POLARIS

User Guide

Howtek

Imaging that makes a difference.™

User Guide

Part Number HTM108
Revision D

Howtek

Imaging that makes a difference.™

Polaris User Guide
Howtek part number: HTM108
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Preface

Congratulations on your purchase of Howtek's Polaris desktop scanning software, a powerful tool that combines high-quality scanning, detailed image and color correction, and output setup in one easy-to-use package.

Overview of Polaris

Polaris is an essential production tool coupled with a Howtek drum scanner (Scanmaster 4500 or Scanmaster D4000) or flatbed scanner (Scanmaster 2500). Its features include:

Ease of Use

Polaris is designed to be easy to use. Its standard point-and-click interface, editable numeric fields, and graphical displays make scanning and color correction work simple and fast.

Color Controls

Polaris' color controls allow you to adjust your color images in a variety of formats (RGB, Grayscale, Lineart) based on parameters such as tonal range, gradation, and neutral balance. You can also correct color casts and edit color channels individually or as a group.

ICC Profiles

Polaris (Mac only) allows you to attach or apply ICC profiles to the scanned images. Polaris uses the ColorSync® Color Management system.

If an output profile of a CMYK device is applied, then the final scan will be a CMYK scan.

Multipoint Color Meter

Polaris' versatile Color Meter is a predictive densitometer that provides precise color values for selected points on the screen. The Color Meter displays density values before and after your changes in RGB (CMYK also on the Mac) format, numerically and graphically.

Unsharp Masking (USM)

Eight preset USM filters make it easy for you to adjust the sharpness of your images, and comprehensive controls provide sophisticated region control to apply the sharpening where you need it.

Focus Controls (Drum Scanners Only)

Polaris optimizes focus with its Auto Focus function, but also provides interactive focus controls for manual adjustment on drum scanners. High-resolution samples of your original give you the opportunity to review your focus settings pixel by pixel.

Comprehensive Sizing Calculator

Determining the optimal output resolution becomes a simple task in Polaris, which can calculate the resolution based on the factors you supply, including image width, height, and scale.

Customizability

User defined settings and even entire profiles of settings can be saved to be reused again and again, enhancing Polaris' speed and adaptability to your work requirements.

Predefined Settings

Polaris comes with a series of predefined settings for many standard image and output configurations.

Batch Processing

With Polaris' powerful batch controls you can queue and scan multiple images and types of originals with one command. The Queue Manager's multitasking ability means images can be added even while batch scanning is in progress.

How to Use This Guide

This document contains information on:

- Installing, configuring, and setting up Polaris software
- Correcting images using Polaris
- Preparing images for output
- Using Polaris' batch scanning features

Please read the installation instructions carefully. Proper installation will ensure efficient operation of your Polaris software. If you have any questions, please contact your local Howtek dealer.

Guide Conventions

The following typographical conventions are used throughout this guide:

Menu options, on-screen selections and buttons, and keyboard keys are indicated in bold, e.g. **Batch**, **Scan**, **Option**, etc. Chapter and section titles are indicated in italics, e.g. *How to Use This Guide*.

> Note: Provides important information about the current topic.

> **CAUTION: Provides information for the prevention of damage to the software.**

Related Documentation

In addition to this user guide, you may need additional information contained in other documents. Your computer's installation guide provides detailed instructions for installing interface cards in the computer and connecting your scanner. The user guide for your scanner contains detailed information about installation and operation of the scanner.

1

Installing Polaris on a Macintosh

This chapter describes how to install Polaris software on a Macintosh® computer. Instructions for installation on an IBM® PC® or compatible can be found in Chapter 2.

Minimum System Requirements

In order for Polaris to run properly, make sure your Macintosh meets the following minimum requirements:

- 68030 processor with floating point coprocessor installed (Power Macintosh® recommended)
- 64 MB of RAM
- 24-bit color display adapter
- 17" color monitor (20" monitor recommended)
- 250 MB available hard disk space (1 GB or more recommended)
- System 7.0.1 or later (System 7.5 recommended)

> Note: ColorSync® must be installed on a Power PC. On older operating systems, ColorSync® installation was optional. Refer to your system installation instructions if Colorsync® was not installed.

Installing Polaris

Before beginning the installation process, make copies of the Polaris system diskettes. Put the original diskettes away in a safe place and use the copies for installation.

To install Polaris on your Macintosh computer, proceed as follows:

1. Power down your computer.
2. Install the software key (dongle) between your keyboard and keyboard cable.

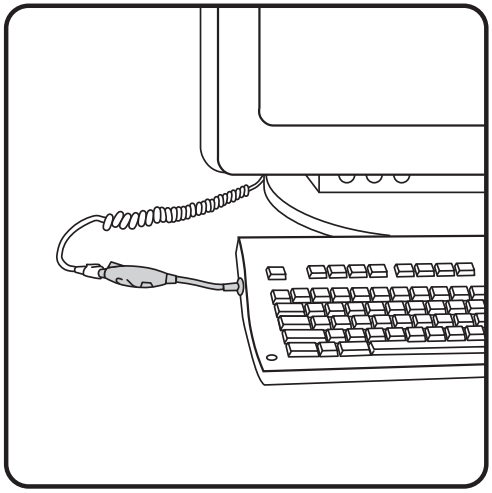


Figure 1–1
Software key (dongle)

> Note: No more than five devices may be attached to a Macintosh keyboard at one time. The Polaris dongle must be first in line closest to the keyboard.

3. Power up your computer.
4. Turn off any virus protection software.
5. Place **Disk 1** into your floppy drive and double-click on the installer icon that appears.

> Note: The Read Me file on Disk 1 contains important last-minute information about the installation and use of Polaris. Please take a moment to read it.

6. Select an install method (**Easy Install** or **Custom Install**):

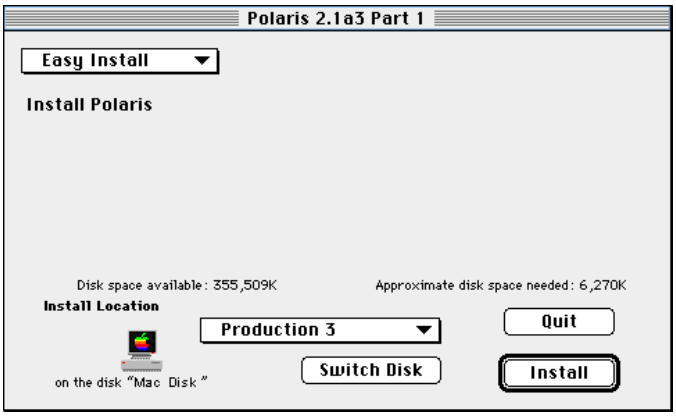


Figure 1–2
Installation window

- **Easy Install** installs all Polaris files. This is the recommended method when installing Polaris for the first time.
- **Custom Install** installs only the files you select. This method is recommended for any reinstallation or update of Polaris, if necessary. When you select this option, the following screen appears:

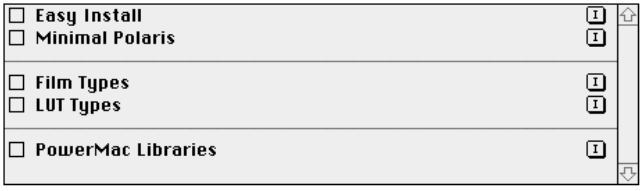


Figure 1–3
Custom installation options

Check the **Minimal Polaris** box and/or any supporting modules you wish to install. For further information about the software modules, click on the corresponding **I** box to the right.

7. Select the destination disk and folder for Polaris. The following dialog window appears (see Figure 1–4):

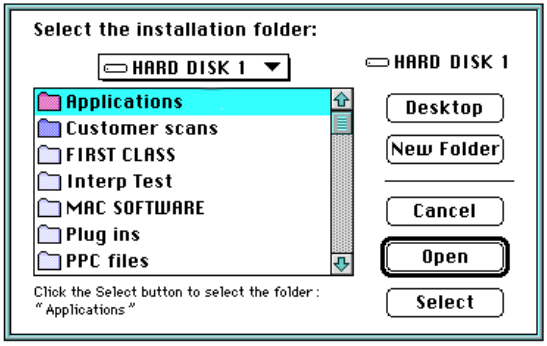


Figure 1–4
Dialog to select destination drive and folder

Note: The Polaris software requires at least 6.5 MB of hard disk space.

8. Highlight the folder where you want Polaris to reside.
9. Click on **Select**.
10. Click on **Install** to begin the installation process or **Quit** to exit the installer.
11. Follow the screen prompts to insert **Disk 2** and to exit the installer.

Installation of Polaris is now complete.

Polaris Folders

Once the installation process is complete, Polaris is installed in its own folder at the destination you selected. The **Polaris** folder contains a number of items (see Figure 1–5).

