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Preface

Introduction

PowerColor is a powerful scanning software package for the UMAX Technologies, Inc. scanner. With its many flexible features, PowerColor enables you to perform complex color corrections and to make professional RGB or CMYK color separations from your scanned images quickly and easily.

Because it manipulates 16-bits per channel color data directly on the host computer, PowerColor gives you the opportunity to preview changes during the initial scanning process without additional prescanning. PowerColor also provides instant CMYK feedback on your image transformations, so you can see the results of your changes immediately.

For performing CMYK separations, PowerColor offers the ease and automation of ICC profiles with our ColorSync Separator, as well as high level control with the PowerColor Conventional Separator.

PowerColor and ColorSync (Macintosh)

The Macintosh version of PowerColor is fully ICC compatible with the use of 16-bits per channel input, output, and display profiles. Output profiles can be either RGB or CMYK, allowing for flexible color matching for a wide variety of output devices.

PowerColor includes the following features:

- Multiple, independent scan regions

- Color, range, and gradation control for individual scan regions

- Image manipulation tools, including rotation, cropping, and unsharp masking

- Flexibility in setting lpi, dpi, size, and scale for individual scan regions

- Scanning to commonly used file formats

- Use of standard ColorSync ICC profiles (Macintosh only)

PowerColor Press

PowerColor Press is a high-end CMYK separator based on a density-to-dot color engine. This software is intended for use by those who understand the concepts behind color separation and reproduction as they relate to offset printing. PowerColor Press offers sophisticated, advanced features for creating high-end color separations, including:

- Selective color correction

- Automatic adjustments for wanted and unwanted colors

- Two operation modes for general production and expert work

- Input/output three-color and four-color density range gradation control

- Cast correction with diffused highlight and shadow settings

- UCR/GCR gradation control

- User definable dot gain

- User definable gray balance

How to Use This Manual

This manual explains how to install PowerColor and guides you through the functions of the software. It contains all the information you need to begin using PowerColor with your scanner. Once you have installed the software, this manual will help you understand the process and tools for scanning, color correction, and image manipulation.

Typographical Conventions

The following typographical conventions are used throughout this guide:

Menus and menu options, dialog box selections, on-screen messages, and keyboard keys appear in bold: e.g. **Manual Update**, **Preview**, etc.

> **Note:** Notes provide useful information about the current topic.

Related Documentation

This guide assumes that you are familiar with the Macintosh or Microsoft Windows interface and operating system. For detailed information on your computer and its interface, refer to your computer's installation guide. For details on using your scanner, refer to the Umax Technologies, Inc. Installation and Operation Manual provided with your scanner.

1
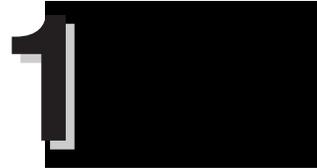
Installation

This chapter describes the configuration requirements for PowerColor and guides you through the software installation process for both the Macintosh and Windows platforms.

Configuration Requirements

Before installing PowerColor, make sure your system meets the minimum configuration requirements indicated below.

Host Computer

In order to take full advantage of the PowerColor software, your host computer must meet the following minimum requirements:

Macintosh

- Macintosh® PowerPC 8100 computer or better with floating point coprocessor installed

- 24-bit color display adapter

- 17" or larger high-resolution monitor (1024 x 768 dpi)

- 64 MB RAM available (128 MB recommended)

- System 7.5 or higher

Windows PC

- Pentium class computer running at 266 megahertz or above

- 24-bit color display adapter

- 17" or larger high-resolution monitor (1024 x 768 dpi)

- 32 MB RAM available (64 MB recommended)

- Windows NT 4.x or Windows 95/98

Scanner

PowerColor works with the UMAX Technologies, Inc. series of scanners.

For details on connecting your scanner to your host computer, refer to your scanner's user guide.

Setting Up and Installing PowerColor on an Apple Macintosh

This section gives instructions for installing PowerColor on an Apple Macintosh computer. For installation on a computer running Microsoft Windows, turn to page 1-6.

Configuring Your Monitor for PowerColor

PowerColor Needs to run in 24 or 32 bit color mode. To configure your monitor for PowerColor, follow the steps below:

1. Open Control Panels in the Apple menu.

2. Open the Monitors control panel and set your monitor to millions of colors (see Figure 1–1).
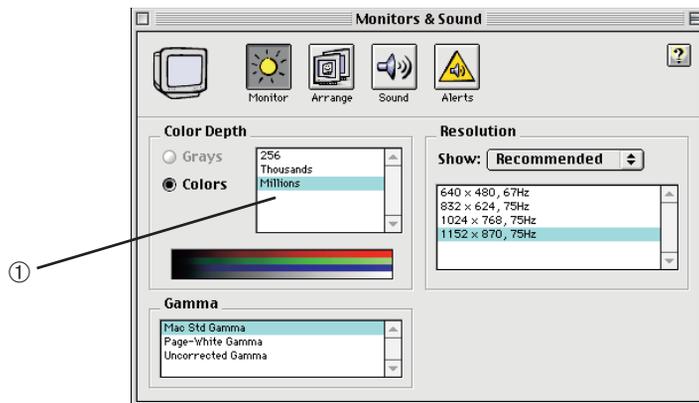
Figure 1–1
Monitors control panel.
①–Millions setting.

The choice for scanning professionals

PowerColor

Version 4.0

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UMAX®

Installing the PowerColor Software

To install the PowerColor software, proceed as follows:

1. Insert the PowerColor CD into your CD-ROM drive and double-click on the Installer icon.

2. Click on Continue... in the PowerColor installer splash screen.

3. Read and adhere to License Agreement. Click the agree button to continue.

4. Click the box next to Standard to install the Application and ColorSync Profiles. If you choose to install just one component, click on the arrow to the left of the box for separate component installation options. After selecting your installation options, click the install button to continue.

5. If you want to change the location in which PowerColor will be installed, follow these steps:
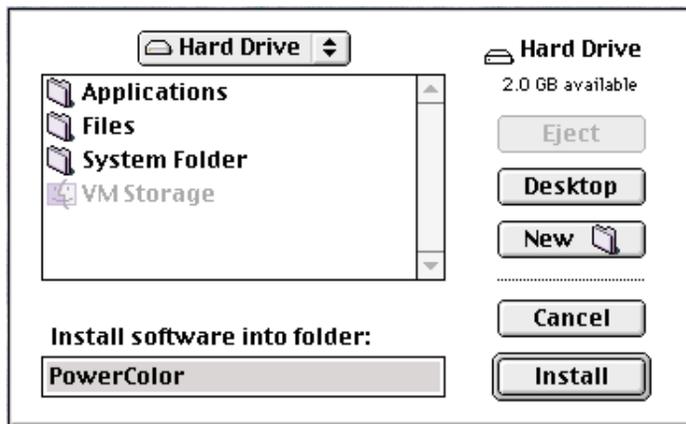
- Click on the Install Location drop down menu.

- Choose Select Folder in the drop down menu.

- In the destination window that appears, select the destination disk and folder of your choice for PowerColor.

  Note: To install PowerColor, you must have at least 10 megabytes of free hard drive space.

- Highlight the folder where PowerColor will reside and click on Install.

6. Follow the screen prompts to complete installation and exit the installer

Installation of your PowerColor software is now complete.

Note: If you are reinstalling or upgrading from a previous version of PowerColor, before launching the application, delete all **PowerColor Preferences** files (located in the **Preferences** folder within the **System Folder**). PowerColor will create a new preferences file the first time you launch it.

Figure 1–4

PowerColor Get Info dialog box
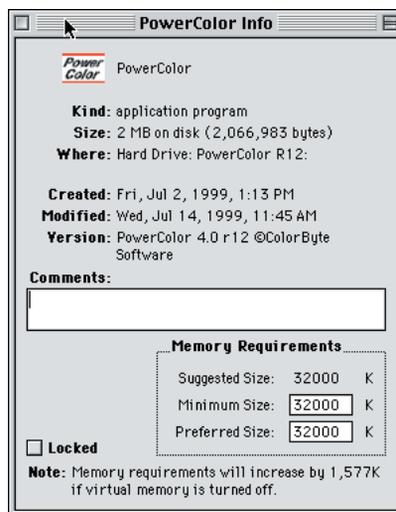
Assigning Memory to PowerColor

To increase the amount of memory assigned to PowerColor, proceed as follows:

1. Select the PowerColor application icon in the PowerColor folder and choose Get Info from the File menu (⌘+I).

2. In the PowerColor Info dialog box that appears, under Memory Requirements make sure the Preferred size is set to at least 32 MB. If possible, increase the RAM for PowerColor to 64 MB.

3. Close the PowerColor Info dialog box.

Setting Up and Installing PowerColor on an Windows NT and Windows 95/98

This section gives instructions for installing PowerColor on a PC running Microsoft Windows 95, 98 or Windows NT. For installation on an Apple Macintosh, turn to page 1-2.

Configuring your display for PowerColor

PowerColor needs to run in 24 or 32 bit color depth. To configure your display settings for PowerColor, do the following:

1. Right click on a clear area of your Windows desktop. Choose Properties from the pop-up window that appears.

2. The Windows Display Properties window will appear. Choose the Settings Tab.

3. In the Color Palette section of the Settings window, choose 24 bit or 32 bit color.

Installing PowerColor

To install the PowerColor software, proceed as follows:

1. Insert the PowerColor CD into your drive and double-click on the Setup icon.

2. The PowerColor installer will launch. You will be asked to specify the location in which PowerColor should be installed. Use the standard Windows dialog box to specify a location, or use the default location of:

    c:\Program Files\PowerColor

3. After you have selected the install location, click OK to have the software installed to the specified directory.

2

Getting Acquainted

PowerColor provides a powerful and flexible software interface between your Computer and UMAX Technologies, Inc. scanner. The software offers a wide array of professional scanning and image manipulation tools with all the convenience and user friendliness of the standard Macintosh or Microsoft Windows interface, including drop-down menus, multiple windows, point-and-click controls, and keyboard shortcuts.

This chapter covers the following topics:

- Overview of the scanning process

- Launching PowerColor

- Setting Preferences

- Changing Screen Gamma

- Making an Overview

- Image Selection Tools

- Creating Regions

- Working with Regions

- Updating Images

- Saving and Recalling Settings

For details on correcting scanned images, see Chapters 3–6. How to use the Queue Manager and scan images to disk is discussed in Chapter 7.

Overview of the Scanning Process

Preparing scans with PowerColor is a simple process with many tools for an efficient and organized workflow. Summarized below are the basic steps in the PowerColor process:

1. Generate an overview scan of the entire scanning bed:

2. Define regions as desired and add them to the Queue Manager.

3. Select an image from the Queue Manager and perform the desired image corrections while verifying the results visually and numerically on-screen.

4. Scan the final images to disk using the desired output and file formats.

Launching PowerColor

To launch the application, double-click on the PowerColor icon in the PowerColor folder, or, if using Windows, click on your Windows Start menu, then choose PowerColor from withn the UMAX program group. When the application opens, the menu bar, blank Overview window, Queue Manager, Control Bar and Toolbar are displayed (see Figure 2–1). These are the tools with which you can access all of PowerColor's commands and functions.

Figure 2–1
PowerColor menus:
Toolbar, Control Bar
and Queue Manager
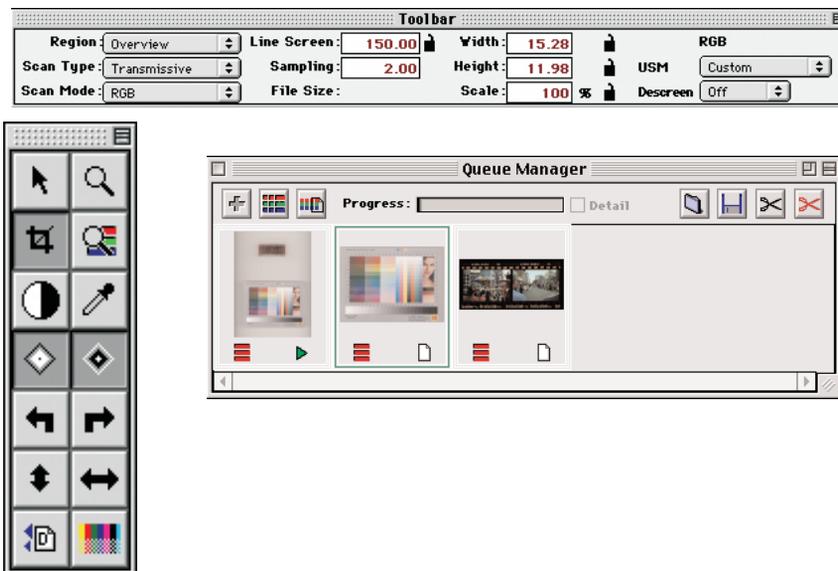
Setting Preferences

Before you begin scanning, check PowerColor's preferences to be sure the options you need will be available.

Preferences are set in the Preferences window (see Figure 2–2). To open this window, select Preferences from the Edit menu.
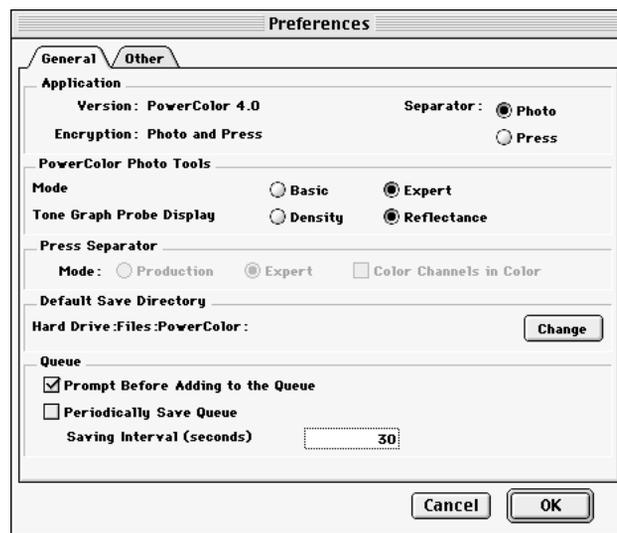
Figure 2–2a
Preferences window,
General components

The components of the Preferences, General window, are defined as follows:

- Application: The static fields in this section describe the software revision number and type of encryption (if any). This area is also used to toggle between the ColorSync and PowerColor Press by selecting the desired radio button.

- PowerColor Photo : This section allows you to set the mode of operation as well as the type of information to be displayed in the expert tone graph.

- PowerColor Press: This section allows you to set the type of separation tools to be used with PowerColor Press. Production mode provides an "all-in-one" color correction window suitable for most general scanning work. In Expert mode, all of PowerColor's sophisticated image correction features are available separately.

- Default Save Directory: Allows navigation to volumes mounted on workstation or available network or servers.

- Prompt Before Adding to Queue: toggles a prompt before file names are added to the queue for final scan.

