quality and for performing image correction on them without losing detail.

Note: RGB color images are always scanned in the Best Quality mode, regardless of the scan mode option selected.

Best Quality: Multiple Sampling

This feature is only implemented on high-end scanner models. If your scanner does not support this function, no sampling lines are available for choosing.

The Multiple Sampling function allows your scanner to perform multiple scans on each line, and then converts their average results into one line. This scheme reduces image noise while increasing the dynamic range of the scanner.

To use this function, select Best Quality in the Scan Mode option, and in the submenu, choose the sampling lines you need. Your selection will be used for the final scan. Available sampling lines are 2, 4, 8, and 16; choose None if multiple sampling is not required. The greater the number of sampling lines chosen, the greater the amount of image data being processed. A trade-off occurs, however, between sampling and speed, and the higher the number of sampling lines, the slower the scanning time.

Interpolation Mode

This command is used when the output resolution of the scanned image does not match the resolution at which the image is scanned. To compensate for the deviation, ScanWizard Pro performs interpolation. Available options are “Nearest neighbor (speed)” and “Bilinear (quality)”. The Speed option supports scanning and yields images at fair quality. The Quality option takes a longer scanning time but produces images of finer quality comparable to those obtained from Adobe Photoshop's bi-linear interpolation mode.

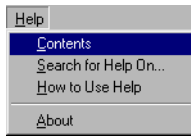
Working Directory

This command lets you place to store temporary working files (e.g., scan job files) during ScanWizard Pro's session. If the directory you specify is not found or does not exist, a warning message appears, and ScanWizard Pro will create a new one for it.

If the computer on which the working directory is created is being shared for use among several people, each person may specify a working directory of their own.



The Help Menu



The Help menu lets you access on-line help for ScanWizard Pro for Windows.

The Help menu uses standard Windows conventions for obtaining on-line help. If you are not familiar with this procedure, refer to your Microsoft Windows user's guide.

About

This command gives you information on the ScanWizard Pro for Windows scanning software. ScanWizard Pro for Windows is also referred to in the *About* screen as the ScanWizard Pro scanner controller.

The Tool Buttons



Frame



Magnify Glass



Pane



Dropper



Scan Frame tool



The Frame tool lets you create a scan frame or multiple scan frames in the preview image, which is the active area on which controls and commands can be applied.

The Frame tool can also be used to create multiple scan frames, but only one can be current at a time; the current scan frame is indicated by a marquee (marching ants, or dotted borders). The current scan frame can be more easily distinguished if you turn on the *Smoked Glass Background* command (in the Preferences menu).

Image with single scan frame



Current scan frame is denoted by marquee

Image with multiple scan frames

Another scan frames, which can be distinguished by the marquee around the right half of the image.

This is not the current scan frame, however, as the part of the image enclosed by the scan frame is dimmed.

Smoked Glass Background is on so that the current scan frames can be seen more clearly.



Current scan frame

Scan Frame Keyboard Shortcuts

To get a better controls of scan frame settings, use Ctrl and Shift keys on your keyboard.

- Ctrl key** Holding down the Ctrl key and drag the marquee results a square selection.
- Shift key** Holding down the Shift key and drag the marquee generates a new frame for a scan job.

A more detailed table is listed below.

Function	Keys	Result
Move/Resize	click+move click+drag Ctrl+click+drag	Move scan frame. Resize scan frame. Toggle between "Keep Square" and "resize".
Change Job	click+move click+drag Ctrl+click	Change to the current job. Select the job and set it to the current job. Toggle between "Job selection" and "make it as the current job".
Redraw/Add	click+drag Ctrl+click+drag Shift+click+drag Ctrl+Shift+click+drag	Redraw current frame. Redraw current frame square. Add new job. Add new job in a square boundary.
Prescan	double-click	Change to the Prescan mode and set the job as current.

To use the Frame tool:

1. Click on the Frame tool.
2. Move the pointer (now a crossbar) to the preview image, and draw a frame enclosing the area to be selected. When you release the mouse, the scan frame will be in a marquee.

To make multiple scan frames (which would add scan jobs), hold down the Shift key and drag the mouse. For more information on scan jobs, refer to the *Scan Job* section of the Reference.

3. To resize the scan frame, do either of the following:
 - Move the cursor to any corner of the frame; the pointer will change to a double-headed arrow. Hold down the mouse, and drag to form a new area, then release the mouse; or
 - Click on the Frame tool again and restart the area-selection process.

Magnify Glass tool



The Magnify Glass tool enlarges your view of the preview image, allowing you to set the scan frame with greater precision if you need to. Only your view of the preview image is changed; the actual size of the image remains unaffected.

Each click of the Magnify Glass tool magnifies or reduces by a factor of 2. Thus, the magnification levels increase from 100% to 200%, to 400%, and to the maximum 800%.



Original image view



Image view enlarged with
Magnify Glass tool

To enlarge the view:

1. Click on the Magnify Glass tool.
2. Place the pointer — now a lens with a plus sign inside it — on the image and click.

To reduce the view, hold down the Shift key and click again. The plus sign changes to a minus sign when you hold down the Shift key.

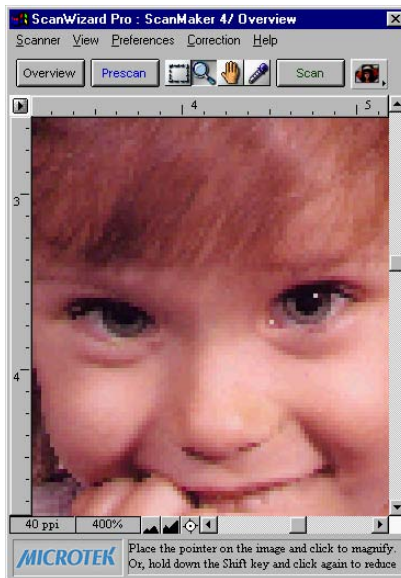
Pane tool



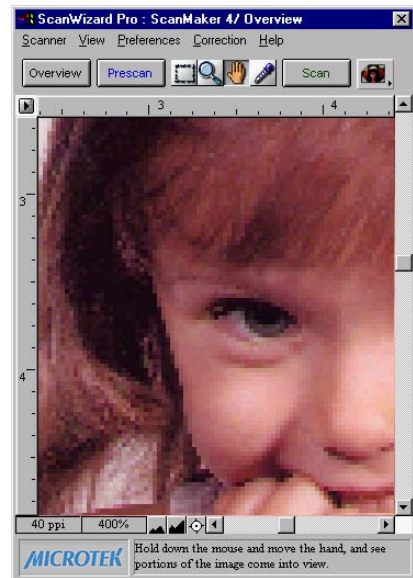
The Pane tool lets you scroll through a preview image, allowing you to move parts of the image into view.

The Pane tool can be used for zoomed-in images (enlarged through the Magnify Glass tool), or images not included completely within the frame of the preview window (for instance, if your preview image is 7 inches wide and you resized the width of your overview/preview window to only 3 inches).

Zoomed-in image



Scrolled image



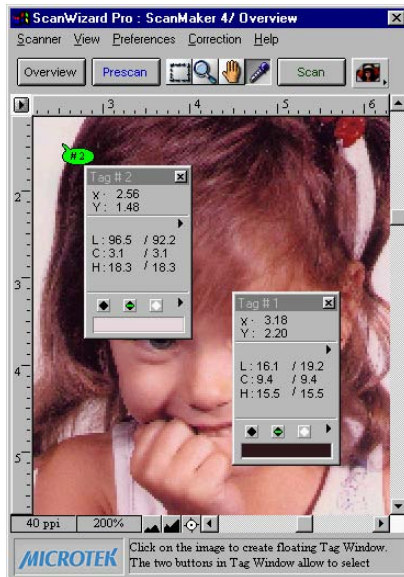
To use the Pane tool:

1. Click on the Pane tool.
2. Move the pointer (now a hand) to the image. Hold down the mouse and move the hand left, right, up, or down, and see portions of the image come into view. You can also use the scroll bars to scroll through the image.

Dropper tool



The Dropper tool creates tag windows for setting White and Black points. If in LCH mode, Add/Remove Cast is present. When you click on the preview image, the tag window instantly displays the pixel information.



The Dropper tool allows you to sample color from an area of an image, and to designate a new white or black point. The two buttons let you select black and white points for the current job. Using the same pair of tag windows, you can apply black and white points to several jobs.

With the Dropper tool, you can determine the color values for any pixel in an image. When you click on the Dropper tool and pass over a pixel, the value of that pixel will be displayed in the Information window, based on the sample size also selected in the Information window. Pixel-value information is useful especially when you're making color adjustments based on color values.

To create a Tag window

The Tag window displays coordination (x, y) position and the pixel values (RGB, CMYK, Lab, et. al.), depending on the image mode you select for the current scan job. The tag contents are updated according to the current job settings.

To close the Tag window

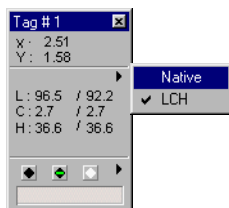
Clicking on the Close box closes the Tag window. To close all Tag windows, holding down the Shift key, then click on any Close box.

Choosing Black and White Droppers

Holding down the *Ctrl* key enables the Black dropper. Holding down the *Alt* key enables the White dropper.

Input display Mode switch

To change the input display (Native color or LCH color), click on the Mode Changing triangle.



Black, White, and Color diamonds

The black (for the shadow) and white (for the highlight) diamonds are used to apply the shadow and highlight points indicated on the Tag windows to the image.

- To set the shadow point on the image to its Tag Windows value, click the black diamond.
- To set the highlight point on the image to its Tag Windows value, click the white diamond.
- The Color diamond: The color diamond is used to add or remove color cast to the selected color. Remove color cast is the default, indicated by a minus sign. To add color cast, click the title bar of the Tag Window, then hold down the Alt key, the minus sign is changed to plus sign, then add the color cast.
- Color display: The color strip shows the color selected by the Tag Windows Tools

Setting White/Black points

There are two ways to set White and Black points:

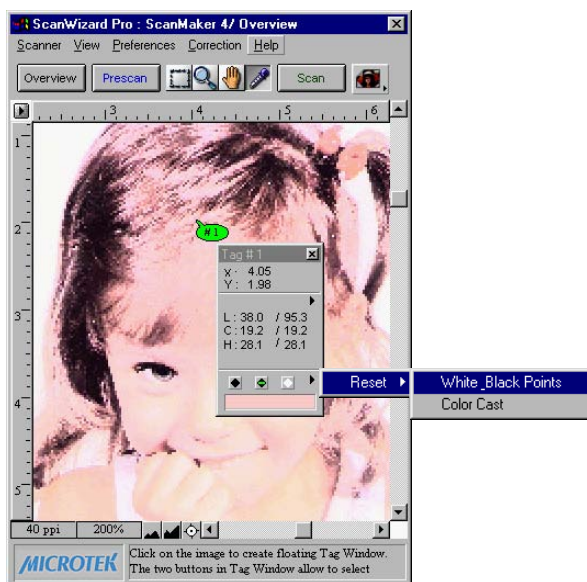
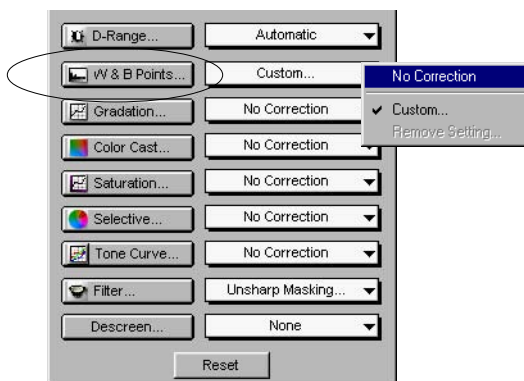
1) Choose it from the Tag window, and 2) choose it directly from the Dropper (holding down the *Ctrl* key to select Black point, and the *Alt* key to select White point).

To restore original settings:

Select “No Correction” from the White/Black points menu.

- or -

Click on the “Reset” button.



Before restore



After restore

To change the sample size of the Dropper:

1. Open the Information window by choosing the *Show Info Window* command in the View menu.
2. Click on the Sample Size button, located to the right of the RGB values in the Information window.
3. Choose your options.

Select the sample size. For instance, the 1 by 1 option will display the value of one pixel — the one in the middle of the Color Meter Display. The 3 X 3 option reads the average value of a 3-pixel by 3-pixel area.

To display color information for a pixel or an averaged area:

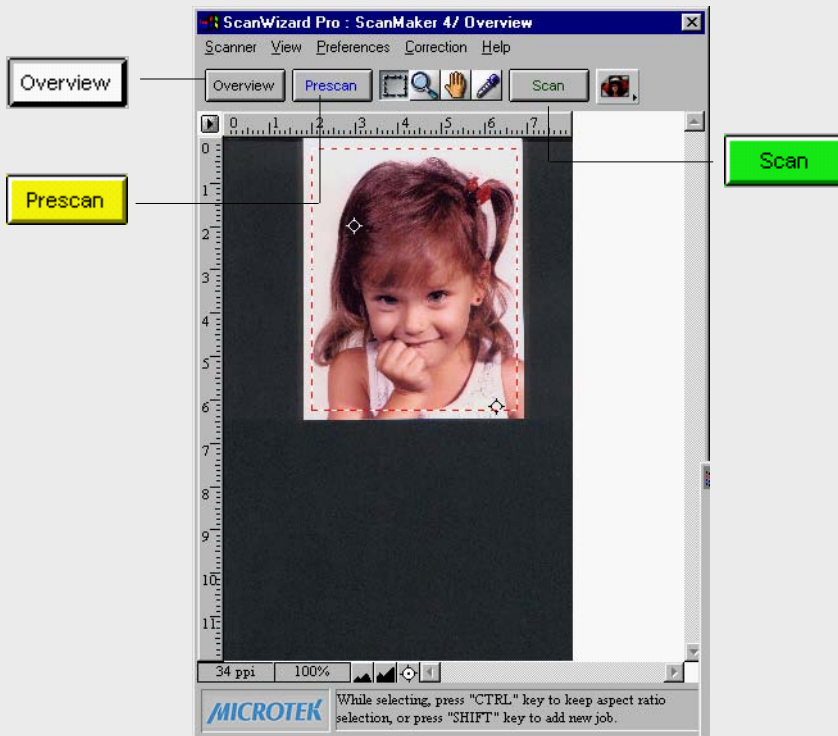
1. Click on the Dropper tool.
2. As you pass over a point in the image, see the Information Window — the RGB, CMYK, or Lab values will be displayed in the Color Meter Display. These values are in turn based on the sample size you selected.

Dropper Keyboard Shortcuts

To get a better controls of scan frame settings, use Ctrl and Shift keys on your keyboard.

Key	Function
Click	Clicking on the preview image generates a Tag window.
Ctrl key	Holding down the Ctrl key, the Dropper tool becomes a <i>Black Point</i> tool.
Alt key	Holding down the Alt key, the Dropper tool becomes a <i>White Point</i> tool.

Action Buttons



Overview

The Overview button scans a low resolution preview at a size specified in the Overview Setup command.

Prescan

The Prescan button performs high resolution preview for the selected scan jobs.

Scan

The Scan button lets you scan the image in your scanner and delivers it to your image-editing software. The scanned image is based on the specifications you have chosen in the Settings window and on controls you may have applied to the preview image if a preview was performed.

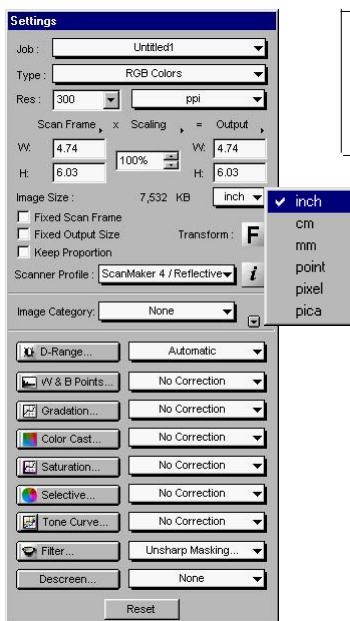
If you bring up ScanWizard Pro directly without using other application program, the Scan button turns out to be Batch button, and you are in the Batch scanning mode. In this mode, you can scan multiple jobs in a single pass.

Rulers

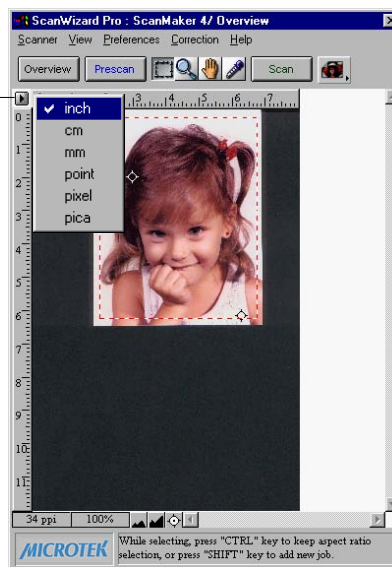
The rulers on both sides of the preview window help you with operations that need precise measurement and alignment of your image.

The unit of measurement in the rulers is determined by the unit of measurement you have selected. This can be done either in the Image Dimension controls, located in the Settings window, or by clicking on the ruler unit button at the 0,0 point of the rulers in the Preview window.

Depending on your chosen unit of measurement, the rulers can mark off measurement in these units: inch, centimeter, millimeter, point, and pixel. The *pixel* option is dimmed if the selected resolution unit is *lpi*, and vice versa.



Pressing the ruler unit button displays the measurement menu.



Select the unit of measurement for the rulers in either the Settings window or the Preview window.

To select the unit of measurement for the rulers:

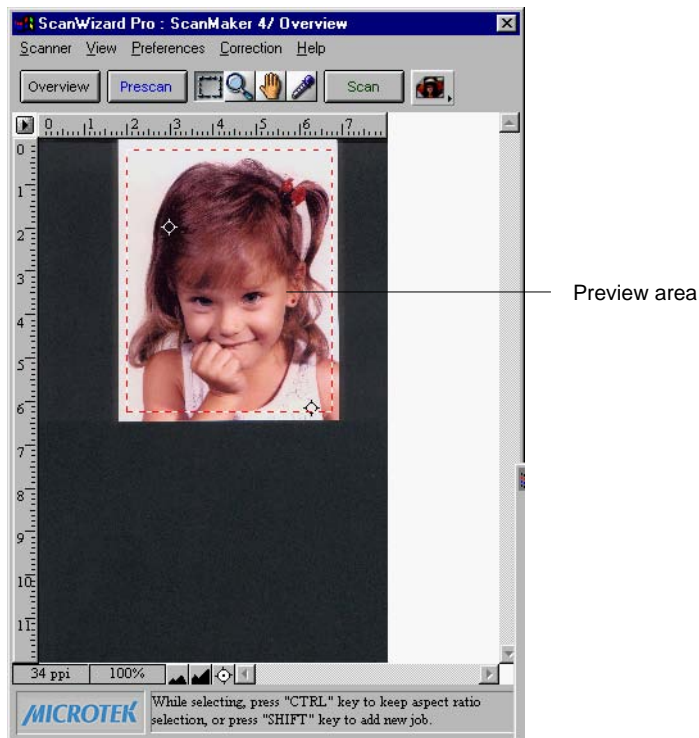
Click on the unit box in the Settings window, or click on the ruler unit button at the 0,0 point of the rulers in the Preview window. When the submenu appears, select the unit of measurement.

Preview Area

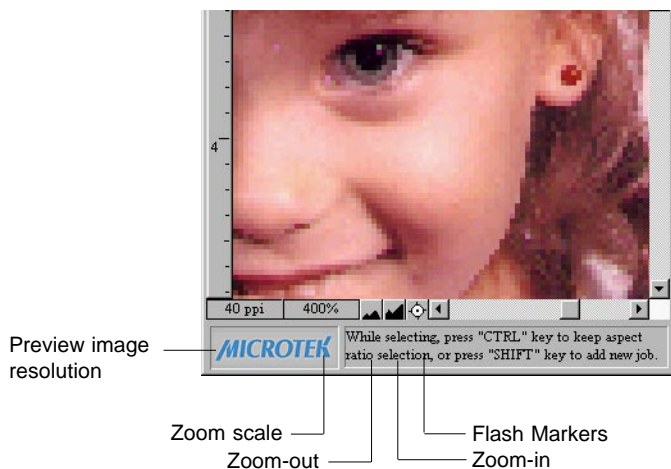
The preview area is where the preview image appears.

The dimension of the preview area varies, depending on your scanner model. The size can be changed, however, through the *Overview Setup* command in the Preferences menu. You can increase the size of the preview area to see more detail in your image, or you can reduce the preview area to save on memory.

For details on how to change the size of the preview area, refer to the *Overview Setup* command in the Preferences menu section.



Auxiliary information



Preview image resolution:

When Overview or Prescan command is executed, the preview window displays the prescan image, also the auxiliary information shows the preview image resolution. Preview image resolution is changed according to the size of the preview window. To resize preview window, drag any side or corner of the window.

Zoom scale

Lets you choose the size of the preview image, ranging from 100%, 200%, 400% to 800%.

Zoom-out

Each time you click on this zoom-out icon, the preview image is reduced one zoom scale level, minimum 100%.

Zoom-in

Each time you click on this zoom-in icon, the preview image is enlarged one zoom scale level, maximum 800%.

White/Dark points marker flasher

When preview image is displayed, the white point marker (the extremely white reference point) and the dark point marker (the extremely black reference point) are shown. Sometimes the two markers cannot be visually detected, clicking on the White/Dark points marker flasher activates the markers to flash 5 times. When they flash, the locations can be seen.

The Settings Window

The Settings window contains the parameters for outputting your scanned image for the current scan job and includes the advanced image correction tools of the program.

Elements of the Settings window

Resolution edit box: Lets you enter a resolution value in which your image will be output (not scanned).

Image Dimension controls: include various parameters for specifying scan frame width and height, scaling, output width and height, and unit of measurement.

Settings

Job : Untitled1

Type : RGB Colors

Res : 300 ppi

Scan Frame x Scaling = Output

W: 4.74 100% W: 4.74

H: 6.03 H: 6.03

Image Size : 7,532 KB inch

☐ Fixed Scan Frame

☐ Fixed Output Size

☐ Keep Proportion

Transform : F

Scanner Profile : ScanMaker 4 / Reflective

Image Category : None

D-Range... Automatic

W & B Points... No Correction

Gradation... No Correction

Color Cast... No Correction

Saturation... No Correction

Selective... No Correction

Tone Curve... No Correction

Filter... Unsharp Masking...

Descreen... None

Reset

Type menu: Lets you select the image type in which your image will be scanned and processed.

Unit selection: Lets you choose the unit of measurement for resolution in either ppi (pixel per inch) or lpi (lines per inch).

Advanced Image Correction tools: Improve image quality by enhancing image characteristics such as brightness and contrast, white and black points, and others.

Output Image Parameters

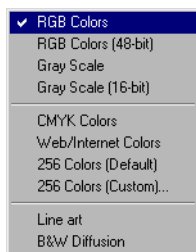
The Output Image Parameters include the various controls that determine how your image is scanned and processed.

The Output Image Parameters include:

- Type
- Resolution
- Unit Selection
- Image Dimension controls

Type (Image Type or Scan Mode)

The Type menu determines what your resulting scan will be. It does not refer to the original image mode. For instance, if you have a color photo but choose 256 grayscale for the scan mode, the photo is scanned and processed as grayscale.



To use the Type menu, from the Type menu, select your scan mode. Choose the correct image type, as the wrong choice will simply create bigger files that won't be of any use to you.

- If you have a grayscale original, do not set image type to *RGB Colors (48-bit)*. RGB colors are 24-bit, and RGB (48-bit) colors are used for applications such as Photoshop 5.0.

Note: The options of RGB Colors (48-bit) and Gray Scale (16-bit) are available only for 36-bit or above scanners, such as ScanMaker 5. Only a few applications (e.g., Photoshop 5.0) in the market today support these two options.

- CMYK color separation is used for commercial printing. Some image editing software program, such as Photoshop 5.0 full version, have the capability of processing CMYK file format. ScanWizard Pro CMYK color supports US SWOP, European, and Japanese printing ink standards. For more information, refer to Appendix C.
- Web/Internet color is 256-indexed color image converted with uniform palette and error diffusion. The sRGB (web color standards) profile is used for color matching with this image type.
- Customized 256 color option lets you select the attributes of indexed color. If this option is selected, the following dialog box displayed.



Palette

Lets you choose the method of creating color palette table. “Uniform” uses 6-6-6 levels fixed color palette table, independent of the contents of the 24-bit RGB image. By default, the “Adaptive” is selected, this option creates color palette table from commonly used areas of the color spectrum that appears in the image. Since colors in most images are concentrated in particular areas of the spectrum, this option is generally used.

Dither

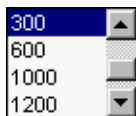
Lets you choose the dithering method. Dithering can further improves the 256-index color image quality by mixing the available colors to simulate the missing colors. “None” disables dithering; “Pattern” uses a structured pattern to simulate the missing colors, this option is grayed out for Adaptive palette; and “Diffusion”, which is the default, produces the best quality of 256-indexed color image with lowering a little bit the scanning speed due to intensive algorithm computation is required.

- Default attribute of 256-color is the last customized 256-color setting.
- B&W Diffusion image type is 1-bit B&W image dithered with error diffusion effect.
- Save As 256 color

You may save the palette and Dither selections as the defaulted 256 colors, to be selected from the Type menu.

Resolution

Resolution in the Settings window refers to the desired resolution for outputting the image to a device, such as a monitor or printer. It does not refer to the resolution in which the image is scanned.



To set your resolution:

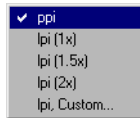
Enter a resolution setting in the Resolution edit box, then press Enter. If the value you enter is too low or too high, the minimum or maximum resolution value is entered for you instead.

According to the image type you select, default resolution is displayed. When you specify the resolution you need, this value is recorded for subsequent use. ScanWizard Pro records last 6 different resolution settings.

Note: In setting resolution, choose the setting that best matches your output device. Remember that the higher the resolution, the larger the resulting file will be and the longer it will take to output.

Unit selection

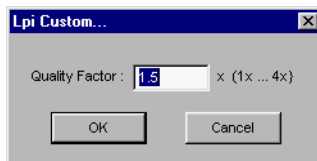
The unit of measurement for resolution is in ppi (pixel per inch) or lpi (lines per inch). Lpi settings are dimmed if the ruler unit is in pixels, and vice versa for ppi.



To select your option:

- Choose *lpi (1x)* if you know precisely the resolution you need for your image. Or, in case of Stochastic halftone and contone (continuous tone) printing.
- Choose *lpi (1.5x)* to produce resolution that is one and one-half times the screen frequency. Normally used on the screen higher than 133 lpi halftone printing.
- Choose *lpi (2x)* to produce resolution that is two times the screen frequency. Normally used on the screen equal to or less than 133 lpi halftone printing.
- Choose *lpi Custom* to produce customized resolution.

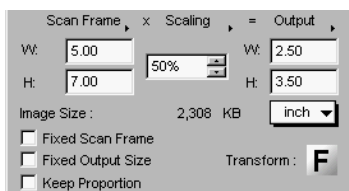
Lpi is widely used in professional offset printing. Values of ppi and lpi are exchangeable. During scanning, ScanWizard Pro first converts the unit into ppi before sending image data to the scanner.



Quality Factor represents multiplication factor for converting lpi to ppi. For example, an 85 lpi printing is 127 ppi multiplying quality factor 1.5; or 170 ppi multiplying quality factor 2. The Custom setting allows you to define values from 1 to 4, decimal value is accepted, such as 1.33.

Image Dimension controls

These controls allow you to adjust the various factors that affect the image, including the width and height of your image when it is first scanned (Scan Frame), the scaling factor, and the dimensions of the image in final output.