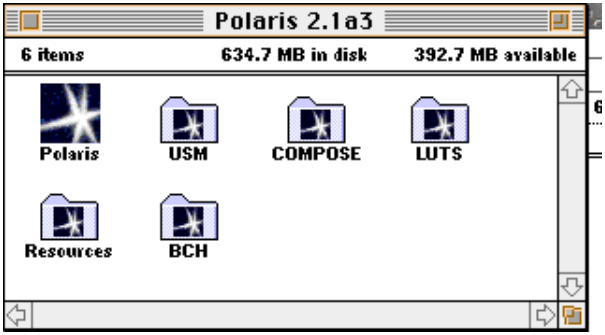


Figure 1–5
Contents of the Polaris folder

The contents of the Polaris folder are briefly described below:

- **Polaris icon:** Double-click on this icon to launch the application.
- **Resources:** This folder contains auxiliary files needed by Polaris. Do not alter or remove any of these files.
- **BCH:** This empty folder is used to hold queued batch files.
- **COMPOSE:** Custom film parameters can be stored in this folder for later use.
- **USM:** The unsharp masking folder contains predefined USM filters.
- **LUTS:** The files in this folder contain parameters for different film types in Look-Up Tables (LUTs).

> Note: For optimum performance, the minimum RAM allocation for Polaris should be increased from the default of 18,000 K. The recommended amount of RAM is 64 MB.

Profile Installation (Polaris Mac only)

You should have received a profile installation disk(s) with Polaris. Insert the disk into the Mac and double click on the icon. Installation is similar to the Polaris installation.

This installer will install your scanner profiles in the "system...Prefs...ColorSync® profiles" folder.

These profiles were created for the Howtek scanners with ColorSynergy® software package available from Candela® Ltd., 1676 East Cliff Road, Burnsville, MN 55337-1300, 800-944-1355.

2

Installing Polaris on a PC

This chapter describes how to install your Polaris scanning software on an IBM PC or compatible computer. Instructions for installation on a Macintosh are found in Chapter 1.

Minimum System Requirements

In order for Polaris to run properly, make sure your PC meets the following minimum requirements:

- 486-66 processor with floating point coprocessor installed (Pentium® processor recommended)
- 64 MB of RAM
- 24-bit color display adapter
- 17" color monitor (20" monitor recommended)
- 250 MB available hard disk space (1 GB or more recommended)
- Windows 3.1 or later, Windows 95 or Windows for Workgroups 3.11

Installing Polaris

Before beginning the installation process, make copies of the Polaris system diskettes. Put the original diskettes away in a safe place and use the copies for the installation.

To install Polaris on your PC, proceed as follows:

1. Power down your computer.
2. Install the software key (dongle) on the PC's LPT1 port.

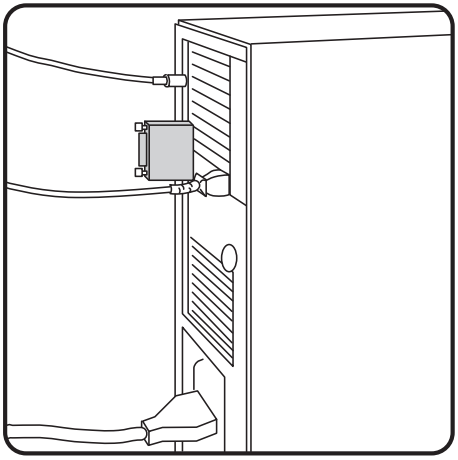


Figure 2–1
Software key installed

Note: No more than five software keys may be attached to your PC at one time.

3. Power up your computer.
4. Place the installation diskette (**Disk 1**) into your computer's floppy drive.
5. Launch Windows.
6. In the Program Manager, select **Run** from the **File** menu.

7. In the dialog box that appears enter **a:\setup** (or **b:\setup** depending on the designation of your floppy drive) and click on **OK**.
8. As the installer initializes, the Polaris Setup dialog is displayed (see Figure 2–2).

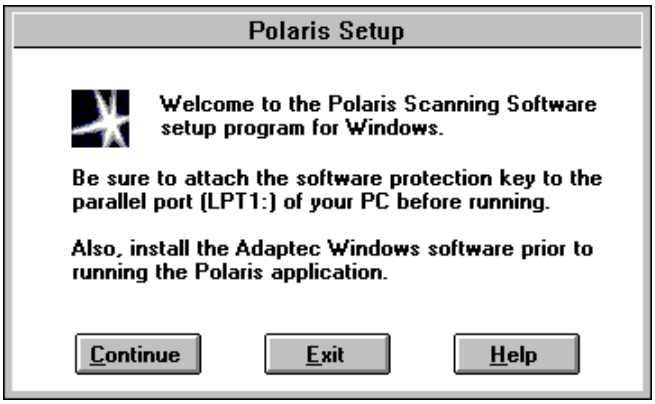


Figure 2–2
Polaris Setup dialog

9. Click on **Continue**. The following dialog box appears:

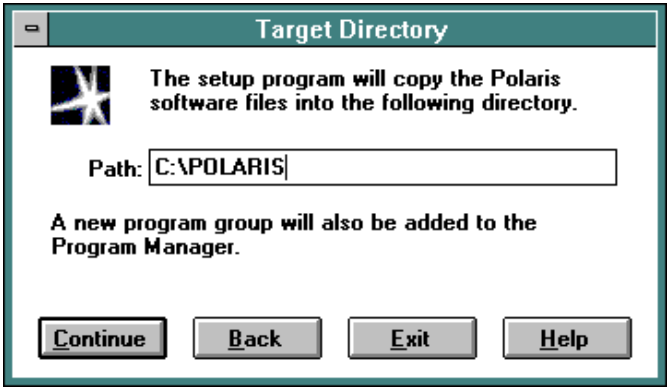


Figure 2–3
Target Directory dialog box

10. Click on **Continue** to install Polaris using the default path (**C:\POLARIS**), or enter a new path.

    Polaris now begins to install the files in the selected directory.

11. Insert diskettes as prompted. A dialog box appears to indicate successful installation of the software.

12. Click on **OK** to exit the Polaris Setup program.

Installation of Polaris is now complete.

Polaris Directory

During installation, the Polaris directory is placed at the destination you selected. The Polaris directory contains several subdirectories (see Figure 2–4).

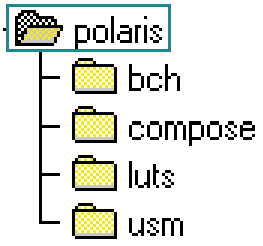


Figure 2–4 Contents of the Polaris directory

The contents of the Polaris directory are briefly described below:

- **Polaris icon:** Double-click on this icon to launch the application.
- **BCH:** This empty directory is used to hold queued batch files.
- **COMPOSE:** Custom film parameters can be stored in this directory for later use.
- **LUTS:** The files in this directory contain parameters for different film types in Look-Up Tables (LUTs).
- **USM:** The unsharp masking directory contains predefined USM filters.

3

Overview of Polaris

This chapter contains a detailed overview of the features of the Polaris software and explains the basic scanning process. It covers the following topics:

- Launching Polaris
- Polaris menus
- Polaris main window
- Prescanning an image

Launching Polaris

Before launching Polaris:

- Make sure your scanner is properly connected to your host computer and that it is powered up.
- Mount the original(s) to be scanned on your scanner's drum or platen surface. (For more information on mounting originals, refer to your scanner documentation.)

To launch Polaris, follow these steps:

1. Locate the Polaris icon in the **Polaris** folder.
2. Double-click on the **Polaris** icon to launch the application.

Figure 3–1
Polaris icon

3. Depending on your configuration, a different window appears:

   - If you have only one scanner attached to your system, the Polaris main window appears:

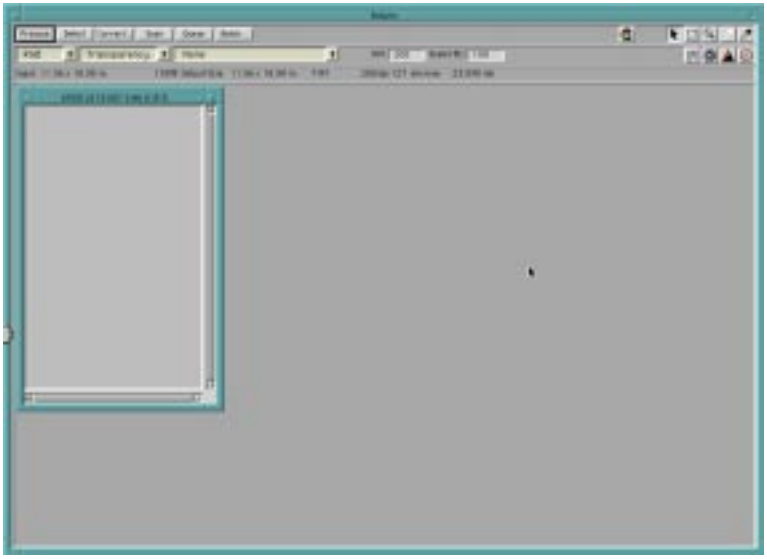


Figure 3–2
Polaris main window

   - If more than one scanner is attached, the Acquire window appears:

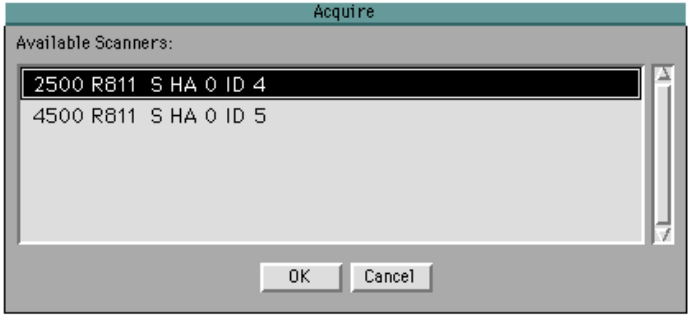


Figure 3–3
Acquire window

In the Acquire window select the scanner you want to use and click on **OK** to proceed to the main window.