- Periodically Save Queue: allows you to designate whether PowerColor will automatically save the current queue at the interval specified in the *Saving Interval* Field.

The components of the Other tab in the Preferences Window are defined as follows:
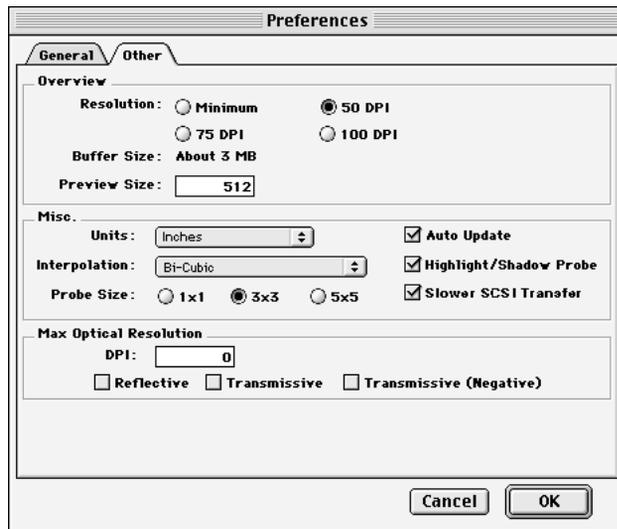
Figure 2–2b
Preferences window,
Other components

- Overview: This section controls how images are viewed on screen during the scanning and color correction process. The Resolution setting defines the desired resolution of the overview scan. The default value is 50 dpi. Higher resolutions provide greater detail in the image window, but also require considerably more RAM (as reflected in the non-editable Buffer Size field). If you have over 64 MB of RAM available for PowerColor, setting the resolution to 75 or 100 increases the default resolution in the region windows, which may save you from having to perform a preview scan for each region. The Preview Size setting defines the dimensions of the image window. The default size is 512 pixels.

- Units: sets the units of measure for the entire application. The default setting is Inches.

- Probe Size: sets the size of the area sampled by the probe. 1x1 samples a single pixel; 3x3 samples the eight pixels surrounding the cursor location; 5x5 samples the 24 pixels surrounding the cursor location.

Interpolation: PowerColor provides the following interpolation modes:

– Bi-Cubic: weighted average of a region of pixels around the target pixel (default mode). This type of interpolation provides high quality for continuous tone images when scaled to a resolution higher than that of the scanner.

– Bi-linear: weighted average of adjacent pixels. This setting provides high quality with better performance than Bi-Cubic, but may cause unwanted patterns in some images.

– Nearest neighbor: interpolation by pixel replication (should only be used for line art).

– Maximum Optical Resolution: This feature allows PowerColor to set a maximum optical scanning resolution for certain film types. Any resolution above this value will be interpolated. This is very helpful when scanning noisy or grainy originals that need to be enlarged beyond the quality of the original.

Note: The preferences you select, as well as all window positions and contents, are saved by PowerColor when the application is closed. The next time you launch PowerColor, they will be restored.

Note: Changes made in the preference window do not require the PowerColor application to be restarted to take effect.

Changing Screen Gamma

PowerColor's Monitor Setup option in the Edit menu (see Figure 2–3) allows you to specify the gamma values of your monitor, as well as the CMY-to-RGB tables used by PowerColor Press to display the "blowback" of your CMYK output.

By default, PowerColor assumes a monitor gamma value of 1.8. If you have changed your monitor's gamma, enter the new gamma value in the Monitor Setup window. PowerColor then adjusts its previews to look the same regardless of any monitor gamma
(in the range of 0.2 to 5.0)

> **Note:** PowerColor does not adjust the gamma value of your monitor. It merely adjusts its previews to look the same regardless of different gamma settings.

You can choose between the PowerColor default blowback tables, or you can
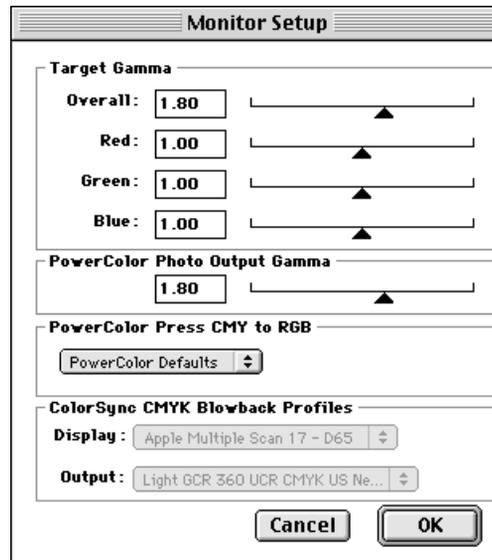
Figure 2–3
Monitor Setup
window

select ColorSync and load your own monitor and output CMYK profile.

> **Note:** PowerColor only uses ICC tables for the monitor preview in Separator Mode.

Making an Overview

Before working with images, the contents of the scanning surface must be scanned into the Overview window. To do so, proceed as follows:

1. Mount the original(s) on your scanner.

2. Select the Scan Type in the toolbar as follows:

    *   Transmissive: color or black-and-white transparencies.

    *   Transmissive Negative: negative transparencies.

    *   Reflective: color or black-and-white photographs or prints.

3. Click on the Preview button ( ) in the toolbar or the Preview button ( ) below the blank first image in the Queue Manager.

    Your scanner now produces a low-resolution overview scan of the entire scanning surface.

    > **Note:** To stop an overview scan once the desired portion of the scanning surface has been scanned: on a Macintosh press ⌘ **+ .** (period), if using Windows, hit the **Escape** (ESC) key.

    > **Note:** If you are scanning all the images in the Queue Manager using the same line screen, sampling, and scale values, set up the Overview with the desired values. All images subsequently added to the queue will reflect those changes.

Image Selection Tools

Once you have produced an Overview, PowerColor's image selection tools, located in the Control Bar, allows you to define and work with regions for detailed color correction work. This section describes how to use these tools.

> **Note:** For Macintosh users, enabling the Macintosh **Balloon Help** will cause the name and function of each button to be displayed as the cursor passes over it.

Image Selection Tools

Probe Region: The Probe (or Pointer) tool is used to select items and to move around the image to sample pixels. The tool deselects the Crop and Zoom tools.

Zoom: Click on the image with the Zoom tool to enlarge the image for more precise examination of a region. If necessary, resize the image window to accommodate the new view. The magnification is shown at the bottom left-hand corner of the image window. To reduce the view again, hold down the Option key (Macintosh) or Control key (Windows) while clicking on the image with the Zoom tool. Note: The point where the Zoom tool is clicked becomes the new center of the image in the window.

Crop Region: Use the Crop tool to select a portion of the image, for example to cut out the clack edges of a film frame or tape used to hold images on the scanning surface.

Auto Range: Automatically adjusts the tonal range, setting the highlight and shadow points.

Pick Neutral Point: Uniquely selects multiple gray points in an image by holding down the Option key (Macintosh) or Control key (Windows) and clicking on quarter, mid, and three quarter tone values.

Highlight Value **Shadow Value:** Automatic values for each image highlight and shadow range are made with both buttons selected (default setting). Deselecting either button will result in a new auto range without the deselected value. Edit/Undo, from Main Menu reverts to last values.

Refresh: With automatic updating off, click on the Refresh key to update the active region with all changes since the last update.

Figure 2–4
Region Window

Regions

The purpose of the region window is to define areas from the overview that will be scanned to image files, and to correct them in higher resolution than the overview. Each region window has the following components:

- History : Each region can be cropped, rotated, and color corrected independently of all other regions. Each region also carries its own history list of all actions taken by the user on that region. You can scroll the history list by selecting the "H" icon at the bottom of the region window (Macintosh version) or on the Toolbar (Windows version). This list can be used to undo and redo to any point in the history.

- Duplicate: At any time during the correction process the active region can be duplicated for side by side comparison. This duplicate view is static except for its history list, which can be used to compare views at any correction step.

Creating Regions

There are two ways to create regions: from the cropped overview, or by opening a TIFF file from disk.

1. Creating a region from a TIFF file

To create a region from a TIFF file on your hard drive, choose Open from the file menu and choose the desired TIFF file. The file will open into a new region window.

2. Creating a region from the Overview

Once you have cropped the desired portion in the Overview, double click the selected area to assign it to a region. You can also click on the Add Region button (⊞) from the Queue Manager.

Images and Memory

The amount of memory (RAM) required for a region varies depending on the Overview resolution (selected in the Preferences window) and the size of the region. You can create as many regions as the amount of RAM assigned to the PowerColor application allows. (The minimum and default application RAM is 32 MB, 64 MB of RAM is recommended.) If you exceed the amount of memory allocated to the application, the following warning dialog appears:
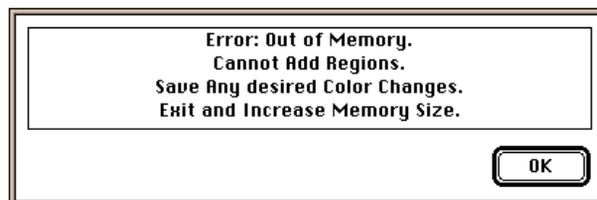
Figure 2–4
Out of Memory
warning

> **Error: Out of Memory.**
> **Cannot Add Regions.**
> **Save Any desired Color Changes.**
> **Exit and Increase Memory Size.**
>
> [OK]

If this dialog box appears, you can:

1. Quit the application and assign more RAM to PowerColor, (Macintosh only)

2. Final scan the regions you have already created, and/or

3. Delete unneeded regions. For more information on final scanning or deleting regions, see Chapter 7.

> **Note: Macintosh users:** To check the current memory setting for PowerColor on a Macintosh, Select **About this Macintosh** in the **Apple** menu.

Region Names

PowerColor names regions by default according to the order in which they are created. The default name assigned to a region is based on the following scheme:

Region-X : scan####

where

X = the region number in the order of its placement in the Queue Manager.

= an arbitrary sequential number.

Your regions may represent separate originals for different jobs, or different areas from within the same piece of art. When you prepare your final scans, it is helpful to follow a naming convention for your regions that makes sense in your production environment (for example, by job, client, date, etc.). To change the name of a selected region, press ⌘+S or select Save from the File menu.

> **Note:** For more information about naming regions, see *Naming Final Scans* in Chapter 7.

Working with Regions

Regions created using the Add Region button are placed into PowerColor's Queue Manager. The Queue Manager. is a highly flexible tool designed to organize your work with regions. Use the Queue Manager. to:

• Activate a region

• Preview regions

• Rearrange the order of the regions

• Scan regions to disk

• Add a region

• Delete a region or all regions

• View the progress of a scan

• Switch between detail view and full preview

This section explains how to manipulate regions using the Queue Manager. Scanning to disk is discussed in Chapter 7.

Activating Regions

To activate a region, double-click on its image in the Queue Manager. The selected region is then framed in red, the region number is displayed in the Region field, and the image data is shown in the appropriate fields in the toolbar. A 1:1 view of the image is displayed in the image window. Color correction work can now be performed on the image.

> **Note:** Before making color corrections, make sure the region you want to work on is active.

Adjusting the Queue Manager Window

The Queue Manager window can be manipulated using standard Macintosh or Windows tools:

- To close the window, click on the close box in the upper left-hand corner (to reopen it, select Queue Manager from the Window menu. or press ⌘+M on a Macintosh, or Control+M on a Windows PC).

- To expand the window to its full size, click on the window resize box.

- To resize the Queue Manager window to a custom size, click and drag the resize button in the bottom right-hand corner. on a Mac, or click and drag any corner on a Windows PC.

- To scroll through the images in the Queue Manager, use the standard scroll bar at the bottom of the window.

- To move the Queue Manager window to another location on screen, click and drag the title bar.

Manipulating Regions in the Queue Manager

The regions in the Queue Manager can be rearranged or deleted any time, even while scanning is in progress.

To rearrange the order of the regions in the Queue Manager, click and drag the region to the desired location in the queue.

> **Note:** The Overview can not be moved in this manner.

To delete a region, use one of the following tools:

Cut: To delete a single region from the queue, activate the region by double-clicking on it (a red frame appears around it) and click on the black Cut button in the Queue Manager to delete the region.

Cut All: To delete all regions from the queue, click on the red Cut All button in the Queue Manager

Saving the Queue

To save the contents of the current queue manager choose Save Queue from the file menu. In the dialog box that appears assign a name for the queue, then click OK to have it saved to disk. This option is useful for preserving your work in the event of a crash, or for production environments in which drums need to be set up for later scanning.

Previewing Regions

Before manipulating and correcting regions, the image should generally be previewed.

> **Note:** Although previewing an image is not absolutely necessary, it improves the accuracy of the Probe values and provides a higher resolution image for image correction work. Without a preview scan your Probe values may not be accurate due to the dithering of the low resolution image.

Preview: To preview a single region, click on the Preview button ( ) under the desired image in the Queue Manager. During scanning the region's Preview button appears red, green, and blue. Once the preview is complete, the button turns all red.

Preview All: PowerColor's Preview All button allows you to batch preview all the regions in the Queue Manager with a single click. This can be done even if there are different types of originals in the scanning area (reflective, positive transparencies, or negative transparencies).

Once you have defined and added multiple regions with the PowerColor tools, click on the Preview All button. The scanner then scans each region in succession.

To preview only certain regions in the Queue Manager, click on the white Preview button under each desired image. The regions are then scanned in order.

Dynamic Operations in the Queue Manager

The Queue Manager is a multitasking tool. While a region
is being previewed or final scanned, other regions can be added, deleted, or
rearranged in the Queue Manager. Color correction work can also be performed
on a region in the queue, whether or not scanning is in progress.

The queue may also be interrupted during scanning using the Active/Pause icon
on the right-hand side under the Overview in the Queue Manager. Clicking on
this icon toggles the scanning process on (▶) or off (■).

Transforming Images

To make your work with regions easier, PowerColor also includes the tools shown
below to transform images. The tools can also be selected from the Transform
menu.

> **Note:** The image transformation tools can only
> be used in a region, not in the Overview.

Rotate Left: rotates the image in a region 90° counterclockwise.

Rotate Right: rotates the image in a region 90° clockwise.

Flip Horizontally: flips the image horizontally, along the vertical axis.

Flip Vertically: flips the image vertically, along the horizontal axis.

Viewing an Image in Detail

PowerColor's Detail feature is used to scan a small area of a region at the final scan output resolution. This feature is helpful for examining an image in precise detail.

To use the Detail feature, proceed as follows:

1. Activate the region in which you want to perform a detail scan by double-clicking on it in the Queue Manager.

2. Select Detail in the Region menu or click on the Pick Detail Point button ( ) in the Control bar. The cursor becomes a cross-hair.

3. Click on the center of the desired area of the image to be viewed in detail.

    The scanner now performs a detail scan of predefined dimensions around the point you selected using the scanning parameters indicated in the fields in the toolbar (size, scale, line screen, etc.).