Scan Frame (input) x Scaling = output

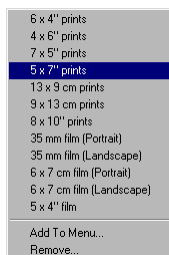
This mathematical formula indicates the relation of the input dimensions to scaling and how these factors affect image dimensions when the image is scanned.

The Input-Output dimensions consist of four edit boxes: Scan Frame width, Scan Frame height, output width, and output height. These edit boxes are linked to the use of Fixed Scan Frame, and the boxes may or may not be edited depending on whether the Fixed Output Size is checked or not. Below are the details.

Scan Frame

Use the Scan Frame dimensions to specify your scan frame; or drag on the scan frame to whatever size you want, and the dimensions will be reflected in the Scan Frame width and height boxes.

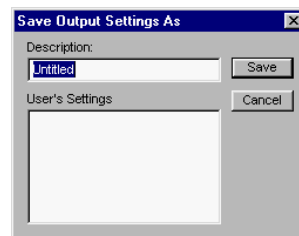
The Scan Frame dimensions can be changed only if the Fixed Scan Frame is unchecked, and this is evident because only the Scan Frame dimensions are active (not grayed out).



Output

The output dimensions determine the width and height of your image when output to a device such as a monitor or printer. The output dimensions can be changed only if the Fixed Output Size is unchecked.

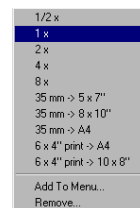
The output dimensions are grayed out, indicating that they cannot be edited in this situation. The output boxes, however, will respond to any changes in the Scan Frame boxes (and scaling).



Scaling

The **Scaling** lets you create large or small images so that the images don't have to be resized subsequently, which is usually done in your image-editing software.

Scaling is the process of creating larger or smaller images in your scanning software so that you need not resize the images later when they are delivered to your image-editing program.



Specific scales: Choose from 1/2x (half size), 1x (full scale), 2x (enlarged to twice size), 4x, and 8x. Film scale mapping: Choose your image material and the output dimension. For example, “35mm to 5” x 7”” means your image source is 35mm film, and output size is 5" x 7". Add to Menu: You can customize the image mapping scale, and name it for later use. Restore: Retrieve the image scale name you assigned in the Add to Menu command.

The above assumes that your resolution is held constant throughout the changes. When you change resolution and specify a value that has no exact equivalent for scaling, the scaling may be affected and adjusts itself to the nearest allowed value. For instance, if your resolution is 100, your scaling becomes 99 (instead of a full 100), because that is the closest scaling equivalent, given the resolution value.

Image Size

The **Size** indicates how big the file will be when you accept the dimensions shown in the edit boxes, together with the resolution setting that you selected. Size is calculated automatically.

Unit of Measurement

The **Unit of Measurement** allows you to select your unit of measure. The options include inch, centimeter (cm), millimeter (mm), point, pixel, and pica.



Keep Proportion

The **Keep Proportion** option allows you to keep the ratio of the image width and height constant.

Transform (Rotate and Flip tool)

Click the “F” icon to bring up rotate and horizontal image flip selections. The “F” icon represents the current selected orientation job.



Image effect of the Flip tool applies to prescan and scanned image, not the overview image.

To use the Image Dimension controls

1. Select the unit of measurement
2. Enter a value in the applicable edit boxes (width input, height input, scaling, width output, height output)
3. Scan Frame width and Scan Frame height refer to the dimensions of the scan frame that you draw. For example, if the image on your scanner is 5" x 7" and you draw a scan frame that is 3" x 4", then your Scan Frame width will show 3.00 and your Scan Frame height will show 4.00.

The Scan Frame width, Scan Frame height, output width, and output height are affected by your scaling and whether you have checked the Keep Proportion option or not.

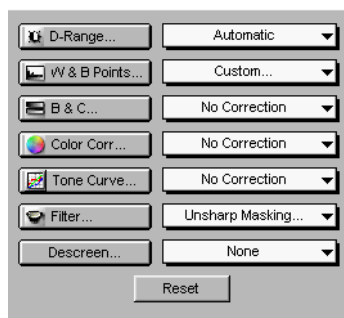
To specify a name for frame: You may give a specific resolution a name for easier access. To begin, set the Width/Height of the scan frame, click the small triangle underneath the Resolution setting. A dialog box appears for your entering the frame name. Input a name you want, then choose Add to menu.

You may also specify names for the Scaling and Output values.

Advanced Image Correction Tools



LCH Color Space Mode AIC Tools



Native Color Space Mode AIC Tools

Available Image Correction Effects

ScanWizard Pro automatically locates all settings (default and the existing custom settings) from a specific directory, and made them available in the Advance Image Correction (AIC) dialog box.

Not all image correction tools are available for all types of scan material and output images. Non-applicable AIC tools are dimmed when the selected image type is not supported by such tools.

	RGB	CMYK	Lab	Gray	Line-art	B & W Diffusion	Remark
Dynamic Range	✓	✓	✓	✓			
White/Black Points	✓	✓	✓	✓	✓		*
Gradation	✓	✓	✓	✓			LCH mode only
Color Cast	✓	✓	✓				LCH mode only
Saturation	✓	✓	✓				LCH mode only
Selective	✓	✓	✓				LCH mode only
Tone Curve	✓	✓	✓	✓			
Filter	✓	✓	✓	✓	✓		
Descreen	✓	✓	✓	✓			**
Brightness & Contrast	✓			✓			Native mode only
Color Correction	✓						Native mode only

* For “Line-art” output, White/Black Points will switch to Threshold AIC tool.
When output type is “B&W diffusion”, this AIC tool is dimmed.

**For negative films scan material, the Descreen AIC tool changes to Film Type selection.

Introducing the Image Correction tools

With the image correction tools, you can edit the characteristics of your image during scan stage. The image correction tools in ScanWizard Pro save you time and provide you with the needed flexibility to adjust images right within the scanning software.

Although you can use all the image correction tools, you don't need to use everyone of them to achieve a great image. Perhaps all that's needed is a change in the shadows or gamma curve. Try experimenting with the tools to see which one provides the optimal results.

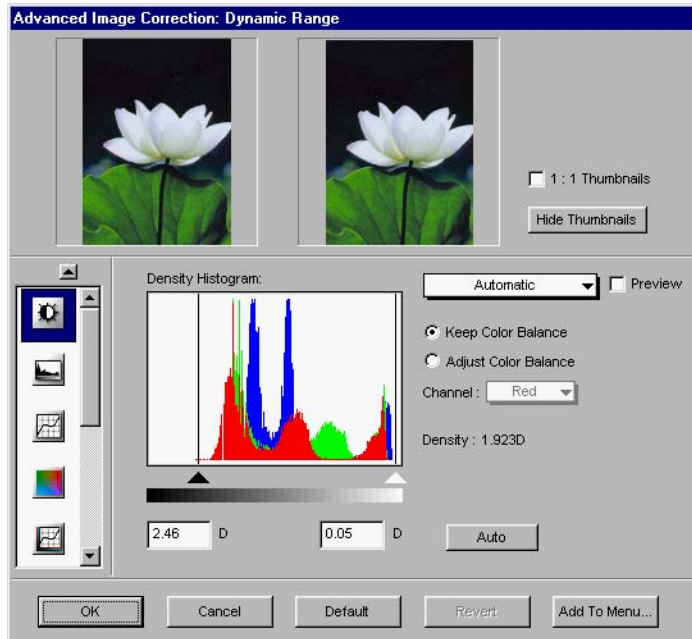
Using the Advanced Image Correction dialog box

When you click on any of the image correction tools, or select Custom... in the Settings window, the Advanced Image Correction (AIC) dialog box appears. In this box, you can do the following:

1. These are the thumbnails of the image captured by your scanner. The left thumbnail is the “before” version — which shows the effects of the last saved settings values. The right thumbnail is the “after” version — which shows the effects of the new settings added in the AIC.
2. To select another image correction tool, click on any of the buttons displayed in the vertical toolbar on the right side of the dialog box.
3. Click on an action button to achieve a particular effect.

The Action Buttons in the AIC dialog box

The Action buttons in the AIC dialog box carry out a specific action.



1:1 Thumbnails

If checked, size of the thumbnail is about the same as the image shown in the Preview window. If unchecked, the image size appears fit into the shown dialog box.

Hide Thumbnails

If checked, the “before” and “after” thumbnails becomes hidden. To redisplay, click the “Up” arrow at the left side of the dialog box.

Preview

If checked, the AIC image correction effect applies to the Preview image in real time.

The OK button

Clicking on this button will apply whatever Image Corrections you have performed on the current scan job, and close the AIC dialog box.

Example: If you increased brightness, changed the saturation, and then clicked OK, all the changes are applied, and you exit the AIC dialog box. The settings are changed as Customized status.

The Cancel button

Clicking on this button will cancel out all image correction changes you have made to the current scan job, and then close the AIC dialog box. The settings remained unchanged.

Example: If you applied filters, changed the curve, and then clicked Cancel, none of the changes will take effect, and you exit the AIC dialog box.

The Default button

If Reset is selected, the settings are restored to their default values; if Cancel is selected, the operation has no effect.

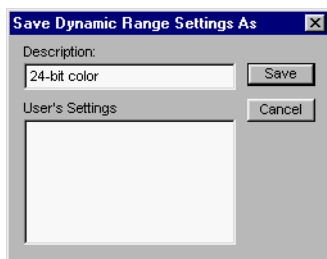
The Revert button

Clicking on this button cancels out the changes you made with the current image correction tool. This means that if you used several tools (and achieved a look that is the cumulative effect of all the tools), using Revert will cancel the effect of only the current tool and preserve the effects of the other preceding tools.

The Add to Menu button

Clicking on this button to save the settings you have made as a name. You may retrieve this user-defined AIC setting afterwards from the Setting windows. Maximum 20 sets of user-defined settings for each AIC function.

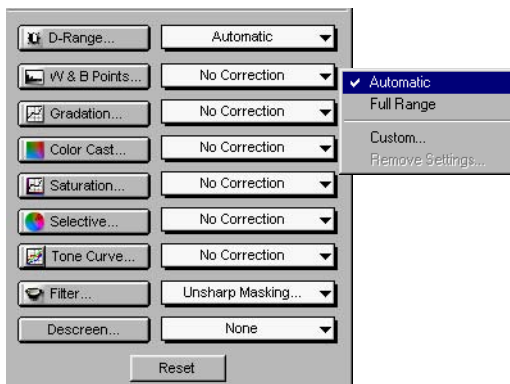
Example: Suppose you have set a Dynamic Range for future use, at the Description column, you input “24-bit color” string.



To retrieve user-defined AIC settings

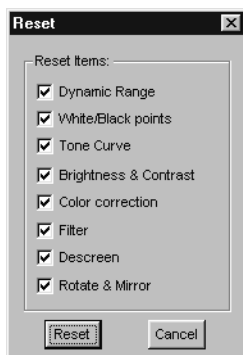
From Settings window, select the AIC settings you have made from the respective AIC command.

Example: Suppose the Dynamic Range settings of your input (e.g., 24-bit color) is available for choosing.



The Reset button

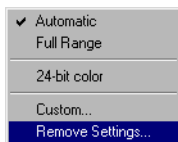
Clicking on this button brings up the Reset dialog box, where you can specify which settings are to be reset, then click Reset or Cancel. If Reset is selected, the settings are restored to their default values; if Cancel is selected, the operation has no effect.



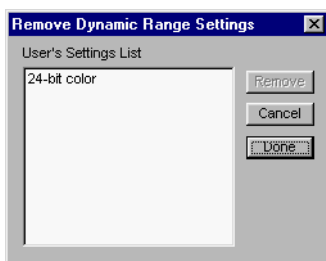
Example: If you changed white/black points, changed brightness, then clicked on Reset and chose to reset brightness, the brightness setting of the scan job is restored to its default; but the altered shadows and highlights remains in effect. If you reset both white/black points and brightness, then those values are both restored to default.

To remove user-defined AIC settings

From Settings window, choose the AIC function, then select the Remove Settings item.



A Settings dialog box appears.



Select the Settings you want to remove, click the Remove button.

Dynamic Range tool

This tool lets you locate the lightest tone (Dmin) and the darkest tone (Dmax) of the original in the prescan image; and then capture the full tonal range of the final scan image without posterization.

The maximum dynamic range depends on the bit depth of the scanner model. For example, a 12-bit per (R, G, and B) color scanner may have 3.6D in dynamic range; where a 8-bit per color scanner will have lower dynamic range.

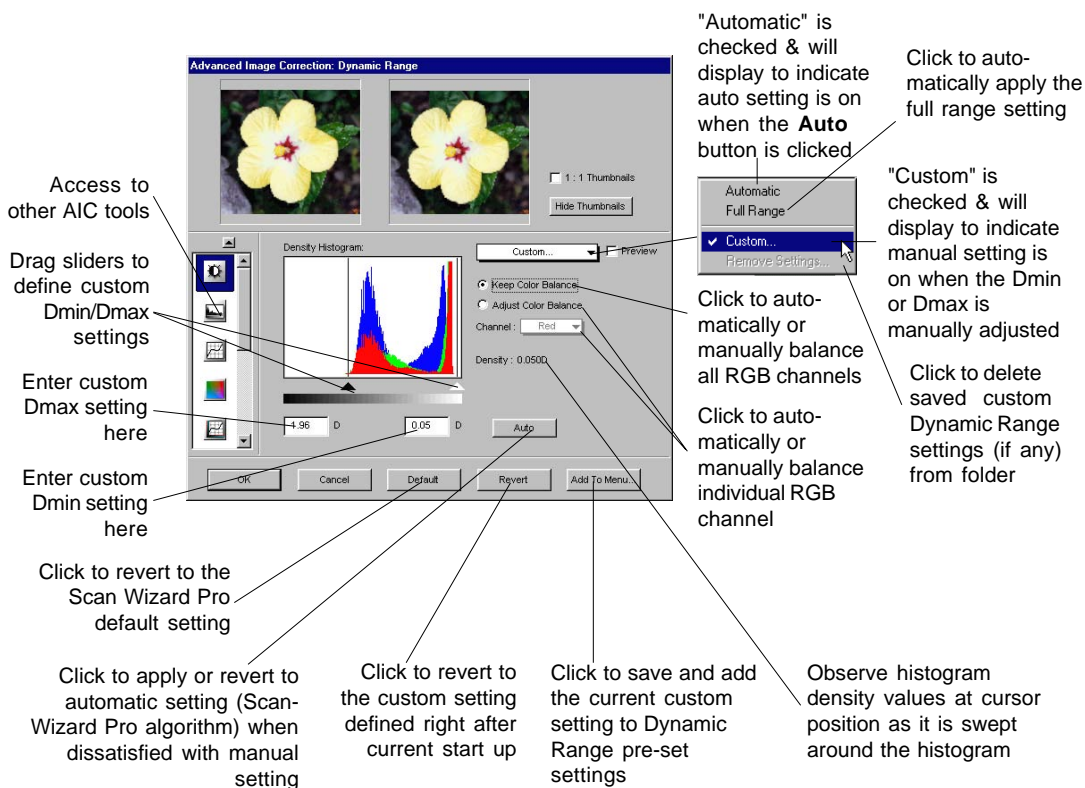
Dynamic range differs from scan materials as well. A piece of positive original can have a dynamic range up to 4.0D, yet negative original or reflective material (picture or printed document) results a dynamic range possibly equal or lower than 2.0D. Without optimized remapping from scanner's dynamic range to the dynamic range of the original, tonal range of the image will not be fully captured, resulting poor contrast.

Automatic dynamic range setting determines the lightest tone (Dmin) and darkest tone (Dmax) of the original automatically, then captures the image with the full input tonal range of the scanner. This setting optimizes the contrast of the output image, most useful for scanning negative films.

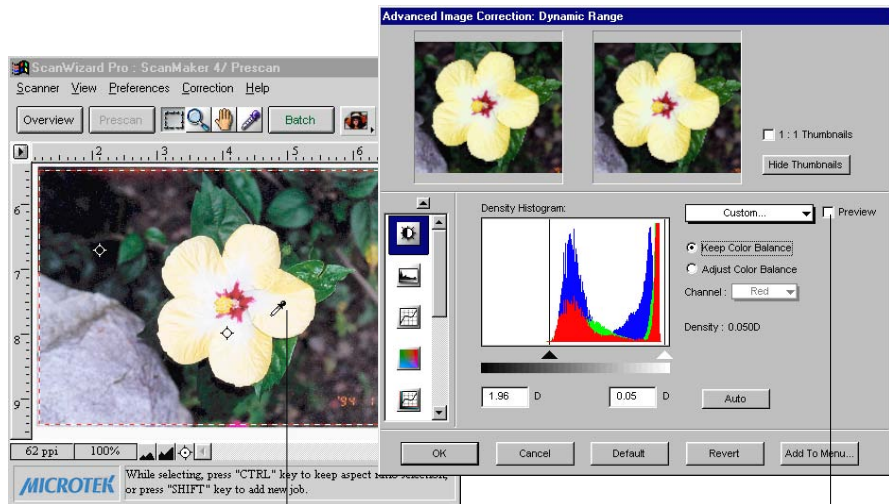
Note: Automatic dynamic range is not suitable for originals such as image contains direct light sources or specular highlights such as reflections from shining metal or bright glass surfaces, these should be kept as purely white. An automatic Dmin may generally be placed incorrectly in specular highlights, causing other highlights and midtones to be darkened. In addition, automatic Dmin/Dmax setting is not suitable for low-key and high-key images.

The Dynamic Range dialog box

By default, this tool automatically determines the lightest density or tone (Dmin) and darkest tone (Dmax) of the original; then it captures the image color data (histogram area) with the full input tonal range of the scanner. This setting optimizes color balance and the contrast of the output image, and is most useful for scanning negative films. You can override the auto-settings by defining your own custom dynamic range (Dmin/Dmax) values to all or each individual RGB channels. Manual setting tools are provided in the AIC **Dynamic Range** dialog box shown below.



You can also use the Eyedropper tools to define Dmin and Dmax settings. Just move the cursor toward the prescan image while the AIC Dynamic Range dialog box is on display. Notice that the cursor automatically transform itself into Black Eyedropper tool (default).



The Black Eyedropper tool appears when you move cursor toward the prescan while AIC Dynamic Range dialog box is on display.

Use this tool to manually define your Dmin (shadow) setting.

Press Alt key to switch tool into White Eyedropper and use it to assign the Dmax (highlight) setting.

Release Alt key to revert back to Black Eyedropper tool.

Enable this check box to show simulated effect of the adjustment on the prescan image

White/Black Points tool

For color and gray images, this tool allows you set white/black points; for line-art image, it carries out threshold adjustment feature.

The White/Black Points dialog box (Color/Gray image)

By default, this tool automatically determines the lightness (but not chroma and hue) of a prescan color or gray image. When the default setting fails to provide the lightness you want for your prescan, you can click the **Auto** button to allow the tool to analyze your prescan and then auto-clip the White and Black points of the Lightness histogram to optimize lightness of the output image. You can override the auto setting by providing your own custom clipping values in the "L" edit box for both White and Black points or .

The tool also provide option to auto-neutralize undesirable color cast in either or both highlight and shadow areas of the image.

Observe Histogram Input Lightness, Pixel Counts, & % of Lightness values at cursor position as it is swept around the histogram

Check to Auto-Neutralize unwanted color cast in Shadow (Black) area (LCH Mode only)

Check to Auto-Neutralize unwanted color cast in Highlight (White) area (LCH Mode only)

Click to define custom parameters (in %) for Auto Clipping, Output Levels, and Highlight/Shadow Markers

Click to apply the automatic (Scan-Wizard Pro algorithm) or custom clipping setup values of the prescan

Click to save and add the current custom setting to Lightness preset settings

Click to revert to the Scan Wizard Pro default setting

Click to revert to the custom setting defined right after current start up

Access to other AIC tools

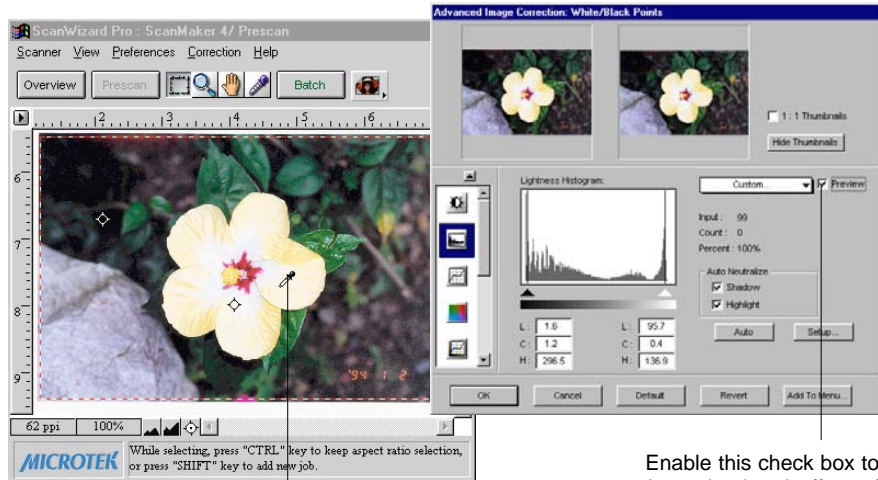
Drag sliders to define custom Lightness settings

Enter custom Lightness, Chroma, & Hue values for Shadow (Black) area here. C & H values are applicable only when the Shadow check box of Auto Neutralize is enabled

Enter custom Lightness, Chroma, & Hue values for Highlight (White) area here. C & H values are applicable only when the Highlight check box of Auto Neutralize is enabled

Area	L	C	H
Shadow (Black)	0.0	3.5	317.6
Highlight (White)	97.3	1.6	289.4

You can also use the Eyedropper tools to define the two end points of the Highlight (White) and Shadow (Black). Simply move the cursor toward the prescan image while the AIC White/Black Points dialog box is on display. Notice that the cursor automatically transform itself into Black Eyedropper tool (default).



Enable this check box to show simulated effect of the adjustment on the prescan image



The Black Eyedropper tool appears when you move cursor toward the prescan while AIC White/Black Points dialog box is on display.

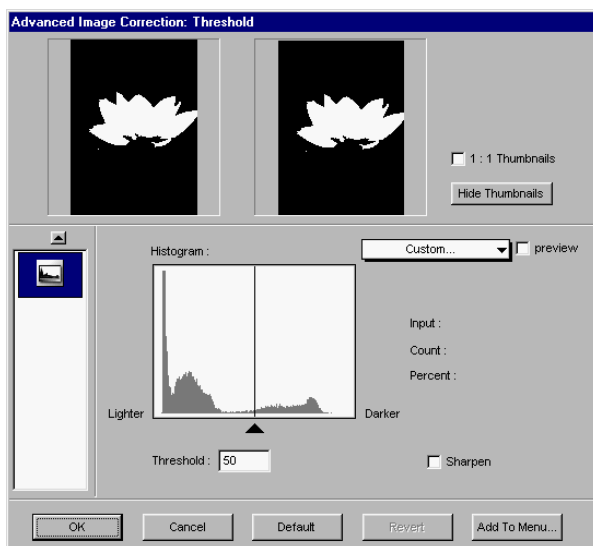
Use this tool to manually define your Black (Shadow) Point setting.

Press Alt key to switch tool into White Eyedropper and use it to assign the White (Highlight) Point setting.

Release Alt key to revert back to Black Eyedropper tool.

The Threshold dialog box (Line-art image)

For line-art image, the White/Black Point tool becomes a Threshold correction tool.



The threshold values are in the range of 0 through 255.

Sharpen

This option lets you further enhance line-art image quality if your original line-art material appears blur (e.g., text printed by inkjet, dot matrix printer, or contains text of small points).

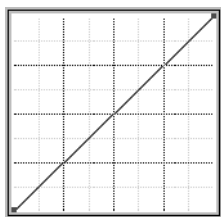
Gradation Curve tool (LCH mode only)

The Gradation Curve tool lets you control the gamma, which measures the intensity affecting the mid-level grays (midtones) of an image.

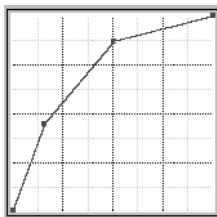
Gamma is commonly used to describe the relationship between output density to the original density across the mid-tones. Adjusting the gamma lets you change the values of the middle range of gray tones without dramatically altering the shadows and highlights.

In many ways, the Gradation Curve tool gives you the most control for adjusting an image's values, but beginners may take some time to master its intricacies. The Gradation Curve tool applies to grayscale and color images and is not available for use with line-art or halftone scan modes.

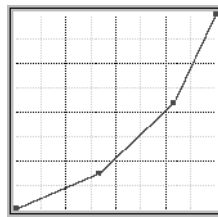
How to read the curve



Original curve: Straight diagonal line



Modified curve with points moved up



The curve shows the relationship of the brightness changes across the middle pixels between the resulting image and the original.

When you open the Curves dialog box, the line on the graph is diagonal because the Input and Output values are the same.

The x axis of the graph represents the original brightness values of the pixels, from 0 to 255, for 8-bit scanners (see the table on next page); the y axis represents the new brightness values. Clicking on the diagonal line then plots a point that can be adjusted.

Scan	Original brightness value
8-bit color	0 - 255
10-bit color	0 - 1023
12-bit color	0 - 4095
CMYK	0 - 100%
Gray	0 - 100%

In the above table, 100% indicates purely black.

When the curve is moved up or down, the relationship between input value and output value changes accordingly.

- In areas where the curve is moved down, pixels in that portion of the image are darkened.
- In areas where the curve is moved up, pixels in that portion of the image are lightened.

Contrast in an image can be seen by the angle of the line. The steeper the slope, the higher the contrast. The closer the line is to horizontal, the lower the contrast.

The Gradation Curve dialog box

The **Gradation** tool enables you adjust the toner distribution of an image to create a gradual transition between two or more colors. This is where LCH color system has its great advantage. With this tool you can easily change the brightness and contrast without affecting the gray balance and saturation of an image. This is because chroma and hue values are always kept constant.

To prevent the color images from becoming too light or too dark, ScanWizard Pro provides a **Saturation Range** option. With this option, colors outside of a given chroma range will not be affected by the gradation curve manipulation.

NOTE To separately adjust toner of individual RGB channel, a separate **Tone Curve** tool is provided for such purpose. See section on "Optimizing Image with Tone Curve Tool" in this chapter.