- If no scanner is attached or Polaris cannot locate your scanner, the following dialog box appears:

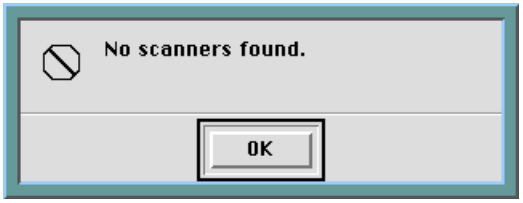


Figure 3–4
"No scanners found" dialog box

Note: If this message appears, shut down your system completely. Make sure that your SCSI cables and terminator are properly connected and that your system has no SCSI ID number conflicts. Reboot your scanner and host computer and relaunch Polaris.

Polaris Components

This section describes the components of the Polaris software and should be used as a reference to all the scanning software's features. Detailed information about how to use those features is contained in the chapters that follow.

Menus

The menu bar at the top of the screen contains pulldown menus for accessing most features in Polaris. Many of the functions of the menu options are duplicated by tools in the main window. The tables on the following pages explain the functions of each menu option.

File Menu

Menu Option	Description
Open...	Not used (grayed out).
Close	Closes the active window.
Acquire...	Selects a connected scanner.
Quit	Exits the application.

View Menu

Menu Option	Description
Correct...	Opens the Image Correction window.
Color Meter...	Opens the Color Meter.
Batch...	Opens the Queue Manager for batch scanning.
Zoom...	Changes the magnification factor in the active window.

Preferences Menu

Menu Option	Description
Scaling	Opens the scaling preferences window.
Color Meter...	Opens the Color Meter Preferences window.
General Preferences...	Opens the General Preferences window to set prescan resolution, units of measure, interpolation and save views.
Scanner Preferences...	Opens the Scanner Preferences menu to set the scanner's calibration mode.
Save Profile...	Saves a user-defined settings profile.
Load Profile...	Loads a previously saved settings profile.
Save As Default	Saves the current Polaris settings as defaults.

Setup Menu

Menu Option	Description
USM Styles...	Opens the Define USM Style window for creating custom unsharp masking settings.
Lineart...	Opens a dialog window for setting the threshold value when scanning line art.
Focus Styles...	Opens a dialog window to define custom focus settings for your scanner (drum scanners only).
Output File...	Opens a dialog window to define the output file format (TIFF or EPS) for each scan.

Utilities Menu

Menu Option	Description
Calibrate	Opens a dialog window for setting your monitor's screen gamma.
Interactive Focus...	Opens a dialog window to focus your scanner manually (drum scanners only).
Downloader...	This option is used to download new scanner firmware. **Note: This option is available only if the scanner is not selected.**

Window Menu

Menu Option	Description
[various]	The menu is used to toggle between active windows.

Help Menu

Menu Option	Description
About Polaris...	Opens a dialog box displaying the software's version number.

Main Application Window

The main application window contains all Polaris tools and controls. Figure 3–5 below shows the upper left-hand corner of the main application window.

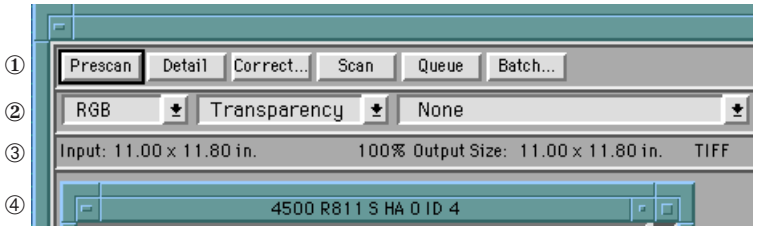


Figure 3–5
Polaris controls.
①–Command Bar.
②–Control Bar.
③–Status Bar.
④–Title Bar.

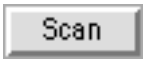
Command Bar

The topmost set of controls in the main application window is the Command Bar, which contains most of Polaris' basic functions. Each button is described below:

The **Prescan** button is used to prescan all or only a cropped portion of the drum or platen surface. For more information on prescanning, see the section *Performing a Prescan* later in this chapter.

The **Detail** button is used to prescan, at a higher resolution, a cropped area of the prescanned image. For more information on detail scanning, see *Performing a Detail Scan* at the end of this chapter.

Clicking on the **Correct...** button brings up the Image Correction window, which allows you to perform color correction work on your prescanned or detailed image. For more information on using the Image Correction window, see Chapter 4.



The **Scan** button initiates a final scan to a file. Before the scan begins, you are prompted to name the final image file and select its destination. For more information on scanning to a file, see Chapter 6.

The **Queue** button adds the selected image to the Queue Manager for batch scanning. Clicking on this button brings up a dialog window to select the image's name and destination.

Clicking on the **Batch...** button opens the Queue Manager (see Figure 3–6) and enables batch scanning. Click on the **Launch** button to begin scanning all the images in the Queue Manager (for more information on batch scanning, see Chapter 6).

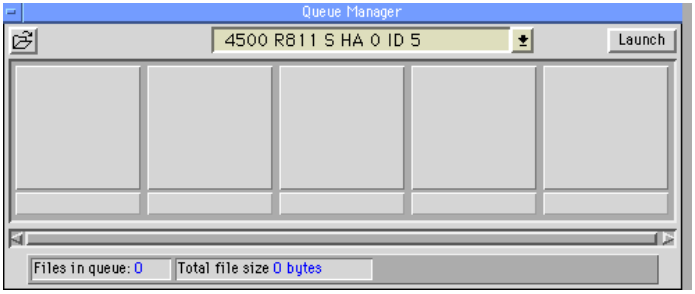


Figure 3–6
Queue Manager window

The Command Bar also contains a set of tools at the far right. These tools control cursor functions and are described below:

This button opens the **ICC Profile Window**.

The **Pointer** is used to select and resize windows and crop boxes. This is the default cursor tool.

The **Marquee** allows you to define (crop) an area in the Prescan or Detail windows for further scanning or color correction work.

The **Zoom** tool increases or decreases the magnification of the image. It functions as follows:

- **To zoom in:** Select the tool and click repeatedly on the desired portion of the image until the desired magnification is reached.
- **To zoom out (Macintosh):** Press the **Option** key while clicking the mouse button.
- **To zoom out (Windows):** Press the right mouse button.

The **Highlight Eyedropper** is used to set the highlight point in the image. Double-clicking on this tool brings up the Cast Correction window where you can select the highlight cast correction mode to be applied to the image. For more information on cast correction, see the section *Removing Color Casts* in Chapter 4.

The **Shadow Eyedropper** is used to set the shadow point in the image. Double-clicking on this tool brings up the Cast Correction window where you can select the shadow cast correction mode to be applied to the image. For more information on cast correction, see the section *Removing Color Casts* in Chapter 4.

Control Bar

The Control Bar (see Figure 3–7) is used to define the data format of the scanned image, the media type of the original, any applicable Look-Up Table (LUT), the scanning resolution, and the scale factor to be applied.

The components of the Control Bar are described below.

Figure 3–7
Control Bar

Scan Data Format Menu

The **Scan Data Format** pulldown menu (see Figure 3–8) displays the file formats available for final image files.

Figure 3–8
Scan Data Format menu

The menu options are defined as follows:

- **RGB:** Red, Green, Blue.
- **Gray:** grayscale.
- **Lineart:** black and white.

Media Type Menu

The **Media Type** pulldown menu (see Figure 3–9) is used to select the media type of the original mounted on the scanner.

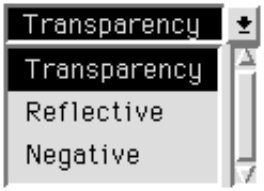


Figure 3–9
Media Type menu

The menu options are defined as follows:

- **Transparency:** positive transparencies (color or black-and-white).
- **Reflective:** printed photographs and artwork.
- **Negative:** negative transparencies (color or black-and-white).

LUT Menu

The **LUT** pulldown menu (see Figure 3–10) contains a list of Look-Up Tables (LUTs) used to compensate for certain original image characteristics (e.g. overexposed, underexposed, etc.).

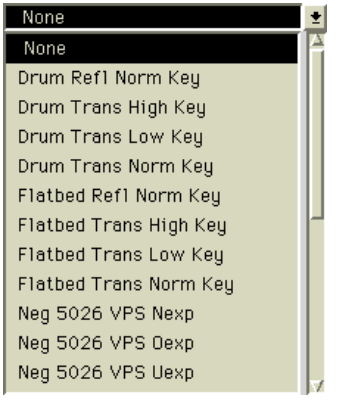


Figure 3–10
LUT menu

Note: The default menu option for the LUT menu is None.

DPI

This editable field defines the input scan resolution in dots per inch (DPI), but may not reflect the final output resolution of the image (see the note below). The value in this field is automatically adjusted when a scale value is entered in the **Scale %** field (see below). To enter a resolution manually, click on the **DPI** field, enter the desired value and press **Return**.