Once the detail scan is complete, you can switch between the detail view (as indicated in the title bar of the image window) and normal preview by toggling the Detail checkbox in the Queue Manager.

> **Note:** The purpose of the detail scan is to view a small area of interest at the final output resolution. Before performing a detail scan remember to setup the output parameters for the image in the geometry window.

Updating Images

Whenever you make changes in a prescanned image or scanning parameters, the image can be updated in the Region window so you can visually gauge the effect of the changes. Image updating is performed in two ways: automatically and manually.

Updating Automatically

If you want the image window to be updated automatically, choose Auto Update On from the Preferences menu. The image is then updated every time you make a change. To turn off automatic updating, choose Auto Update Off.

Automatic updating is helpful in visually tracking changes incrementally. However, it can add production time due to the time needed to refresh the screen image after every adjustment.

Updating Manually

With automatic updating off, click on the Manual Update button ( ) in the toolbar (or in any window where it appears) to update the active region with all changes since the last update. You can also use the keyboard shortcut ⌘+K.. When the update is completed, the Command field at the top of the toolbar indicates Updating… Done.

The manual update feature is particularly useful if you are a more experienced scanner operator and only need to check the image window from time to time.

> **Note:** If you are using the manual update feature, the image window's display is updated only when you click on the **Manual Update** button.

Saving and Recalling Settings

During your color correction work, you may decide to save the changes you have made for future applications. You may also wish to use other predefined settings, or even start over. PowerColor gives you the option of saving and recalling default or previously saved settings for one or all of the parameters you have changed, or resetting the parameters to those in the original prescan.

To use this feature, select one of the options in the Settings menu,

> Save: This option allows you to save custom correction settings. After adjusting the settings you want to save, click on the Save button or select Save in the Settings menu. In the dialog window that appears
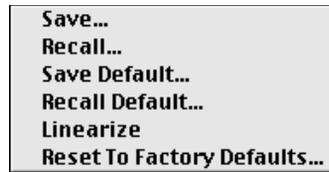
(see Figure 2–6) check off the settings you want to save.
In the standard file dialog that appears next, name the settings file and choose where it will be stored. The settings can now be recalled any time using the Recall feature (see below).

Note: Only the settings you check off are saved.

Figure 2–6
Settings window
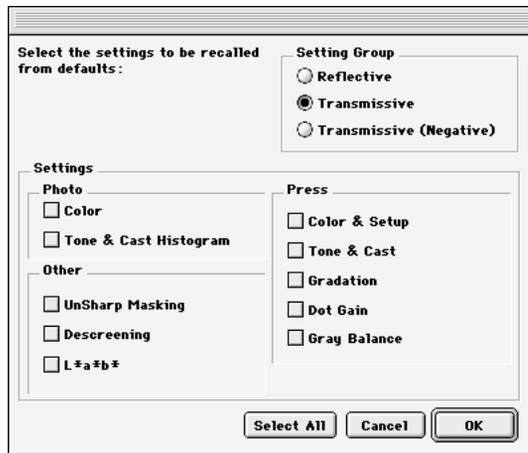
Recall: This option recalls a previously saved settings file. PowerColor comes with a number of preset files for your convenience, or you may recall a settings file you created. After you select Recall, a standard file dialog appears for you to select the settings file to be recalled.

Save Default: Use this option to store your own custom default settings.

Note: The **Save Default** option overwrites PowerColor's default settings. Once PowerColor's defaults have been overwritten, they cannot be recalled. If you use certain settings regularly, save those settings in a separate file and recall them as needed. See **Save** and **Recall** above for more information about these options.

When you select Save Default, a dialog window similar to the one shown in Figure 2–6 appears where you can check off the settings to be saved as defaults.

Note: Only the settings you check off are saved as defaults.

Recall Default: This option brings up a dialog window similar to the one shown in Figure 2–6 where you can select the specific default settings to be recalled by clicking on the appropriate checkboxes. Click on OK to recall the settings.

Linearize: This option will reset tone and gradation curves to linear values. For other settings it will remove any correction made to the tool. For example, gray balance would become equal percentages for all inks.

Reset to Factory Defaults: This option will reload the original defaults that may have been saved over at some time.

Note: In some cases, PowerColor grays out settings in the **Recall Default** and **Reset** dialog windows. The grayed out items are values which have not been saved.

3

Correcting Images with PowerColor Photo/RGB Mode

PowerColor offers many powerful features that allow you to correct your pres-canned images before the final scan is made. For those who prefer to work in RGB color space, PowerColor provides fast and efficient tools to make image corrections.

This chapter explains how to use the RGB tools and covers the following topics:

- Using the RGB Probe

- Using the RGB Controls in Basic Mode

- Using the RGB Controls in Expert Mode

The Photo mode is selected in the Preferences window (see *Setting Preferences* in Chapter 2 for more information).

For information on working in the CMYK color space with PowerColor, refer to Chapters 4 and 5. For details on using PowerColor's descreening and unsharp masking features , see Chapter 6.

Using the RGB Probe

The most important tool in correcting images is the Probe. This window tracks your corrections by displaying the RGB values. To view the RGB Probe, select Probe in the Window drop down menu (Or press ⌘+P on a Macintosh, Control+P if using Windows). As you pass your cursor over the Overview or a region window, the Probe shows the values for the pixel(s) at the current cursor position.

The RGB Probe window is a static display. Its appearance depends on the Scan Mode you select in the Control Bar (see next section). However, the Probe always shows the X/Y coordinates of the current cursor position (Probe Location) and the original and output optical density values (Densities) for the selected pixel(s).

RGB Probe Window Configurations

When scanning in RGB mode, the RGB Probe displays the RGB reflectance values (RGB Pixel Values) for the selected pixel(s) (see Figure 3–1).
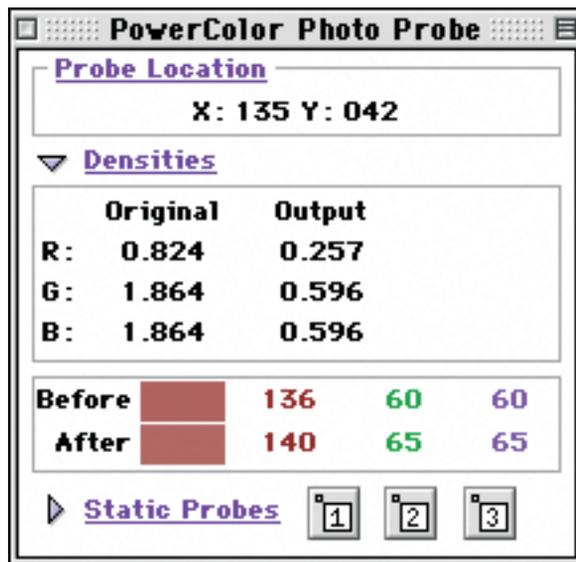
Figure 3–1
RGB Probe in RGB mode

If the image is in a grayscale scan mode (one of the Gray options), the RGB Probe shows the reflectance value (Pixel) and dot percentage (Dot) for the selected pixel both before and after correction (see Figure 3–2).

Figure 3–2
RGB Probe in Gray mode
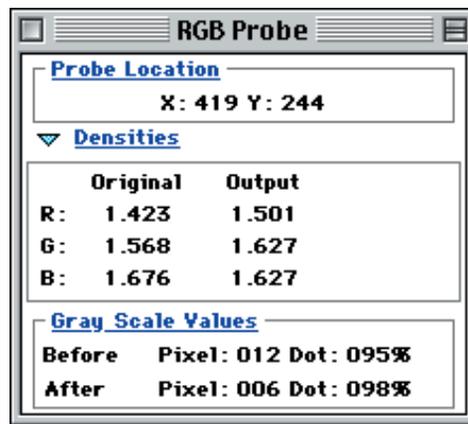
When scanning line art (the Scan Mode is set to one of the Line options), the Line Art Pixel Value field in the RGB Probe shows whether the selected pixel is black (0) or white (1) both before and after correction (see Figure 3–3).

Figure 3–3
RGB Probe in Line mode
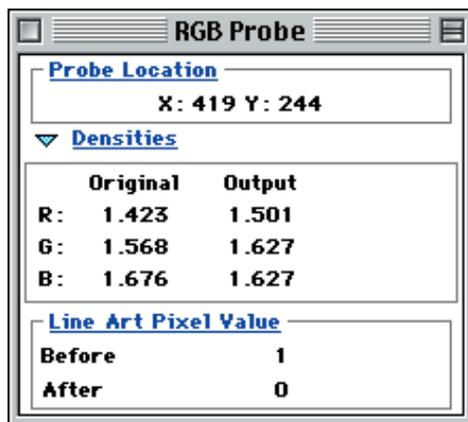
Note: When probing images in line art or grayscale mode, set the **Probe Size** in the Preferences window to **1x1** to avoid false readings.

Setting Highlight and Shadow

The most important aspect of setting up a scan is defining where to place the highlight and shadow point. PowerColor has an automatic as well as a manual means for accomplishing this task.

> Note: There are two types of highlights: "Specular" highlights are areas that contain no color, while "diffused" highlights contain a minimum amount of color. All densities less than the diffused highlight slope to white at a 45° angle. When setting Highlight and Shadow points, PowerColor uses the values within the Diffused Highlight and Shadow area of the Tone and Cast window.

Setting the Input Range automatically with Auto Range

In the Control bar you will find the Auto Range Icon. By selecting this tool, an Auto Range will be performed on the active region. The Highlight and Shadow point will be set to the RGB values shown in the Diffused Highlight and Shadow fields at the bottom of the Tone and Cast Window. Also, these points will be marked in your image by sticky densitometers.

How Auto Range determines Highlight and Shadow points

After the software has evaluated the image data it will make a series of decisions as to where it will set the Highlight and Shadow point.

- Auto Range looks only at the densities of the image data that falls within the current Region Crop. This is important to know because if you leave film edge or an area beyond the image edge in your crop, the software will include that data in its decision.

- The Highlight and Shadow points will not be set at the extreme minimum and maximum, but at a percentage inside of the min and max. The reason for this is to avoid setting the points on dust or scratches on the film.

- Due to the use of a catch light, data is never clipped, regardless of where the highlight and shadow is set. (We will explain this later on with a discussion of the Diffused Highlight.)

- PowerColor searches for densities that are closest to neutral (equal).

Setting the Input Range Manually

In both Basic and Expert mode, there are two methods of manually setting the Input Range:

1. Select the Histograms tab from the Photo RGB Window. You can use the fields at the bottom of the Input Histogram to enter the Highlight and Shadow densities, or move the two arrows at the bottom of the Histogram graph. Changing the RGB Histogram will affect all channels equally. To set each channel separately, select the appropriate channel from the drop down window and adjust the Highlight and Shadow points.

> Note: In expert mode, any changes to the Histograms will be shown in the position of the RGB tone curves.

2. First, perform an Auto Range by clicking on the Auto Range icon within the Control Bar. Next, select the Pointed cursor from the Control Bar, then click on the diamond shaped Highlight (white) and Shadow (black) densitometers within the region, and move them to the desired locations.

Changing the Diffused Highlight and Shadow Point : An Example

It is very important to understand the interaction between the diffused highlight and shadow point in the image, the diffused highlight and shadow RGB fields in the Tone and Cast menu, and the highlight and shadow cast correction setting in the Tone and Cast menu. One will always affect the other.

- The sticky densitometers reflect the exact points of interest.

- The Highlight and Shadow RGB fields control the values those points will inherit.

- The Cast settings influence how the RGB values react to one another when a new value is typed into one of the fields or when you select a different cast setting.

For this example, an IT8 target is used, although a similar target containing a gray wedge would work as well.

The bottom of the target contains 22 steps of gray bordered by paper white and black. Let's refer to paper white as a specular highlight (any point that should contain no color) and black as our shadow point.

By selecting the pointed cursor from the Control bar, you can pick up the high-light sticky densitometer and drag it to a new location. First, place the highlight densitometer on the specular highlight. This will cause that area to become our point of interest and reflect the values in the RGB Highlight fields from the Tone and Cast Window.

We will now work with the Highlight fields in the Tone and Cast Window. First, make sure the Highlight and Shadow Cast Correction is set to full. In the Red field next to the Diffused Highlight label type in "255" and hit Enter. Notice that both the Green and Blue values changed automatically. This is because the Cast Correction setting is on Full--The color computer will always keep the RGB val-ues adjusted based on the Cast setting. You have now made the paper white patch a specular highlight.

For the Shadow point, take the Shadow sticky densitometer and place it on the Black patch. In the Red field next to the Shadow label type 0. The black patch will now become the absolute shadow point.

Of course, setting the input range would be a piece of cake if you only have to scan IT8's. Unfortunately, in the real world, not all images have perfect specular highlights and absolute shadow points. But that's OK, because PowerColor was designed for the real world.

The next example is closer to the challenges of everyday scanning: Again, lets use the bottom of the IT8, but this time we are going to throw out every patch except #3 and #20. Now patch #3 may exist in an image as a linen table cloth, pearl necklace, shirt, or countless other objects and materials. The point is that it is identifiable in the image, and we either know, were told, or have to make an assumption as to how it should reproduce on paper.

Lets start with knowing that patch #3 should be neutral and the red value should be 240. Take the Highlight sticky densitometer and place it on patch #3. In the Red field type in 240 and hit Enter. You have just set a Diffused Highlight and, because the red value is less than 255, the Catch Light is automatically activated. Now move the Shadow sticky densitometer to patch #20 and in the Red field next to the Shadow label, type 10 and hit Enter.

> Note: Highlight and Shadow points don't need to be at the extreme ends of a histogram, even though most of us are taught to think that way. In fact, the highlight and shadow points don't even need to be neutral and in many images you will need to leave a cast in these points.

Now, change the Highlight Cast correction setting to Half. The color computer will automatically calculate and keep half of the original cast. Change the cast setting to None. The Highlight point will now keep 100% of its original cast. Set the cast setting to Manual and you can now control the Highlight point to any values that you desire. This of course works identically for the Shadow Cast.

Using the Gray Eyedropper

The gray eyedropper is unique in that it can set multiple points. Gray points are made up from the quarter tone, midtone, and three-quarter tone regions. On a Mac, to select multiple points, hold down the Option key (Macintosh) or Control key (Windows) while selecting each point. Before you select the last point, release the Option or Control key and click on the point. The tool is then deselected automatically.

Tone and Cast

PowerColor gives users two options for working with Tone and Cast--Basic and Expert modes.

- The Basic Mode uses sliders for correction instead of curves. These sliders are easy to use, yet give good control over image editing features.

- The Expert mode gives access to curves for more advanced adjustment of the tonal settings.

To change the current mode, select Preferences from the Edit Menu, then choose the desired setting within the General section of the Preferences Window.