The screenshot shows the 'Advanced Image Correction: Gradation' dialog box. It features two side-by-side image thumbnails of a yellow flower. Below the thumbnails are checkboxes for '1 : 1 Thumbnails' and a 'Hide Thumbnails' button. The main area contains a 'Lightness' graph with a grid and a diagonal line. A cursor is positioned on the line, with 'Input: 19' and 'Output: 90' displayed. To the right of the graph are controls for 'Method' (set to 'Curve'), 'Auto', and 'Preview'. Below these is a 'Saturation Range' checkbox (checked) with two sliders set to 5 and 90. At the bottom are buttons for 'OK', 'Cancel', 'Default', 'Revert', and 'Add To Menu'. Annotations with arrows point to various parts of the dialog:

- Dragging the top-right section of the curve below the default diagonal line will add shadow to light tones
- Dragging the bottom-left section of the curve above the default diagonal line will add lightness to shadow tones
- Click to create handles from which to drag and manipulate a portion of the curve. The more handles is created, the easier and smoother it is to manipulate the curve. The handles also allow you to precisely isolate tone areas that you want to exclude from your manipulation.
- Click to revert to the Scan Wizard Pro default setting
- Click to revert to the custom setting defined right after current start up
- Current **Gradation** method used is "Curve" (default). See "Line" and "Gamma" methods next page
- Click **Auto** to apply the auto (based on ScanWizard Pro algorithm) **Gradation** setting of the prescan
- Coordinates information of cursor position within the grids
- Check to enable **Saturation Range** option check box. Then drag sliders or enter values in the setting edit boxes to define saturation (chroma) range (colors outside the chroma range will not be affected by the Gradation curve)
- Click to save current custom (curve) parameters to **Gradation** preset settings

Dragging the lower left section of the line above the default diagonal line will add shadow to light tones

Dragging the upper right section of the line below the default diagonal line will add lightness to shadow tones

Current **Gradation** method used is "Line"

Coordinates information of cursor position within grid

Input : 98
Output : 46

This section (higher chroma and outside the set **Saturation Range**; 51 to 100) will NOT be affected by **Gradation** adjustment

Only this section (lower chroma) of **Saturation Range**; 0 to 50, will be affected by **Gradation** adjustment

These sections of color tones are unchanged

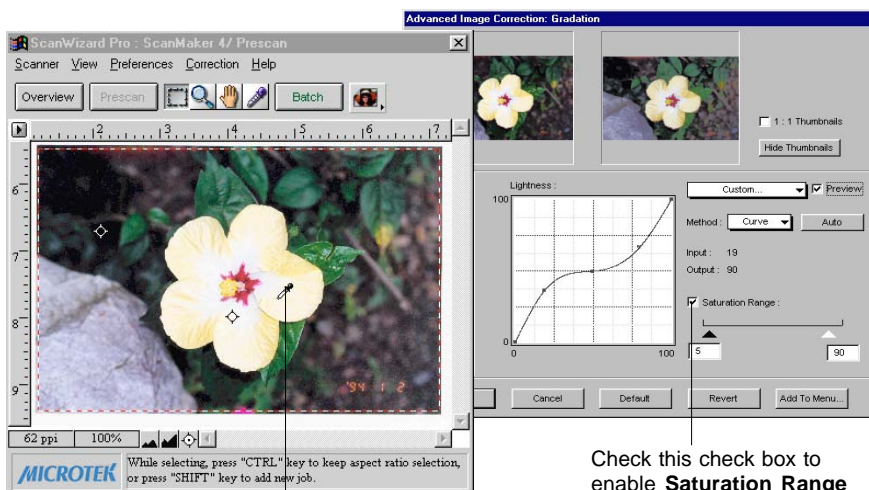
Dragging the Gamma handle toward left (Gamma value above 1.00), will lighten the dark tones. Likewise, dragging the handle toward right (Gamma value below 1.00), will add shadow to light tones & vice versa

Enable this check box to show simulated effect of the adjustment on the prescan image

Current **Gradation** method used is "Gamma"

Instead of dragging the Gamma handle, you may directly enter the appropriate Gamma value in this setting edit box

You can also use the Eyedropper tools to define the Saturation Range. Simply move the cursor toward the prescan image while the **Saturation Range** check box is enabled. Notice that the cursor automatically transform itself into White Eyedropper tool (default).



Check this check box to enable **Saturation Range** option. You can use either the saturation sliders or Eyedropper tool to set saturation range to be subjected for Gradation



The White Eyedropper tool appears when you move cursor toward the prescan while the **Saturation Range** check box is enabled

Use this tool to manually define your high chroma range setting

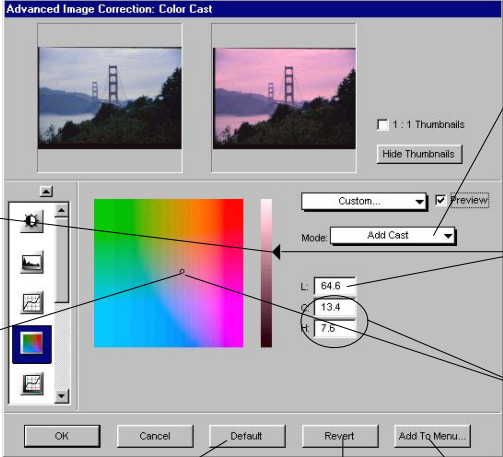
Press Alt key to switch tool into Black Eyedropper and use it to assign the low chroma setting

Release Alt key to revert back to White Eyedropper tool

Color Cast tool (LCH Mode Only)

The **Color Cast** tool is most useful in eliminating unwanted color cast and adding color cast where proper color cast is lacking to maintain the neutral and gray balance of an image. You must initially select mode before color casting.

The Color Cast dialog box



The screenshot shows the 'Advanced Image Correction: Color Cast' dialog box. It features two thumbnails at the top showing a bridge over water. Below them is a color wheel and a vertical gradient bar. On the left, there are handles for 'Lightness' and 'Chroma and Hue'. On the right, there are input boxes for 'L', 'C', and 'H' values. At the bottom, there are buttons for 'OK', 'Cancel', 'Default', 'Revert', and 'Add To Menu...'. Annotations with arrows point to various parts of the dialog box, explaining their functions.

Select Color Cast mode
✓ Remove Cast
Add Cast
"Remove Cast" is the default

Define Lightness by adjusting "L" Handle and observe corresponding "L" value in the edit box. You can also enter "L" value directly in the box

Select desired color to add or remove by dragging the Chroma & Hue Handle toward desired color cast; and observe corresponding "C&H" values on the edit boxes. You can also directly enter "C&H" values in their respective edit boxes

Click to save current custom (curve) parameters in **Color Cast** preset settings

Click to revert to the default "C&H" Handle position

Click to revert to the custom setting defined right after current start up

Lightness Handle

Chroma and Hue Handle

Mode: Add Cast

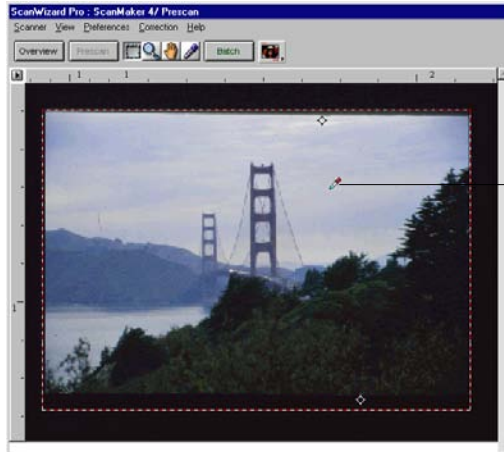
L: 64.6
C: 13.4
H: 7.6


Custom... Preview

1:1 Thumbnails
Hide Thumbnails

OK Cancel Default Revert Add To Menu...

It is more convenient to use the neutral Eyedropper tool in removing or adding color cast. Simply move the cursor toward the prescan image while the **Color Cast** dialog box is only display. Notice that the cursor automatically transform itself into Neutral Eyedropper tool. Use this tool to click on the color cast from the image you want removed or added.



 The Neutral Eyedropper tool auto displays when you move cursor toward the prescan while the **Color Cast** dialog box is on

Use this tool to click and define the color cast you want to add or remove

Saturation tool (LCH Mode Only)

Saturation tool allows you to optimize image by manipulating the **Saturation Curve** while correcting the chroma channel of the LCH at the same time. Full range effect is the default, while options to saturate highlight, midtone, or shadow area only, are also available.

The Saturation dialog box

Dragging the curve (or line) above the default diagonal line will create a result color with luminance & hue of the base color (relative to the selected Range)

Dragging the curve (or line) below the default diagonal line will de-saturate color into gray level

The screenshot shows the 'Advanced Image Correction: Saturation Curve' dialog box. It features two side-by-side image thumbnails of the Golden Gate Bridge. Below the thumbnails is a 'Saturation' graph with a grid and a curve. To the right of the graph are controls for 'Method' (set to 'Curve'), 'Range' (set to 'All'), and 'Input/Output' values (Input: 100, Output: 36). At the bottom are buttons for 'OK', 'Cancel', 'Default', 'Revert', and 'Add To Menu...'. Annotations with arrows point to various elements: 'Select Saturation method.' points to the 'Method' dropdown; 'Enable this check box to show simulated effect of the adjustment made on the prescan image' points to the 'Preview' checkbox; 'Select Saturation Range. "All" is the default' points to the 'Range' dropdown; 'Coordinates information of cursor position within the grids' points to the 'Input/Output' fields; 'Click to revert to the default Scan Wizard Pro default setting' points to the 'Default' button; and 'Click to save current custom (curve) parameters in Saturation preset settings' points to the 'Add To Menu...' button.

Select Saturation method.
☒ Curve "Curve" is the default
Line

Enable this check box to show simulated effect of the adjustment made on the prescan image
☒ Preview

Select Saturation Range. "All" is the default
☒ All
Highlight only
Midtone only
Shadow only

Coordinates information of cursor position within the grids
Input : 100
Output : 36

Click to revert to the default Scan Wizard Pro default setting
Default

Click to revert to the custom setting defined right after recent start up
Revert

Click to save current custom (curve) parameters in **Saturation** preset settings
Add To Menu...


Selective Color Tool (LCH Mode Only)

The **Selective Color** tool supports local color correction of an image to specific color ranges without altering the other colors in the image.


The Selective Color dialog box

These basic steps required for each color corrections are summarized below. There is no limit to the number of colors that can be changed in an image.


1. Define a "From" color setting as follows:

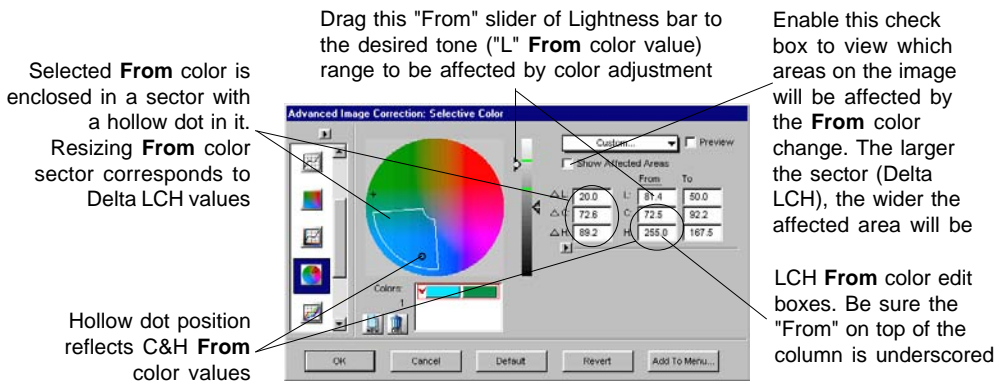
- a) Except for the first color selection, you need to click on the **"NEW"** button (near bottom-left of the dialog box) before starting to define each **From** color setting.

- b) Select color to be altered with one of the following methods-
 - Go to your prescan, with the pointer (now a Neutral Eyedropper); pin-point the **From** color you wish to alter from the prescan.
 - Click on the color wheel to select the **From** color. Note that selected color region is enclosed in a sector. To change choice of color, click on the new region. The sector jumps to the new color region. Note that the hollow dot position in the sector corresponds to the **"From** color" chroma and hue values. Changing the dot position also changes the C&H values. To do so, click at new position within the sector.
 - Enter the numerical values of the **From** color directly in the LCH **From** edit boxes.



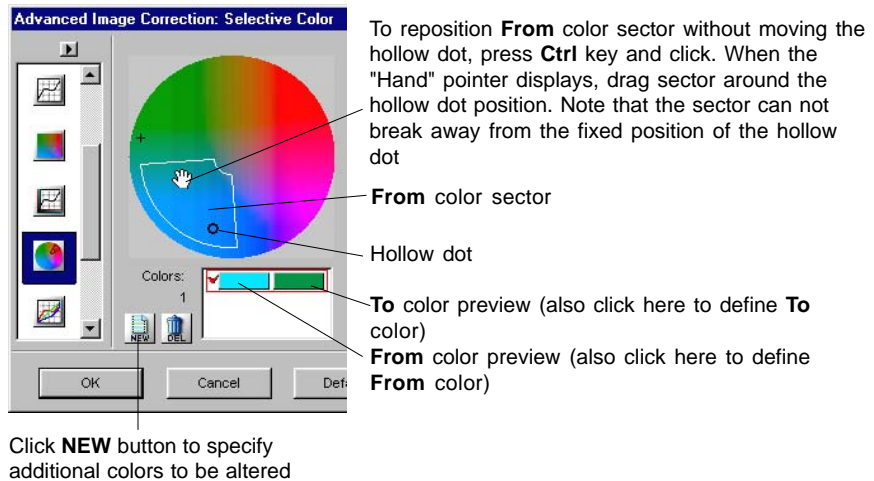
2. Drag the **"From" slider (black arrowhead with hollow dot)** of **lightness bar to the desired tone (lightness to shadow) range to be affected by color adjustment.**


3. Adjust the delta LCH to expand or reduce the region of the color tone area to be altered. This could be done by one of the following:

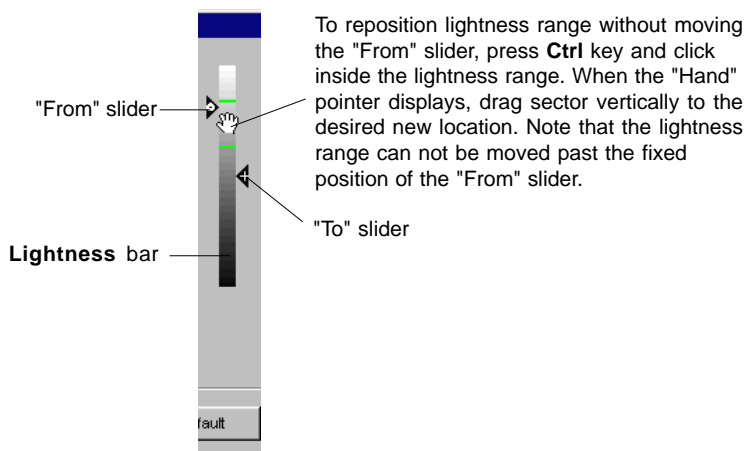
- 
 - Adjust the Lightness bar and the radius, intersection, and arc of the sector in the color wheel.
 - Directly enter numerical values in the Delta L, Delta C and Delta H edit boxes.



To move the **From** color sector without changing the hollow dot position (fixed C&H values), press **Ctrl** key and click inside the sector. Notice the pointer now switches into the "Hand" pointer. Drag the sector with the "Hand" pointer to a new position. Note that movement of the sector is limited to within the vicinity of the hollow dot. Otherwise you need to reposition the hollow dot which changes the C&H values.



Likewise, you can also move a defined **From** color lightness range along the **Lightness** bar without moving the "From" slider (fixed "L" value). Press **Ctrl** key and click on the lightness range. When the "Hand" pointer displays, drag the lightness range vertically to its new position. Note that the lightness range can not go beyond the fixed "From" slider position.



4. Define your "To" color setting as follows:

a) You need to enable the **To** LCH column by doing one of the following:

To
50.0
92.2
167.5

- Click on the "**To**" located on top of LCH edit box.
- Directly enter LCH **To** values in the **To** LCH edit boxes.

Observe the **To** on top of LCH edit box being underscored (To).

b) Select a **To** color to change the **From** color with one of the following methods-

- Go to your prescan, with the pointer (now a Neutral Eyedropper); pin-point the **To** color you wish to turn the specified **From** color into.
- Click on the color wheel to select the **To** color. Note that the selected color spot is highlighted with a Plus (+) sign. Observe color change result in your "After" thumbnail image or prescan. If not satisfied, try clicking at other spots of the color wheel.



Click near the arc of the **From** color sector to increase hue of the selected color. Note that the + position corresponds to the "**To**" color chroma and hue values. Hence, C&H values changes as you click at new position within the color wheel.

To
50.0
92.2
167.5

- Directly enter the numerical values of the **To** color directly in the LCH **To** edit boxes.

5. Adjust tonal range (**To "L" value**) of the resulting color with either of the following methods:

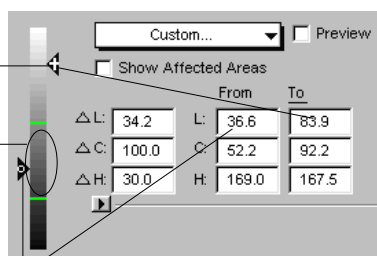


- Drag the "To" slider (black arrowhead with "plus" sign) of the **Lightness** bar to the desired tone.
- Enter the **"L"** numerical value directly into the "L" edit box under **To** column.

If you are not satisfied with the resulting image on preview, you can always go back to redefined your **From** color settings . To temporarily go back to **From** color setting environment, press **Alt** key (watch **From** color setting being underscored) and perform **From** color adjustment. Release **Alt** key and the **To** color setting is again enabled.

"To" slider positioned at 83.9 tonal range (the target tonal range for the specified **From** color tonal range)

From lightness range (the tonal range within the selected **From** color to be subjected to tonal change)

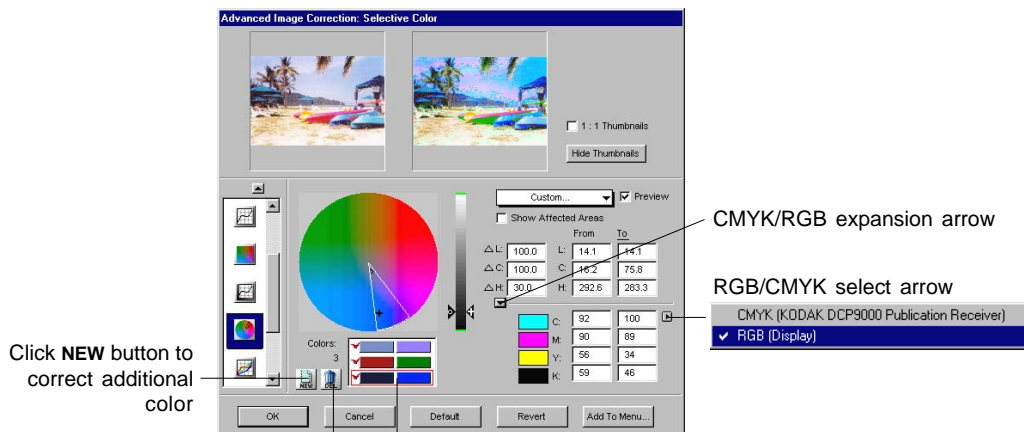


"From" slider positioned at 36.8

6. Using CMYK or RGB values as "From" and "To" Selective colors. This can be done in one of the following ways:

- Define such requirement in the **CMS Setup** dialog box.
- Click on the expansion arrow provided in the **Selective Color** dialog box.

Then proceed to set **From** and **To** settings as it were done under LCH mode. Note that changes to LCH settings remain visible as you manipulate colors in CMYK/RGB mode.



Click **DEL** button to delete a selected color

Add **To & From** colors by clicking the **NEW** button.

Enable/Disable selected color by clicking on check mark

Delete selected color (enclosed in a frame) by clicking **DEL** button

Click any of the **From** (left) or **To** (right) colors to redefine the "From" settings of the particular color

Tone Curve tool

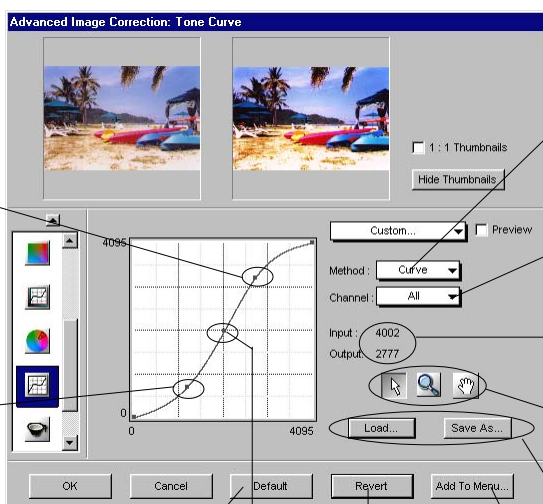
The **Tone Curve** tool functions is just like the **Gradation Curve** tool, except that it provides an additional functions that allows separate adjustments of toner distribution for each individual RGB or CMYK channels (depending on which image type is defined in the **Setting** window).

By default, "Curve" method is used to manipulate toner distribution. You can change it to "Line" or "Gamma" whenever the need arise. While "Curve" and "Line" will maintain the same setting when you switches between the two, "Gamma" has to be manipulated independently.

The Tone Curve dialog box

Dragging the top-right section of the curve below the default diagonal line will add shadow to lightness tones. (Here, it is dragged above the diagonal line to add more lightness to brighter tone to intensify contrast)

Dragging the bottom-left section of the curve above the default diagonal line will add lightness to shadow tones. (Here, it is dragged below the diagonal line to add more shadow to darker tone to intensify contrast)



Click to revert to the Scan Wizard Pro default setting

Click to revert to the custom setting defined right after current start up

Click to create handles from which to drag and manipulate a portion of the curve. The more handles is created, the easier and smoother it is to manipulate the curve. The handles also allow you to precisely isolate tone areas that you want to exclude from your manipulation

Current **Tone Curve** method used is "Curve" (default).
See "Line" and "Gamma" methods next page

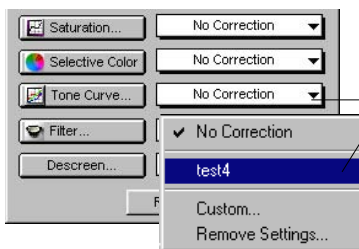
Click to select individual RGB/CMYK channel to adjust tone distribution

Coordinates information of cursor position within the grids

See applications for these tools next page

Click "Save As" to save the current curve/line parameters as preset tone curve setting for future use. Click "Load" to apply the setting

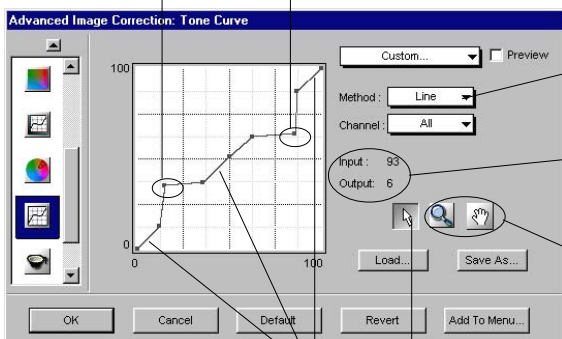
Same as "Save As" above but the tone curve parameters is save in and retrieve from **Tone Curve** preset settings of **Setting** window (see below)



Click on this expansion arrowhead to retrieve a custom setting (e.g., *test4*) saved under "Save As" button

Dragging the lower left section of the line above the default diagonal line will add shadow to light tones

Dragging the upper right section of the line below the default diagonal line will add lightness to shadow tones



Current **Tone Curve** method used is "Line"

Coordinates information of cursor position within grid

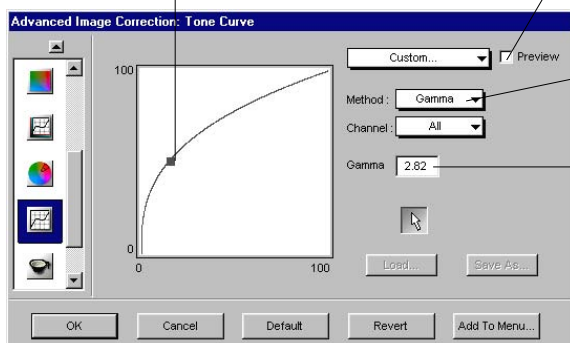
Drag Zoom tool to grid and click to magnify the curve/line. Then use the Hand pointer to pan around the zoomed curve/line to fine tune its position on the grid. Press **Shift** key and click Zoom tool to zoom out grid back to normal size

These sections of color tones are unchanged

Use this pointer to click and create handles on the zoomed in curve or line

Dragging the Gamma handle toward left (Gamma value above 1.00), will lighten the dark tones. Likewise, dragging the handle toward right (Gamma value below 1.00), will add shadow to light tones & vice versa

Enable this check box to show simulated effect of the adjustment on the prescan image



Current **Tone Curve** method used is "Gamma"

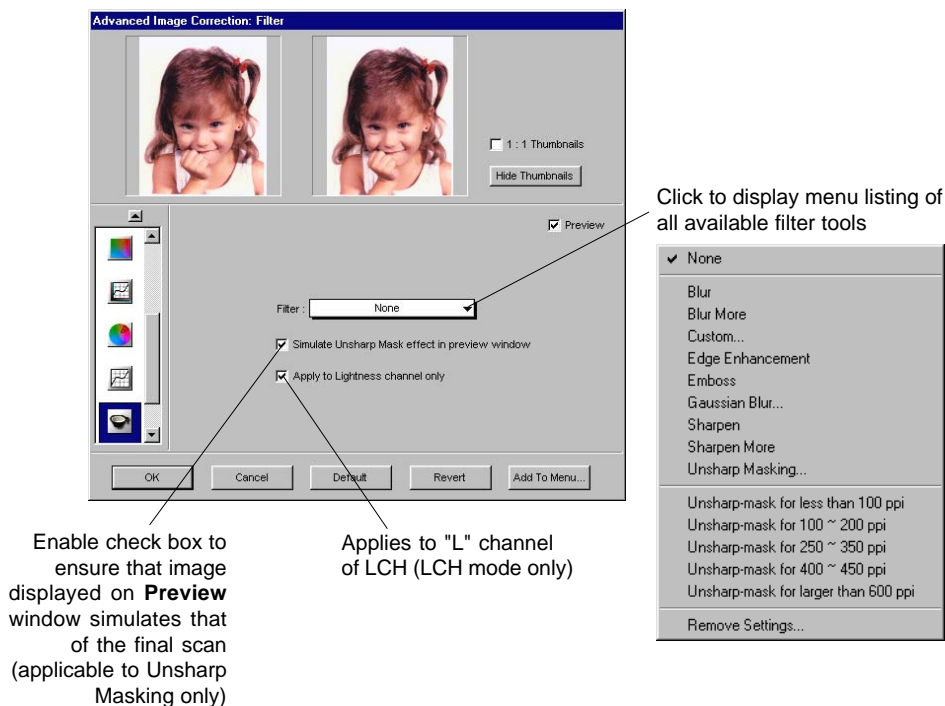
Instead of dragging the Gamma handle, you may directly enter the appropriate Gamma value in this setting edit box

Filter tool

The **Filter** tool is used to create special effects to your images such as blur, Gaussian blur, sharpen, edge enhancement, emboss and unsharp masking.

The Filter dialog box

The final scan result for Unsharp Masking filter can now be simulated and previewed from the **Preview** window.



Blur filters eliminate noise in the parts of the image where significant color transitions occur. The filter decreases the contrast between adjacent pixels, making the image appear hazy and out of focus

- **Blur** smooths out the transitions by lightening pixels next to the hard edges of defined lines and shaded areas
- **Blur More** produces an effect three or four times stronger than Blur



Original



Blur



Blur More

Edge Enhancement filter gives greater contrast to edges. The filter can do this because edges usually are the areas in an image where gray or color levels change abruptly. It is best to use this tool for improving geometrical contouring shape



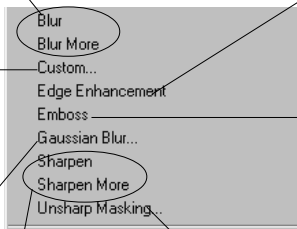
Original



Edge Enhancement

The **Custom** filter changes the brightness values of each pixel in the image according to a predefined algorithm known as convolution. This filter allows you to define a 3x3 or 5x5 mask size custom filter (see dialog box next page for details)

Gaussian Blur filter is used to blur or defocus the area of an image where significant color transitions occur, or noise exists. "Gaussian" refers to the bell-shaped curve that is generated when this filter adjust the color values of the affected pixels. This filter produces a hazy effect (see dialog box in the following pages for details)



Emboss filter makes a selection appears engraved or stamped by suppressing the color within the selection and then tracing its edges with dark shadow



Original



Emboss

Sharpen and **Sharpen More** filters do the opposite of the Blur filters and increase the contrast of adjacent pixels, making images appear sharper and more focused. Both filters improve clarity. The **Sharpen More** filter has a stronger sharpening effect than **Sharpen** filter.