> Note: If Scale % is set to 100, the final output resolution equals the selected input scan dpi. However, scaling affects the final output resolution. When scaling an image, the following formula may be used to calculate the final output image:
>
> $$\text{Final output resolution} = \frac{\text{input scan dpi}}{\text{Scale \%}} \times 100$$

Scale %

This editable field is used to apply a scale factor to the image being scanned. The **Scale %** value needed for the final output requirements can be calculated using the following formula:

$$\text{Scale \%} = \frac{\text{final image width}}{\text{original image width}} \times 100$$

For example, if your original image is a 4"x5" print and the final image is to be 8"x10", the **Scale %** value is 200.

Whenever a scale value is entered manually, the resolution value in the **DPI** field is automatically adjusted based on the following formula:

$$\text{Input scan dpi} = \frac{\text{Line Screen} \times \text{Quality Factor} \times \text{Scale \%}}{100}$$

> Note: The default Scale % value is 100.

The Control Bar also contains a set of buttons at the far right to access other Polaris functions:

The **Linescreen** button brings up the Linescreen/Quality Factor dialog window (see Figure 3–11). This window allows you to set the line screen in lines per inch (lpi) of your output device and an arbitrary quality factor. Polaris uses these parameters, as well as the **Scale %** value, to calculate the scan resolution for the final scan.

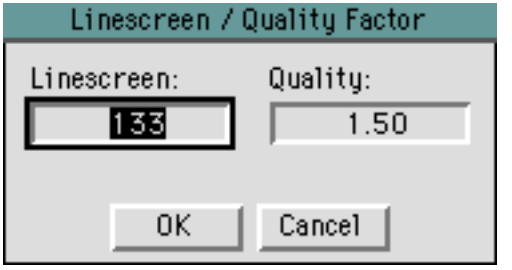


Figure 3–11
Linescreen/Quality Factor window

Note: Quality Factor is also commonly referred to as the sampling rate. The sampling rate helps to insure that the final scan uses enough data to provide a quality image reproduction. A sampling rate of 2.0 x linescreen has traditionally been used in scanning. With the overall improvement in the quality of graphic arts hardware and standards the current industry trend is toward a sampling rate of 1.5 x linescreen. The advantage of a lower sampling rate is three-fold: it requires a lower input resolution, reduces scanning times and produces smaller scan files.

(Drum scanners only) The **Aperture** button manually adjusts the scanner's aperture based on the value in the **DPI** field. Clicking on this button brings up the **Aperture** pulldown menu (for more information on aperture, see the section *Aperture* in Chapter 5).

Clicking on the **USM** (Unsharp Masking) button brings up the **USM Style** pulldown menu (see Figure 3–12). This menu is used to apply the desired degree of unsharp masking to the image. For more information on USM, see the section *Unsharp Masking* in Chapter 5.

Figure 3–12
USM Style menu

(Drum scanners only) Clicking on the **Auto Focus** button brings up the **Auto Focus** pulldown menu (see Figure 3–13), used to control the scanner's focus and defocus options. For more information on Polaris' focus options, see the section *Focus* in Chapter 5.

Figure 3–13
Auto Focus menu

Status Bar

The Status Bar (see Figure 3–14) displays the following information (from left to right) for the scanned image in the active Prescan or Detail window:

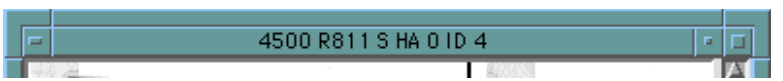
- Current input size
- Scale percentage
- Current output size
- Output file type
- Resolution
- Aperture size in microns
- Disk space required for final scan

Figure 3–14
Status Bar

Title Bar

The Title Bar of the Prescan window indicates the following information for the selected scanner (see Figure 3–15): model (4500), firmware revision (R811), SCSI host adapter number (SHA 0), and SCSI ID number (ID 4). Title Bars of Detail scan windows contain the Prescan window's Title Bar information followed by a sequential number.

Figure 3–15
Prescan window
Title Bar



Note: To move any Polaris window, click and drag its Title Bar.

Performing a Prescan

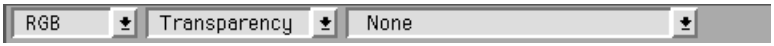
This section explains how to perform a prescan of an original so you can begin to use Polaris' image correction functions.

To perform a prescan, follow these steps:

1. Mount your original on the drum or platen surface. (For information on mounting originals, see the documentation for your scanner.)
2. Set the Scan Data Format to **RGB**.
3. Set the Media Type to **Transparency**, **Reflective**, or **Negative**, as appropriate.
4. Set the LUT to **None**.

   The left-hand side of the Control Bar should look like this:

Figure 3–16
Control Bar



5. Click on the **Prescan** button to prescan the contents of the drum or platen surface. As the scanner scans the original, the Prescan window is filled in.

> Note: If your original covers only a part of the drum or platen surface, you can end the prescan after you have scanned the portion you need by pressing Escape.

When the prescan is complete, you may begin color correction work. It may, however, be helpful to select a representative area of the image and work with it in greater detail. To do so, see the next section, *Performing a Detail Scan.*

> Note: Prescan data is stored in RAM until another prescan is performed.

Performing a Detail Scan

Once you have made a prescan of your original (see previous section), you can select a specific area for detail scanning before you begin image correction work. A Detail scan will allow you to evaluate and crop your image more precisely.

To scan a detailed area of your prescanned image, follow these steps:

1. Click on the **Marquee**. Using the crosshair cursor crop the desired area of the prescan.
2. Click on the **Detail** button in the Command Bar.

   The scanner scans only the cropped area and places it in a separate window.
3. Repeat step 2 for as many detail areas as you wish to view.

For detailed information on image correction in your Detail windows, see Chapter 4.

> Note: Detail scan data is stored in RAM until the Detail window is closed.

4

Image Correction

This chapter introduces the fundamentals of image correction using your Polaris scanning software. It covers the following topics:

- Image correction workflow
- Configuring the Color Meter
- Adjusting tonal range
- Adjusting tonal gradation
- Adjusting the neutral balance
- Removing color casts
- Setting the lineart threshold
- Setting the output size
- Saving settings

For information on the components of the Polaris interface and on how to perform a Prescan and Detail scan, see Chapter 3.

Image Correction Workflow

When correcting prescanned images, it is useful to follow a basic workflow to make sure you have adjusted all the image parameters to your liking. Below is the recommended workflow for image correction. Each of the steps is discussed in detail later in this chapter.

1. Configure and open the Color Meter.

   The Color Meter is used to monitor changes made to the image during the correction process.

2. Crop the image area to be corrected.

3. Set the tonal range of the image.

   The tonal range represents the gamut of tones in your image, from lightest to darkest.

4. Adjust the gradation of the image.

   Gradation is used to lighten or darken the entire image or a specific tonal range (i.e. quarter tones, midtones, three-quarter tones, etc.).

5. (Optional) Set the neutral balance of the image.

   The purpose of setting the neutral balance is to control color casts in the image and to adjust the contrast levels.

The remainder of this chapter describes how to use the Color Meter and the features of the Image Correction window.

Configuring the Color Meter

The Color Meter (see Figure 4–1) is a dialog window that provides a dynamic way of monitoring the effects of color changes in an image by sampling and displaying changes to pixel densities. Depending on its configuration (see *Setting Your Color Meter Preferences* below), the Color Meter displays readouts in RGB or black dot percent values, indicating the values both before and after the changes have been made. The sampled areas are defined numerically and visually (through color swatches), and the location and size of the sampled area can be adjusted.

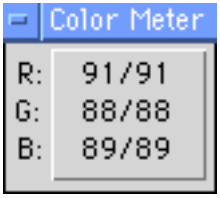


Figure 4–1
Color Meter window

To display the Color Meter, select **Color Meter...** from the **View** menu.

Setting Your Color Meter Preferences

The Color Meter Preferences window (see Figure 4–2) allows you to configure your Color Meter. To open this window, select **Color Meter...** from the **Preferences** menu.

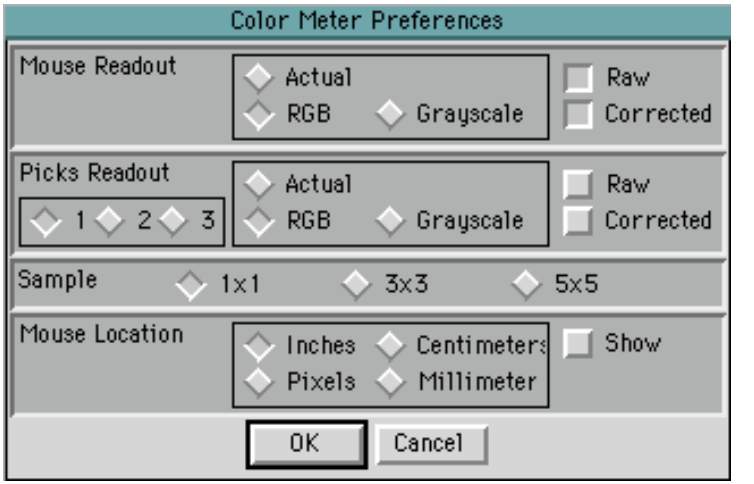


Figure 4–2
Color Meter Preferences window

This section describes how to use the Color Meter Preferences window to configure the Color Meter.