Adjust Tone and Cast - Basic Mode
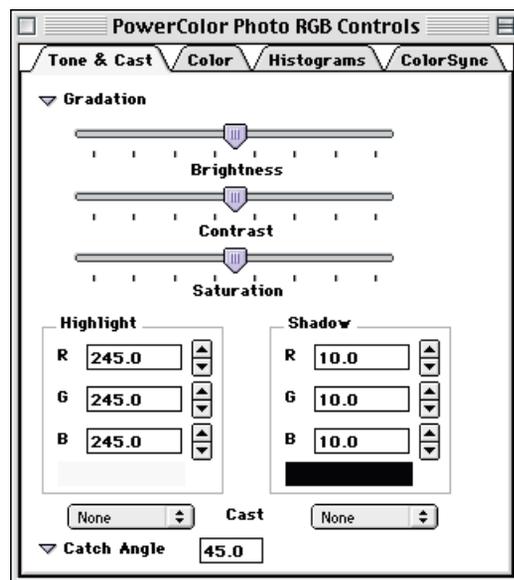
Figure 3–5
Basic Mode Sliders

Adjusting Tone and Cast in Basic Mode

- Brightness: Controls the lightness and darkness of the image. Usually referred to a the midtone point on a gradation curve.

- Contrast: Controls how fast the transition is between light and dark pixels. On a gradation curve this would be the correlation between the quarter tones and three quarter tones.

- Saturation: The amount of chromanence present in all hues. Zero percent saturation would yield a black and white image.

Adjusting Tone and Gradation - Expert Mode

The purpose of the tone curves is to define what is neutral by removing unwanted casts. The purpose of the gradation curve is to specify tone compression and contrast. Therefore, color correction should be performed only in the Selective Color window, where neutrals and hues are treated separately. To adjust neutral tones, use Tone & Cast; to correct hues, use Selective Color.
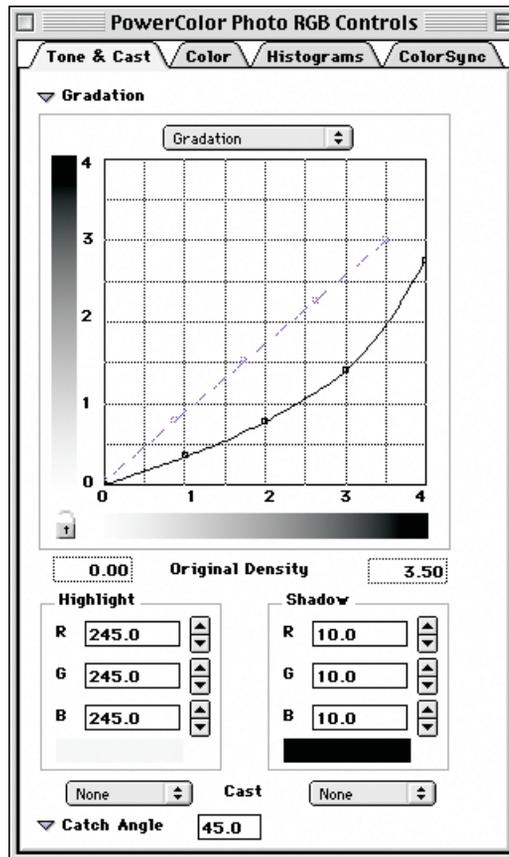
Figure 3–5
Tone & Cast option in the RGB Control window

The gradation curve (black) defines how tone compression is handled. The horizontal axis shows the input density while the vertical axis displays the output density.

The points (called "anchor points") are located, from left to right, at the following values: highlights, quarter tones, midtones, three-quarter tones, and shadows. By selecting an anchor point and dragging it up or down, you can alter the gradation value for that point.

The lock icon at the bottom left corner of the grid is open by default. By clicking on it, you can lock the anchor points on the curve. This allows you to move the points individually without affecting the others. Locking anchor points is useful for fine-tuning the gradation curve.

> **Note:** Adjustments in the gradation curve change the input-to-output tonal compression. For example, moving the three-quarter tone point down expands the shadow area of the image by starting the three-quarter tone range at a lower optical density.

> **Note:** Every original, film or print, has a specific density range which defines the points where the image data starts and ends. This density range is measured on an optical density scale of 0 (lowest) to 4 (highest).

The "output density range" is usually set to different values than the input range. The default output density value is 2.7, the maximum density monitors are capable of displaying. Knowing the density range of your intended output device and entering that value in the RGB Control window helps optimize the quality of the final image.

> **Note:** If you are unsure of which value to use, keep the value 2.7. If your output device is a film recorder, values of 3.0 or higher may be advisable.

Using PowerColor Photo Controls

Adjusting Colors

The Color option in the RGB Control window (see Figure 3–4) provides control over high chroma (saturated) and low chroma (pastel) in all primary and secondary colors independently.

Use the Color Selection color wheel to select the individual color to be corrected. You can also click on any area of the image and PowerColor automatically detects the selected pixel's high value and whether it is a pastel or saturated color. To toggle between the high and low chroma colors, click on the color wheel. This toggle feature allows you to make changes in the darker or lighter colors without affecting the other.
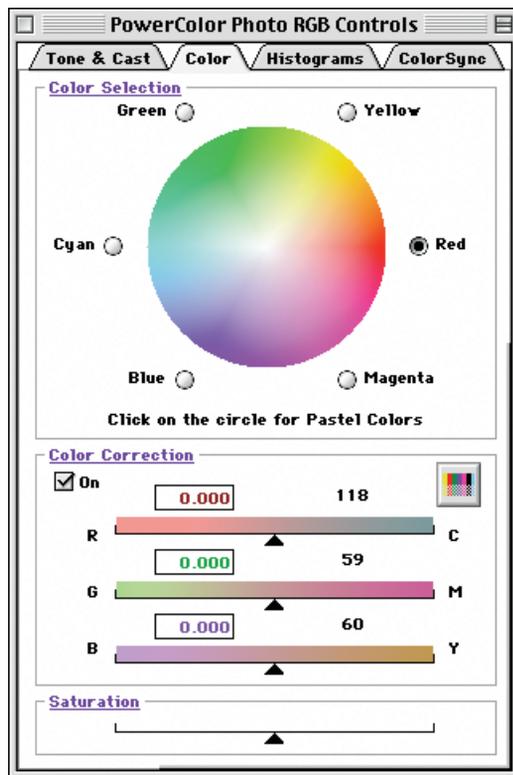
Figure 3–4
Color option in the RGB Control window

Correcting Colors

The checkbox in the Color Correction section of the RGB Control window toggles selective color on or off. The default mode is On.

> **Note:** The **Color Correction** checkbox should always be checked.

The sliders in the Color Correction section allow you to perform color correction in the three separate color channels. To do so, proceed as follows:

1. Select the hue to adjust by clicking on the color wheel.

2. Click on the radio button of the desired color.

> **Note:** Steps 1 and 2 above can be combined by selecting a point in the image, which automatically selects the proper hue and color.

3. Adjust the sliders to add or remove color(s) in a channel. Remember that small movements in either direction can have strong effects.

> **Note:** The boxes in each slider show arbitrary reference numbers for your convenience. The numbers to the right of the boxes show the RGB values after the change.

4. Click on the Manual Update button in the window to check the results of each change (or turn on automatic updating by clicking on the Auto Update On button located in the Preferences Window).

The Before and After sections of the Probe provide real-time feedback for your changes.

Manipulating the Histograms

Manipulating the image's histograms is a quick and powerful method of of setting its tonal range. To do so, click on Histograms in the RGB Control window (see Figure 3–6).
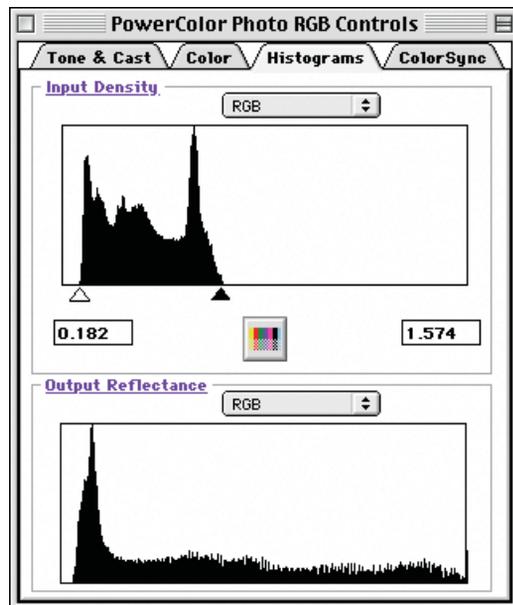
Figure 3–6
Histograms option in the RGB Control window

The window displays the input density histogram and the output reflectance histogram. The input histogram can be adjusted to show all three RGB channels together or each channel individually. To adjust the limits, slide the white slider (highlight) and/or black slider (shadow) to the desired position.

The Output Reflectance histogram is a static display that cannot be adjusted. It is designed to show how your adjustments will affect the image when output.

> **Note:** Minor adjustments to histograms have strong results. Move the sliders in small increments to avoid distorting your range values excessively. (Remember to update the image regularly to view your changes.)

The ColorSync Separator (Macintosh Only)

The ColorSync window appears when you select ColorSync in the RGB Control window (see Figure 3–7). Please note that this feature is available only for the Apple Macintosh version of PowerColor.
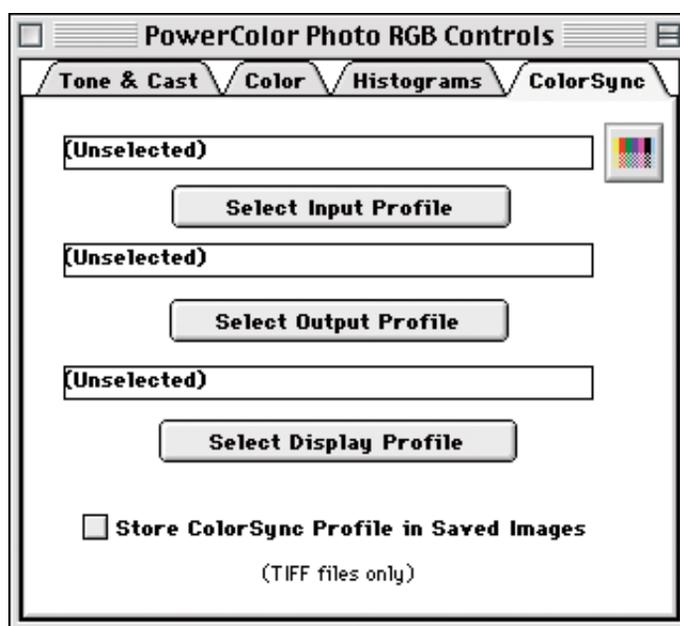
The ColorSync window allows you to choose ColorSync ICC profiles. These profiles will be applied to separations done if Photo is the specified separator in the Preferences window (See Chapter 2-3).

Using the ColorSync Separator

In order to use a ColorSync profile, it must be in the ColorSync Profiles folder within the System Folder of the Macintosh.

You can choose to open profiles for calibrating your output to a specific printer, as well as input profiles for reflective or transparency scanning. These profiles will automatically be applied to images scanned into CMYK colorspace.You can also specify a screen monitor profile to provide an accurate "blow back" of your images.

To choose a profile, click on the appropriate button within the ColorSync Window. In the file dialog box that appears, choose the desired profile.

Note: ColorSync must be active on your system in order to use ColorSync profiles

> **Note: ColorSync must be active on your system in order to use ColorSync profiles.**

Tagging profiles to scanned images

The Store ColorSync Profiles in Saved Images check box at the bottom of the ColorSync Window allows the user to tag the current profiles to final scanned images. This feature is only available with the TIFF format. When using this feature, the output file is not processed with the profiles, which allows further correction "downstream" with different profiles, and also allows others to view the file as you did.

4
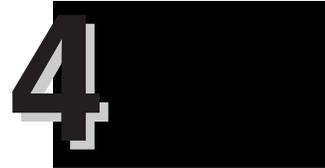
Correcting Images with PowerColor Press/CMYK: Production Mode

PowerColor's selective separator offers two color control modes for image correction work in the CMYK color space: Production and Expert. The Expert color control mode is discussed in Chapter 5.

This chapter explains how to use Production mode and covers the following topics:

- Understanding the CMYK Probe

- Using Production Color Controls

- Making Selective Color Corrections

The Production mode is selected in the Preferences window (see *Setting Preferences* in Chapter 2 for more information).

Understanding the CMYK Probe

The CMYK Probe window (see Figure 4–1) is opened by selecting Probe from the Tool menu or pressing ⌘+P (Macintosh) or Control + P (Windows).

The Probe is a static display of numerical information used as a guide in making color correction changes. It is a valuable tool and should always be used in conjunction with the screen display. This section explains how to understand and use the Probe.
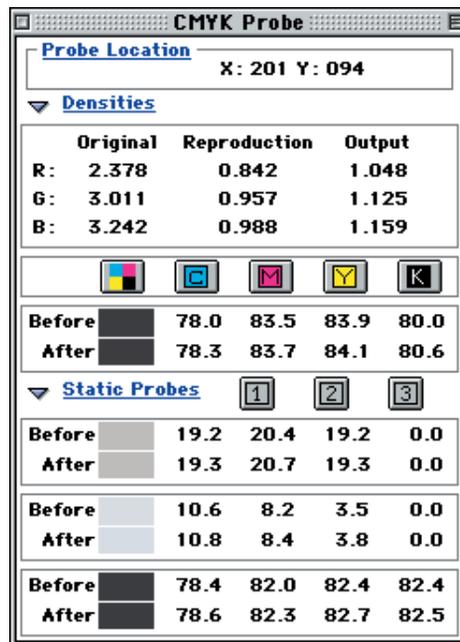
Figure 4–1
CMYK Probe window

Probe Location

This section of the CMYK Probe window shows the cursor's X/Y coordinates at the current location.

Displaying Density Values

The Densities table can be toggled open or closed with the blue triangle. It displays the RGB densities as read from the scanner (Original), after color correction (Reproduction), and when output after tone compression (Output).

Displaying Color Plates

The Probe allows you to select the color separations or combination of separations you would like to view in the image window as follows:

- The Four Plates button (■) shows all four process colors together in the image window (press ⌘+0 on a Macintosh or Control + 0 in Windows).

- The Cyan button (C) shows only the Cyan plate in the image window (press ⌘+1 on a Macintosh or Control + 1 in Windows).

- The Magenta button (M) shows only the Magenta plate in the image window (press ⌘+2 on a Macintosh or Control + 2 in Windows).

- The Yellow button (Y) shows only the Yellow plate in the image window (press ⌘+3 on a Macintosh or Control + 3 in Windows).

- The Black button (K) shows only the Black plate in the image window (press ⌘+4 on a Macintosh or Control + 4 in Windows).

CMYK Values Before and After Corrections

The section below the Color Plates shows the CMYK values of the current cursor location before and after changes, both in color swatches and in terms of dot percentages.