Original



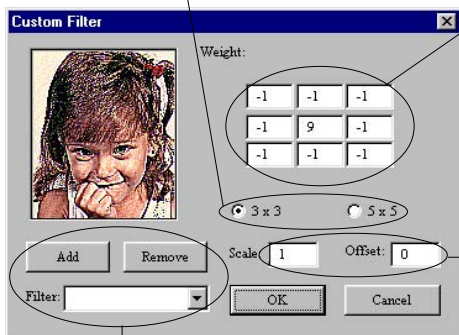
Sharpen



Sharpen More

Unsharp Masking (USM) filter is used to adjust the contrast of edge detail, creating the illusion of more image sharpness. This filter is used for refocusing an image that has become blurry from interpolation or scanning. It is an essential tool for doing CMYK color separation. In general, unsharp mask is needed to make a good sharpness color reproduction, especially when you want to make a large color reproduction from a small original (see dialog box in the following pages for details)

Choose a filter mask size, 3x3 or 5x5. Notice the **Weight** edit boxes switches between 5x5 (25) and 3x3 (9) edit boxes.



Enter a filename in the **Filter** edit box, and click the **Add** button to save current **Custom** filter parameters in the **Filter** menu. Click **Remove** button to delete

Click the center **Weight** edit box. This represents the pixel being evaluated. Enter the value by which you want to multiply that pixel's brightness value. Value range is +/-99

Click a **weight** edit box representing an adjacent pixel for you to assign a weighted value. Enter the value by which you want to multiply the pixel in that position multiplied. For example, if you want the brightness value of the pixel to the immediate bottom of the current pixel multiplied by 1, enter 1 in the **Weight** edit box right under the center **Weight** edit box

Repeat the last two steps for all the pixels you want to include in the operation. It is not necessary to enter values in all the **weight** boxes

In the **Scale** edit box, enter the value by which to divide the sum of the brightness values of the pixels included in the operation

In the **Offset** edit box, enter the value to be added to the result of the scale calculation

Sample **Custom Filter** setting and result



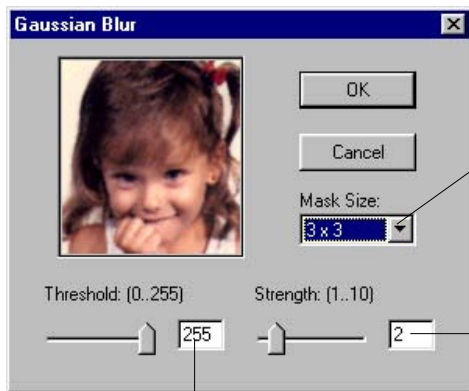
Original

-5	0	0
0	5	0
0	0	0

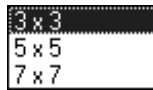
Settings of
Find Edge



Fine Edge
effect



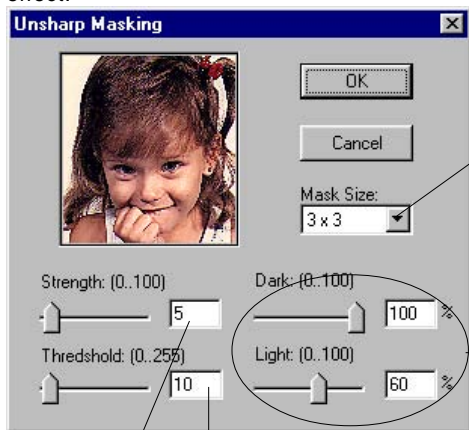
Select a mask size from the **Mask Size** list box. This parameter determines the depth of surrounding pixels that will be affected. The larger the mask size, the stronger the blurring effect of the filter.



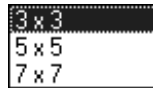
Enter a value (1-10) in the **Strength** edit box (or drag the slider) to specify the degree of the filter's effect. The higher the value, the stronger the blurring effect of the filter.

Enter a value (0-255) in the **Threshold** edit box (or drag the slider). This option allows you to specify a tolerance range to prevent overall blurring that might generate a too smooth or defocused result on undesired image area. The Threshold defines the required range of contrast between adjacent pixels before blurring is applied. Only the pixels with the range of contrast below Threshold value, will be subjected to blur effect. Therefore, the smaller the Threshold value, the weaker the blurring effect.

Sample **Gaussian Blur** filter result



Select a mask size from the **Mask Size** list box. This parameter determines the depth of pixels that will be affected at the edge. For small, low resolution image file, 3x3 is sufficient. For higher resolution or large scaled image file, use 7x7



Drag sliders or enter a **Dark** value (0-100%) and **Light** value (0-60%) to control the sharpness effect of the light and dark edges to be applied separately to the image. In general, too much Unsharp Mask on light edges would make the image looks unnatural due to sensitivity of human vision toward bright image area. If both values are 0, **Unsharp Masking** is disabled

Enter a value (0-100) in the **Strength** edit box (or drag the slider) to specify the degree of the filter's effect. The higher the value, the stronger the effect of the filter

Enter a value (0-255) in the **Threshold** edit box (or drag the slider) to specify a tolerance range to prevent overall sharpening that might generate noise. **Threshold** defines the required range of contrast between adjacent pixels before sharpening is applied to an edge. A lower value produces a clearer effect

Sample **Unsharp Masking** filter result



Descreen

Descreen allows you to remove moiré patterns in images.

A moiré is an undesirable pattern in printing that results from incorrect screen angles of overprinting halftone. Moiré usually result when you scan images taken directly from a magazine (instead of scanning a continuous glossy photographic original or a transparency).



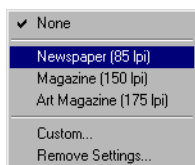
Before Descreen



After Descreen

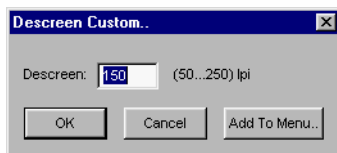
To use Descreen:

1. Click on the Descreen pop-up menu.
2. When the Descreen menu comes up, select the screen for your needs.



- Choose *Newspaper (85 lpi)* if the original image has a coarse dot pattern (like images in a newspaper).
- Choose *Magazine (150 lpi)* for images with a finer dot pattern.
- Choose *Art Magazine (175 lpi)* for images with near-photographic quality with a very tight dot pattern.
- Choose *Custom* to set your own descreen options.

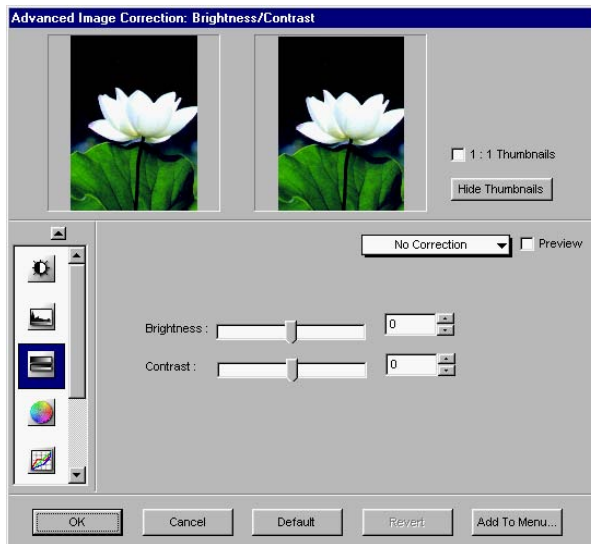
A check appears next to the descreen option that is enabled.



Clicking the “Add to Menu...” brings up a dialog box for your saving the descreen as a name for future retrieval.

Brightness and Contrast tool (Native Color Mode only)

The Brightness and Contrast tool changes the brightness, contrast of the entire image.



Brightness

The **Brightness** control lets you change the brightness setting. Too much brightness can make an image look washed out.

Contrast

The **Contrast** control lets you change the contrast setting.

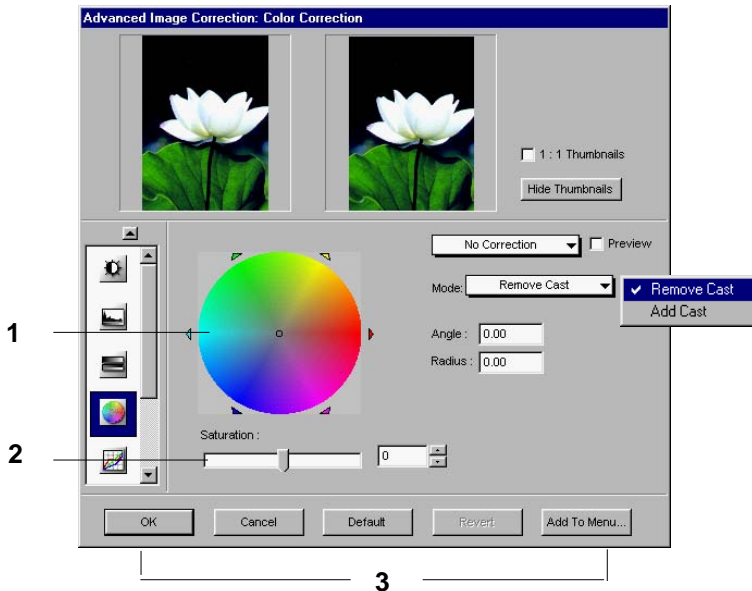
- High contrast can make an image look like a photocopy of a picture with little or no gray shades.
- Low contrast can make an image look dull and flat.
- Very low brightness levels can make an image look very dark.

Individual channel adjustment for brightness/contrast is not supported. For RGB color image, the same effect applies to all channels. For Lab color image, brightness and contrast applies to L (Lightness) channel only.

Color Correction tool (Native Color Mode only)

This tool changes hue and saturation of the image. The Color Correction tool lets you click on the preview image to remove the unwanted color cast. The parameters needed to balance the clicked pixel is reflected on the color wheel, angle and radius values are updated accordingly.

The Color Correction tool is useful when the image has a particular color cast and you wish to remove the cast to make the image look neutral.



Color Wheel

The **Color Wheel** shows you the position of colors — green is across magenta, and red is across cyan. By moving the pointer (a small dot in the center of the wheel) to another place in the color wheel, the hue of the image is altered. For instance, if you move the pointer towards the green area of the wheel, the image will acquire a greenish cast.

Saturation bar

The **Saturation bar** lets you change the intensity of the hues (colors) in your image. Use Saturation selectively, because increasing saturation will intensify all hues in the image.

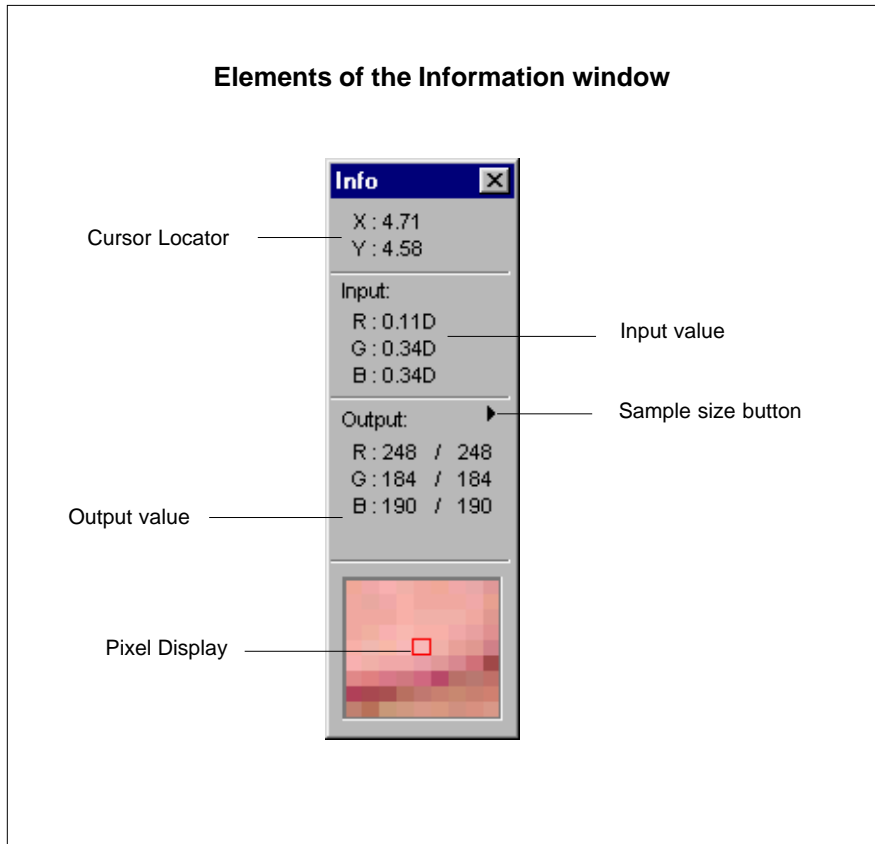
Using the Color Correction tool

1. To change the hue of an image, move the pointer in the color wheel to its new color position in the wheel.
2. To change the saturation of an image, drag on the saturation bar. Dragging the slide bar to the left decreases saturation; dragging it to the right increases saturation.
3. Click on an action button.
 - Click OK to accept changes and exit the AIC dialog box.
 - Click Cancel to abandon all changes and exit the AIC dialog box.
 - Click Reset to restore settings to original default values.
 - Click Revert to cancel the effect of the current image-enhancement tool.

The Information Window

The Information window is a floating window that provides preview image information at the cursor location. It also allows you to change zoom levels directly, in much the same way like using the Magnify Glass tool in the Preview window.

To display the information window, click on the *Show Info window* command in the View menu in the Preview window.



Cursor Locator

The **Cursor Locator** shows where the cursor is on the coordinates along the x (horizontal) and y (vertical) axis, based on the unit of measurement selected for the rulers. This feature is useful for operations that require very precise measurements and alignment.

Input value

This data indicate the input density values of the scanned raw image data. This information is useful for you to locate Dmin/Dmax points.

Output value

This data indicate the output values of the selected image type. The image type is selected from Settings window. The value at the left side is the image data *before* processing by White/Black points, Tone Curve, Brightness/Contrast, Color Corrections, and Filters. At the right side is the image data after the processing (White/Black points, Tone Curve, Color Corrections, and Filters) .

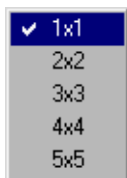
Indications of output value range depend on output image types. See the table below.

Image Type	Pixel Range
8-bit color	0 - 255
10-bit color	0 - 1023
12-bit color	0 - 4095
CMYK	0 - 100%
Gray Scale	0 - 100%

Sample size button

The **Sample Size button** lets you choose how extensively the color information will be read — whether it will apply to a single pixel or an averaged area.

Clicking the **Sample Size button** displays the sample size. The values as a whole represent color information for the sample size selected in the Sample Size button. For instance, if you chose 3 x 3 as your sample size and your R value reads 23, that shows your red value of 23 is the average of a 3-pixel by 3-pixel area.



Pixel-value information is useful when you are making image corrections based on color values. Knowing this, you can modify the White and Black points of an image, then come back to the same point in the image, and verify through the output value that the image type values have indeed changed.

Using the Pixel Display

The Pixel Display helps you see how color pixels are organized and distributed. The display can then help you make an informed judgment on how best to modify image characteristics such as White and Black points, it also allows you to verify any changes you have made.

The Scan Job Queue Window

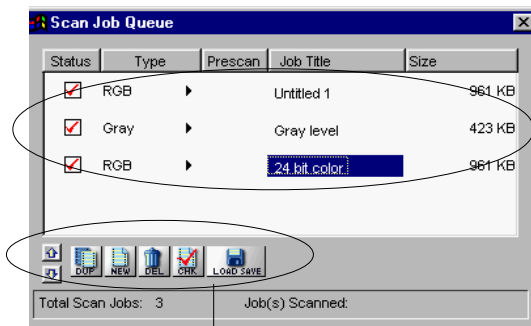
The Scan Job window provides several key functions in managing your scan jobs.

A scan job is simply a task that you designate the scanner to process and scan. For instance, when you first preview an image, the image as a whole has its own parameters (its own brightness and contrast setting, resolution, etc.). The whole image can be treated as one scan job, or you can select part of the image, apply different parameters to it, and treat that as a separate scan job. Scan job 1 can be in color mode, while scan job 2 can be in grayscale mode.

By making the scan jobs distinct, you can then manage each job separately (apply image correction, change settings, etc.) and scan them as separate files into your image-editing software (if the software supports multiple open images).

The number of scan jobs is indicated by the number of titles in the Scan Job window. Scan jobs marked with a check are the ones designated to be scanned, and the jobs are scanned in the order that they appear in the window.

Scan Job Queue window



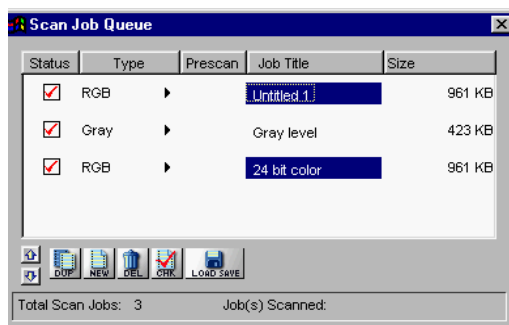
This area shows the number of jobs that have been created. In this example, there are three scan jobs. Check marks indicate which job or jobs are to be scanned; the highlighted title indicates the current scan job. To rename a scan job, highlight the title and type over a new name.

Function buttons: The function buttons allow you to create or manipulate the settings for a scan job. These buttons include the Up and Down position arrows; Duplicate, New, Delete, Check, and Load/Save.

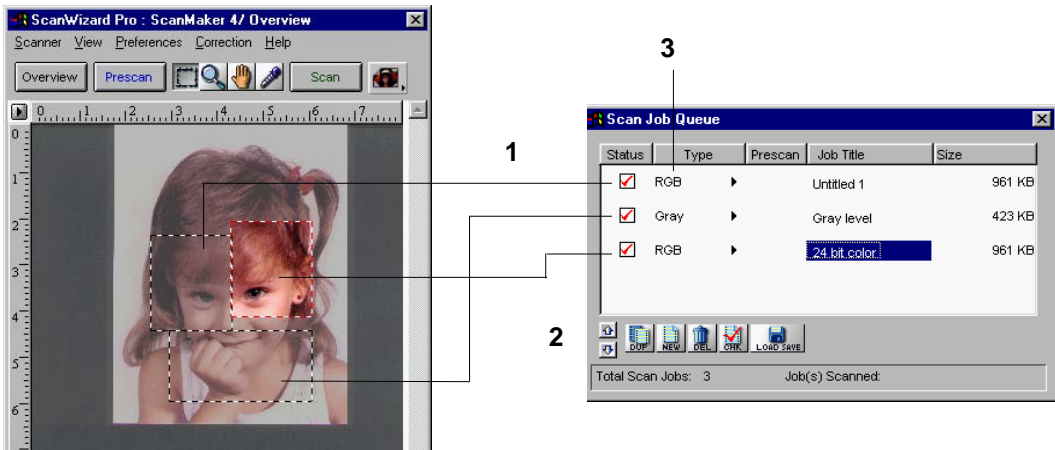
Multiple Selections

Duplicate, Delete, and Check buttons allow multiple selections.

For multiple random selection, holding down the *Ctrl* key, then click the scan jobs respectively; for sequential selection, click the “begin” scan job, then holding down the *Shift* key, click the “end” scan job. The highlighted scan jobs are selected.



How to read the Scan Job window



1. The example above shows three scan jobs.
 - The first scan job, entitled *Untitled 1*, is a color image.
 - The second scan job, entitled *Gray level* is a grayscale image.
 - The third scan job, entitled *24 bit color*, is a duplicate that shares the settings of the first scan job.

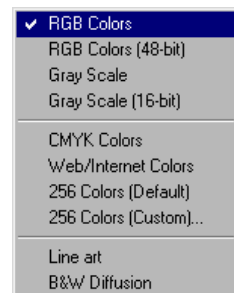
The current scan job is the third scan job (24 bit color), as it is highlighted. This is also evident in the Preview window, as the third scan job is the one enclosed by the current scan frame.



2. All three scan jobs will be scanned, as each is marked with a check. To change the order in which the jobs will be scanned, use the Up and Down position arrows to change the sequence of the titles.

Note: The Smoked Glass Background feature is turned on in the above example to mark clearly the current scan job.

3. The image-type icon in front of the scan job title shows the scan job type whether it is color, grayscale, line art, or halftone. A color scan job will have a color image-type icon; a grayscale scan job will have a gray image-type icon; and a line art or halftone scan job will have its corresponding image-type icon.





The New button

The New button lets you create a new scan job; the new scan job will have default settings. This feature allows you to create as many scan jobs as you wish, and each scan job can then have its own settings.

A scan frame may already be present after you click on the Overview button and the preview image appears.

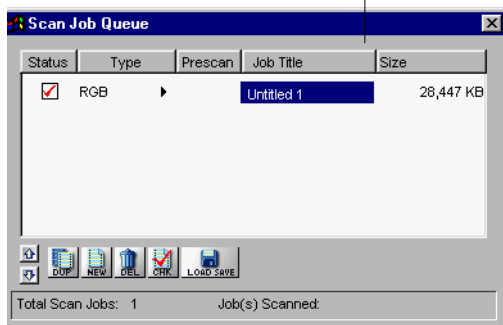
You can then simply grab one of the corners of the scan frame and drag towards the left to form the scan frame described above. You can also click on the Frame tool and redraw the frame. Both methods will work.

In the following example, we will use a single image and then divide it into two parts: the left half of the image will comprise one scan job and will be in color; the other half of the image will make up the second scan job and will be in grayscale.

To use the New button:

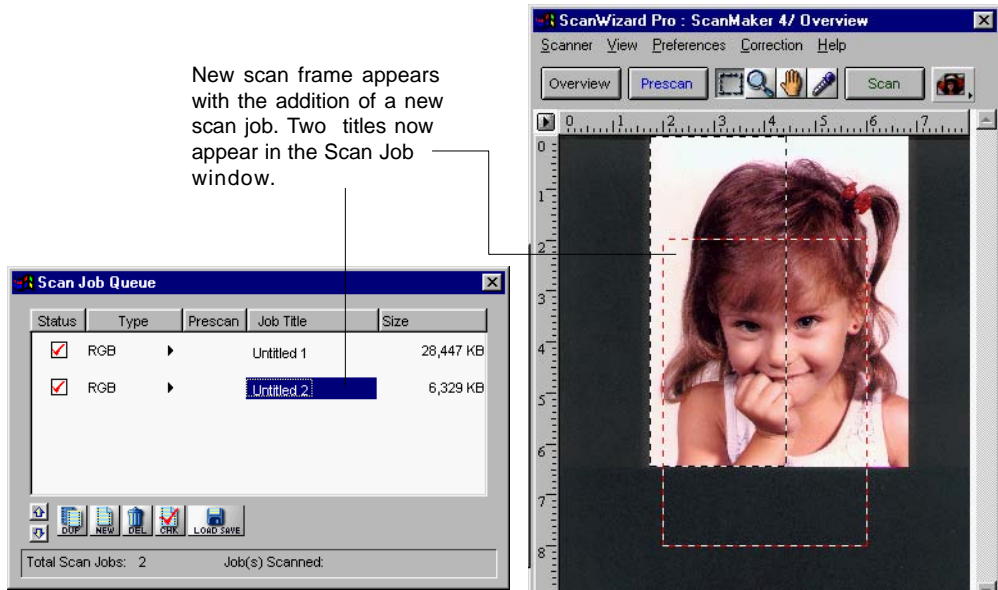
1. Click on the Overview button to see a preliminary view of the image.
2. When the preview image appears, draw a scan frame that covers the left half of the image. At this time, your scan job area shows the title of the current scan job (*Untitled 1*). Make sure the image type selected (in the Settings window) for this scan job is *RGB colors*.

Scan frame around left half of image. This corresponds to the current scan job in Scan Job window.



- Click on the New button in the Scan Job window. When a dialog box comes up, give a title to the new scan job, then click OK. In this example, we will call the new scan job Untitled 2. The Scan Job window will now have two titles. At the same time, a new scan frame appears in the preview window.

New scan frame appears with the addition of a new scan job. Two titles now appear in the Scan Job window.



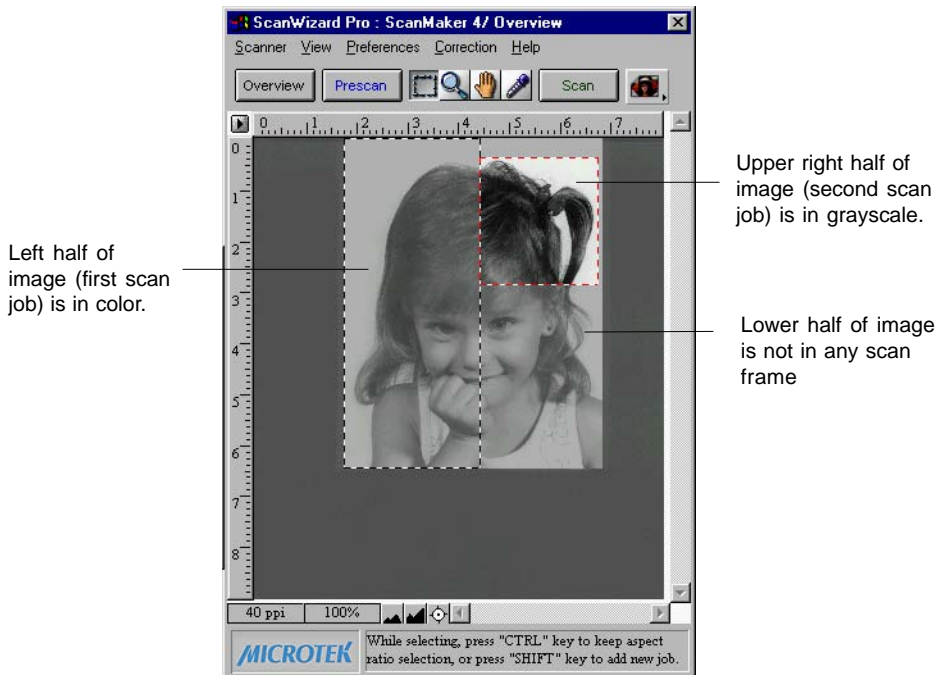
- Draw the second scan frame around the right half of the image. In this case, confine the scan frame to the upper right half; leave the lower right half free. The reason why will become apparent in the next step. (For details on drawing the scan frame, see the *Note* that comes after #2.)



5. With the title bar in the Scan Job window highlighting the second scan job, go to the Settings window, then choose *Grayscale* in the Type box. Next, go to the Preferences menu in the Preview window, choose *More* command, and enable the *Smoked Glass Background* command.