Setting the Cursor Location Values

Mouse Readout is used to select the scan data format at the cursor position. The values are displayed in the first column of the Color Meter in the format you select in this section of the Color Meter Preferences window:

- **Actual:** sets the displayed values to RGB values.
- **RGB:** also sets the displayed values to RGB values.
- **Grayscale:** sets the displayed values to black dot percentage values.
- **CMYK:** grayed out unless ICC CMYK output profile is selected.

Selecting the Sample Location Values

The **Picks Readout** section of the Color Meter Preferences window is used to configure a static display of user-selected locations on the image in both numeric values and as color swatches. When 1, 2, or 3 points are selected, the Color Meter is expanded to the right by that number of points to show the values for those points. To select the sample locations, use the eyedroppers in the Color Meter.

The format for the values is selected just as in the **Mouse Readout** section of the window (see previous section).

Displaying Values Before and After Changes

At the far right of the Color Meter Preferences window, you can select whether to display the values of the locations sampled in the Color Meter before changes, after changes, or both. To view the values before your changes, click on **Raw**; to view the values after your changes, click on **Corrected**. With both options selected, the Color Meter displays the values side by side separated by a slash (Raw on the left, Corrected on the right). See Figure 4–3. Figure 4-4 shows values with CMYK selected.

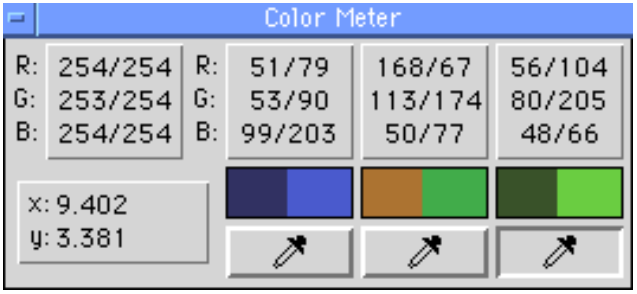


Figure 4–3
Expanded Color Meter displaying Raw and Corrected values

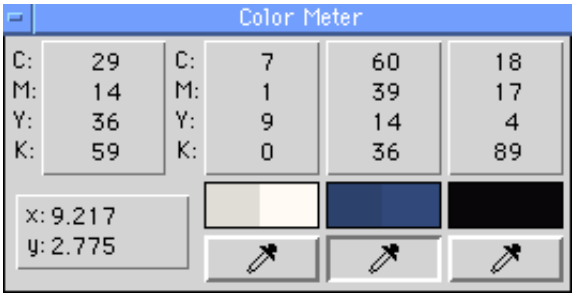


Figure 4–4
Expanded Color Meter with CMYK selected

Determining the Sample Size

The **Sample** option in the Color Meter Preferences is used to set the size of the area sampled by the eyedroppers. Sampling areas are defined in pixels. The available sizes are defined as follows:

- **1x1:** Polaris displays only the values for the selected pixel.
- **3x3:** Polaris displays the average of the values in the 8 pixels surrounding the selected pixel.
- **5x5:** Polaris displays the average of the values in the 24 pixels surrounding the selected pixel.

The averaging of values that takes place with the **3x3** and **5x5** option can produce more realistic values in areas with very subtle shifts in density between individual pixels (for example, a grainy photo or a textured surface). We recommend that you use the **1x1** or **3x3** settings for your image correction work.

Setting the Display Units

The **Mouse Location** section of the Color Meter Preferences window sets the units of measure for the X/Y coordinates of the cursor location displayed in the Color Meter (see Figure 4–3). Click on the button next to the desired units.

The **Show** button toggles the display of the X/Y coordinates in the Color Meter on and off.

Basic Image Correction

To begin image correction on your prescanned image, make sure the Color Meter is open and your Color Meter preferences are set (see previous section). Open the Image Correction window by clicking on the **Correct...** button in the Command Bar (see Figure 4–5).

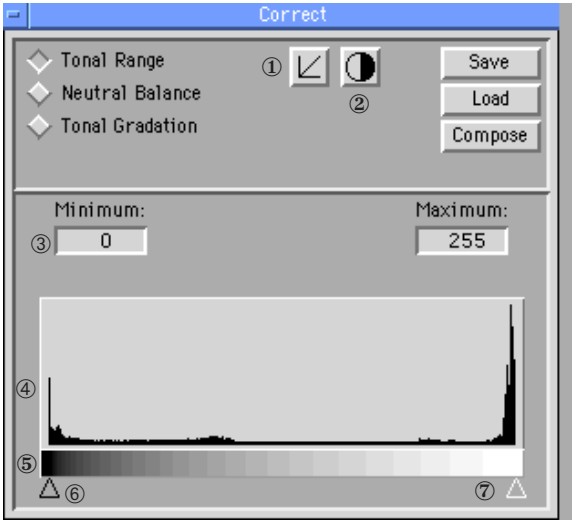


Figure 4–5
Image correction window.
①–Reset button.
②–Auto-range button.
③–Pixel range (0–255).
④–Histogram.
⑤–Density gradient.
⑥–Shadow slider.
⑦–Highlight slider.

This section explains how to use the **Tonal Range**, **Tonal Gradation**, and **Neutral Balance** button menus in the Image Correction window.

Cropping an Image Area

Before correcting your prescanned image, it is important to crop an area of the image.

To crop an area, follow these steps:

1. Select the **Marquee** () in the Command Bar.
2. Click and drag the crosshairs around the area of the image you wish to crop.
3. Move, resize, or reshape the cropped area as needed using the automatically selected **Pointer** ().

> Note: When cropping, avoid areas outside the image itself (e.g., drum or platen surface, tape, etc.). These areas could produce false readings in the histogram.

The cropped area may be resized after the tonal range has been set.

Adjusting Tonal Range

The **Tonal Range** button is selected by default when you open the Image Correction window. With **Tonal Range** selected, the histogram at the bottom of the window (see Figure 4–6) displays the full range of tones within the currently active window (or cropped area), from lightest to darkest.

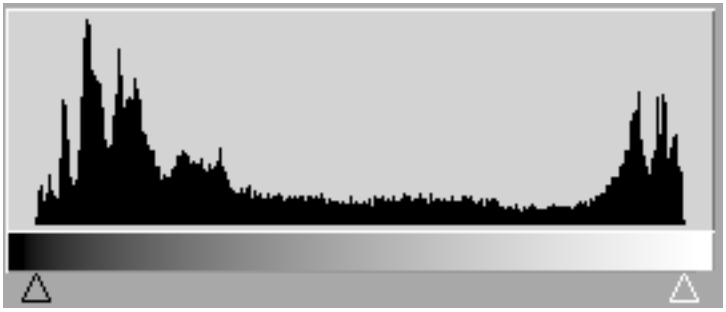


Figure 4–6
Tonal Range histogram

The histogram graphically depicts how many sampled pixels in the image are set to each level of gray. This allows you to determine the distribution of tones (shadows, midtones, highlights, etc.) in your image. The bar under the histogram represents the range of tones from shadows (left) to highlights (right).

In displaying the histogram information, Polaris uses the data from the entire prescanned area unless you have cropped a specific area (see the previous section).

Setting the Highlight and Shadow Points Using the Auto-Range Feature

Polaris' Auto-Range feature automatically sets the image's highlight and shadow points to the end points on the histogram. To use this feature, click on the **Auto-Range** button ( ). The highlight and shadow points move to the points on the histogram where Polaris calculated the lightest and darkest values, and the image in the Prescan window is changed to reflect the new range.

Measure areas of the image using the Color Meter to determine whether the new setting is acceptable to you. If you are not satisfied with the new range, click on the **Reset** button ( ) to return the histogram to its original position.

Setting the Highlight and Shadow Points Using the Eyedroppers

The highlight and shadow points in the tonal range can also be set manually using the eyedropper tools. Follow this procedure:

1. Locate the lightest diffuse highlight in the image.
2. Click on the **Highlight Eyedropper** ( ) in the Command Bar.
3. Move the eyedropper to the area you located in step 1 and observe the values in the Color Meter. Find the spot with the highlight values you are looking for. (Generally, the highest RGB values represent the lightest highlight.)

> Note: To view the area of the image in greater detail, click on it with the Zoom tool ().

4. Press the mouse button when you locate the lightest point. The highlight is now set and the image is updated to reflect the new setting.
5. Locate the darkest area in the image.
6. Click on the **Shadow Eyedropper** ().
7. Move the eyedropper to the area you located in step 5 and observe the values in the Color Meter. Find the spot with the shadow values you are looking for. (Generally, the lowest RGB values represent the darkest shadow.)
8. Press the mouse button when you locate the darkest point. The shadow is now set and the image is updated to reflect the new setting.

> Note: The Auto-Range function and eyedroppers update the first and last Picks Readouts in the Color Meter with the lightest and darkest points within the cropped area, respectively.

Setting the Highlight and Shadow Points Using the Histogram Sliders

The third method for setting the highlight and shadow points is by moving the two triangle-shaped sliders in the histogram. The black slider controls the shadow endpoint, and the white slider, the highlight endpoint. As you move the sliders, the image changes to reflect the new setting(s). Use the Color Meter to find the values you are looking for.

> Note: Moving the shadow and highlight sliders cancels any cast removal settings that have previously been applied to the image.