> **Note:** As you sample the image, you can "mark" a location for image correction by simply clicking with your mouse. The CMYK values for that location are then entered in the CMYK Selective Color window (see below for details) and remain there until you click on another location in the image window. After a location is marked, the cursor can still be used to sample other parts of the image.

Selecting Fixed Reference Points

The Static Probes section at the bottom of the CMYK Probe can be toggled open or closed by clicking on the blue triangle. It allows you to select up to three fixed points in the image which you can use to monitor important tonal ranges as you correct the image.

To select a point, click on the 1, 2, or 3 button and click on the desired location in the image. The location is flagged with the number, and the colors and dot percentage values for that point before and after any changes are displayed in the Probe.

> **Note:** New static points can be selected at any time using the above procedure, but the points cannot be moved or deleted.

Using Production Color Controls

PowerColor's CMYK Production mode is designed to combine the most common tools for color correction work in a single dialog window. This allows you to work more efficiently, gain a better overview of all adjustments, and use window space economically. For more detailed and precise color controls in the CMYK color space, or to build custom tables, use the Expert mode (see Chapter 5).

> **Note:** Changes made in Production mode are reflected in the individual controls in Expert mode and vice versa.

To use the Production mode, select Production as PowerColor Press Mode in the Preferences window (see *Setting Preferences* in Chapter 2 for more details). Open the Production Controls window by selecting Production Controls in the Correction menu.

Production Mode Workflow

PowerColor's Production mode was designed to allow for fast setup and correction of scans through the use of predefined tables. Color correction tables are made up of six components: Grey Balance, Dot Gain, Gradation, Tone, USM, and Selective Colors. Selective colors are corrected in the CMYK Selective Color window (see next section).

Using Production Controls

The Production Controls window is broken into three major sections.

- Tools to set highlight and shadow points

- Pop-up menus for dot limits, settings and cast

- Slider controls for brightness, contrast, and saturation

Figure 4-2
CMYK Production
Controls

Although there is no set workflow that needs to be followed when correcting an image, for this manual we will assume a more traditional work-flow as follows:

- Set highlight and shadow points

- Set cast correction settings

- Adjust brightness and contrast

- Adjust dot limits

- Adjust selective colors

- Adjust USM

For this section of the manual we only cover the topics associated with the Production Controls window. Selective color will be covered later in chapter 4. USM will be covered in chapter 6.

Setting Highlight and Shadow

The most important aspect of setting up a scan is defining where to place the highlight and shadow point. PowerColor has an automatic as well as a manual means for accomplishing this task.

> Note: There are two types of highlights: "Specular" highlights are areas that contain no dot percentage of any ink, while "diffused" highlights contain a minimum dot percentage. All densities less than the diffused highlight slope to a 0% dot at a 45° angle. When setting Highlight and Shadow points, PowerColor uses the values within the Diffused Highlight and Shadow area of the Production Controls Window.

Setting the Input Range automatically with Auto Range

In the Production Controls Window you will find the Auto Range Icon ( ). By selecting this tool, an Auto Range will be performed on the active region. The Highlight and Shadow point will be set to the values shown in the Diffused Highlight and Shadow fields within the Productions Control Window. Also, these points will be marked in your image by sticky densitometers.

How Auto Range determines Highlight and Shadow points

After the software has evaluated the image data it will make a series of decisions as to where it will set the Highlight and Shadow point.

- Auto Range looks only at the densities of the image data that falls within the current Region Crop. This is important to know because if you leave film edge or an area beyond the image edge in your crop, the software will include that data in its decision.

- The Highlight and Shadow points will not be set at the extreme minimum and maximum, but at a percentage inside of the min and max. The reason for this is to avoid setting the points on dust or scratches on the film.

- Due to the use of a catch light, data is never clipped, regardless of where the highlight and shadow is set. (We will explain this later on with a discussion of the Diffused Highlight.)

- PowerColor searches for densities that are closest to neutral (equal).

Setting the Input Range Manually

To set the Input Range Manually when using the Production Controls, first, perform an Auto Range by clicking on the Auto Range icon within the Control bar. Next, select the Pointed cursor from the Control bar, then click on the diamond shaped Highlight (white) and Shadow (black) densitometers within the region, and move them to the desired locations.

Changing the Diffused Highlight and Shadow Point : An Example

It is very important to understand the interaction between the diffused highlight and shadow point in the image, the diffused highlight and shadow fields in the Production Controls, and the highlight and shadow cast correction setting in the Production Controls. One will always affect the other.

- The sticky densitometers reflect the exact points of interest.

- The Highlight and Shadow fields within the Production Controls control the values those points will inherit.

- The Cast settings influence how the values react to one another when a new value is typed into one of the fields or when you select a different cast setting.

For this example, an IT8 target is used, although a similar target containing a gray wedge would work as well.

The bottom of the target contains 22 steps of gray bordered by paper white and black. Let's refer to paper white as a specular highlight (any point that should contain no color) and black as our shadow point.

By selecting the pointed cursor from the Control bar, you can pick up the highlight sticky densitometer and drag it to a new location. First, place the highlight densitometer on the specular highlight. This will cause that area to become our point of interest and reflect the values in the Highlight field from the Production Controls Window.

We will now work with the Highlight fields in the Production Controls. First, choose the Settings button in the Production Controls Window, make sure the Highlight and Shadow Cast Correction is set to full within the Settings Window that appears. In the Cyan field next to the Diffused Highlight label type in "0" and hit Enter. Notice that both the Magenta and Yellow values changed automat-

ically. This is because the Cast Correction setting is on Full--The color computer will always keep the CMY values adjusted based on the Cast setting. The Color Computer knows the relationship between Cyan, Magenta and Yellow based on the user definable Gray Balance Table. You have now made the paper white patch a specular highlight.

For the Shadow point, take the Shadow sticky densitometer and place it on the Black patch. In the Cyan field next to the Shadow label type "100". The black patch will now become the absolute shadow point.

Of course, setting the input range would be a piece of cake if you only have to scan IT8's. Unfortunately, in the real world, not all images have perfect specular highlights and absolute shadow points. But that's OK, because PowerColor was designed for the real world.

The next example is closer to the challenges of everyday scanning: Again, lets use the bottom of the IT8, but this time we are going to throw out every patch except #3 and #20. Now patch #3 may exist in an image as a linen table cloth, pearl necklace, shirt, or countless other objects and materials. The point is that it is identifiable in the image, and we either know, were told, or have to make an assumption as to how it should reproduce on paper.

Lets start with knowing that patch #3 should be neutral and the cyan dot value should be 10%. Take the Highlight sticky densitometer and place it on patch #3. In the Cyan field type in "10" and hit Enter. You have just set a Diffused Highlight and, because the cyan value is greater than 0, the Catch Light is automatically activated. Now move the Shadow sticky densitometer to patch #20 and in the Cyan field next to the Shadow label, type "97" and hit Enter.

> Note: Highlight and Shadow points don't need to be at the extreme ends of a histogram, even though most of us are taught to think that way. In fact, the highlight and shadow points don't even need to be neutral and in many images you will need to leave a cast in these points.

Now, change the Highlight Cast correction setting to Half in the Settings Window. The color computer will automatically calculate and keep half of the original cast. Change the cast setting to None. The Highlight point will now keep 100% of its original cast. Set the cast setting to Manual and you can now control the Highlight point to any values that you desire. This of course works identically for shadow cast.

Setting Dot Limits

The Dot Limits Window (see Figure 4–3) is used to control how inks will be output on a press.

Figure 4–3
Dot Limits Window
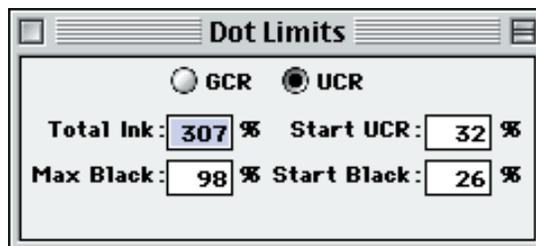
The ink control fields are defined as follows:

- Total Ink: represents the maximum dot percentage the press can accommodate and equals the sum of the CMYK ink percentages. This number is generally between 260% and 340%.

- GCR/UCR: Undercolor Removal (UCR) and Gray Component Replacement (GCR) replace CMY inks with Black in the neutral areas to reduce total ink on the press. GCR/UCR is the percentage of ink replaced, while Start% defines the Cyan dot percentage at which GCR/UCR begins.

- Max Black: This field sets the maximum dot percentage for Black. Start% defines the Cyan dot percentage at which Black begins to be added.

> **Note:** It is always advisable to consult with your press operator when adjusting ink controls.

Setting an Image's Tone

Click on Tone at the top of the Production Controls window to bring up the Tone section of the bottom of the window (see Figure 4–5). PowerColor's tone controls provide a flexible tool for correcting color casts.
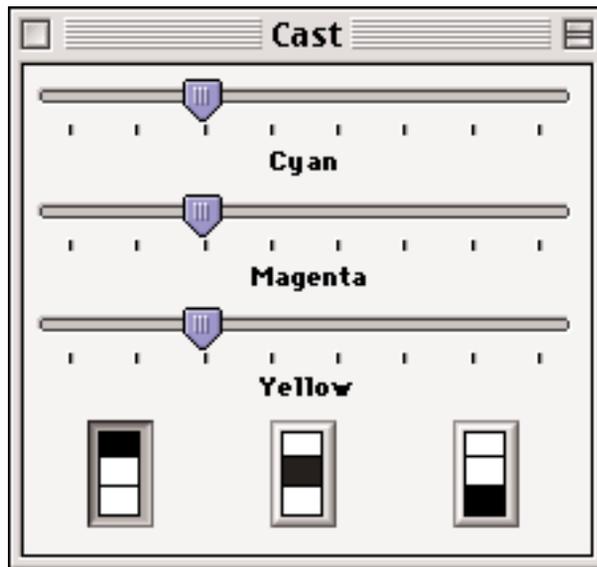
Figure 4–5
Cast window of the
Production Controls
window

Adjusting Colors in Tonal Regions

Use the top half of the Tone section to adjust the CMY colors in the three basic tonal regions. To use these tools, click on the desired tonal region button left: quarter tones, middle: midtones, right: three quarter tones) and adjust the CMY sliders to achieve the result you are looking for.

Correcting Color Casts

Cast correction is the process by which unwanted color is removed from the neutral tones of an image. PowerColor provides automated and manual controls to target points along the tonal range.

Cast correction is important because PowerColor Press performs color correction separately on the hues and on the neutral areas. Casts are removed by adjusting the Cyan, Magenta and Yellow densities of a selected tonal region. By making the output densities equal or nearly equal, the result is a neutral value. This neutral density value is passed through PowerColor's gray balance table where the appropriate dot values are applied.

> **Note:** Many images may not contain truly "neutral" points. For these images, it is best to perform the following procedure on a grayscale step wedge mounted next to the image instead of the image itself.

To correct casts automatically on neutral grays, proceed as follows:

1. Click on the gray eyedropper in the Control bar.

2. Move the cursor inside the image or step wedge and click on the point you wish to define. After you select the point, the eyedropper tool is automatically deselected.

3. Check the new values using the Probe.

Setting multiple gray points

The gray eyedropper is unique in that it can set multiple points. Gray points are made up from the quarter tone, midtone, and three-quarter tone regions. To select multiple points, hold the Option key down (Macintosh), or the Control key down (Windows), while selecting each point. Before you select the last point, release the Option key and click on the point. The tool is then deselected automatically.

Making Selective Color Corrections

The CMYK Selective Color window (see Figure 4–7) provides control over high chroma (saturated) and low chroma (pastel) in all primary and secondary colors independently. To open the window, select Selective Color from the Correction menu.

Figure 4–7
CMYK Selective Color window
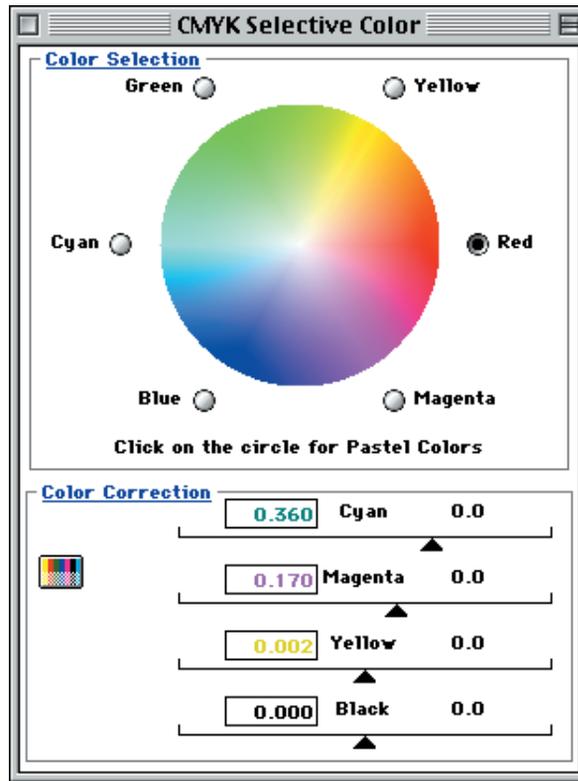
Selecting Colors to Be Corrected

Use the Color Selection color wheel to select the individual color to be corrected. You can also click on any area of the image and PowerColor automatically detects the selected pixel's high value and whether it is a pastel or saturated color. To toggle between the high and low chroma colors, click on the color wheel. This toggle feature allows you to make changes in the darker or lighter colors without affecting each other.

Using the Sliders to Correct Individual Colors

The sliders in the Color Correction section allow you to perform detailed color correction. Follow this procedure:

1. Select the color to adjust by clicking the appropriate radio button around the Color Selection color wheel. Clicking on a point in the image automatically selects the proper hue.

2. Adjust the sliders in the desired color(s) to add or remove CMYK inks for that color. Remember that small movements in either direction can have substantial effects.

> **Note:** The boxes in each slider contain arbitrary reference numbers for your convenience.

3. Click on the Manual Update button in the window to check the results of each change (or turn on automatic updating by clicking the Auto Update On button in the toolbar).

4. Check the Before and After swatches in the Probe to evaluate the effect of the color change.

5

Correcting Images with
PowerColor Press/CMYK:
Expert Mode

PowerColor's selective separator offers two color control modes for your image correction work in the CMYK color space: Production and Expert. The Production color control mode is discussed in Chapter 4. This chapter explains how to use Expert mode and covers the following topics:

- Calibrating PowerColor selective separator

- Setting up the gray balance

- Controlling dot gain

- Using tone controls

- Setting highlight and shadow

- Using gradation controls

For information on how to use the CMYK Probe, see *Understanding the CMYK Probe* in Chapter 4.