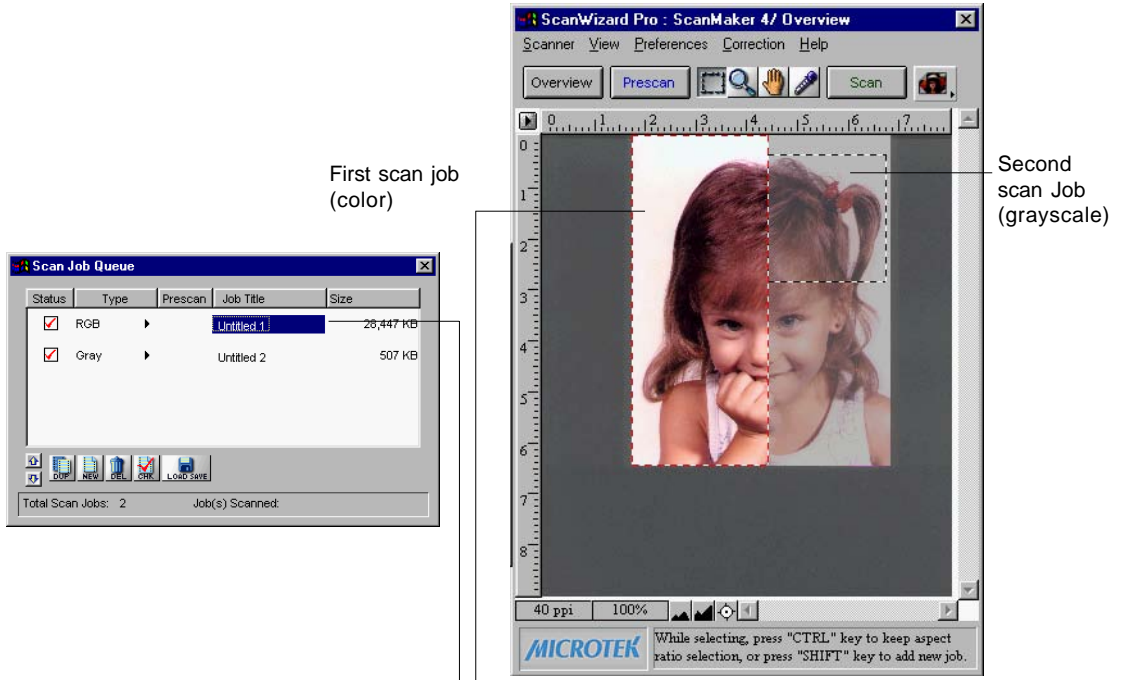
You will now see the following:

- The second scan job (the upper right half of your image) is in grayscale.
- The first scan job (the left half of the image) remains in color.
- The lower right half of the image (the part not included in any scan frame) is hidden behind the smoked glass background. The smoked glass command is not essential for doing a scan job, but it helps you distinguish scan frames more easily.



6. To see how the scan jobs relate to the titles in the Scan Job window, try this.

- Click on the first scan job title. The scan job that becomes active will be the left half of the image (in color). In the Scan Job window, the title will be highlighted, indicating that it is the current scan job.
- Click on the second title, and the second scan job is activated (upper right-hand part of image, in grayscale). The second title will now be highlighted because it will be the current scan job.



Clicking on the first title activates the first image. Clicking on the second title will activate the second image.

7. To designate the scan job to be processed and scanned, select the scan job and click on the Check button. The checked scan job(s) will then be scanned in the order that they appear in the Scan Job window, and they will be delivered separately to your image-editing software.

More on the New button

The above example shows how to use the New button to create different scan jobs. While the example makes use of creating two scan jobs from a single image, with each scan job being a different image type, you can use the same principle in different applications.

For instance, you can:

- Create two or more scan jobs from a single image. The scan jobs may be the same image type (all color or all grayscale), but each job could have different brightness and contrast settings, resolution, etc.
- Create different scan jobs from multiple images. Instead of one, you can have two or more images and designate each image as a separate scan job. Image 1 could be color, image 2 could be grayscale, and image 3 could be line art. When the three scan jobs are scanned, each is delivered into its own file.

When you have multiple scan jobs and designate all of them for scanning (all scan jobs are checked), each job will be scanned once you activate scanning, and each job is delivered to its own file in your image-editing software.



The Duplicate button

The Duplicate button lets you duplicate the settings of a scan job. This function is especially helpful if you have created optimal settings for a scan job and wish to use these settings as a template for other scan jobs. This saves time, as you don't have to create the settings repeatedly for every scan job you make.

Before using Duplicate, it is helpful to turn on the Smoked Glass Background feature. This will allow you to see clearly the effects of duplication.

To use the Duplicate button:

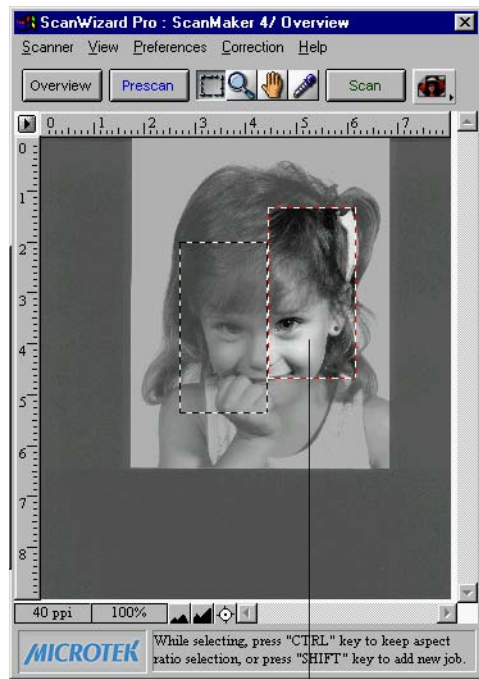
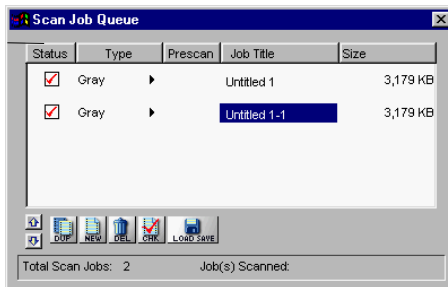
1. Click on the Overview button to see a preliminary view of the image. To show the principle of duplication clearly, choose image type (in the Settings window) as *RGB colors*. Also, turn on the Smoked Glass Background feature (in the Preferences menu of the Preview window). Draw a scan frame around a part of an image. This is your current scan job.
2. Draw a scan frame around a part of the image. This is your current scan job.

Draw scan frame around image part. This is the current scan job.



3. To see the effects of duplication clearly in the steps that follow, do this as an experiment. Set the image type of the current scan job to *Grayscale*. You will see the current scan job as a grayscale job, while the rest of the image behind the smoked glass background remains in color.
4. Click on the *Dup* button. Draw another scan frame around a different part of the image; this is your duplicate scan job. You will see that the duplicate scan job will also be in grayscale, as it shares the settings of the current scan job. In the Scan Job window, there will be two titles, and the duplicate scan job is the one with a number to it (ex. *Untitled 1-1*).

Duplicate scan job (indicated by number in the title)



Duplicate scan job, also in grayscale



The Delete button

The Delete button allows you to delete a scan job.

To use the Delete button:

1. Click to select the scan job template for deletion. Multiple deletion is permitted.
2. Click on the Delete button, then click OK.



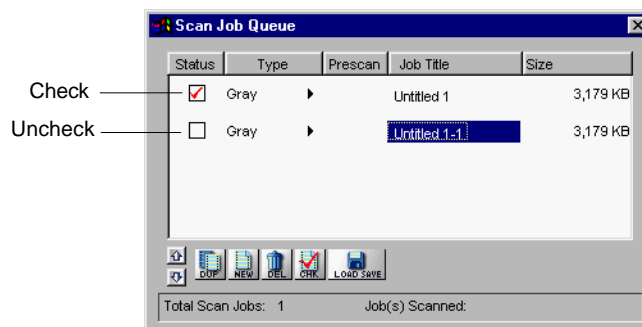
The Check button

The Check button allows you to select the scan jobs to be scanned. When you then click on the Scan button to start scanning, the scan jobs marked by a check are the ones that will be scanned. The Check button is a toggle.

To use the Check button:

1. In the Job Title area of the Scan Job Queue window, select the scan job to be scanned.
2. Click on the *Check* button. A check will appear next to the selected scan job.
3. To uncheck a selection, select the scan job to be unchecked, and click on the *Check* button again. The scan job will be unchecked, and the scan job will not be scanned when you click on the Scan button.

Shortcut: To check or uncheck a scan job, you may toggle-select the Check icon underneath the Status column.



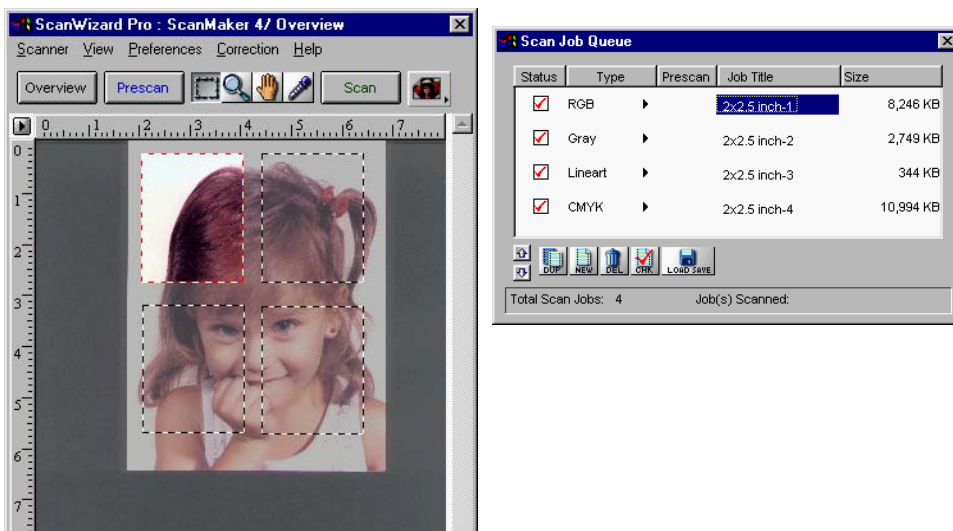


The Save/Load button

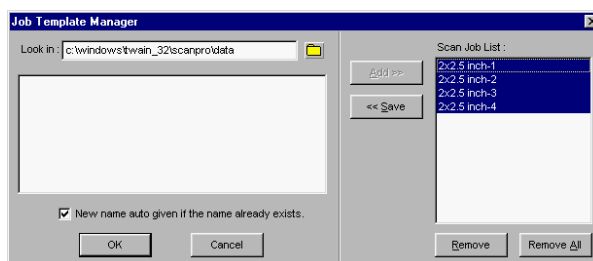
The Save/Load button lets you save current scan jobs as templates, also let you load the scan job templates you have saved.

To save scan job as a template:

1. Click on the *Load/Save* button.



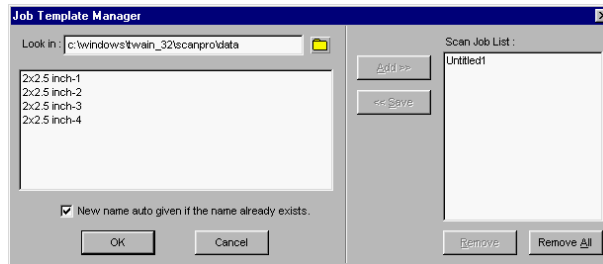
2. At the right column, highlight the scan jobs you want to save.



3. Click on the Save button. The scan job templates are saved under the directory shown at the upper left hand side. In this example, the directory name is "C:\windows\twain_32\scanpro\data". You may specify different directories for respective scan job templates (e.g., 6x7 cm, 35mm, et. al.).

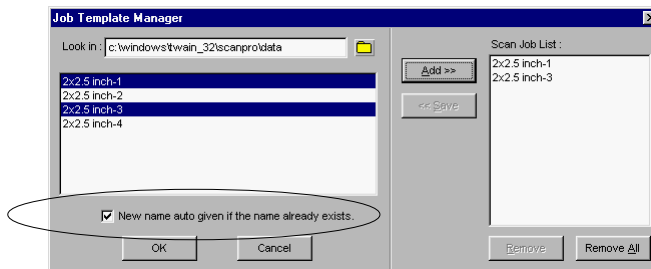
To load scan job templates:

1. Click on the *Load/Save* button.



Other than the default directory, you can also click on the folder icon, choose the directory for Load/Save

2. You may remove your existing scan jobs at the right column before loading the new scan job templates.
3. At the left column, highlight the scan job templates you want to load. You can put more scan jobs to left column by looking in default directory.
4. Click on the Add button.



New name auto given if the name already exists

When you load or save scan job templates, you may check or uncheck the “New name auto given if the name already exists” option. Suppose the scan job templates already exist, if you check this check box, the number suffix is automatically appended as a new scan job. If unchecked, the existing scan job templates are overwritten.



The Up/Down Position Arrows

The Up/Down position arrows allow you to change the sequence in which jobs are scanned through changing the order of the scan jobs in the Title area.

To use the Up/Down position arrows:

1. In the Title area of the Scan Job window, select the scan job to be moved up or down.
2. Click on the Up or Down arrow to change the order of the scan job in the list. When you start scanning, the scan jobs will be processed and scanned in the order that they appear in the Scan Job window (i.e., the first scan job is scanned first; the second scan job is scanned second, etc.).

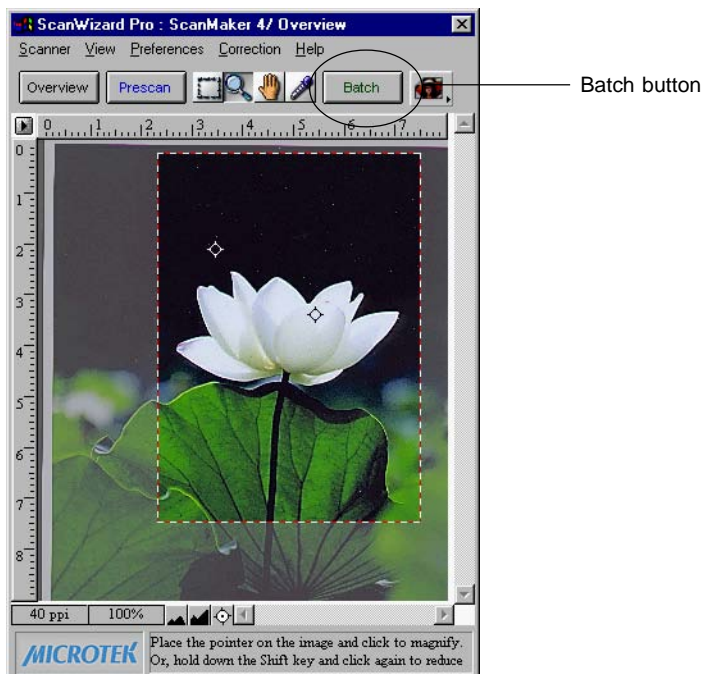
Scan to File

The Scan to File function executes multiple scan job batch scanning.

ScanWizard Pro not only is a Twain driver that works with an image application, but also a program that can be run independently, achieving the Scan-To-File feature. This function is most useful in networked workstation operations. You may scan images at a site, and let co-workers share to use the scanned images.

Entering Scan to File mode

When you double-click on the Microtek ScanWizard Pro icon in the programs group, or select it from Start, Programs, Microtek ScanWizard Pro for Windows menus, you have chosen the Scan to File mode. Consequently, in the Preview window, the Scan button is changed as Batch button.



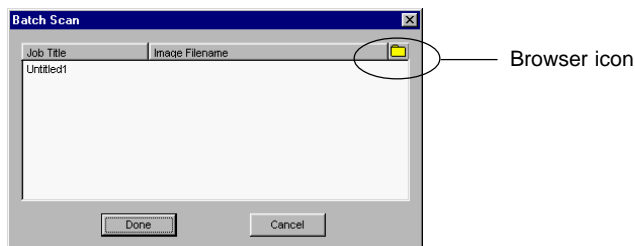
How to perform Scan-to-File

1. Perform preview and create scan jobs, as the way you do when running ScanWizard Pro within image application.



2. Click on the Batch button.

A Batch Scan dialog box displays, allowing you to enter the respective file names for individual scan jobs.



Cursor is located at the Image File name entry of the first scan job. You may either directly input the file name, or click on the Browser icon which is located in the upper right corner of the dialog box, then assign the file name. Current scan job is reflected on the Preview window for the respective scan frame. If the preview image is in the Prescan mode, it will be switched to Overview mode.

3. Specify file name.

Auto Filename for All jobs: If you check “Auto Filename for All jobs” option in the Save As dialog box, the filenames for saving are generated in a sequential manner. For example, simply assign the filename “color” will spawn color-1, color-2, et. al. The start-up count can be assign at the “Filename starting index” entry.

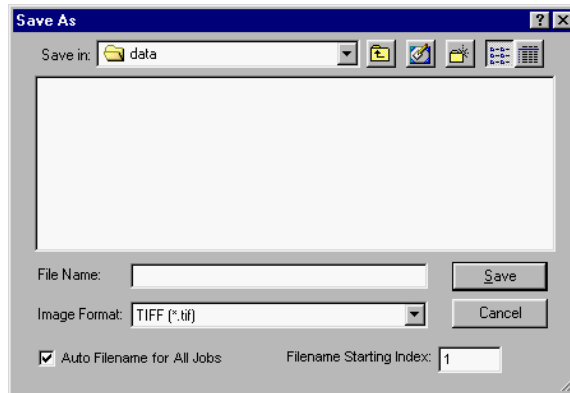
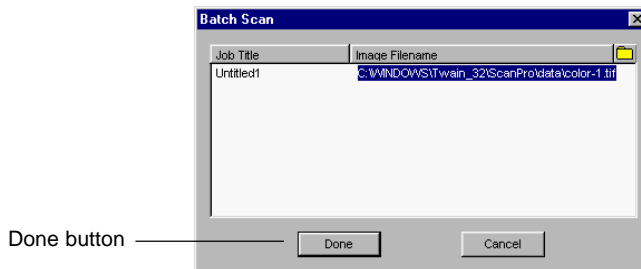
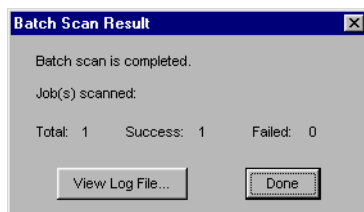


Image format: The available image formats are: TIFF (default), BMP, EPS, JPG, PSD, and SCT. For more information of the image types each file format support, refer to Appendix E.

4. Upon clicking the Done button, ScanWizard Pro closes the dialog box, and carries out Batch Scan task.



- When done, the Batch Scan Result dialog box displays, allowing you to view a logged report.



Available File Formats for “Scan to File” Function

ScanWizard Pro’s “Scan to File” features batch-scanning function, allowing you to carry out scan-and-save images as several file formats. Not all file formats are available for different image types, you should select the proper file format with the image type that meets your requirements. For details, see the following cross-reference table.

	TIF	EPS	BMP	PSD	SCT	JPG
RGB Colors	V	V	V	V		V
RGB Colors (48-bit)	V					
Gray Scale	V	V	V	V	V	V
Gray Scale (16-bit)	V					
CMYK Colors	V			V	V	V
Lab Colors	V					
Web/Internet Colors						
256 Colors (Default)	V		V	V		
256 Colors (Custom)						
Line art	V	V	V	V		
B & W Diffusion						

Appendix

This section contains important information on product and support policies, troubleshooting, and other scanner-related features. The following subjects are covered:

- Product and Technical Support
- Kodak Color Management System (KCMS)
- PhotoShop 5.0 Color Settings
- Troubleshooting
- Glossary

Appendix A: Product and Technical Support

If you need to call Technical Support, please have the following information ready:

- Your scanner model. The model name is indicated on the front of the scanner, not the back.
- The scanner's serial number. This can be found on the back of the scanner, near the SCSI ports.
- Your computer name and model
- The version number of ScanWizard Pro for Windows. This is indicated on the ScanWizard Pro CD-ROM.
- Your system components, or the devices on your system, such as an external hard drive, CD-ROM, etc.
- Software being used with your scanner.

Important

Aside from having the above information ready, please make sure that when calling technical support, you (or someone calling for you) are knowledgeable about the basic operations that may need to be performed on PCs. These procedures include:

- How to edit the CONFIG.SYS file
- How to edit the Windows WIN.INI file
- How to install a card in your PC, and how to remove it

Microtek's technical support will not walk you through these procedures. You are assumed to have knowledge of your DOS and Windows systems.

Appendix B: Kodak Color Management System

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KCMS Overview

Some Background Information

Everyone perceives colors differently. Even the same person's perception can be affected by different lighting conditions. Different devices (input, display, and output) also interpret and define color differently and simply can't create the same gamut (or "range") of colors.

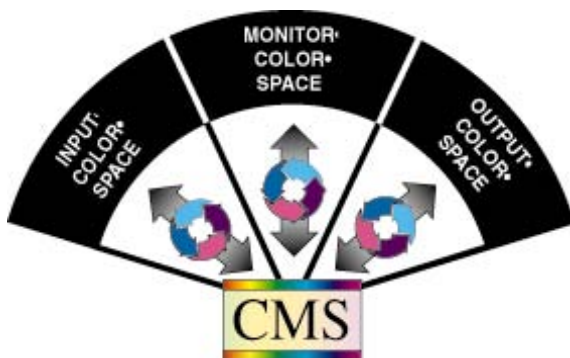
The goal of color management, then, is to help you get accurate, predictable color across all devices by managing, compensating for, and controlling these differences.

The Idea Behind Color Management

Each type of device reads, displays, or interprets color in a unique way. This unique interpretation is called a "device dependent color space." And while there are groups of color spaces, such as RGB or CMYK each device is still unique within its group. For example, monitors display color in RGB, yet each monitor displays a unique version.

The CMS automatically translates between each device dependent color space—so the color data is accurate and understandable.

This chart shows the central role of the CMS in managing device dependent color spaces.

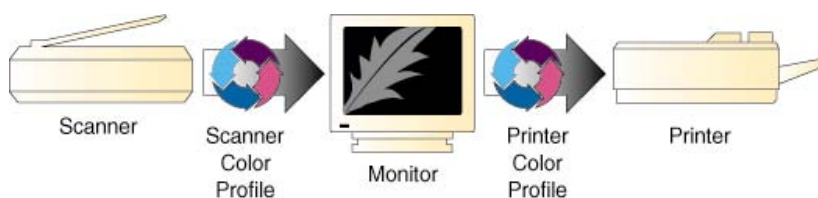


How Color Management Works

The aim of color management is to preserve true color information by making up for the differences in the way devices communicate color. Your CMS does this by using a scientifically designed system including:

- A Color Matching Processor
- A Device-Independent color space, frequently called a Reference Color Space or Profile Connection Space (PCS), which acts as a Rosette Stone in the translation process
- Device Color Profiles (DCPs)

DCPs relate a device dependent color space to the Profile Connection Space. The CMS uses the Color Profile to translate from one device dependent color space to another.



How CMS Translates between Devices

When you scan an image, a CMS uses the information about the scanner—stored in the Scanner Color Profile—to translate the RGB image from the scanner to the Profile Connection Space. The CMS then uses the information about your monitor—stored in the Monitor Color Profile—to translate the image from the Profile Connection Space to your monitor color space, where you see it displayed.

In this example, the scanner is the “source” device, and the monitor is the “destination” device.



When you print the image, the CMS again translates the image data from the monitor's RGB color space to the printer's CMYK color space—using the information about both devices as stored in their Color Profiles.

So, although all of the devices in this example use different device dependent color spaces, the CMS is able to translate between them and produce accurate, predictable color.



What are Device Color Profiles

Color Management Systems use Device Color Profiles to interpret color data between devices. DCPs are a collection of one or more ICC Profile data files. ICC Profiles contain color characteristics of a given device (input, display, or output).

ICC profiles conform to the International Color Consortium profile specification, allowing the same device profiles to be used across multiple platforms.

Where Do Color Profiles Come From?

Color Profiles are created by either Kodak scientists or other color professionals using specialized software packages, sometimes known as profile building tools.

Kodak scientists use sensitive, specialized equipment to measure the color characteristics of a representative example of each device, as supplied by the manufacturer, to determine the intrinsic properties of the device.

From these measurements they develop a “characterization” of the device, called a Device Color Profile, for each make and model measured.

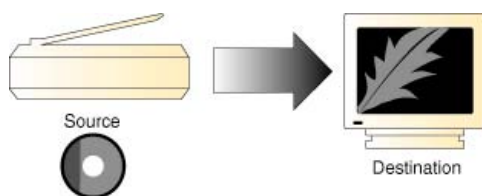
The Color Profile includes color tables that relates the device’s color space to a Profile Connection Space, as well as information about key attributes of the device for use by CMS-based applications.

A Word about Source and Destination

People often get confused about what is the “source” of an image and what is its “destination,” so let’s clarify this.

In general, the “source” of an image refers to where the image currently is, and the “destination” is where you want the image to go.

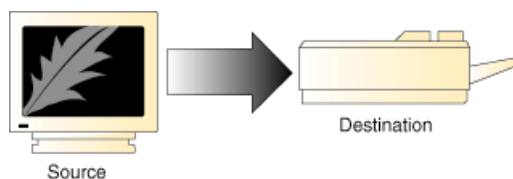
In CMS terms, “source” means the Color Profile used to bring the image data into the Profile Connection Space (PCS). “Destination” means which Color Profile is used to get it from PCS to the destination device. For example, when you scan in an image, you want it to appear on your monitor. So the source is your scanner, and its related Color Profile, and the destination is your monitor, using its Color Profile.



Likewise, when you open a Photo CD image, the source is the Photo CD, plus the Color Profile that relates the color data to the PCS, and the destination is the monitor, plus the Color Profile that relates the PCS to the monitor’s color space.

Here’s another example: Let’s say you manipulate the image on your monitor screen, and print it.

The source this time is the monitor (plus the Color Profile that relates it to the PCS), and the destination is a printer (plus the Color Profile that relates the PCS to the printer’s color space).



So, Source and Destination mirror a logical two-step process most Color Management Systems use to translate images between device color spaces;

- The Source Profile brings the image into the PCS
- The Destination Profile connects the image from the PCS to the output device, such as a Monitor, Printer, or Proofer.

However, this is not the case with a Kodak CMS.

Kodak has patented its composition technology. This technology takes the Source and Destination Profiles and composes them into a single color transforming profile.

This technology adds significant improvement in the quality and performance of the Color Management System.

Note: You use the Source/Destination information when you setup or use your CMS-based application, such as PageMaker 6.5.

Controlling UCR & GCR

Controlling UCR and GCR with Professional CMYK Profiles

In the final stages of color prepress production, the issues change: And your role changes with them. You become that of a professional separator. And it becomes a question of how skilled you are at making good films, films that run correctly on press, avoiding downtime, rework, and expense.

Kodak Digital Science Professional CMYK Profiles helps you with your separations. It expands your selection of undercolor removal (UCR) and gray component replacement (GCR) options, so you can produce correct, quality separations.

Some Background

It is difficult to print four wet layers of ink on top of one another. This is one of the physical constraints of the printing process.

In theory, if you printed a 100% of each CMYK layer, you would have 400% Total Area Coverage (TAC). Real-world experience proves this to be impractical. It is difficult to print jobs that have more than 340% TAC, and most printers feel more comfortable with 280% TAC.

Another area of practical concern is in how process inks are combined. Most printers can not produce a clear, dense black from cyan, magenta, and yellow. Black is needed to produce better details, contrast, and to get a desirable density. Adding black to CMY reduces ink coverage TAC, and thus improves the ability of paper to firmly hold each layer of wet ink, known as ink trapping.

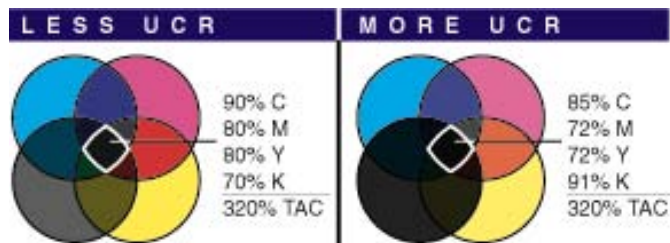
So, from the concerns about ink coverage and ink combinations have come tried-and-true approaches to producing excellent films for excellent separations.

Two aspects of the offset printing process are undercolor removal (UCR) and gray component replacement (GCR).

UCR

Undercolor removal is the practice of removing quantities of yellow, magenta, and cyan ink from the dark neutral areas in a reproduction and replacing what was removed with an appropriate amount of black. Kodak implements UCR in its Color Profiles within a TAC constraint: CMY gets replaced by the maximum amount of K up to the TAC limit—so you get the highest possible density.

The neutral center of both diagrams show different UCR/TAC settings. With UCR applied, less process inks and more black increases the density in the shadows.