Adjusting Tonal Gradation

Once you have set the highlight and shadow points in your prescanned image, you can proceed to adjust the brightness or darkness of the tonal regions individually. The Tonal Gradation function in the Image Correction window allows you to adjust any or all of the five tonal regions — highlights, quarter tones, midtones, three-quarter tones, and shadows — or the entire gradation curve. The five regions can be adjusted in all three channels together or in each channel individually.

To adjust the tonal gradation, click on the **Tonal Gradation** button. The Tonal Gradation panel appears in the bottom half of the Image Correction window and is made up of the following components (see Figure 4–7):

- **Input levels:** The X axis of the graph represents the scan's original brightness values (0–255).
- **Output levels:** The Y axis represents the updated brightness values.
- **Curve points:** Each point in the graph represents a tonal region. The shadows are on the bottom left and shadows are on the top right.
- **Gamma slider:** This slider is used to adjust the gamma value, altering the contrast in the midtones.
- **Color channel buttons:** The top button represents a composite of all three channels, while the three underneath represent the individual channels.

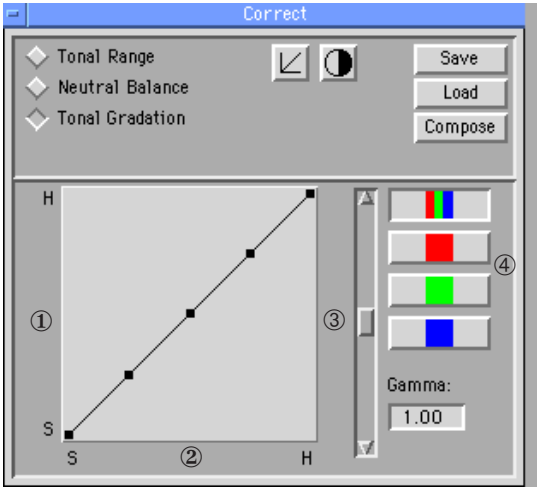


Figure 4–7
Tonal Gradation panel.
①–Output levels.
②–Input levels.
③–Gamma slider.
④–Color channel buttons.

To adjust the gradation in your image, proceed as follows:

1. Open the Image Correction window and click on the **Tonal Gradation** button.
2. In the Tonal Gradation panel select the composite button or one of the color channels to correct. The curve in the graph changes color to reflect the channel you have selected (if you select the top button, the curve is black).

3. Click and drag points on the graph as desired:

   To correct regions individually: Move the point up or down until the desired effect is achieved. Monitor the changes carefully by viewing the Raw and Corrected values displayed in the Color Meter.

   To move the entire curve: Use the Gamma slider to alter the contrast in the mid-range; the highlight and shadow areas move very little. Moving the slider up decreases gamma, darkening the image; moving the slider down increases gamma, lightening the image.

> Note: Clicking on the Reset button ( ) returns all the color channel curves to their default positions.

Adjusting the Neutral Balance

After adjusting the Tonal Range and Gradation in your image, you should make sure the image has a pleasing neutral balance. To do this, select **Neutral Balance** in the Image Correction window to open the Neutral Balance panel in the bottom half of the window (see Figure 4–8).

The function of the Neutral Balance panel is to control color casts in the image and to adjust contrast levels.

> Note: Clicking on the Reset button with Neutral Balance selected resets the sliders only in the tonal region selected. The other regions are not affected.

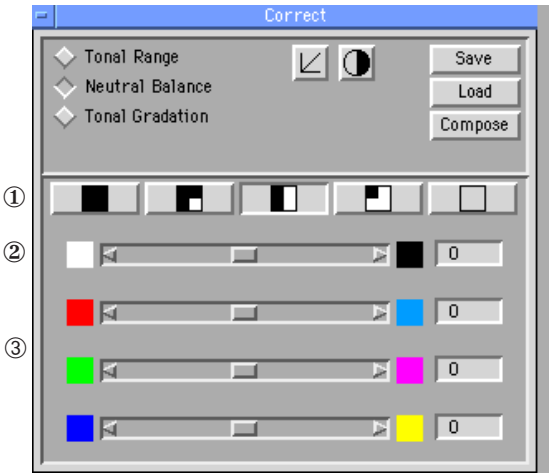


Figure 4–8
Neutral Balance panel.
①–Tonal region buttons (shadow to highlight).
②–Lightness/darkness control.
③–Cast controls.

Controlling Color Casts

The cast controls in the Neutral Balance panel are used to produce a neutral balance in areas of the image that should be white and gray. These sliders provide manual controls to adjust color balance. Polaris also provides automatic cast controls (see the section *Removing Color Casts* later in this chapter). The cast controls apply individually to the shadows, three-quarter tones, midtones, quarter tones, or highlights.

To control color casts, follow these steps:

1. Open the Neutral Balance panel by clicking on the **Neutral Balance** button in the Image Correction window.
2. Select a tonal region by clicking on one of the five region buttons.
3. Slide the appropriate cast control away from the color you want to reduce or toward the color you want to emphasize.

Controlling Contrast

The Neutral Balance panel also allows control over the contrast of the image, using the lightness/darkness slider within each of the tonal regions.

To adjust the contrast, proceed as follows:

1. Open the Neutral Balance panel by clicking on the **Neutral Balance** button in the Image Correction window.
2. Select a tonal region by clicking on one of the five region buttons.
3. Slide the lightness/darkness control toward the left to lighten the region or toward the right to darken it.

> Note: The units in the boxes to the right of the controls are arbitrary numbers for reference only. To move the sliders 1 unit at a time, click on an end arrow; to move them 10 units at a time, click on the background of the slider bar.

Removing Color Casts

Occasionally, image colors can take on unwanted casts due to several different factors, including the following:

- **Light source:** All sources of light give off a specific color temperature (measured in degrees Kelvin). The differences in color temperature are not generally apparent to the naked eye, but they are picked up on photographic film as color casts.
- **Film age:** As photographic film ages, the chemical structure of its emulsion can change, resulting in color shifts that appear as casts.
- **Poor scanning:** An incorrectly calibrated scanner or improperly set color controls can also lead to color shifts.

Color casts are detected in neutral gray areas and are easier to perceive in the highlights of an image than in the shadows. Sometimes neutralizing a cast may introduce an unexpected cast in another tonal region. For example, an image may have a severe cast in the shadows, which is hard to see because color definition is generally weak in the shadow areas. Removing the cast can end up neutralizing the colors that define the shadows and highlights for that image. Similarly, removing a cast completely from an image with no pure white or black areas to represent highlight and shadow may neutralize the colors you are using to define those points.

This section deals with Polaris' automatic cast correction function. For information on how to correct casts manually, see the section *Controlling Color Casts* earlier in this chapter.

Note: CMYK scans (Mac ICC only) are neutralized to 5, 3, 4, 0 and 90, 82, 82, 65.

Note: RGB and Grayscale scans are neutralized to pure white (0) and black (255).

To correct color casts using Polaris' automatic cast correction function, proceed as follows:

1. Double-click on the **Highlight Eyedropper** ( ) in the Command Bar to bring up the Cast Correction window (see Figure 4–9).

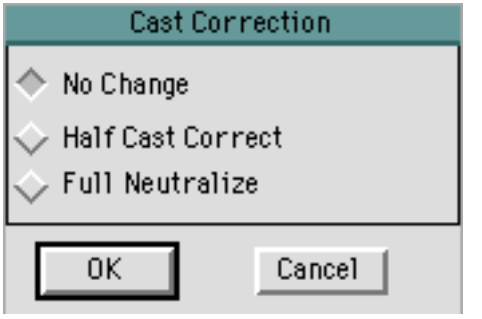


Figure 4–9
Cast Correction window

2. Choose one of the available cast correction modes:
   - **No Change:** This option does not activate any automatic cast correction.
   - **Half Cast Correct:** This option removes 50% of the cast.
   - **Full Neutralize:** This option removes the cast completely.

Example: Suppose the selected highlight in an image had a Red cast (R 249, G 230, B 227). The new RGB values for each cast correction mode selected would be:

- **No Change:** R 249, G 230, B 227
- **Half Cast:** R 249, G 237, B 234
- **Full Neutralize:** R 249, G 249, B 249

3. Select the desired cast correction mode and click on **OK**.
4. Double-click on the **Shadow Eyedropper** ( ) and repeat steps 1 and 2 for the shadows.

> Note: Always check the severity of a color cast in the shadows using the Color Meter. In case of a severe cast, try the Half Cast Correct option and check your results. If you are still not satisfied, select Full Neutralize.

Creating a Custom LUT

If you know that a particular type of photographic film or batch of images contains a certain cast, you can create a custom LUT (Look-Up Table) for those originals. Polaris' Compose function allows you to do this by combining the changes made in the Image Correction window and the selected LUT into a new file. This file is then displayed in the **LUT** pull-down menu in the Control Bar.

To create a custom film LUT, proceed as follows:

1. Open the Image Correction window by clicking on the **Correct...** button in the Command Bar.
2. Make the desired cast corrections.
3. Click on the **Compose** button. The Compose File window appears (see Figure 4–10).