Calibrating PowerColor Press

> **CAUTION: PowerColor Press should be set up and calibrated only using the procedures in this section. Do not make any adjustments in the CMYK Setup window.**

Understanding Calibration

PowerColor incorporates a user-friendly method of calibrating the CMYK Separator for specific output devices, such as inkjet printers, conventional proof printers, and printing presses. The software includes a file called PowerColor 16, which contains patches for saturated and pastel colors, as well as a three-color and four-color Black patch (see Figure 5–1). The markers A, B, and C outside the color patches identify the orientation of the target and the location of the patches.

Figure 5–1
PowerColor 16 target
file
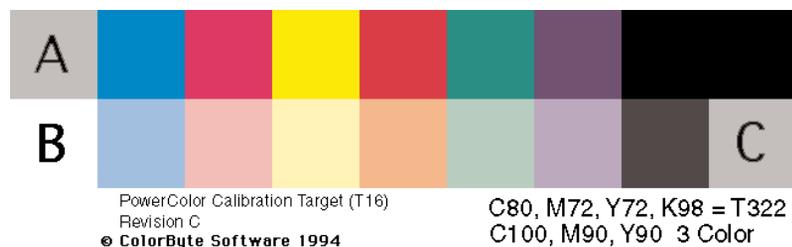
Note: PowerColor calibration is <u>only</u> used with printed targets, not film-based targets (e.g. Q60). This calibration method characterizes output devices, not films.

By characterizing the output device, PowerColor can automatically remove unwanted contaminants found in inks (a process sometimes referred to as "wanted" and "unwanted" calibration). It also allows PowerColor to set the proper thresholds between the saturated and pastel colors.

The three-color Black patch sets the maximum three-color density. This value is automatically entered into PowerColor's setup table and determines the endpoint of the Grad 3 gradation curve.

Note: The Grad 3 and 4 curves can be viewed only in Expert mode.

Preparing the Target for Output

PowerColor 16 is a CMYK file in TIFF format. In order to characterize your output device properly, the file must be processed exactly as a real job, so that all transforms and screens are identical to actual production work.

To prepare the target file for output, follow these steps:

1. Output the PowerColor 16 file on film.

2. Produce a match print using your standard production process.

> **Note:** Make sure the match print is free of any artifacts, such as scratches, ink spots, or fingerprints.

3. Mount the print on the bed of your scanner.

4. Produce an Overview scan and preview scan a region containing the print. (For information on producing Overview scans and working with regions, see Chapter 2).

> **Note: The Scan Type must be set to Reflective.** If scanning in screened output, remember to turn descreening on.

5. In the Edit menu, select Selective Calibration. The Selective Calibration window appears:
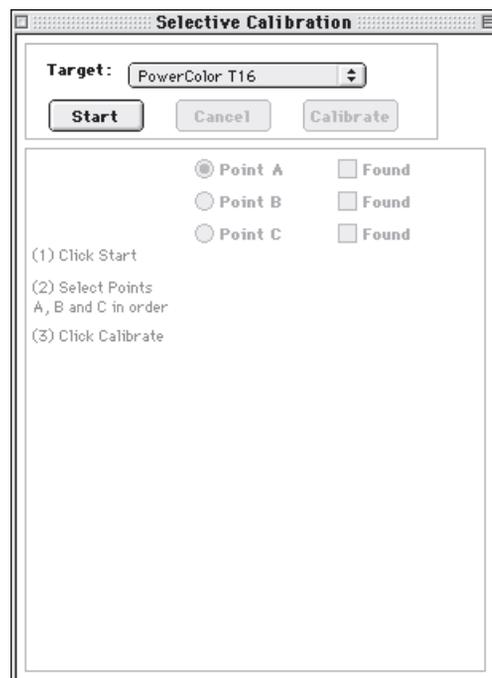
Figure 5–2
Selective Calibration window

6. Make sure the selected Target is PowerColor 16. If not, select PowerColor 16 from the pulldown menu.

> **Note:** Although it is possible to use customized targets, it is strongly recommended that you use the file supplied with PowerColor.

7. Click on Start. The Point A radial button becomes active.

8. Move the cursor over the A patch on the target image. The cursor changes to look like this: **A** .

9. Click once on the A patch. The Found box for A is now checked and the Point B radial button becomes active.

10. Place the box over patch B and click once. The Found box for B is checked and the Point C radial button becomes active.

11. Place the box over patch C and click once. The Found box for C is checked.

12. Click on the Calibrate button. The calibration takes less than one second. The Selective Calibration window then returns to its original state (no points found).

13. After the calibration is complete, you will be prompted to save the calibration as your default. If you select Yes, PowerColor will save the calibration for all film types. If you select No, you can save the calibration manually through the Settings menu. Remember to save Color & Setup and Gradation for all film types.

> **Note:** Before saving settings as defaults, use the settings and verify that they produce the expected results. It is also advisable to save existing defaults before defining new ones.

Setting Up the Gray Balance

PowerColor's Gray Balance table should be adjusted for each press environment you intend to use. PowerColor provides a number of easy-to-use tools for customizing tables for different ink or printing conditions. To bring up the Gray Balance window (see Figure 5–3) select Gray Balance in the Correction menu.

The gray balance table shows the corresponding Magenta and Yellow values for Cyan dot percentages in increments of 5%. Depending on specific press characteristics, you might, for example, want to make sure that at a 50% Cyan dot, the Magenta channel is not too strong. This table could be used to reduce the Magenta value to, for example, 39% by typing 39 in the Magenta field at Cyan 50%.

Figure 5–3
Gray Balance window

Note: Gray Balance affects only the reproduction of the neutral areas. It does not affect the reproduction of hues.

The default gray balance values for PowerColor are those for SWOP inks and may vary with different ink manufacturers. Ink values correspond to a given density, which is used by PowerColor to determine the ink values to be used. The Max Density field at the top left of the gray balance table represents the maximum three-color neutral density. This value should be obtained from your press operator or by performing a selective calibration using the PowerColor 16 target (see previous section).

PowerColor's Save and Recall features are also very useful in the Gray Balance controls, allowing you to store and reuse different gray balance tables.

Editing the Gray Balance Table

The Gray Balance table can be edited by entering the desired values in the fields. This can be done using the two different settings in the Points section as follows:

- Fewer: By selecting this mode, you can enter the desired values only in the 5%, 50%, and 100% fields for Magenta and Yellow. After entering the values, click on Interpolate, and PowerColor calculates all the values in between those fields.

- More: By selecting this mode, you can enter values in all of the fields in the table.

Controlling Dot Gain

PowerColor's dot gain controls are accessed by selecting Dot Gain in the Correction menu. The Dot Gain window that appears (see Figure 5–4) contains a table of values with dot percentages for the Cyan, Magenta, Yellow, and Black inks.

Figure 5–4
Dot Gain window
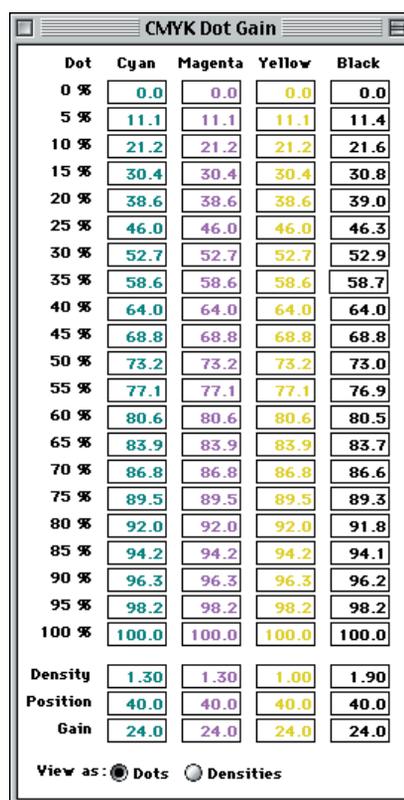
Dot	Cyan	Magenta	Yellow	Black
0 %	0.0	0.0	0.0	0.0
5 %	11.1	11.1	11.1	11.4
10 %	21.2	21.2	21.2	21.6
15 %	30.4	30.4	30.4	30.8
20 %	38.6	38.6	38.6	39.0
25 %	46.0	46.0	46.0	46.3
30 %	52.7	52.7	52.7	52.9
35 %	58.6	58.6	58.6	58.7
40 %	64.0	64.0	64.0	64.0
45 %	68.8	68.8	68.8	68.8
50 %	73.2	73.2	73.2	73.0
55 %	77.1	77.1	77.1	76.9
60 %	80.6	80.6	80.6	80.5
65 %	83.9	83.9	83.9	83.7
70 %	86.8	86.8	86.8	86.6
75 %	89.5	89.5	89.5	89.3
80 %	92.0	92.0	92.0	91.8
85 %	94.2	94.2	94.2	94.1
90 %	96.3	96.3	96.3	96.2
95 %	98.2	98.2	98.2	98.2
100 %	100.0	100.0	100.0	100.0
Density	1.30	1.30	1.00	1.90
Position	40.0	40.0	40.0	40.0
Gain	24.0	24.0	24.0	24.0

View as: ● Dots ○ Densities

Setting Dot Gain

Presses vary widely in terms of the dot percentages at which they experience maximum dot gain. The four color plates also tend to gain differently from each other. PowerColor's Dot Gain window allows you to take a given press's gain characteristics into account in preparing your image for output.

The Dot Gain table shows dot percentages in increments of 5% with editable fields to set the gain at those percentages in each of the four color channels. Dot percentages are determined by the dot gain value a particular press experiences. This value is best determined in consultation with your press operator. The Dot Gain table fields function as follows:

- Density: defines the maximum density for each ink.

- Position: defines the dot percentage at which the press experiences maximum dot gain.

- Gain: sets the amount of dot gain at the dot percentage indicated under Position.

> **Note:** For greater ease of customization, you can enter precise values in any of the fields.

After entering values in the Position and Gain fields, the Dot Gain table adjusts to reflect these values, ramping down on both sides of the Position percentage. To understand how to use PowerColor's Dot Gain feature, see the example below:

An Industry Example

The press operator indicates that the press in your shop gains 20% at a peak of 40% for Cyan. In the Dot Gain window, proceed as follows:

1. Click on the Cyan Position field.
2. Enter 40.0.
3. Press Tab to move to the Cyan Gain field.
4. Enter 20.0 and press Return.

Repeat this procedure for the other plates, adjusting the numbers based on the information from your press operator.

PowerColor's powerful features allow you to customize and save different tables for different presses. This is particularly useful for trade shops that run a variety of presses for different types of work. By recalling the desired tables with PowerColor's Recall feature, you can apply previously calculated dot gains to all your new images without reentering data.

Using Tone Controls

PowerColor's tone controls in Expert mode are accessed by selecting Tone from the Correction menu. The CMY Tone window (see Figure 5–9) provides a highly flexible tool to correct color casts in your image and set the input density range.

When making tone corrections in your image always keep the CMYK Probe open to monitor the changes in numerical values (for more information, see *Understanding the CMYK Probe* in Chapter 4).

Correcting Color Casts

Cast correction is the process by which unwanted color is removed from the neutral tones of an image. PowerColor provides automated and manual controls to target five points along the tonal range: highlights, quarter tones, midtones, three-quarter tones, and shadows.

Cast correction is important because PowerColor Press keeps hues and neutrals separate so that color correction can be performed on the hues without affecting the neutral areas. Casts are removed by adjusting the Red, Green, and Blue densities of a selected tonal region. By making the output densities equal or nearly equal, the result is a neutral value. This neutral density value is passed through PowerColor's gray balance table where the appropriate dot values are applied.

Some images are intentionally photographed through color filters, which, while adding artistic effects, also add a color cast to the image. The human eye is extraordinarily sensitive to shifts in colors in the neutral areas, so cast removal from the highlights and shadows is of paramount importance.

> **Note:** Removing too much of a cast from a heavily casted image may cause undesired effects.

Tone Curves

The primary tools in the CMY Tone window are the tone curves and the highlight and shadow value fields. They are a powerful way of correcting casts in very specific tonal regions of your image. The CMY drop down menu above the curves activates the Cyan, Magenta,or Black curve in the graph, respectively.
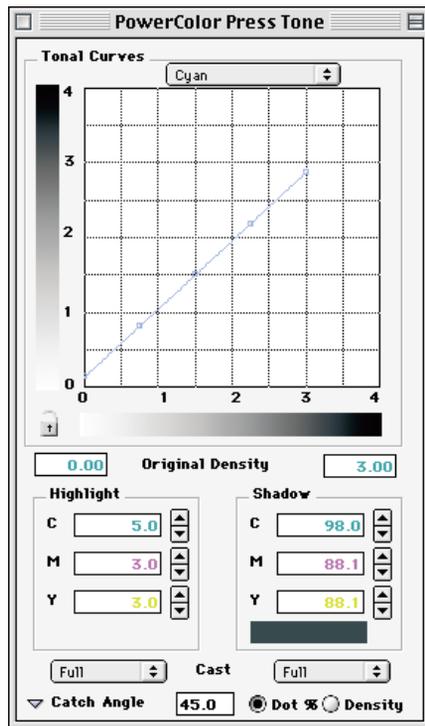
Figure 5–9
CMYK Tone window

The horizontal axis of the graph represents the input density. The vertical axis represents the percentage of output density.

The points on the curve (called "anchor points") are, from left to right, located at the following values: highlights, quarter tones, midtones, three-quarter tones and shadows. By selecting an anchor point and dragging it up or down, you can alter the amount of the selected color in that tonal region.

The black lock icon at the bottom left-hand corner of the grid is open by default. By clicking on it, the anchor points on the curve are locked into position so you can move each of the points individually without affecting the position of the others. Locking the curve also creates additional anchor points allowing you to fine-tune the curve further.

The Highlight and Shadow fields allow you to specify the Diffused Highlight and Shadow settings for Cyan, Magenta and Yellow. When setting your Highlight and Shadow points manually or with Auto Range, the values displayed in these fields will be used. For more on setting Highlight and Shadow points see page 5-13.

The Catch Light Angle section allows you to define the angle between the diffused highlight and the specular highlight. The default setting for Angle is 45°.

The Cast Removal drop-down menu at the bottom of the CMY Tone window allows you to set automatic cast removal for the highlights and shadows as follows: Full, Half, Manual, or None. By selecting Manual cast removal, you can define the density values or dot percentages for highlight and shadow on the Cyan, Magenta, and Yellow plates in the appropriate editable field or by selecting the curve you wish to edit and moving the highlight or shadow anchor point up or down.

> **Note:** Click on the **Dot %** or **Density** radio button to display values in those units.

Using the Gray Eyedropper to Set Neutral Points

The Gray eyedropper, found in the Control Bar, is unique in that it can set multiple points. This is useful in correcting cast along multiple tones in your image. Gray points are made up from the quarter tone, midtone, and three-quarter tone regions. To select multiple points, hold the Option key (Macintosh) or Control key (Windows) down while selecting each point. Before you select the last point, release the Option or Control key and click on the point. The tool is then deselected automatically.