Advantages & Disadvantages to UCR

Undercolor removal within a TAC constraint reduces the problem of printing four solid layers of ink, one on top of the other, while each previous layer is still wet. Reducing the ink coverage, TAC, improves the ability of the paper to firmly hold each layer of wet ink.

Less ink means better control, and faster drying times. Also, replacing cmy ink with the less expensive black ink has proven more cost efficient on long runs that use more ink.

Also, blacks and neutrals that print black are not influenced easily by shifts in the chromatic inks which cause color casts in the shadow tones. Separations produced with greater UCR produce darker blacks which result in better shadow detail.

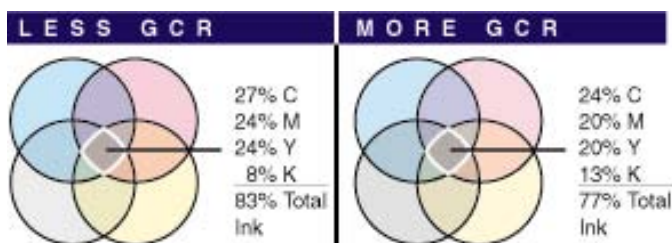
However, some printers don't like high UCR because of **on-press dot** gain and contrasty rosettes.

GCR

Gray component replacement is a variation on undercolor removal. The theory is simple: Whenever amounts of cyan, magenta, and yellow are present in the same color, that color has a gray component. Some or all of this gray component can be printed with black ink while maintaining the original color appearances.

In contrast to UCR, GCR involves a more general color replacement, with black being substituted over all colors.

The neutral center of both diagrams looks the same. With more GCR applied, less color ink and more black ink produces the same color.



Advantages & Problems of GCR

The main advantage of GCR is it reduces the effects of variations on press, so when ink coverage varies, the colors become slightly lighter or darker, rather than changing hue.

Increased amounts of GCR also allows your printing company to use a somewhat higher proportion of black ink, thus reducing cost—which saves you money.

High levels of GCR and/or UCR expand the overall gamut, so darker and more saturated colors are achievable. However, with too light GCR you may not get as saturated a color as with higher levels of GCR.

Professional CMYK Profiles Package

What You Get with Professional CMYK Profiles Package

“Professional CMYK Profiles” was developed for the serious professional, who is concerned about productivity, quality separations, and color fidelity.

With “Professional CMYK Profiles”, you get six different UCR/GCR settings that conform to generic CMYK SWOP, Japanese Ink Standard, and Euroscale standards—Letting you select the best values for your printing conditions.

Any of these combinations give you the control you need to optimize your separations for your proofing and printing applications, reduce your printing costs, and minimize ink trapping problems on press.

However, check with your printer as to the optimal UCR/GCR setting to select for your printing conditions.

The following two pages list the settings for the three standards.

EUROPEAN PRINTING STANDARDS:

Filename	Profile Description	GCR	Maximum TAC
eucmyk02.icm	Light GCR 260 UCR CMYK Euro Positive Proofing	Light	260%
eucmyk04.icm	Light GCR 280 UCR CMYK Euro Positive Proofing	Light	280%
eucmyk06.icm	Light GCR 300 UCR CMYK Euro Positive Proofing	Light	300%
eucmyk08.icm	Light GCR 320 UCR CMYK Euro Positive Proofing	Light	320%
eucmyk10.icm	Light GCR 340 UCR CMYK Euro Positive Proofing	Light	340%
eucmyk50.icm	Light GCR 360 UCR CMYK Euro Positive Proofing	Light	360%

U.S. CMYK SWOP PRINTING STANDARDS:

Filename	Profile Description	GCR	Maximum TAC
gncmyk02.icm	Light GCR 260 UCR CMYK US Negative Proofing	Light	260%
gncmyk04.icm	Light GCR 280 UCR CMYK US Negative Proofing	Light	280%
gncmyk08.icm	Light GCR 320 UCR CMYK US Negative Proofing	Light	320%
gncmyk10.icm	Light GCR 340 UCR CMYK US Negative Proofing	Light	340%
gncmyk14.icm	Medium GCR 280 UCR CMYK US Negative Proofing	Medium	280%
gncmyk18.icm	Medium GCR 320 UCR CMYK US Negative Proofing	Medium	320%
gncmyk28.icm	Heavy GCR 320 UCR CMYK US Negative Proofing	Heavy	320%
gncmyk50.icm	Light GCR 360 UCR CMYK US Negative Proofing	Light	360%

JAPANESE PRINTING STANDARDS:

Filename	Profile Description	GCR	Maximum TAC
jpcmyk02.icm	Light GCR 260 UCR CMYK Japan Std. Proofing	Light	260%
jpcmyk04.icm	Light GCR 280 UCR CMYK Japan Std. Proofing	Light	280%
jpcmyk06.icm	Light GCR 300 UCR CMYK Japan Std. Proofing	Light	300%
jpcmyk08.icm	Light GCR 320 UCR CMYK Japan Std. Proofing	Light	320%
jpcmyk10.icm	Light GCR 340 UCR CMYK Japan Std. Proofing	Light	340%
jpcmyk50.icm	Light GCR 360 UCR CMYK Japan Std. Proofing	Light	360%

You read these settings as follows:

- ◆ **All TAC percentages have the maximum degree of UCR in order to attain the highest density blacks within that TAC limit.**
- ◆ **A Light GCR means a small percentage of the possible gray component is replaced with black.**

Check With Your Service Provider

These DCPs were created with the following conditions in mind. You will want to check with your service provider to confirm the laydown order.

Colorant Laydown Order: Yellow, Magenta, Cyan, Black

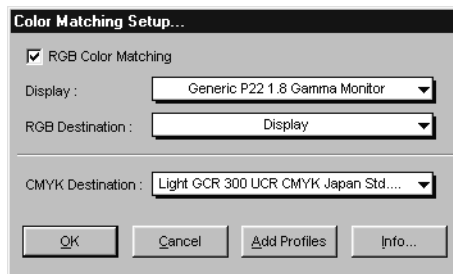
This DCP assumes that your imagesetter has been linearized. So, it's important that you use some kind of calibration software for your imagesetter.

Appendix C: Photoshop 5.0 Color Settings

To ensure color consistency between Photoshop 5.0 and ScanWizard Pro, the color settings (CMS engines, ICC RGB monitor profile, and ICC CMYK printer profile) for both software programs should be identical.

To set Photoshop 5.0 color settings:

1. Install ScanWizard Pro first.
2. When you install ScanWizard Pro, the Installer program lets you choose the ICC profiles to match with your monitor display and printer types.



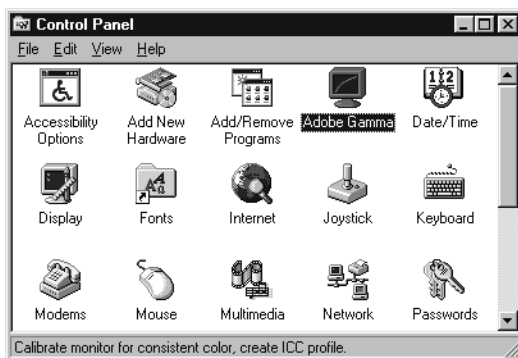
Once you have chosen display and printer ICC profiles in ScanWizard Pro, install Photoshop 5.0, and choose the same profiles.

For example, in ScanWizard Pro you choose “Generic P22 1.8 Gamma Monitor” as the display item, and “Light GCR 300 UCR CMYK Japan Std. Proofing” as the CMYK destination item.

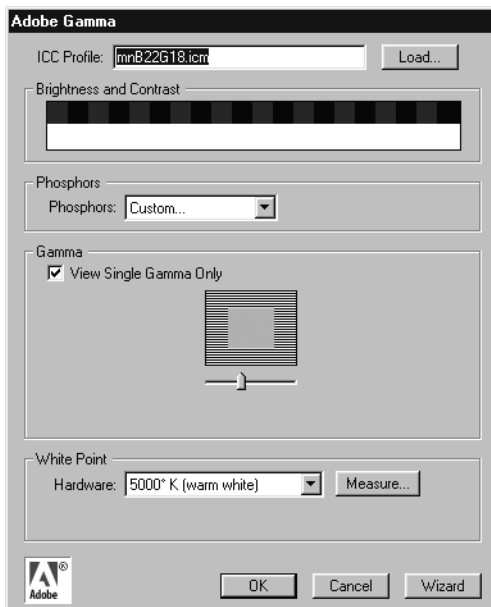
Note: In ScanWizard Pro's Color Matching Setup, if you select the Display setting as sRGB, because default setting of Photoshop display monitor is sRGB as well; therefore, you can by-pass the following “Calibrating your monitor” section. Likewise, if you select the RGB Destination as sRGB, because default setting of Photoshop RGB Setup setting is also sRGB; therefore, you can by-pass the following “Entering RGB setup information” section, and proceed “Entering CMYK setup” section.

Calibrating your monitor

1. Choose Start, Settings, and Control Panel.



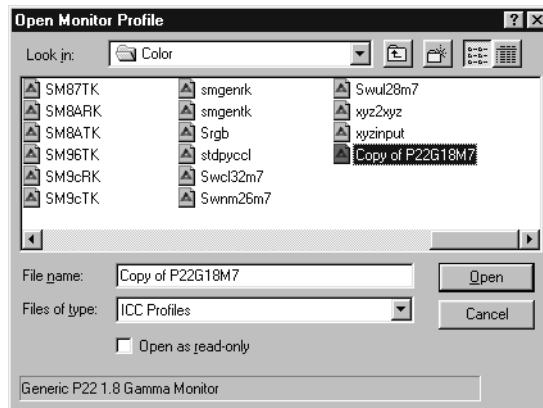
2. Run Adobe Gamma Utility program.



3. Click on the Load button to select the matched monitor ICC profile.

Note: Use a duplicate copy instead of the original profile to calibrate your monitor because Adobe Gamma utility will overwrite the original profile contents with Adobe profile contents when it is saved (as it does not allow user to save as another profile). The original profile (e.g. Kodak's ICC profiles used in ScanWizard Pro) which may contain some proprietary profile information that benefits the original CMM to reproduce more accurate color. Therefore, we highly recommend to duplicate a copy of the profile in C:\Windows\System\Color folder that you're going to use for calibrating your monitor.

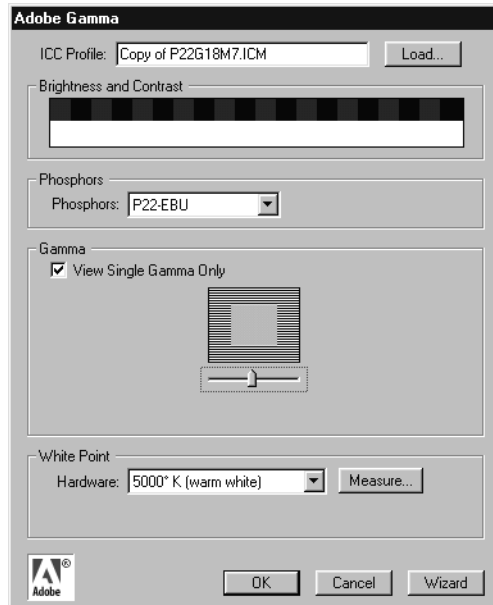
In the following example, select “Copy of P22G18M7.ICM*” — a duplicate of P22G18M7.ICM” which represents “Generic P22 1.8 Gamma” monitor.



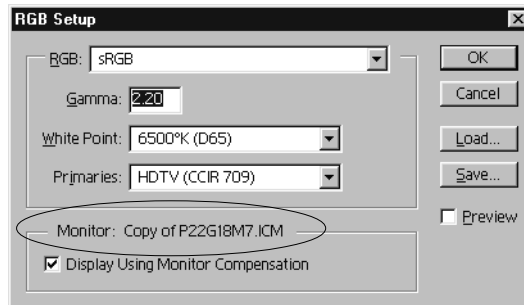
*The file “Copy of P22G18M7.ICM” is generated by first select P22G18M7.ICM from this dialog box. Press Ctrl+C to copy, then press Ctrl+V to paste.

4. Click on the Open button to load the selected profile.

For more information of calibrating monitor, refer to the documentation that came with Photoshop.

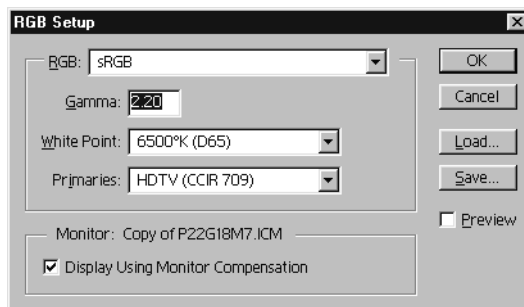


5. Click on the OK button to save the calibrated ICC profile for your monitor. The saved ICC profile name is shown as the selected Monitor on RGB Setup dialog box.

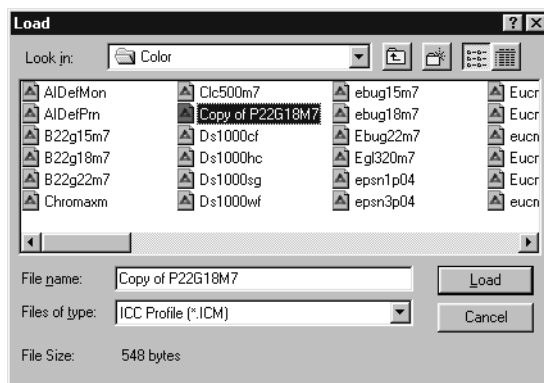


Entering RGB Setup information

1. Choose File, Color Settings, and RGB Setup.



2. Click on the Load button to select the ICC profile your have saved for your monitor.

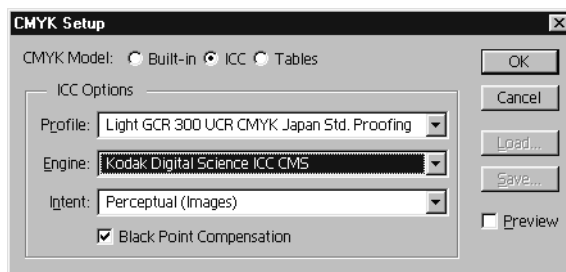


In this example, you should select “Copy of P22G18M7.ICM”.

3. Click OK.

Entering CMYK setup information

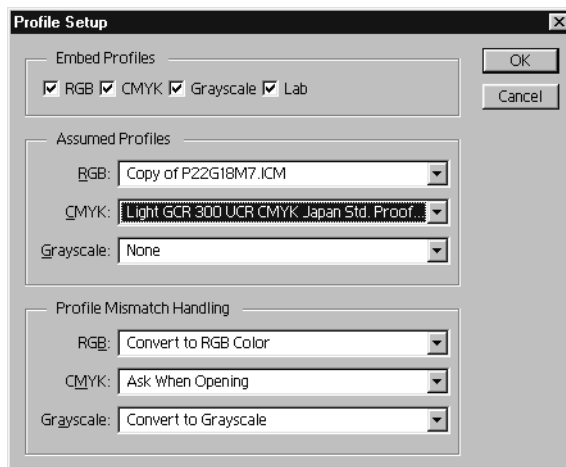
1. Choose File, Color Settings, and CMYK Setup
2. For CMYK Model, select ICC.



3. At the ICC Options (Profile), choose the printer profile that you've selected in ScanWizard Pro. In this example, Light GCR 300 UCR CMYK Japan Std. Proofing is selected.
4. At the ICC Options (Engine), choose Kodak Digital Science ICC CMS.
Note: ScanWizard Pro uses Kodak Digital Science ICC CMS.
5. At the ICC Options (Intent), choose Perceptual (Images)
6. Check to enable Black Point Compensation.
7. Click OK.

Entering Profile setup information

1. Choose File, Color Settings, and Profile Setup.



2. At the Assumed Profiles (RGB), choose the ICC monitor profile you have selected in RGB Setup. In this example, it is “Copy of P22G18M7.ICM”.
3. At the Assumed Profiles (CMYK), choose the ICC printer profile you have selected in CMYK Setup menu. In this example, it is “Light GCR 300 UCR CMYK Japan Std. Proofing.”
4. Click OK.

Note: When you’ve changed the CMS settings on ScanWizard Pro, keep in mind to update Photoshop’s color settings to ensure color consistency.

Appendix D: Troubleshooting

This section covers some of the more common hardware- and software-related problems you may encounter and the solutions for them. If you have a problem not described in this section, try looking up the *Readme* file or *Click Me* file in your scanning software diskette, which contains up-to-the-minute information on the latest changes. For the latest troubleshooting tips, see the *Readme* file in the ScanWizard Pro file group in Windows.

1. ScanWizard Pro can't find any scanner.

This problem may be related to any of the following.

- I/O or IRQ conflict with another card in the computer

Solution: Change the jumper settings on the card. Also refer to the related documentation in the ScanWizard Pro folder.

- Bad SCSI cable

Solution: Try another cable.

- Scanner is faulty

Solution: Check for a steady green Ready indicator on the scanner. If the Ready indicator is lit, the problem is at the cable, or there is a SCSI conflict with another device.

2. If the POWER indicator fails to light up.

Solution: Turn off the scanner. Make sure the scanner's power is grounded and plugged into an AC outlet. Wait 60 seconds, then turn on the power again. Microtek scanners have a protective mechanism that prevents the scanner from coming on right away after it's just been turned off to increase the life of the power supply.

3. [Flatbed scanners only] The scanner's READY light does not come on; you do not have a Transparent Media Adapter.

Solution: Check the fluorescent lamp inside the scanner and make sure it is continuously and solidly on. Take note of the following:

- If the lamp is on and the scanner still doesn't come ready, the problem may be related to temperature. For example, you may experience problems of this sort if you live in cold weather and the scanner is left in a room all night without the room's heater on.

To resolve this situation, leave the scanner on for 30 minutes to warm up, then turn it off and back on after 60 seconds, and see if you get a steady READY light this time.

- If the lamp still doesn't come ready, do one of the following:
 - a) If you purchased your scanner within the past 30 days, call your dealer.
 - b) If you purchased your scanner more than 30 days ago, call the nearest service center or Microtek directly.

If your lamp is on and the READY light is on but the scanner doesn't scan or doesn't seem to work, try testing the scanner to see if it is a scanner-related hardware problem. To do this, disconnect the scanner from the computer, set the SCSI ID to #7, and turn it on. The scanner will scan continuously. If it does not, there is a hardware problem. Contact your dealer and tell them the situation.

4. [Flatbed scanners only] The scanner's READY light does not come on; you have a Transparent Media Adapter attached.

Solution: Disconnect the Transparent Media Adapter (TMA) and see if the scanner comes ready this time. If not, see the solution outlined in situation #2.

If the scanner comes ready on its own but doesn't come ready if attached to the TMA, you may have a problem with the gray template that comes with the TMA, or you may have a problem with the external power supply.

To resolve this situation, check the following:

- Make sure the TMA model matches your scanner (check the outside of the TMA box to verify this). If you have the wrong or mismatched TMA model, call your dealer and exchange it for the correct one.
- Next, install the TMA, and close the TMA top. Make sure that nothing is placed inside the scanner on the glass surface, and then turn the scanner on. You should now get a ready light.

If your lamp is on and the READY light is on but the scanner doesn't scan or doesn't seem to work, try testing the scanner to see if it is a scanner-related hardware problem. To do this, disconnect the scanner from the computer, set the SCSI ID to #7, and turn it on. The scanner will scan continuously. If it does not, there is a hardware problem. Contact your dealer and tell them the situation.

5. [Flatbed scanners only] When issuing a Scan command, the software locks up after the scanner seems to start scanning (makes “noises”); or you get an error message.

5A. If you have the Transparent Media Adapter:

Make sure the TMA is installed properly (see situation #3 for more details). In addition, make sure you observe the following:

- Place the gray template that comes with the TMA on the glass surface of the scanner, with the clear opening of the template towards the front of the scanner.
- Place the transparency to be scanned inside the template, and close the cover.
- In the scanning software, select either *Positive* or *Negative* from the Scan Material command in the Preferences menu (depending on whether you're scanning a positive or negative transparency); do not use the *Reflective* option.
- After complying with the above, click on Scan or Preview.

- 5B. If you are connected to a network, try disabling or disconnecting the network cable, and then try to Scan again.

6. When you scan an 8-1/2-inch wide image, the left or right side of the image is cut off.

Solution: A small margin on each side which will be cut off when you scan.

7. [Flatbed scanners only] While scanning images, the scanner carriage (lamp) keeps going back and forth or idles, resulting in very long scan times.

Solution: This is called backtracking. Microtek scanners have a feature that allows for recovery from image defects that result from the carriage scanning and stopping during the scan. The carriage usually goes back and reads part of the image once, then goes back a second time to patch the images together and create a smooth picture. On some machines, due to low amount of memory or a large virtual memory size, the software forces the scanner to stop and start too many times, causing backtracking (which may happen on almost every scan line).

To resolve this, you can:

- Increase RAM in the computer by purchasing more memory.

8. Your scanned images do not have the same color as the original.

Solution: To ensure the color consistency between scanner, monitor, and printer, please make sure the ICC profiles selected in the Color Matching Setup command under the Preferences menu that match with your color monitor and color printer. If you cannot find the needed device profiles, contact your device vendors to get the ICC profiles, then add them to ScanWizard Pro.

9. When you select Display, or RGB Destination, or CMYK Destination profile in the Color Matching Setup dialog box, there is more than one profile have same description (This is caused by some profiles installed by other application, e.g. Photoshop, have different file name but same profile description as ScanWizard Pro's profile.).

Solution: Select the profile that has higher version number and newer profile created date. You can check these information of each profile by clicking the Info button, and select the appropriate page, i.e. Display, or RGB Destination, or CMYK Destination.

10. Scanned images have vertical white lines from top to bottom.

Solution: The mirrors of your scanner may be dusty or dirty. To resolve this, open the cover and spray some air on the bottom mirror which is roughly 8-1/2" long and is directly below the carriage (but moves with the carriage). Do not clean the mirrors with glass cleaners such as Windex or with cloth. If you want to use a liquid, use alcohol and lens tissue paper (other materials may scratch).

11. When you select Acquire (or other similar command), the Microtek scanner software reports that no scanner is connected.

Solution: This problem usually happens when the software cannot see the scanner. This situation could be resolved by any of the following:

- Make sure the scanner has a solid green light on and that the lamp inside is continuously and solidly on (no flickering). If not, see troubleshooting for situation #2.
- Make sure the scanner is connected properly to the computer. If you have multiple SCSI devices connected to your computer, try the computer with only the scanner connected to see if the two work. If they do, the problem is with another SCSI device, with the cabling, or with the terminator. Make sure none of your cables are too long (4 feet or shorter), and make sure the last SCSI device on your system is externally terminated with a terminator.
- Set the Windows display option to VGA or super VGA, then restart Windows and try again. The problem may be a conflict with the video driver.
- Make sure the SCSI ID setting on your scanner is unique, and that no other SCSI device has the same setting as your scanner. Microtek scanners are set to SCSI ID #6 by default. If you have a utility that can scan your SCSI bus (such as the ScanWizard Pro's SCSI Probe feature), you can easily find out what ID numbers are taken and which ones are free to be used for the scanner.
- You may also want to try to scan using the Scanner Test utility to see if the problem is in your image-editing software or due to other conflicts between the software and another program in your computer. If the test utility works, then your scanner is operating properly, and you can then look for other utilities and programs that may be causing the problem.

12. The File-Acquire option is grayed out in application program, and you cannot select the option for your Microtek scanner.

Solution: You need to reinstall your application program.

13. Color images are washed out with little detail in the light or highlight areas.

Solution: Sometimes on certain images that are light, using Automatic dynamic range settings might make the images very light and thus cause certain areas to wash out. To resolve this, you may want to turn it off by selecting Full Range option.

14. Color images seem to have a pattern on them when scanned.

Solution: Check the following:

- Make sure that your display option in your Windows setup is set to *16.7 million colors*.
- If you scan an image that came from a magazine or brochure, you will get an artifact on the image called a moiré. Moiré patterns show up when you scan an image that has been printed already. To reduce the patterns, select the *appropriate Descreen* option in the Settings window. In the Descreen functions are options for newspaper, magazine, art magazine, and custom.

15. When you preview or scan, the scanner will not move, but an image appears in the software as if the scanner was working.

Solution: This problem may be due to the scanner selection under the Scanner pull-down menu in the Preview window.

16. [Flatbed scanners only] You are unable to use the document feeder (ADF).

Solution: Take note of the following:

- This problem may occur if your ADF is not properly installed. Make sure you have the external power supply connected to the back of the scanner. If you did not get an external power supply, contact the place where you purchased the ADF for an exchange. For verification, look at the ADF box; it should say “Auto Document Feeder for the flatbed scanner.”
- Also, if you attempt to scan color images through the ADF, you will not be able to do so because the ADF only supports multiple page-scanning for line art, halftone, and grayscale, but not color.
- Make sure too your application supports multiple-page scanning. Some graphics applications can only support one document at a time.

Appendix E: Glossary

Cross-referenced entries are indicated in **bold type**.

Bit

The smallest unit of memory in the computer. A bit can be either off or on, representing a value of 0 or 1. Greater bit-depth translates to more complexity in image information. Some examples:

Single-bit

Single-bit images use just one bit of data to record each **pixel** — either black or white.

8-bit grayscale

Images that contain 256 ($2^8=256$) possible shades of gray needed to represent most black-and-white photos accurately. 256 levels of gray is actually more shades of gray than the human eye can see.

24-bit color

24-bit color images are composed of three 8-bit color channels. When combined, the red, green and blue channels provide up to 16.7 million possible combinations (hence, colors). 24-bit color is also known as True Color and photo-realistic color.

Auto Document Feeder (ADF)

A scanner accessory that helps with text scanning. The ADF allows continuous scanning of up to 50 pages of text. This accessory is normally used with an **OCR** (Optical Character Recognition) software program, not an image-editing program.

Batch Scan

Sequential scanning of multiple originals using user-defined settings for each.

Brightness

The balance of light and dark shades in an image. Brightness is distinct from **contrast**, which measures the range between the darkest and lightest shades in an image. Brightness determines the intensity of shades; contrast determines the number of shades you get.

Color calibration

The process of ensuring accurate reproduction of color for images. Full color calibration is usually a two-step process: calibrating your input device, such as a scanner; and calibrating your output device, such as a printer or monitor. By calibrating input and output devices correctly, color is accurately captured by your scanner and is reproduced faithfully on your monitor or printer as well.

CCD

Stands for charge-coupled device, a strip of light-sensitive cells that converts light waves reflected from an image during scanning into digital information.

CMM

Color management module, the color processor inside CMS to transform color information between native device color spaces.

CMS

Color management system which ensures color consistency from input devices to output devices.

CMYK

Cyan, magenta, yellow and black are the base colors used in printing processes

Color channel

Refers to the red, green, and blue components from which colors are created.

Color image

An image type that contains the most complex information (compared to single-bit and grayscale images). To capture color images, scanners use a process based on the **RGB** color model.

Contrast

The relationship between the light and dark areas of an image. Contrast is the range between the darkest and lightest shades in an image, while **brightness** is the balance of light and dark shades. Contrast determines the number of shades you get; brightness determines the intensity of the shades. An image with low contrast tends to look dull and flat.

DCP

Device color profile, which provides color management system with the information necessary to convert color data between native device color spaces and device independent color spaces.

Density

The degree of opacity of a photographic image on paper or film.

Dmax

The point with maximum density value in an original or image.

Dmin

The point with minimum density value in an original or image.

DPI

Stands for dots per inch, the measure of **resolution**. The greater the dpi number, the higher the resolution.

Dynamic Range

The density measurement of the darkest and lightest points of the original or image.

Exposure

The amount of light in an image. The exposure of an image can be changed by increasing or reducing available light.