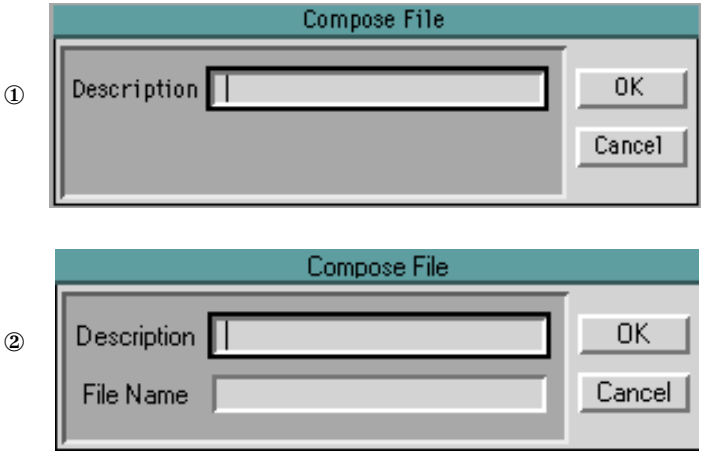


Figure 4–10
Window for creating a film LUT.
①–Macintosh format.
②–Windows format.

4. **Macintosh:** Enter a description (maximum 31 characters) for the image or film you are using.

   Windows: Enter a file name and a film type using the standard DOS naming convention (eight letters + period + three-letter extension).

   The new LUT is saved in the **Compose** folder and added to the **LUT** pulldown menu in the Control Bar.
5. Click on **OK** to accept the new file name.

Setting the Lineart Threshold

Lineart originals (also known as bitmaps) are made up of only two types of pixels: black and white. When lineart is scanned, the RGB information from the image is converted to bitmap form, removing all color information.

Polaris' lineart threshold control allows you to adjust the point at which pixels in the image are converted to black or white.

If you are scanning lineart, set the threshold as follows:

1. Prescan your lineart original.
2. Select **Lineart** from the **Scan Data Format** pulldown menu.
3. Select **Lineart** from the **Setup** menu. The Lineart window appears (see Figure 4–11).

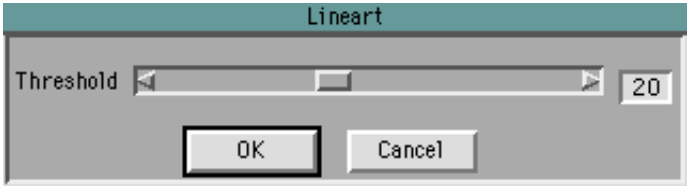


Figure 4–11
Lineart window

4. Drag the slider and observe the image until the results are to your liking.

> Note: The units in the box to the right of the slider are arbitrary numbers for reference only. When the Lineart window is opened, the default value for the threshold is 20. To move the slider 1 unit at a time, click on an end arrow; to move it 10 units at a time, click on the background of the slider bar.

5. Click on **OK** to accept or **Cancel** to ignore the new threshold value.

Setting the Output Size

Polaris automatically calculates the output size of your final scanned image based on several parameters that you set.

To set the output size, proceed as follows:

1. Select **Scaling** from the **Preferences** menu and drag your cursor to the right to select a scaling option:
   - **Scan to Width:** If you know the width you want your final image to be, Polaris can determine the output height and input scan resolution based on the width of the crop, the values entered in the Linescreen/Quality Factor window, and the **Scale %** value.
   - **Scan to Height:** If you know the height you want your final image to be, Polaris can determine the output width and input scan resolution based on the height of the crop, the values entered in the Linescreen/Quality Factor window, and the **Scale %** value.
   - **Scan to Both:** If you know the width and height you want your final image to be, Polaris can determine the input scan resolution based on the width and height of the crop, and the **Scale %** value. In this mode, when you draw a new crop box or click on a corner of the existing crop box, the marquee snaps automatically to the aspect ratio (width/height) required for the output file.
   - **Scan to Scale:** This mode allows you to control the width and height of the crop box with the **Marquee** and to enter a resolution (dpi) and scale percentage manually. This is the default scaling mode.

2. Enter a value in the Control Bar based on the scaling method you selected in step 1:

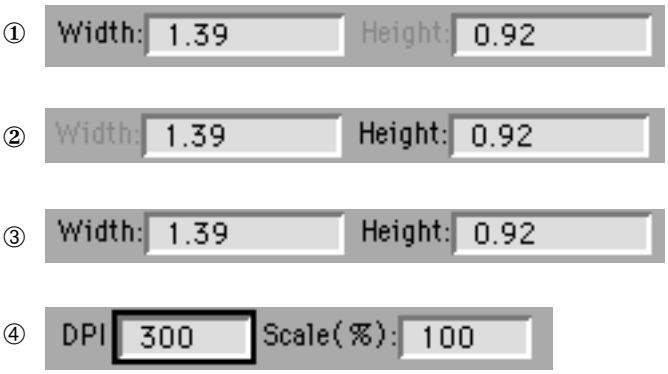


Figure 4–12
Entering a size value in the Control Bar.
①–Scan to Width.
②–Scan to Height.
③–Scan to Both.
④–Scan to Scale.

After you enter the respective parameter(s), Polaris calculates the remaining values for the final scanned image.

Saving Settings

Polaris provides several tools for storing often used image correction settings. To use any of these features, make sure you have made all the desired corrections in your prescanned image first.

Saving Image Correction Settings

You may store image correction settings in a file for later use on similar images. To do so, follow these steps:

1. Make your desired image corrections.
2. In the Image Correction window click on the **Save** button.
3. In the standard file dialog that appears, enter a descriptive file name for your settings.
4. Select the **LUTS** folder within the **Polaris** folder as the destination for your file.
5. Click on **Save** (Macintosh) or **OK** (Windows) to create the file.

Recalling a Saved Settings File

If you wish to recall a previously saved image correction file, follow these steps:

1. In the Image Correction window, click on the **Load** button.
2. In the standard file dialog that appears, locate the file you want in the **LUTS** folder within the **Polaris** folder.
3. Click on **Open** (Macintosh) or **OK** (Windows) to use the settings from the file.

Working with Profiles

In addition to being able to store image correction settings individually, Polaris also provides a method of saving *all* of your Polaris parameters in a profile. This feature is useful in customizing parameters for work with specific images, output conditions, and/or a particular customer's jobs. The saved profile can then be loaded when needed.

Polaris profiles record the following parameters:

- Data type
- Art type
- Look-Up Table
- Line ruling (lpi)
- Unsharp masking style
- Focus style
- Scaling preferences
- General preferences
- Scanner preferences
- Lineart threshold
- Cast correction settings
- Output file type
- Window placement
- ICC Profile Settings (Mac only) (ICC enabled)

Creating a Profile

Before saving a profile of all your settings, make sure you have checked and/or defined all the desired parameters.

> Note: All settings are lost when you quit Polaris unless you save them in a profile.

To create a custom profile, proceed as follows:

1. Select **Save Profile...** from the **Preferences** menu.
2. In the standard file dialog that appears, select a folder within the **Polaris** folder, or create a new one, and name the file.
3. Click on **Save** (Macintosh) or **OK** (Windows) to create the profile.

Loading a Profile

To use a previously saved custom profile, proceed as follows:

1. Select **Load Profile...** from the **Preferences** menu.
2. In the standard file dialog that appears, open the folder where your profiles are stored and select the desired file.
3. Click on **Open** (Macintosh) or **OK** (Windows) to load the profile.

Saving a Profile as Default

Similar to creating a profile, Polaris software parameters can be set to match your most common configuration and saved as the default setting. When you use this feature, each time Polaris is launched, those settings are loaded automatically.

Select **Save as Default...** from the **Preferences** menu to save the parameters currently in effect as the default settings.

A previously saved profile can also be saved as the default by loading it and then selecting **Save as Default...**

5

Image Sharpness and Focus

When scanning high-quality originals, the default settings in Polaris generally produce sharp, focused images. On occasion, however, you may need to compensate for poorer quality originals (for example, printed images or grainy films) or adjust your image's sharpness for other reasons. This chapter discusses the tools Polaris provides to adjust the sharpness and focus of your scanned images. It covers the following topics:

- Unsharp Masking (USM)
- Focus options (drum scanners only)
- Setting the aperture (drum scanners only)

Before adjusting the sharpness and focus of your images, you should make all necessary color corrections. For more information, see Chapter 4.

Unsharp Masking

Polaris uses a digital Unsharp Masking (USM) process that is based in your host computer. The purpose of this unsharp masking is to adjust the contrast of an image (i.e., the difference between light and dark areas) to achieve a desired effect. By exaggerating the difference between light and dark, USM increases contrast and gives the impression of greater sharpness. By reducing the difference, the image can be softened or even blurred.

Polaris provides eight preset USM modes (see Figure 5–1) to simplify the application of sharpening to your image. These modes are selected from the **USM Style** pulldown menu which appears when you click on the **USM** button ( ) in the Command Bar.

Figure 5–1
USM Style menu

The default mode for Unsharp Masking is **Off**. To apply Unsharp Masking to the entire scanned image, select one of the eight modes in the **USM Style** menu. The modes range from blurriest (**Blur More**) to sharpest (**High Res Sharpen Edges**). The results of Unsharp Masking can only be seen in the final scanned image. They cannot be viewed in the Pre-scan or Detail windows.

The three **Low Res** settings should be applied to images scanned with an input resolution that is less than 400 dpi.

The **High Res** settings are generally used with images scanned at input resolutions greater than 400 dpi.