Setting Highlight and Shadow

The most important aspect of setting up a scan is defining where to place the highlight and shadow point. PowerColor has an automatic as well as a manual means for accomplishing this task.

> Note: There are two types of highlights: "Specular" highlights are areas that contain no dot percentage of any ink; "diffused" highlights contain a minimum dot percentage. All densities less than the diffused highlight slope to a 0% dot at a 45° angle. When setting Highlight and Shadow points, PowerColor uses the values within the Diffused Highlight and Shadow area of the Production Controls Window.

Setting the Input Range Automatically

In the Control bar you will find the Auto Range Icon ( ). By selecting this tool, an Auto Range will be performed on the active region. The Highlight and Shadow point will be set to the values shown in the Diffused Highlight and Shadow fields within the Tonal Window. Also, these points will be marked in your image by sticky densitometers.

How Auto Range determine Highlight and Shadow points

After the software has evaluated the image data it will make a series of decisions as to where it will set the Highlight and Shadow point.

- Auto Range looks only at the densities of the image data that falls within the current Region Crop. This is important to know because if you leave film edge or an area beyond the image edge in your crop, the software will include that data in its decision.

- The Highlight and Shadow points will not be set at the extreme minimum and maximum, but at a percentage inside of the min and max. The reason for this is to avoid setting the points on dust or scratches on the film.

- Due to the use of a catch light, data is never clipped, regardless of where the highlight and shadow is set. (explained later on with Diffused Highlight.)

- PowerColor searches for densities that are closest to neutral (equal).

Setting the Input Range Manually

To set the Input Range Manually, first, perform an Auto Range by clicking on the Auto Range icon within the Control bar. Next, select the Pointed cursor from the Control bar, then click on the diamond shaped Highlight (white) and Shadow (black) densitometers within the region, and move them to the desired locations.

Changing the Diffused Highlight and Shadow Point : An Example

It is very important to understand the interaction between the diffused highlight and shadow point in the image, the diffused highlight and shadow fields in the Production Controls, and the highlight and shadow cast correction setting in the Production Controls. One will always affect the other.

- The sticky densitometers reflect the exact points of interest.

- The Highlight and Shadow fields within the Tone Window control the values those points will inherit.

- The Cast settings influence how the values react to one another when a new value is typed into one of the fields or when you select a different cast setting.

For this example, an IT8 target is used, although a similar target containing a gray wedge would work as well.

The bottom of the target contains 22 steps of gray bordered by paper white and black. Let's refer to paper white as a specular highlight (any point that should contain no color) and black as our shadow point.

By selecting the pointed cursor from the Control bar, you can pick up the highlight sticky densitometer and drag it to a new location. First, place the highlight densitometer on the specular highlight. This will cause that area to become our point of interest and reflect the values in the Highlight field from the Tone Window.

We will now work with the Highlight fields in the Tone Window. First, click the Cast button and make sure the Highlight and Shadow Cast Correction is set to full. In the Cyan field next to the Diffused Highlight label type in "0" and hit Enter. Notice that both the Magenta and Yellow values changed automatically. This is because the Cast Correction setting is on Full--The color computer will always keep the CMY values adjusted based on the Cast setting. The Color Computer knows the relationship between Cyan, Magenta and Yellow based on

the user definable Gray Balance Table. You have now made the paper white patch a specular highlight.

For the Shadow point, take the Shadow sticky densitometer and place it on the Black patch. In the Cyan field below the Shadow label type "100". The black patch will now become the absolute shadow point.

Of course, setting the input range would be a piece of cake if you only have to scan IT8's. Unfortunately, in the real world, not all images have perfect specular highlights and absolute shadow points. But that's OK, because PowerColor was designed for the real world.

The next example is closer to the challenges of everyday scanning: Again, lets use the bottom of the IT8, but this time we are going to throw out every patch except #3 and #20. Now patch #3 may exist in an image as a linen table cloth, pearl necklace, shirt, or countless other objects and materials. The point is that it is identifiable in the image, and we either know, were told, or have to make an assumption as to how it should reproduce on paper.

Lets start with knowing that patch #3 should be neutral and the cyan dot value should be 10%. Take the Highlight sticky densitometer and place it on patch #3. In the Cyan field type in "10" and hit Enter. You have just set a Diffused Highlight and, because the cyan value is greater than 0, the Catch Light is automatically activated. Now move the Shadow sticky densitometer to patch #20 and in the Cyan field next to the Shadow label, type "97" and hit Enter.

> Note: Highlight and Shadow points don't need to be at the extreme ends of a histogram, even though most of us are taught to think that way. In fact, the highlight and shadow points don't even need to be neutral and in many images you will need to leave a cast in these points.

Now, change the Highlight Cast correction setting to Half. The color computer will automatically calculate and keep half of the original cast. Change the cast setting to None. The Highlight point will now keep 100% of its original cast. Set the cast setting to Manual and you can now control the Highlight point to any values that you desire. This of course works identically for shadow cast.

Using Gradation Controls

PowerColor's gradation is controlled in the CMYK Gradation window (see Figure 5–5). To open this window select Gradation in the Correction menu.

When making gradation corrections in your image always keep the CMYK Probe window open to monitor the changes in numerical values (for more information, see *Understanding the CMYK Probe* in Chapter 4).

Figure 5–5
CMYK Gradation window
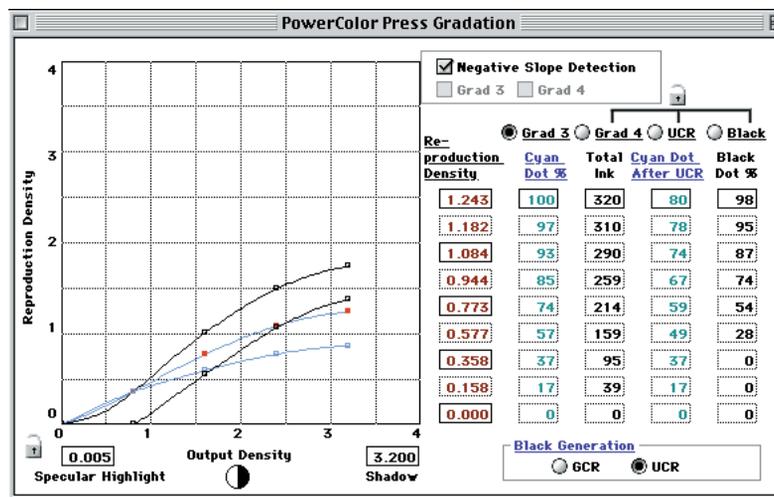
Understanding Gradation

In a general sense, gradation governs how quickly colors ramp from highlight to shadow. In the CMYK Tone window (see the *Using Tone Controls* later in this chapter), highlight and shadow values are defined independently for Cyan, Magenta and Yellow. In the CMYK Gradation window, however, highlight and shadow are set for groups of colors globally.

The CMYK Gradation window consists of a curve grid and a table of editable fields (see *Working with the Gradation Table* below). You may notice that only Cyan appears to be represented in the table. Cyan is the most representative of the colors which make up "Grad 3," a term designating the CMY curve. However, gradation changes affect all colors.

Above the table is a set of four radio buttons (see Figure 5–5) to select the gradation curve to work on. The buttons are defined as follows:

- Grad 3: activates the three-color (CMY) density curve, shown as the uppermost blue curve in the graph. This curve determines the shape of the three-color density gradation curve and sets both the three-color input and output range (see *Setting the Input Range* later in this chapter).

> **Note:** The endpoint of the Grad 3 curve represent the CMY reproduction density. This value is set automatically during CMYK selective calibration (see the section earlier in this chapter). Do not modify this value unless you intend to limit the Cyan dot. This value should never be increased beyond the maximum three-color density.

- Grad 4: represents the increased density that can be achieved by adding Black to CMY (also referred to as the "skeletal Black"). The shape of the curve reflects where Black begins and ends and the slope of its ramp in between. The endpoint of the Grad 4 curve represents the total reproduction density of all four inks (generally ±2.0 for coated stock). The area in between Grad 4 and Grad 3 curves represents the skeletal Black:

By pulling the nodes of Grad 4 down to meet Grad 3, the Black is eliminated in the density range where the curves meet:

Figure 5–6
Skeletal Black area.
①–Grad 4 curve.
②–Grad 3 curve.
③–Skeletal Black.
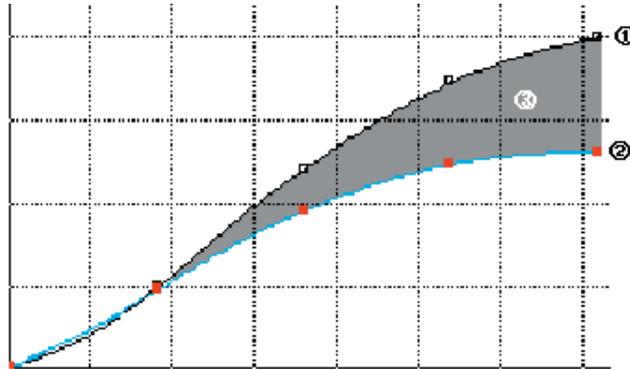
Figure 5–7
Skeletal Black area.
①–Grad 4 curve.
②–Grad 3 curve.
③–Skeletal Black.
④–Black eliminated.
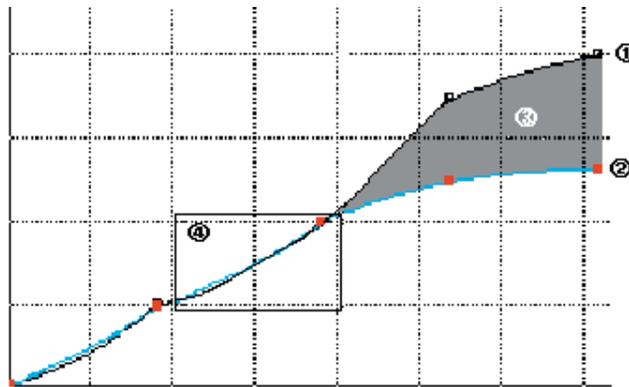
- UCR/GCR: activates the UCR (Undercolor Removal)/GCR (Gray Component Replacement) curve. This curve allows you to specify how much Cyan, Magenta, and Yellow is replaced with Black in the neutral areas. The higher the UCR/GCR percentage, the less total ink is used on the press. The UCR/GCR curve is very similar to the Grad 4 curve in relation to Grad 3. The area between Grad 3 and the UCR/GCR curve represents the black generated by lowering your total ink. To remove or reduce black in certain tonal regions, select the appropriate node on the UCR/GCR curve and move it up towards the Grad 3 curve. Whenever the two curves meet, there will be no black generated.

- Black: activates the Black density curve, with which you can directly adjust the amount of Black ink to be used along the tonal range of the image. This curve is automatically set from the Grad 4 and UCR/GCR curves, and does not need to be adjusted.

Working with Gradation Curves

The points on the curves (called "anchor points") can be moved up or down to change the gradation value at any point. The anchor points of the currently active curve are shown in red. To activate a different curve, click on the desired radio button above the table to the right of the graph (Grad 3, Grad 4, UCR/GCR, or Black).

The lock icon at the bottom left-hand corner of the grid is open by default. By clicking on it, the anchor points on the curve are locked into position so you can move each of the points individually without affecting the position of the others. Locking the curve also creates additional anchor points allowing you to fine-tune the curve further.

> **Note:** Changes in one gradation curve affect its relationship to the other curves.

Locking the relationship to Grad 3

After making adjustments for Total Ink, Start Black with Grad 4, and Start UCR/GCR, you can lock those relationships to Grad 3 by selecting the Lock icon above the UCR/GCR radial button. With the relationships locked, you can freely make changes to Grad 3 without affecting the settings of the other curves.

To illustrate how to work with gradation curves, consider this example: Suppose your goal is to reduce the CMY values in the quarter tones. You would proceed as follows:

1. Select the Grad 3 radio button.

2. Click on the quarter tone anchor point of the Grad 3 curve.

3. Drag the anchor point down and monitor the numerical values in the table.

    > **Note:** Very small changes in a gradation curve shape can have dramatic effects.

4. Update your image using the button at the top of the CMYK Gradation window (or turn on automatic updating).

5. Measure the density values in the image window using the CMYK Probe.

6. Repeat steps 2 through 5 until you achieve the desired result.

Using Negative Slope Detection

At the top of the CMYK Gradation window is a section called Negative Slope Detection. This feature is designed to limit the movement of the anchor points for the Grad 3 and Grad 4 curves, preventing you from creating an invalid curve with a negative slope (which occurs when a point on the curve goes above an anchor point).

Setting the desired curve shape may involve moving multiple anchor points. If a point has reached its maximum or minimum slope and no longer moves, negative slope detection is at work. It may then be necessary to adjust another point on the curve so that the curve will move freely again.The default setting for negative slope detection is on (checkbox checked). If the function is off, all anchor points move freely, but if a negative slope is detected in the Grad 3 or Grad 4 curve, the appropriate box is checked in the Negative Slope Detection section. The image cannot be updated or final scanned until the negative slope situation is corrected.

Working with the Gradation Table

The gradation table in the CMYK Gradation window represents ink coverage on the press in numerical terms. The rows go from shadow values at the top to highlights at the bottom. The columns perform the following functions:

- Reproduction density: shows the input density for the shadow point (top) and highlight point (bottom) in increments of 1/8 tonal point.

- Cyan Dot %: shows the dot percentage for Cyan ink at each tonal step. Since Cyan is the densest ink, this value is, in effect, the maximum dot size.

- Total Ink: shows the total dot percentage at each tonal step. Total ink coverage is determined by Grad 4 and UCR/GCR.

> **Note:** Adjusting the UCR/GCR curve is a powerful means of controlling the total dot percentage.

- Cyan Dot After UCR/GCR: shows the maximum Cyan dot percentage after the current UCR/GCR curve is applied. This column is useful in determining how UCR/GCR affects ink usage.

- Black Dot %: shows the dot percentage of the Black ink at the various tonal steps. These values are affected by adjustments in UCR/GCR, as well as changes in the shape of the four-color or Black ink curves.

> **Note:** It is not necessary to adjust the black curve or percents. These are computed by the color computer and should be used primarily as reference. Changes to black should be governed by Grad 4 and UCR/GCR. To understand the table read across a row. For example, for the table shown in Figure 5–8, the top row (shadow) indicates that at a reproduction density of 1.308, and a total ink coverage of 320%, a 100% Cyan dot is reduced by GCR to 80% and the maximum Black dot is at 100%.

The Gradation table is useful for entering values specific to your requirements or production needs.