File format

The way a graphic file is saved. Several file formats are available for use, and each one has its own advantages and disadvantages. The most popular file formats include TIFF, PICT, EPS, and PCX. TIFF is the most widely used file format.

Filters

Tools that allow you to apply or create special effects to your images. Filters in your scanning software include Blur/Blur More/Gaussian Blur, Sharpen/Sharpen More, Emboss, and Enhance Edges.

GCR

Gray component replacement, a technique for reducing the amount of cyan, magenta and yellow in an area and replacing them with an appropriate level of black.

Gamma

The contrast affecting the mid-level grays or midtones of an image. Adjusting the gamma of an image allows you to change brightness values of the middle range of gray tones without dramatically altering the **White** and **Black** points.

Grayscale

An image type that contains more than just black and white, and includes actual shades of gray. In a grayscale image, each **pixel** has more bits of information encoded in it, allowing more shades to be recorded and shown. 4 **bits** are needed to reproduce up to 16 levels of gray, and 8 bits can reproduce a photo-realistic 256 shades of gray.

Halftone

A type of **single-bit image** composed of a pattern of black dots that fool the eye into seeing shades of gray. Examples of halftone images are the pictures you see in a newspaper. These images usually look very coarse.

Highlights

The lightest portions of an image.

Histogram

A graphic representation of how brightness and darkness pixels are distributed in an image. A histogram skewed heavily to the left indicates a dark image, while a histogram skewed to the right indicates a light image.

Hue

The aspect of color that distinguishes it from another color (what makes a color red or green or blue). Hue is distinct from **saturation**, which measures the intensity of the hue (more red, more green).

ICC

International Color Consortium, a standard committee for color management that created a standard which attempts to serve as a cross-platform device profile format to be used to characterize color devices.

Image-editing software

Software that is used to edit images, such as PhotoImpact SE.

Image correction tools

Tools in your scanning software for adjusting the color and quality of images.

Image Type

The way you wish an image to be scanned and processed. ScanWizard Pro lets you reproduce an image as **halftone**, **line art**, **grayscale**, or **color**.

Imagesetter

An output device used to render high-resolution images or documents on photographic paper or film.

Interpolated resolution

Resolution enhanced through software; thus also known as software-enhanced resolution. For instance, if your **optical resolution** is 300 **dpi**, you may be able to enhance images up to 600 dpi through software interpolation. Interpolated resolution may capture less detail than the optical, but it is useful for certain tasks, such as scanning **line art** or enlarging small originals.

Lab

A CIE device independent color model which represent the color vision of human being, and normally used as a reference color space in color management system.

Line art

A type of **single-bit image** that is just purely black and white, such as a pencil or ink sketch. Line art may also include one-color images, such as mechanical blueprints or drawings.

Lpi (lines per inch)

The resolution of printed images. Lpi is distinct from **dpi**, which measures the resolution of electronic images.

Midtones

The parts of an image between the lighter and darker areas, at around 50% gray.

Moiré

An undesirable pattern in color printing that results from incorrect screen angles of overprinting **halftones**. Moirés usually result when you scan a halftone or when you scan images taken directly from a magazine (instead of scanning a photographic original or a transparency).

OCR

Stands for Optical Character Recognition, the process of scanning an image and converting the image into text format.

Optical resolution

The true resolution of a scanner and is the key factor in determining the amount of detail visible in an image. Optical resolution is one type of resolution; the other is **interpolated resolution**.

Pixel

A unit used by the computer to describe picture elements and to represent image information in a digital format. An image file, for instance, is simply a representation of hundreds (or thousands) of pixels arranged in a grid.

Printing methods

The type of printing method you choose should be tailored according to your scanned image. For instance, low-resolution black-and-white printers are good for producing text and **line art**, but they are not suitable for **grayscale**. For grayscale, use higher-resolution printers such as the ones capable of producing 600 to 1200 **dpi**. To print **color images**, you can choose from ink jet/desk jet color printers, dye-sublimation printers, or printing presses.

Resolution

The level of detail in an image, expressed in dots per inch or **dpi**. The greater the dpi number, the higher the resolution and the resulting file size. There are two types of resolution: **optical resolution**, and **interpolated resolution**.

RGB

The color model in which every color is composed of a varying amount of the three colors of red, green, and blue.

Saturation

The intensity of a color, or the amount of color in a specific **hue**. For instance, the image of a bright red apple will appear to be "more red" if the colors are saturated.

Scaling

The process of creating larger or smaller images in ScanWizard Pro, so that the images don't have to be resized later when they are delivered to the image-editing program. Scaling has an inverse relation to **resolution**: The lower the resolution, the larger the image can be scaled. At the highest resolution, images can only be scaled smaller.

Scan material

The type of material for your image. Scan materials can be generally classified into three types: reflectives, such as photographs or prints; positives, such as slides; and negatives, like the negative film used in cameras.

Scanner

A device that captures an image for your computer and converts it to a digital form that your computer can display, edit, store and output. A scanner can be used for a wide variety of applications, such as incorporating artwork or photos into documents, scanning printed text into your word processor to eliminate retyping, scanning faxed documents into a database for storage, and adding images to multimedia productions.

SCSI

Stands for Small Computer System Interface, a format for interfacing hardware to the your computer.

SCSI chain

A chain that links SCSI devices on your system. A SCSI chain may include such devices as a scanner, a CD-ROM drive, an external hard drive, and a tape drive. Each SCSI device on the chain must have its own SCSI ID number, or conflict will ensue.

Shadows

The darkest areas of an image.

Single-bit image

Single-bit images are the simplest kind of image, using just one **bit** of data to record each pixel. Single-bit images come in two types: **line art**, and **halftone**.

sRGB

sRGB is a standard RGB color space, which is endorsed by a wide variety of hardware and software manufacturers, and is becoming the default working color space for many scanners, low-end printers, and software applications, as well as the Internet.

Text scanning

One of the most common uses for scanners, as it eliminates the need for retyping. Scanners scan text through the use of **OCR software** and deliver text to your word processor.

Terminator

A special resistor pack or a block of resistors that tells the computer where the end of the SCSI chain is and ensures the electrical integrity of the bus signals. Terminators act as a filter to clear out electrical "noise" caused by multiple cables and devices.

Transparent Media Adapter (TMA)

A scanner accessory used for scanning transparencies, slides and filmstrips. The TMA has a unique lighting device that prevents transparent originals from being exposed to too much light and getting washed out as a result.

Twain

A software industry standard that allows software applications and hardware imaging devices to communicate directly. ScanWizard Pro for Windows is a Twain-compliant program, which means it can be used with other Twain-compliant applications like PhotoImpact SE. In practical terms, this means that when a scan is performed through ScanWizard Pro, the scan is automatically placed inside PhotoImpact SE.

UCR

Under color removal, a technique for reducing the amount of cyan, magenta and yellow in neutral area and replacing with them an appropriate level of black.

Zoom

The ability to magnify the view of an image in the preview window.

Addendum to ScanWizard Pro

This addendum provides information on newly added functions or updates to features in ScanWizard Pro, including the following:

1. Negative Scan Settings window: Allows you to control settings for negative film scanning.
2. Automatic Sharpness Enhancement: Emphasizes the edges (contours) of an image, contributing to increased sharpness.
3. DIGITAL ICE: Reconstructs damaged photos and film by removing dust, scratches, rips and tears from images to be scanned.
4. Automatic Color Restoration: Restores faded colors in photos and film back to life.
5. Automatic Color Enhancement: Improves the contrast and saturation of an image, resulting in more vibrant colors.
6. Working Color Space; Sharpen: Name change for these functions.
7. Default command: Added to the Preferences menu to restore default values for various preferences, including Color Space, White & Black Points setup, Color Management Setup, Overview Setup, Prescan Setup, Scan Quality, and Interpolation Mode.
8. Expansion button for the Settings window: Lets you customize the look of the Settings window.
9. Multiple Sampling: Reduces random image noise and yields higher-quality images.
10. Automatic Correction: Improves the color of an image automatically, resulting in more vibrant colors.
11. Multiple Auto-crop for EZ-Lock Film Holder: Automatically perform multiple auto-crop preview of the film loaded onto the scanner.
12. File Option: Allows you to save the scanned image in different quality compression ratio.

These new functions may or may not be available, depending on the system you use. See table below for more details.

Functions	Windows XP/Vista	Mac OS X	Mac OS 9.x
Negative Scan Settings window	O	O	–
Automatic Sharpness Enhancement	O	O	–
Automatic Color Restoration	O	O	–
Automatic Color Enhancement	O	O	–
Change in function name	O	O	–
Preferences / Default command	O	–	–
Display Profile selection	–	O	–
Window Expansion button	O	O	–
Multiple Sampling	O	O	–
Automatic Correction	O	O	–
Multiple Auto-crop for EZ-Lock Film Holder	O	–	–
File Option	O	–	–

(O: Available, –: Unavailable)

Negative Scan Settings window

The Negative Scan Settings window is available only when negative film is your scan material, providing controls that enable you to customize the settings for your negative film. The Negative Scan Settings window is always displayed on the desktop until you switch your scan material to Reflective or Positive.

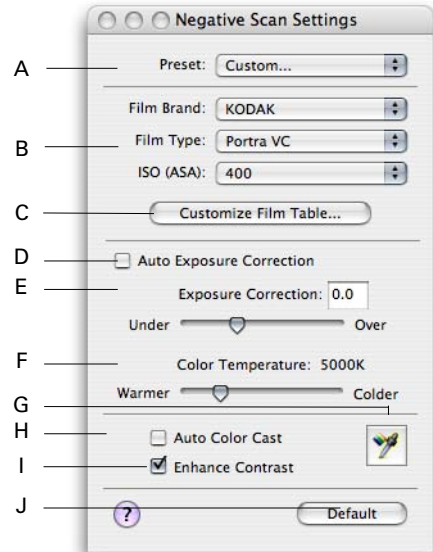
To use the Negative Scan Settings function:

1. In the Preview window, choose “Negative Film” or “Negative” from the Scan Material options menu.
The Negative Scan Settings window appears.
2. Click the “Overview” button to perform a preliminary scan of the image.
3. Make a scan frame selection.
4. Click the “Prescan” button to display a detailed image of the selected scan frame.
5. Adjust the scan frame to ensure that the selection marquee is inside the image, and that the marquee does not contain any film material area.
6. In the Negative Scan Settings window, choose the Film Brand, Film Type, and ISO settings that match your film.

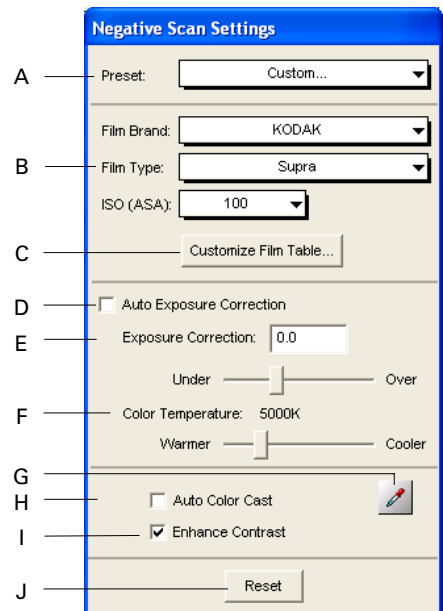
The settings for the negative film you selected are applied to the prescan image, and the adjusted image is displayed in the Preview window.

You can save the selected negative film settings into the Preset drop-down menu for easy access in the future.

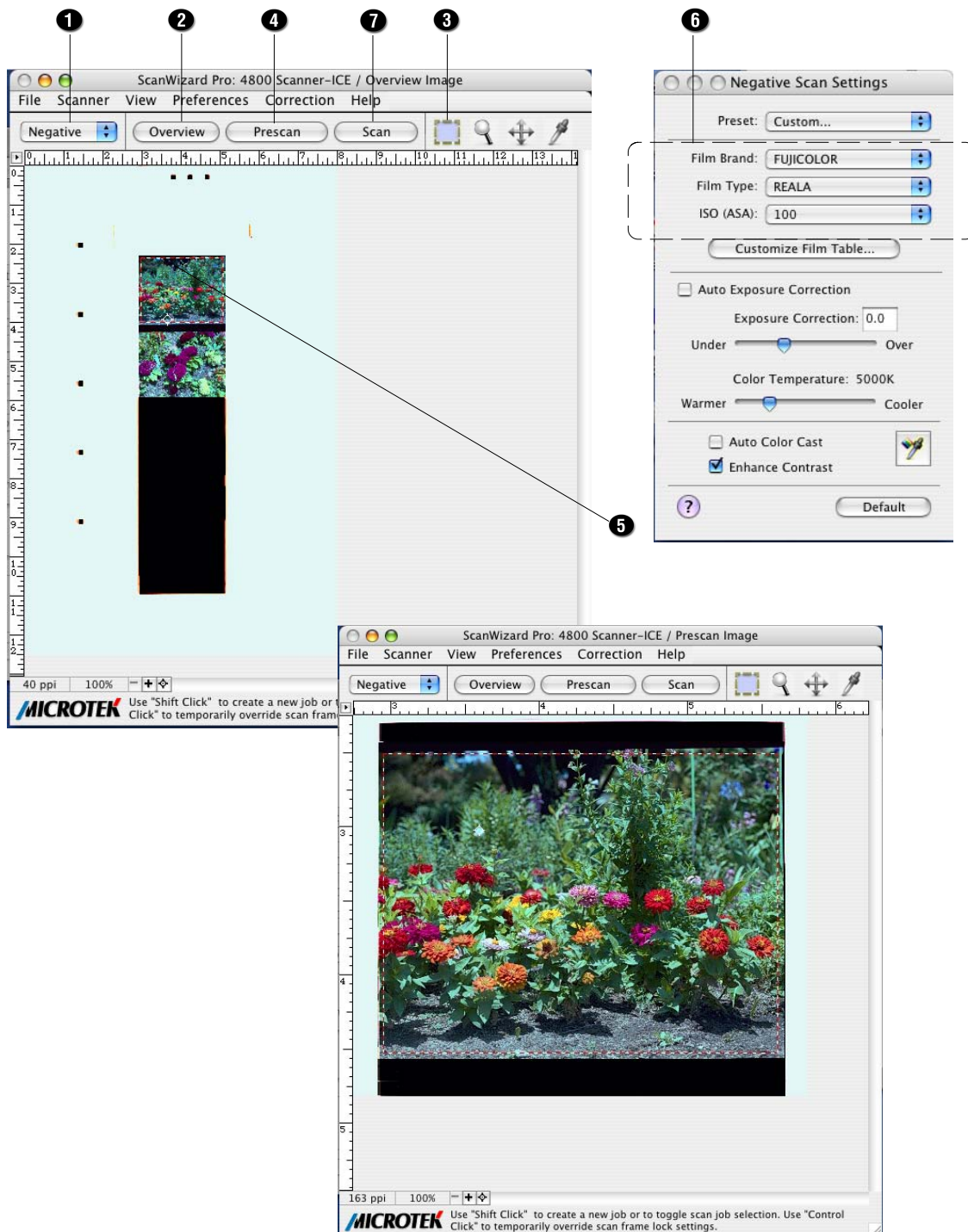
7. Click the “Scan” or “Batch” button to start scanning your negative film.



Mac OS X



Windows XP



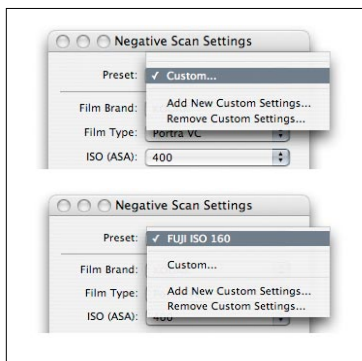
A. Preset

The Preset setting allows you to load or retrieve a custom film scan setting that you have previously defined for your negative film scan in the Negative Scan Settings window.

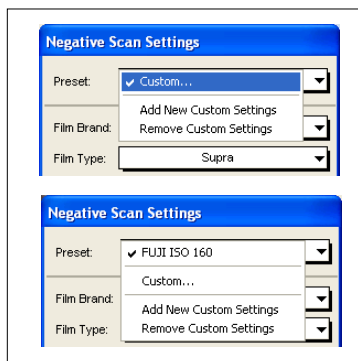
When the Preset drop-down menu appears the first time, no preset values or settings are shown, as they have not been created.

Choose the Add New Custom Settings menu command to save negative film scan settings as preset values.

Choose the Remove Custom Settings menu command to delete preset values.



Mac OS X



Windows XP

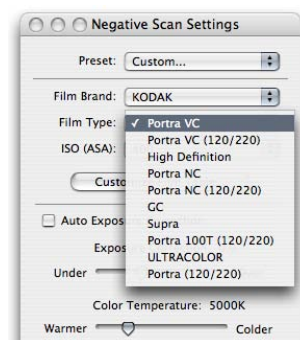
B. Film Selection

The Film Selection feature allows you to choose the film brand, type, and ISO speed that match the film you use. When the film type selection is completed, the selected film type settings are remembered and used when a new scan job is created the next time.

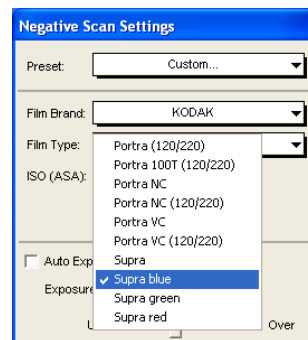
Film Brand: Lists the popular brands (e.g., Kodak, FujiColor, AgfaColor, etc.) on the market. If your film brand is not on the list, choose a compatible option, or customize according to your need.

Film Type: Lists the film type for the selected Film Brand. For example, the film types Supra and Portra are supported by the Kodak brand. The film type list will vary, depending on the film brand.

ISO (ASA): Displays the sensitivity listing to reflect the combined film brand and film type selections. For example, ISO 100, 200, and 400 are available for Kodak Supra. The ISO list will vary upon changing the film type.



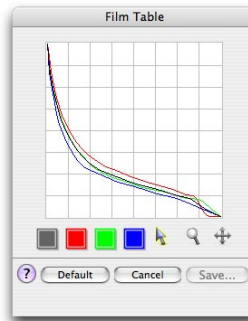
Mac OS X



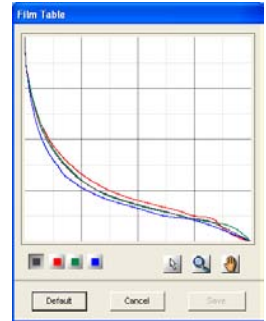
Windows XP

C. Customize Film Tables

The Customize Film Table feature allows you to view and to customize film table or profile data for your needs. The film table data can then be saved or added to the film type selection menus as a custom setting. The next time you wish to retrieve that particular film type setting, simply go to the film type selection drop-down menus, and choose that setting.



Mac OS X



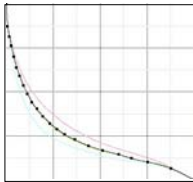
Windows XP

To enable the Film Table function:

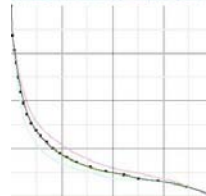
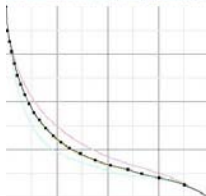
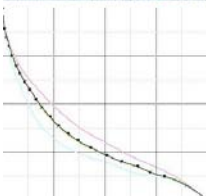
In the Negative Scan Settings window, click the “Customize Film Table” button. The Film Table window appears with film profile information in Microtek’s proprietary format. The four curves (R, G, B, and Master) that represent the color characteristics of the selected film type are displayed with exposure correction effect applied (if any). You can adjust each R, G, B, and Master curve to customize a film profile for your need.

To create a customized film type profile:

1. Choose the R, G, B, or Master () channel in the Film Table window.
2. Use the Curve Pointer tool () to enable handles in the curve that will be modified.



3. Click on any handle in the curve, then drag and move it. The corrected image will be displayed in the Preview window in real time.



Take note of the following during editing:

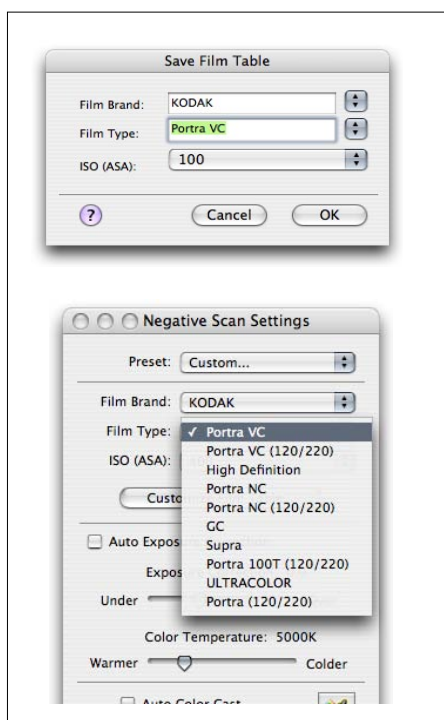
- All handles on the curve can be moved, except for the handles on the two end points, which remain immovable as the values they represent need to be preserved.
- Handles cannot be added or removed from a curve.
- When dragging a handle, the entire curve is moved at the same time that the handle is moved.
- To move a handle without moving the entire curve, press the Option key (or Ctrl key for Windows).

4. Click the “Save” button to save the current settings as a new film profile.

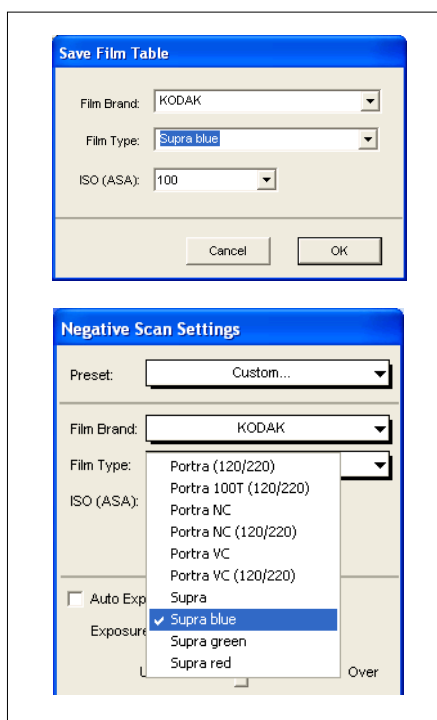
In the Film Type field, you can enter a suitable description to help provide additional information for the film profile being created, then click OK to save the profile. The ISO field is not editable.

The newly added profile is then displayed and selectable from the Film Type options menu in the Negative Scan Settings window.

Take note that you will not be able to overwrite factory settings. User settings, however can be overwritten, and informative messaging will accompany any overwriting action that you undertake.



Mac OS X



Windows XP

R, G, B, or Master channel

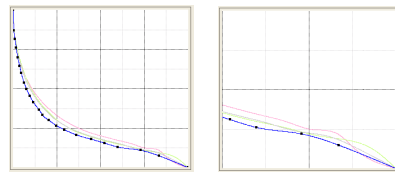
The channel allows you to choose the color or gray channel in which the curve will be affected.

Curve Pointer tool

Use the Curve Pointer tool to enable the handles in the curve that will be modified; the handles appear in black to mark your position. Click on any handle in the curve and drag it to the position you desire; the handle and the entire curve are moved simultaneously. To move the handle only, use Option-click (Mac) or Ctrl-click (PC) to move that handle only. When the Master curve is moved, the R, G, B curves will be automatically updated accordingly, and vice versa.

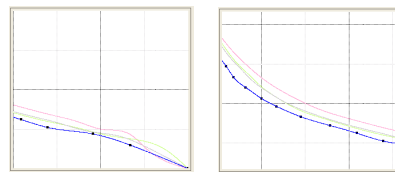
Curve Zoom Frame tool

Use the Curve Zoom Frame tool to zoom in and out on a particular point in the curve. Once the area is zoomed in, you can then use the Curve Pointer tool to redefine points for better precision. The zoom level can be seen in the Zoom field. To zoom out, use Option-click (Mac) or Shift-click (PC).



Curve Move tool

Use the Curve Move tool to scroll through the curve if the curve has been zoomed in. This curve tool can be used only if the curve has been zoomed in with the Curve Zoom Frame tool.



Default button

The Default button allows you to cancel the changes you have made with the film type settings, and revert the settings to original factory-set values.

Cancel button

The Cancel button allows you to exit the Film Table window without making any modification to the film type settings.

Save button

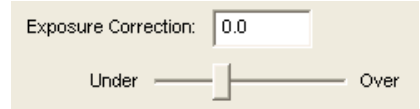
The Save button allows you to save the customized film settings as a new film type profile, with user-defined proper information. The saved film type profile is displayed and selectable from the Film Type options menu in the Negative Scan Settings window.

D. Auto Exposure Correction ☐ Auto Exposure Correction

This feature allows you to perform the exposure correction automatically for the current scan job.

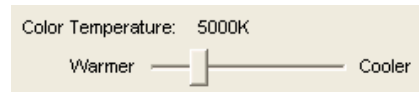
E. Exposure Correction

This feature allows you to manually set the exposure correction value for the current scan job. By dragging the slider or entering a value in its edit box, you can change the exposure correction value from Under (2.0) to Over (4) in 0.1-step increments.



F. Color Temperature

This features shows the default color temperature for the selected film type. By dragging the slider, you can change the color temperature from Warmer (4000) to Cooler (8500) at 100K per step. Once the slider is in place and following an interval of a few seconds, changes in the Color Temperature are immediately reflected in the Preview window.



G. Color Cast Picker

The Color Cast Picker is used to eliminate color casts in the neutral area of an image without altering the lightness and saturation of the image.

1. Click the Color Cast Picker in the Negative Scan Settings window.
2. Move the cursor to the preview image in the Preview window; the cursor becomes a Color Picker tool.
3. Pick the color cast in the preview image to be removed.

Once a color is selected, the “Auto Color Cast” check box in the Negative Scan Settings window is unchecked automatically. By default, the Color Cast Picker is not selected, but clicking on the Picker will enable the picker. Only a selected or enabled Picker can pick up a color value.



Before



After

H. Auto Color Cast ☐ Auto Color Cast

This feature allows you to remove color casts in the image automatically. You can control this function by clicking its check box. If the Auto Color Cast check box is checked, the color cast is removed automatically. When it is unchecked, no color cast removal will be performed.

I. Enhance Contrast ☐ Enhance Contrast

This feature allows you to emphasize the contrast of an image, resulting in more vivid colors. When this option is checked, the Enhance Contrast feature is applied automatically to the image. When unchecked, colors – especially skin tones – appear in more natural shades.



Before



After

J. Default

The Default button allows you to cancel the changes you have made with film correction, and reverts the settings to the original factory-set values. Click the Default button to restore settings.

Automatic Sharpness Enhancement

The Automatic Sharpness Enhancement feature emphasizes the edges (contours) of an image, contributing to increased sharpness.

To use the Automatic Sharpness Enhancement function:

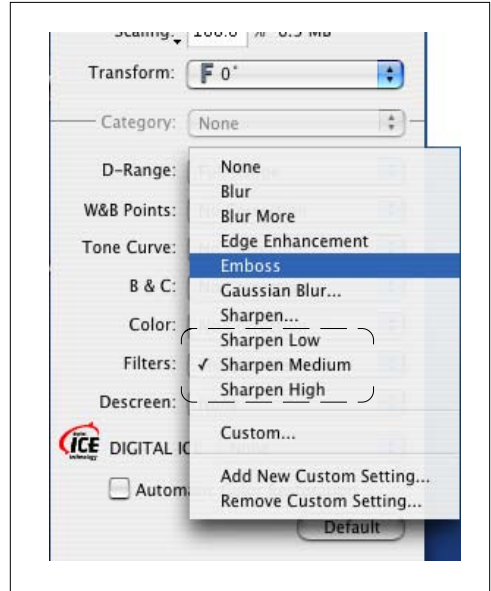
1. In the Settings window, select the Filter options menu.
2. From the options menu, select your sharpening option from Low, Medium, and High. Alternatively, you can also select the sharpening option from the “Advanced Image Correction: Filter” window.
3. Click the “Scan” or “Batch” button to start scanning. The resulting sharpened image displays shortly afterwards.