Figure 5–8
Gradation table

| Re-production Density | ● Grad 3 ○ Grad 4 ○ UCR ○ Black | | | |
	Cyan Dot %	Total Ink	Cyan Dot After UCR	Black Dot %
1.243	100	320	80	98
1.182	97	310	78	95
1.084	93	290	74	87
0.944	85	259	67	74
0.773	74	214	59	54
0.577	57	159	49	28
0.358	37	95	37	0
0.158	17	39	17	0
0.000	0	0	0	0

Note: Changes made in the CMYK Gradation window in Expert mode are reflected in the Production Controls window in Production mode.

Determining Black Generation

The method of Black generation can be set to UCR or GCR by selecting the desired radial button at the bottom right of the CMYK Gradation window. Which method is used is a matter of individual preference, but the shape of the curves can vary considerably between the two, with the corresponding different effects on the image.

Note: Always refer to the Probe as well as a standard gray step wedge to verify that you are getting the desired results.

6

Unsharp Masking and Descreening

P owerColor offers many powerful features that allow you to correct your pres-canned images before final scanning. This chapter describes PowerColor's Unsharp Masking (USM) and Descreening functions.

Applying Unsharp Masking

Unsharp masking (USM) represents a way of adjusting the contrast of edge detail in an image. PowerColor's Unsharp Masking window contains extensive tools for fine-tuning the sharpness of your images.

To open the Unsharp Masking window (see Figure 6–1), select Custom USM from the Tools Menu or ⌘ + U (Macintosh) Control + U (Windows).

You can toggle Unsharp Masking on or off by clicking on the On box next to Unsharp Mask at the top of the Unsharp Masking window.

Note: Unsharp Masking is set to **On** by default.

Figure 6–1
Unsharp Masking window
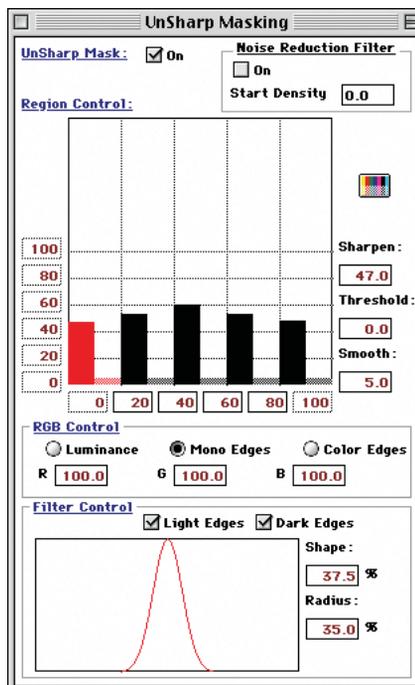
As with all of PowerColor's image correction features, USM allows you to recall previously saved settings, apply default or save new tables. All of these functions are found in the Settings menu (for more information, see Chapter 2).

Controlling USM in Tonal Regions

PowerColor's USM controls allow you to regulate the amount of unsharp masking applied to each of your image's tonal regions. The Region Control chart in the Unsharp Masking window shows the five tonal regions in the image from left to right, reflecting an overall density range from 0 - 4.

> **Note:** The values used in the Unsharp Masking window are arbitrary numbers for relative reference only.

The vertical axis of the Region Control chart is composed of non-editable percentages of sharpening to be applied. The horizontal axis contains editable fields to define the density at which each tonal region begins.

> **Note:** The currently active region in the chart is indicated in red.

Various fields in the USM window determine how the tonal regions are handled. These are defined as follows:

• Sharpen: governs the amount of sharpening applied to the selected tonal region. To define a desired sharpening value for a region, click on the region's bar in the chart (it turns red) and enter the value in this field.

• Threshold: refers to the minimum difference between dark and light areas that must exist before unsharp masking is applied. The lower the threshold value, the smaller the difference between the pixel values needs to be to apply USM. As you raise or lower the value in this field, the active bar is shifted up or down in the chart to reflect the higher or lower starting point for USM. Areas below the threshold are smoothed (see below); areas above it are sharpened.

• Smooth: evens out differences between tonal regions in an image. This option is helpful, for example, in reducing the effect of film grain (typically in the shadows or three-quarter tones) when an image is magnified. A higher Smooth value helps to diminish the film's graininess.

Smoothing is represented in the Region Control chart by the lighter colored bar to the right of each dark bar. As you increase the Smooth value, the lighter bar gets longer, graphically representing the smoothing effect between two adjacent regions.

> **Note:** Only those areas below the threshold are smoothed.

Manually Adjusting the Region Control Bars

In addition to being able to enter numerical values to adjust the region control bars, the bars can be manipulated directly as follows:

- To adjust sharpening in a tonal region: Click and drag the desired bar up or down.

- To adjust sharpening in all tonal regions: Hold down the Option key and click and drag any bar to the desired point. The region control bars move together.

- To adjust smoothing in a tonal region: Hold down the Shift key and drag the desired bar up or down.

- To adjust smoothing in all tonal regions: Hold down the Option + Shift keys and drag any bar up or down. The smoothing bars move together.

- To adjust the threshold of a tonal region: Hold down the Control key and drag the desired bar up or down.

- To adjust the threshold of all tonal regions: Hold down the Control + Option keys and drag any bar up or down. The bars move together, maintaining their relative sharpening and smoothing positions.

Controlling Edges between Tonal Regions

PowerColor's unsharp masking also allows you to choose monocolored edges or colored edges between tonal regions. Mono edges are made up of a single color, mixed in the ratio you define in the R, G, and B fields. Color edges are a composite of the surrounding colors.

The edge setting is a matter of individual preference. Some images tend to look better with mono edges (also called "halos"). The goal is to achieve the right amount of edge sharpening without over-accentuating the halos.

The Filter Control section in the Unsharp Masking window allows you to select or deselect sharpening in light edge and dark edge areas. PowerColor's default is "on" for both settings. Deselecting Light Edges tends to bring out dark edges and detail and vice versa.

Using the Unsharp Masking Curve

The curve at the bottom of the Unsharp Masking window graphically depicts the transition from gray to white in unsharp masking. The Shape field governs how quickly the colors ramp from gray to white, while Radius is a measure of how wide the halo effect is at the edges of the tonal regions. As you change these values, the curve at the left changes shape.

Applying Descreening

Descreening represents a method of eliminating the moiré patterns that can result when printed halftone images are scanned. The Descreening function can also be useful in eliminating other artifacts, such as film grain.

To access PowerColor's descreening function, select Descreen from the Window menu (or press ⌘ + D on a Macintosh, Control + D in Windows).
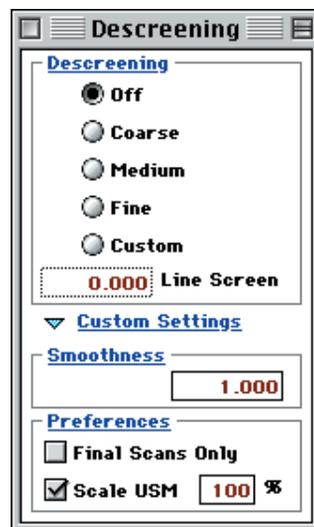
Figure 6–2
Descreening window

Descreening Options

The type of descreening to be applied is selected in the top half of the Descreening window. The available options are defined as follows:

- Off: No descreening is used (default).

- Coarse: The image is substantially descreened.

- Medium: Some descreening takes place.

- Fine: Only a small amount of descreening occurs.

- Custom: used to set a specific line screen for the final image. Enter the desired lpi value in the Line Screen field.

Customizing the Descreening Function

The blue triangle next to Custom Settings toggles open an additional area of the Descreening window for customizing PowerColor's descreening function. The options for customization are defined as follows:

• Smoothness: performs the same function as the Smooth field in the Unsharp Masking window (see above). The value entered in this field is reflected in the USM window.

• Final Scans Only: applies descreening only to the final image to be scanned, but not to any prescans.

• Scale USM: limits the degree of unsharp masking applied to the final image. To use the option, click on the checkbox next to Scale USM and enter the percentage by which you want USM reduced. Since descreening "softens" the focus of an image, the Scale USM option is helpful because it helps to avoid "over sharpening" the image again by applying an excessive amount of unsharp masking.

7

Scanning Images
to Disk

Once you have completed color correction work on your images (see Chapters 4 through 6), they are ready to be scanned to disk. This chapter explains how to check final settings and scan your corrected images to a file and covers the following topics:

- Reviewing scan settings
- Performing final scans

Reviewing Scan Settings

Before final scanning, review your scanning parameters to make sure you have made all necessary adjustments.

> **Note:** To review the parameters for each region individually, make sure each desired region is selected in the Queue Manager, as indicated by the red frame around it.

PowerColor provides an overview of all scanning parameters for a given region in the Scan Info window (select Info in the Tool menu or press ⌘+I if on a Macintosh). Figure 7–1 shows an example of a Scan Info window:

The Scan Info window is a static display of the scanning parameters. To make any changes before final scanning, select the desired parameter options in the menu bar and toolbar.

Figure 7–1
Scan Info window


```
                 Scan Info
  Scan Time
  Scan Time 00:12:41

  Region 1
    Scan Type :Trans Positive
    Scan Output :CMYK
    Scan Input :RGB
         USM :On
    Descreen :Off

    Line Screen :    176.38
      Sampling :      2.00
         Width :     10.57
        Height :     13.71
         Scale :    300.01
     File Size :    68.76M
    File Type :Tiff
    File Name :PPC●4 :scan0001 :
```

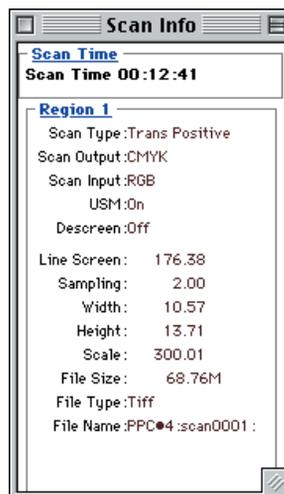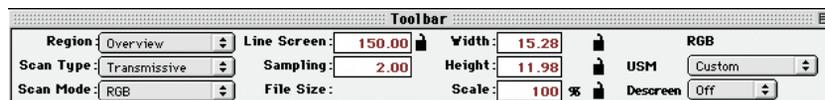## Checking Tool Bar Parameters

Check the following parameters in the Tool Bar (see Figure 7–3) to make sure they match your final scan specifications:

Scan Type

The Scan Type of your image should correspond to the type of original: Transmissive or Reflective.

Scan Mode

The Scan Mode field is used to select the output mode for the scanned image. The options are:

•   RGB: standard Red, Green, and Blue.

> **Note:** If you scan in CMYK color space with Photo RGB selected in Preferences as the separator, the final image will not represent accurate color. To scan in the CMYK color space, you must choose Press as the designated separator.

•   CMYK: four process colors (Cyan, Magenta, Yellow, Black).

> **Note:** If PowerColor Press is selected in the Preferences menu, choosing CMYK mode will immediately activate the separator, giving you access to the CMYK toolset and causing your image to be displayed in CMYK color space.

- Gray Red/Green/Blue: grayscale image from the Red, Green, or Blue color channel, respectively.

- Line Red/Green/Blue: line art from the Red, Green, or Blue color channel, respectively.

> **Note:** Whenever the CMYK scan mode is selected, PowerColor automatically switches to the CMYK mode (if Press is the designated separator in **Preferences**) and replaces any open image correction windows with the corresponding CMYK version. When any scan mode other than CMYK is selected PowerColor automatically switches back to RGB mode.

Line Screen

Line Screen represents the number of lines per inch in a halftone image. Along with Sampling (see below), the line screen is used to calculate the final scan output resolution.

Sampling

Sampling indicates the number of dots per pixel in the final scanned image. The Sampling value multiplied by the Line Screen value (see above) yields the dots per inch (dpi) resolution of the final image. For example, a Sampling value of 2 with a Line Screen of 150 results in a 300 dpi image.

Using the Resolution Lock Tool

Clicking on the small lock icon next to the Line Screen field locks the scanner's resolution at the next highest native resolution. When locked, the scanner's native resolution is used; when unlocked, the final scan output resolution is based on the values in the Line Screen and Sampling fields. To unlock the resolution, click on the lock icon again.

File Size

The File Size field is a static display of the amount of disk space the final scan requires. As you adjust other scanning parameters, the value in this field changes.

Width and Height

You can select the specific width or height for your final image in these fields. However, based on the cropped area, they are proportionate to each other. Any change in the Width value proportionally changes Height and vice versa.

Scale

Use the Scale setting to define the degree of enlargement (or reduction) of your final image. Remember that file size is directly proportional to the scale of your image.

Naming Final Scans

Final scan files are named using the default region name. If you want to name the scans differently, before performing the final scan, proceed as follows:

1. Select the region in the Queue Manager by double-clicking on it.

2. Select Save from the File menu (or press ⌘+S on a Macintosh).

3. In the standard dialog window that appears, enter the name for the scan and click on Save.

4. Perform the final scan as outlined below.

> **Note:** Final scan file icons in PowerColor are automatically set to be opened in Adobe Photoshop™ when double-clicked. This feature is convenient for performing further image manipulations on your final scans.

Performing Final Scans

Once you have checked all your parameters and adjusted your settings in a region, you are ready to final scan your images.

Scanning Images Individually

To scan a single region to disk, click on the Scan button () under that region in the Queue Manager. While the scan is in progress, the button appears red, green, and blue. After the region has been scanned, the Scan button turns all red.

Batch Scanning All Images

PowerColor's Queue Manager allows you to send all regions to be final scanned in one batch. To do so, click on the Scan All button ().

> **Note:** Regions are scanned in the order they appear in the queue. While scanning is in progress, you may rearrange, add, or delete regions.

Pausing or Stopping the Scanning Process

Once scanning has begun, you can stop the scan by pressing ⌘+ . (period) on a Macintosh, or ESC (escape) on a Windows PC. Pressing these keys during batch scanning will stop the scan for the current image only. To stop the queue completely, click on the green triangle under the Overview image in the Queue Manager.

8

Tips and Tricks

This chapter offers some practical tips and hints for your work with PowerColor.

Tips and Tricks

- To hide the Control Bar temporarily, select Hide Toolbar from the Tool menu. To bring the toolbar back, select Show Toolbar from the same menu.

- You can make the toolbar into a floating window to customize your use of monitor space. To do so, select Unanchor Toolbar from the Tool menu. (To replace the toolbar in its default position, select Anchor Toolbar.)

- When adding regions, always define them in the Overview window, not in another region.

- To resize a region, change the Preview Size in the Preferences window. This setting defines the dimensions of the image window in pixels. Resizing the image window itself does not change the region's dimensions.

- Follow a rational naming scheme for your final scans (by client, project, date, etc.). Otherwise, your hard disk can quickly become cluttered with indecipherable file names.

- If you develop a group of settings that you use often (for example in tone or gradation), save them as tables using the Save feature in the Settings menu to speed up your work next time. See Chapter 2 for more information.

- You may choose to send your file directly to Canto Cumulus Desktop, Asset Management Software. To do this, select Associate Cumulus Catalog File from the Command menu.