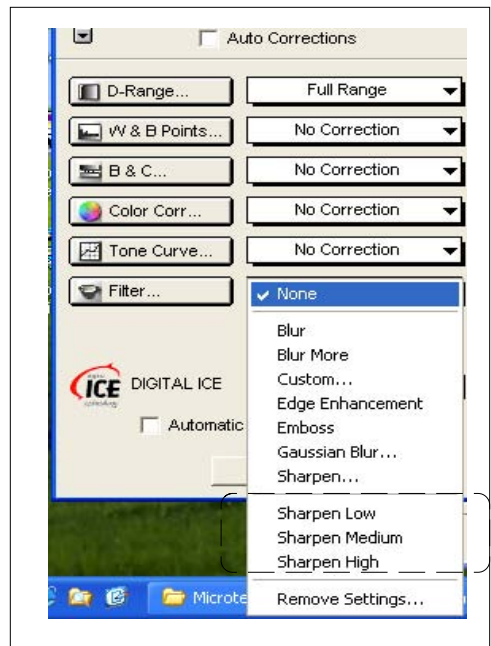
Before



After



Mac OS X



Windows XP

DIGITAL ICE

The DIGITAL ICE option is part of Microtek's exclusive PictuRescue™ system for reconstructing damaged photos and film.

The DIGITAL ICE feature allows scanners that implement this function to automatically remove dust, scratches, cracks, creases, folds, and other defects from damaged photos and film, resulting in markedly visible improvements.

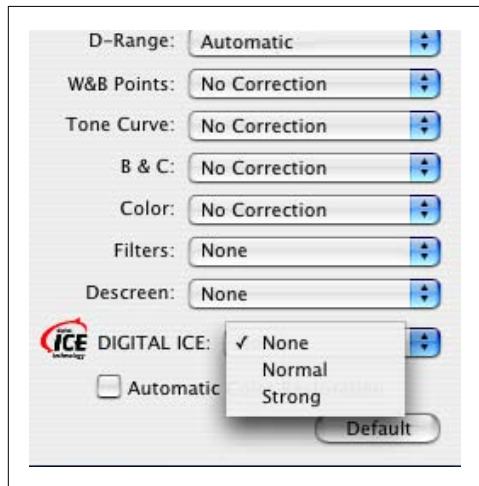
The DIGITAL ICE function is provided as a pull-down menu with 3 available options: None, Normal, and Strong.

To use DIGITAL ICE to repair damaged photos and film:

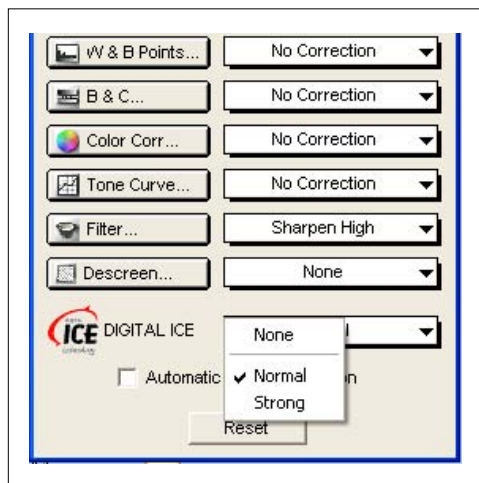
1. In the Settings window, click the “DIGITAL ICE” options menu, and select None, Normal, or Strong.
2. In the Preview window, click the “Scan” or “Batch” button to perform scanning. The effects from the use of DIGITAL ICE will display shortly afterwards – with dust, scratches, creases, and other defects removed from the image being scanned. Take note that DIGITAL ICE requires additional time in processing and requires more time than regular scanning.

Note:

- For DIGITAL ICE to work on photos, make sure the Descreen option in the Settings window is set to None.
- For DIGITAL ICE to work on film, the EZ-Lock™ film holder should be used if it is supplied as an accessory with the scanner (such as the ScanMaker i800). Use of the EZ-Lock film holder sends a signal to the scanner that film is being scanned, allowing DIGITAL ICE to be enabled if it is to be used to repair damaged film.



Mac OS X



Windows XP



Before



After

Automatic Color Restoration

The Automatic Color Restoration feature is part of Microtek's ColoRescue™ system for bringing faded colors back to life.

Note:

- This option will not work when the Image Type is set to “Line Art” or “Black and White Diffusion.”
- For best results when using the “Automatic Color Restoration” feature, marquee (select) only the image area of the photo to be restored (the photo proper). Do not include the white border around the photo, as inclusion of the background may lead to inaccurate color restoration.

To use the Automatic Color Restoration function:

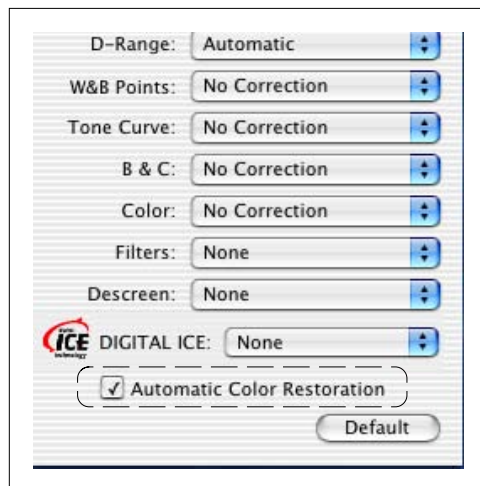
1. In the Preview window, marquee the faded image area to be restored.
2. In the Settings window, check the “Automatic Color Restoration” option.
3. Click the “Scan” or “Batch” button to start scanning. Automatic Color Restoration is applied, and faded colors in the photo are restored.



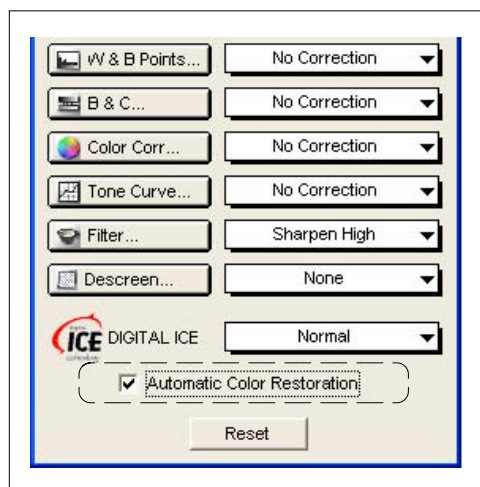
Before



After



Mac OS X



Windows XP

Automatic Color Enhancement

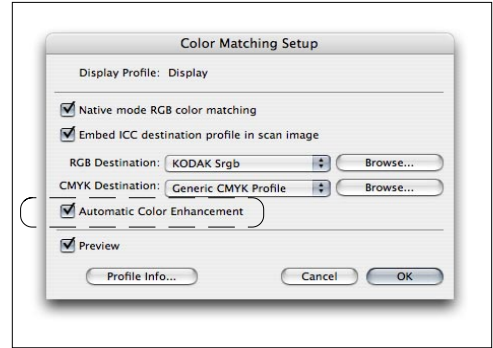
The Automatic Color Enhancement feature improves the contrast and saturation of an image, resulting in more vibrant colors.

In the Color Matching Setup window (under the Preferences menu in the Preview window), check the “Auto Image Enhancement” option to enable Automatic Color Enhancement. If this option is unchecked, the scanned image will appear like the original, with no image enhancement applied.

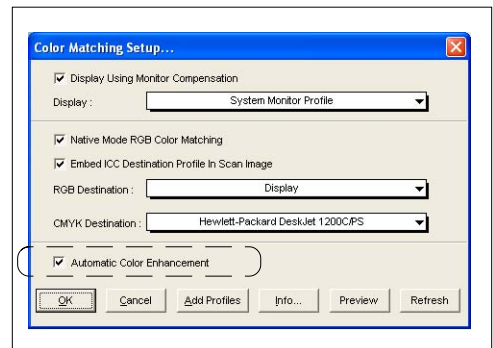
Note: This feature is always checked for specific scanner models (e.g., ScanMaker i900 and i800).

To use the Automatic Color Enhancement function:

1. In the Preview window, select the “Color Matching Setup” command from the Preferences menu.
The Color Matching Setup window appears.
2. Check the “Native mode RGB color matching” option.
3. Check the “Auto Color Enhancement” option, then press the OK button.
4. Click the “Scan” or “Batch” button to perform scanning. The resulting enhanced image displays shortly afterwards.



Mac OS X



Windows XP



Before

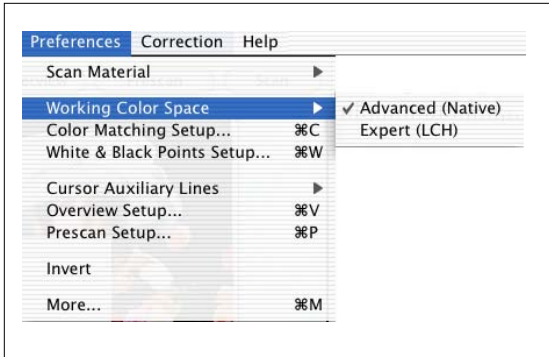


After

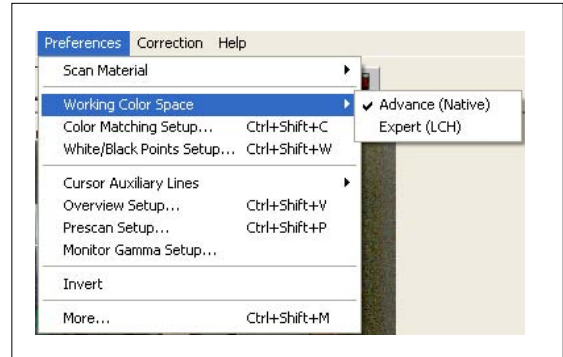
Changes to function name

Working Color Space

The term “Color Space” has been changed to “Working Color Space.” Originally located under the “More” command, this function can now be found under the “Preferences” menu.



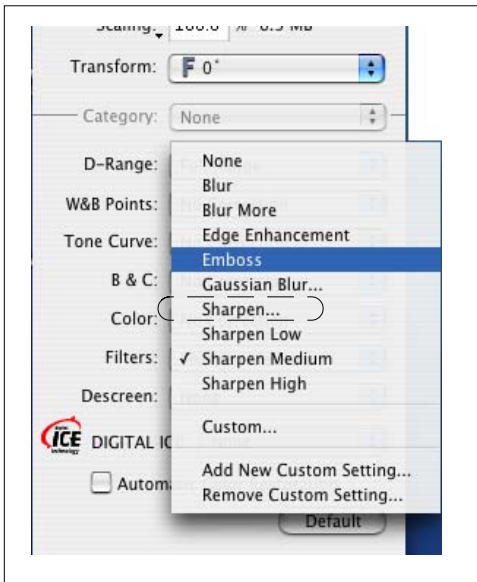
Mac OS X



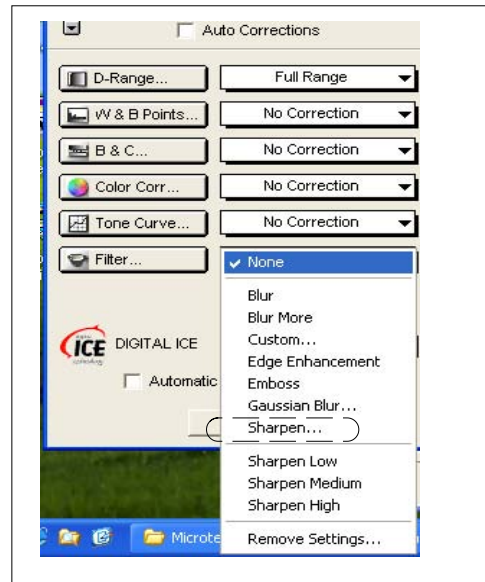
Windows XP

Sharpen

The term “Unsharp Mask Filter,” located under the Filter pull-down menu in the Settings window, has been changed to “Sharpen.”



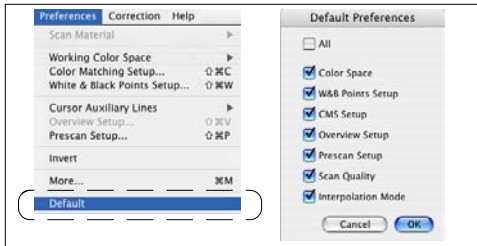
Mac OS X



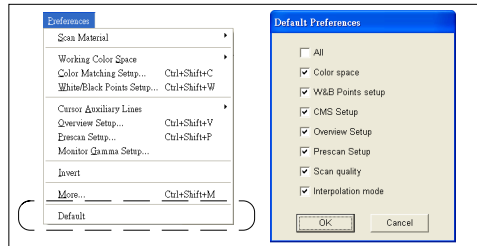
Windows XP

Preferences / Default Command

A new *Default* command has been added to the Preferences menu, allowing users to reset selected preferences to factory defaults and to recover the original values. As default, all checked boxes are checked, except for the *All* check box. The following options are available as general guidelines, where (x) indicates that a checkbox is checked for that particular preference. Please take note, however, that the default values may vary depending on the scanner model.



Mac OS X



Windows XP

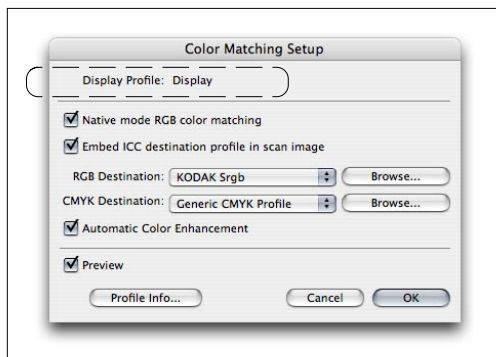
Preference	Default Value
Color Space	<ul style="list-style-type: none"> • Advanced (Native)
White & Black Points Setup	<ul style="list-style-type: none"> • Auto Clipping: 0.01% and 0.01% • Output Levels: 0% and 100% • Markers: 0% and 100% • For more details, see the <i>White/Black Points Setup</i> section in the Reference Manual.
CMS Setup	<ul style="list-style-type: none"> • Embed ICC destination profile (x) • RGB Profile: Kodak s RGB • CMYK profile: Generic CMYK • Auto Color Enhancement (x) • For more details, see the <i>Color Matching Setup</i> section in the Reference Manual and page 8 of this Addendum. See the next section too for additional information.
Overview Setup	<ul style="list-style-type: none"> • Size: Maximum size • Keep overview image after quit (x) • Fast overview (x) • Warn me if overwriting prescan (x) • For more details, see the <i>Overview Setup</i> section in the Reference Manual.
Prescan Setup	<ul style="list-style-type: none"> • Keep Prescan image(s) after quit (x) • Prescan image margins: Small • Prescan image dimension: 75% screen • Background prescan (x) • Completion sound: Basso • For more details, see the <i>Prescan Setup</i> section in the Reference Manual.
Scan Quality	<ul style="list-style-type: none"> • Quality • For more details, see the <i>More Preferences</i> section in the Reference Manual.
Interpolation Mode	<ul style="list-style-type: none"> • Bi-linear (Quality) • For more details, see the <i>More Preferences</i> section in the Reference Manual.

Display Profile selection

The following are changes made to the Display Profile Selection in the Color Matching Setup dialog box (for Mac OS X only):

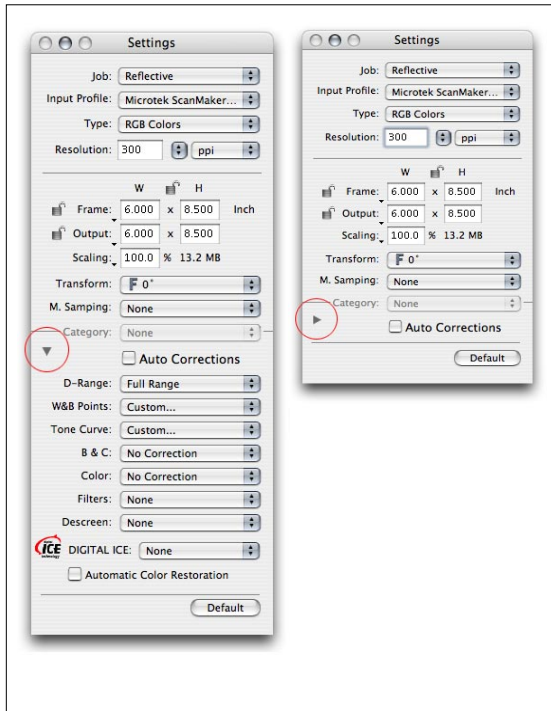
Display Profile: The user's display profile is shown. To select a different display profile, users will need to go to the *System Preferences Displays* panel to make the change. Please note that the image displayed in the Preview window is now always compensated with the currently selected display profile in the System Preferences.

Removed: The *Display using monitor compensation* checkbox and the *Change...* button fields have been removed.

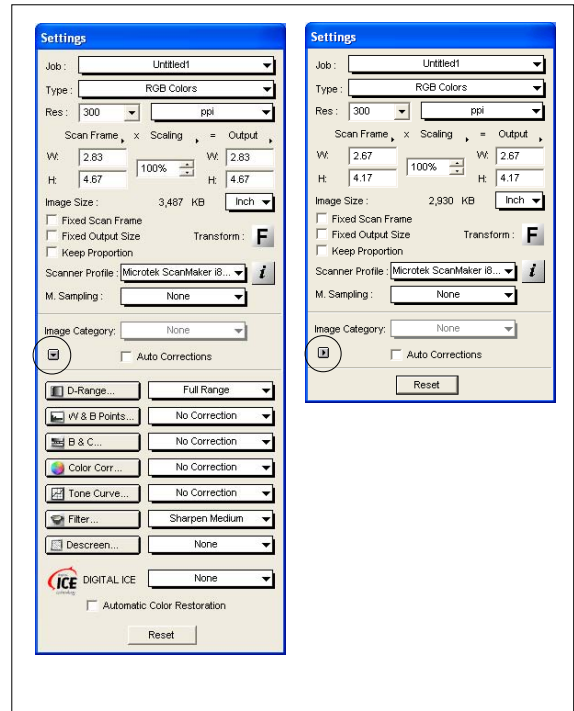


Expansion button for Settings window

The Window Expansion button reveals the bottom half of the Settings window, which includes the various image-enhancement controls.



Mac OS X



Windows XP

Multiple Sampling

Multiple Sampling is a process in which the scanner samples each line in the image a number of times, then obtains an average to reduce random noise. Enabling multiple sampling will slow down scanning, as the process requires extra time to yield higher-quality images.

To use Multiple Sampling:

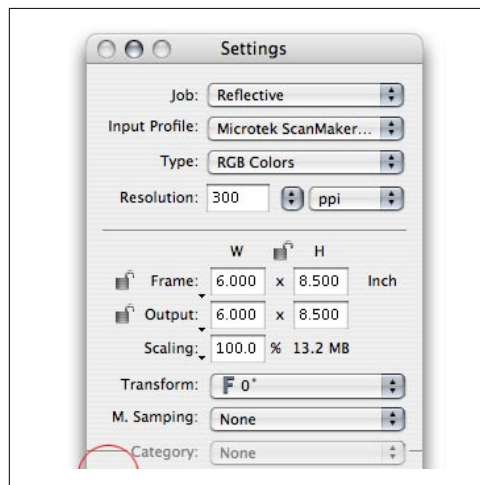
1. In the Preview window, click the “Preview” button to preview the image.
2. Select the image area in the preview image where multiple sampling will be applied.
3. In the Settings window, click the “M. Sampling” drop-down menu, and choose an option.
4. Click the “Scan” or “Batch” button to start scanning. Multiple sampling is applied, producing a higher-quality image.



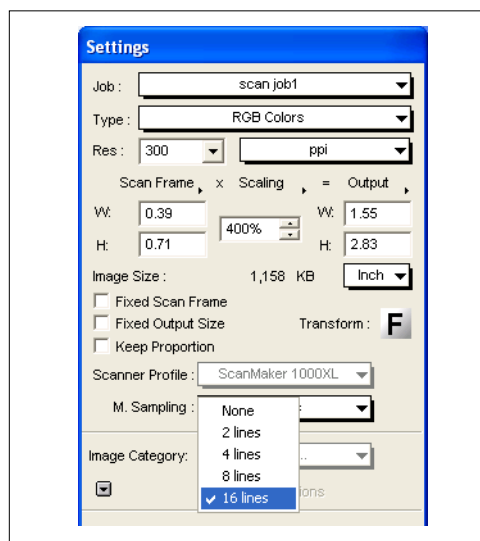
Before



After



Mac OS X



Windows XP

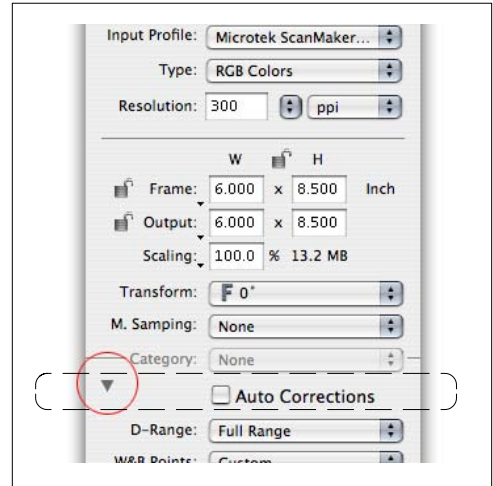
Auto Correction

The Auto Correction function optimizes the quality of scanned images by making adjustments to the W&B Points, Gradation, Color Cast, and Filter in Expert (LCH) mode, W&B Point, Tone Curve, and Filter in Advanced (Native) mode. You can control this function by clicking its check box.

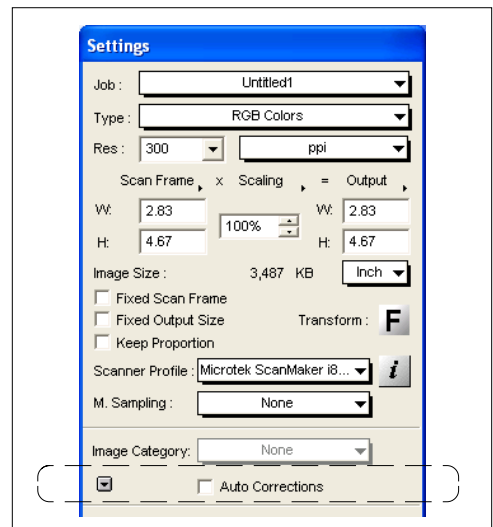
To use the Auto Correction function:

1. In the Preview window, click the “Preview” button to preview the image.
2. Select the image area in the preview image where automatic correction will be applied.
3. In the Settings window, check the “Auto Correction” check box.

Automatic correction is performed, and the adjusted images are displayed in the Preview window in real time.



Mac OS X



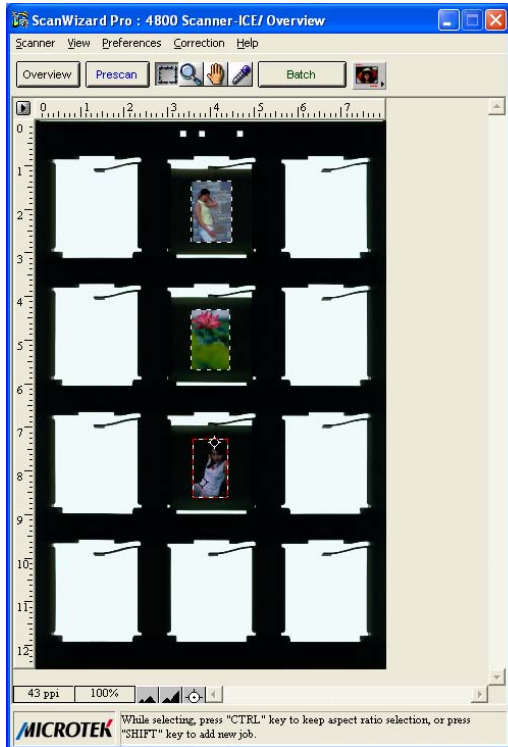
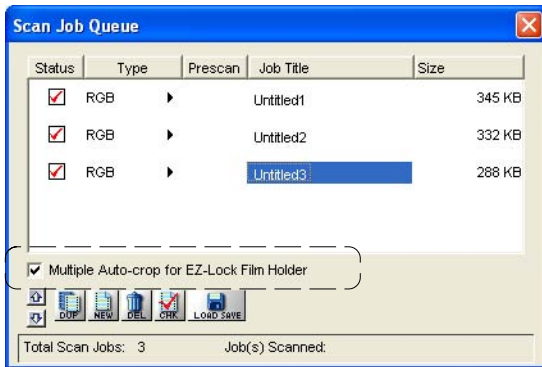
Windows XP

Multiple Auto-crop for EZ-Lock Film Holder

The Multiple Auto-crop for EZ-Lock Film Holder option is enabled only when the EZ-Lock film holder is placed on the scanner glass surface, and the scan material is Positive or Negative Film. Otherwise, this option is disabled. Check this option to enable the scanner to auto-crop multiple scanning frames.

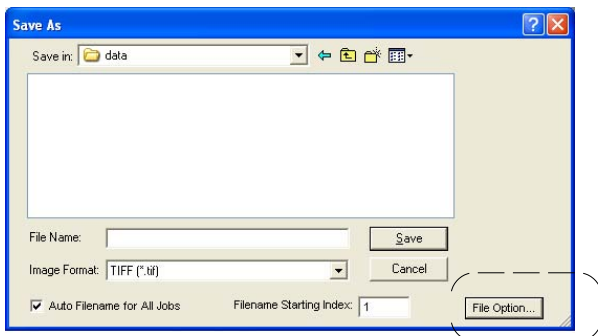
To perform multiple auto-crop preview of the film loaded onto the scanner, click the Overview button. When done, you will see multiple scan frames that have been automatically cropped in the preview window. Multiple job titles will appear in the Scan Job Queue window, numbered sequentially and all marked by a “Check” that indicates the jobs are ready to be scanned.

Note: After performing multiple auto-crop scanning, the previously created jobs will be removed from the Scan Job Queue window.



File Option

The File Option button is active only when the file format is PDF or TIF; otherwise it will not appear.



If “RGB Color” or “Grayscale” is selected as your image type in Settings window

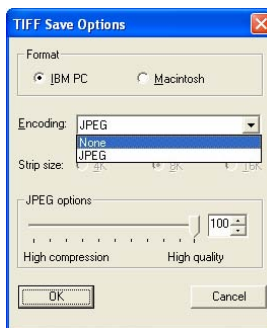
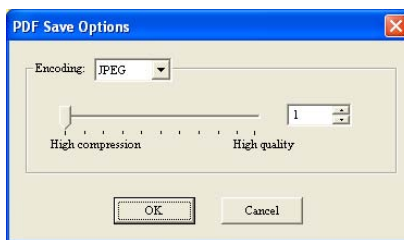
- You select “PDF” as your image format, then click the File Option button. The “PDF Save Options” dialog box will appear.

The Encoding option includes ZIP and JPEG. If ZIP is selected, the image quality compression will not be available for adjusting.

- You select “TIF” as your image format, then click the File Option button. The “TIF Save Options” dialog box will appear.

There are two Format options, IBM PC and Macintosh, supported for saving a TIF file; the default setting is IBM PC.

While, the Encoding option includes JPEG and None. If “None” is selected, the image quality compression will not be available for adjusting. The default setting is “None”.



If “Line art” or “B&W Difussion” is selected as your image type in Settings window, and also you select “TIF” as your image format. Click the File Option button to open the “TIF Save Options” dialog box. There are five options supported for file compressing.