Customizing USM Settings

Polaris also offers an option to customize the application of Unsharp Masking in cases where specific tonal regions of your image may need sharpening to different degrees. To access this feature, select **Custom...** from the **USM Style** pulldown menu or by selecting **USM styles** from the **Setup** menu. This brings up the Define USM Style dialog window (see Figure 5–2).

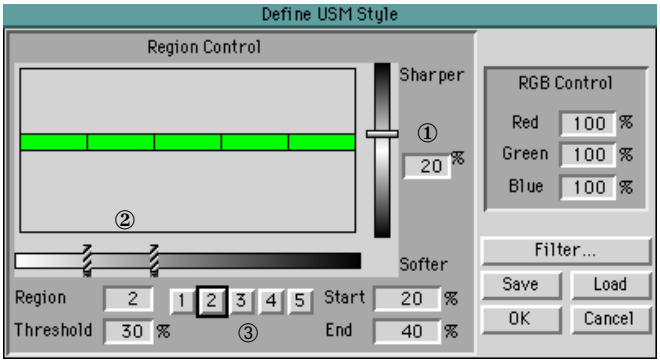


Figure 5–2
Define USM Style dialog window.
①–Sharpen slider.
②–Region sliders.
③–Region selection buttons.

This section describes the elements of the Define USM Style window and presents a typical procedure for creating a custom USM file.

> Note: When changing a default USM style, the changes are not reflected in the USM menu. The changes do appear in the Filter window within the USM Style window. *It is not recommended that you change these values.*

Region Selection Buttons

Generally, the same degree of sharpening is applied to all five tonal regions. Polaris allows you to apply different amounts of unsharp masking to different tonal regions. The regions in the Define USM Style window represent the values in your image from 0 to 100% within the available density range. The density range is set by cropping the image and selecting the highlight and shadow points (see section *Adjusting Tonal Range* in Chapter 4). By default, each of the five regions covers 20% of the density range.

When customizing Unsharp Masking in each tonal region individually, Polaris also allows you to define the size of each region. To do so, proceed as follows:

1. In the Define USM Style window click on the desired region selection button.
2. Enter a new **Start** and **End** value for the region, or move the region slider until you set the size you want.
3. Repeat steps 1 and 2 for all the regions you want to define.

Sharpen Slider

The Sharpen slider controls the amount of sharpening applied to the selected region. A different amount may be applied to each region.

Threshold Value

The **Threshold %** field defines the transition point between pixels when sharpening is applied. The lower the threshold value, the more parts of the image are sharpened. This feature is useful because it allows you to set up USM to ignore areas with subtle tonal changes where sharpening would be undesirable.

> Note: Generally, as input scan resolution increases, the threshold value should be lowered. To avoid emphasizing media defects such as film grain, raise the threshold value. If your scan appears grainy, for example, raise the threshold 5–10%.

RGB Controls

Polaris' USM feature samples data from the Red, Green, and Blue channels to calculate the degree of sharpening. By default, Red contributes 30% of the data, Green 60%, and Blue 10%.

The **RGB Control** fields in the Define USM Style window can be used to change the amount each RGB channel contributes to the sharpening calculation.

For most scanning applications, the default **RGB Control** settings are adequate. However, you can adjust the numbers manually to isolate sharpening to a particular color region (for example, to heighten the sharpening of a red object in the foreground while softening a green background).

Filter

Clicking on the **Filter** button brings up a dialog window (see Figure 5–3) where you can define the weight and radius of pixels surrounding the current pixel to be sharpened. The number in the center of the window represents the pixel depth and is automatically calculated from the numbers around it.

> Note: Most users do not need to modify the Filter settings.

Figure 5–3
Filter window

Polaris supplies six predefined files that can be loaded in the Filter window using the **Load** button:

- **Thick:** This filter applies sharpening to a large radius around the selected pixel and is best used at resolutions greater than 400 dpi.
- **Thin:** This file applies sharpening to a small radius around the selected pixel and is appropriate for resolutions below 400 dpi.

Defining Custom USM Settings

To customize your Unsharp Masking settings, proceed as follows:

1. Click on the **USM** button in the Command Bar and select **Custom...**, or select **USM Styles** from the **Setup** menu.
2. In the Define USM Style window that appears click on a region selection button to be adjusted.
3. Move the region sliders as needed, or enter new **Start** and **End** values, to define the size of the region.
4. Repeat steps 2 and 3 for each region to be adjusted.
5. Set a sharpening or blurring amount for each region.

   For all regions: Hold down the **Shift** key and drag the sharpen slider up or down until the desired value is reached (positive numbers sharpen the image, negative numbers blur it).

   For individual regions: Select a region using the region selection buttons. Drag the Sharpen slider up or down until the desired value is reached, or enter a sharpen value (positive numbers sharpen the image, negative numbers blur it).

   The green bars in the chart change to reflect your settings.

6. Repeat step 5 for each region to be adjusted.

> Note: If each tonal region has a different sharpening amount applied, the degree of sharpening can be adjusted in all of them at the same time while maintaining their relative positions. To do so, hold down the Control key while moving the Sharpen slider.

7. Set a threshold value.

   For all regions: Enter a new value (0–100%) in the **Threshold** field and

   - hold down the **Option** key and press **Return** (Macintosh), or
   - hold down the **Alt** key and press **Enter** (Windows).

   For individual regions: Click on a region selection button and enter a new value (0–100%) in the **Threshold** field.

8. (Optional) Make any desired changes to the RGB conversion values (**RGB Control**).

9. (Optional) Click on the **Filter** button to customize the Filter window.

> Note: Filter values should be changed with extreme caution, as any changes may adversely affect your image. The default parameters are generally satisfactory.

   - **Option A:** Make any desired changes in the Filter window manually.
   - **Option B:** Load a predefined or previously saved Filter file by clicking on the **Load** button. Locate the **USM** folder in the **Polaris** folder and select the desired file in the standard file dialog that appears.

10. Click **OK** to accept the new **Filter** settings.
11. In the Define USM Style window, click on **OK** to accept all the USM settings.

The new USM settings apply to all images scanned or queued after the above procedure until either USM is turned off in the **USM Style** menu or the USM style is customized again.

> Note: Quitting and relaunching Polaris also turns off USM and any custom settings are lost.

Saving and Recalling Custom USM Settings

Custom Unsharp Masking settings can be saved to a file for later use on similar images or jobs.

To save custom USM settings to a file, click on the **Save** button in the Define USM Style window. In the standard file dialog that appears, name the file and save it to the **USM** folder within the **Polaris** folder.

To recall custom USM settings in a previously saved file, click on the **Load** button in the Define USM Style window. In the standard file dialog that appears, select the desired file in the **USM** folder within the **Polaris** folder.

Focus Options (Drum Scanners Only)

Polaris provides a set of focus tools for drum scanners to achieve optimal focus settings automatically or manually. In addition, defocus settings can be used to remove the signs of material defects in images, such as matte surfaces or screen lines.

Auto Focus

The preferred method for focusing your images in Polaris is Auto Focus. In this mode, Polaris automatically calculates the optimal focus position for your image. For most applications, this method is quite satisfactory.

To use the Auto Focus feature, proceed as follows:

1. Click on the **Focus** button () in the Command Bar.
2. In the **Auto Focus** pulldown menu that appears, select **Autofocus On**.

The **Focus** button on the Command Bar now appears pushed in to indicate that Auto Focus is active.

Defocus

The Defocus options in the **Auto Focus** menu (see Figure 5–4) cause your scanner to scan out of focus to varying degrees, depending on which Defocus mode you select.

Defocusing is useful in minimizing the moiré effect caused by scanning halftones (for example, printed images). Moiré is reduced by blurring the dots in the printed image, giving them the appearance of continuous tones. Defocusing is also useful for softening images on photographic film where high-resolution scans can overemphasize film defects (i.e., film grain, dust, and scratches).

Figure 5–4
Auto Focus menu

Defocus options can also be used in conjunction with Unsharp Masking (USM) at a higher **Threshold** level (see the section *Unsharp Masking* earlier in this chapter) to produce sharp images while at the same time eliminating image artifacts.

To select a Defocus mode, click on the **Focus** button in the Command Bar and make a selection in the pulldown menu that appears:

- **Defocus Light:** This option produces a slight blur in the image and is best for scanning halftones with a line ruling above 150 lpi.
- **Defocus Medium:** This option blurs the image somewhat more than **Defocus Light** and is suitable for line rulings between 133 and 150 lpi.
- **Defocus Heavy:** This option blurs the image considerably and works best for line rulings below 100 lpi.
- **Custom:** Use this option if none of the above Defocus settings gives you the desired results (see the section *Setting Custom Focus* below).

When scanning printed images, check the aperture setting (displayed in microns in the Status Bar) Polaris is using by default. The aperture is automatically calculated from the DPI value to achieve the optimal setting for *normal* scans. For this reason, the DPI value should be set before selecting the **Custom Defocus** option. For more information on aperture, see the section *Aperture* later in this chapter.

Setting Custom Focus

To set a custom focus value, follow these steps:

1. Click on the **Focus** button () in the Command Bar and select **Custom...** from the **Auto Focus** pulldown menu that appears.
2. In the Focus window that appears, enter a **Focus Offset** number.

   The **Focus Offset** value represents the number of focus steps by which to deviate from the scanner's Auto Focus position. The scanner's focus motor can travel anywhere from 0 to 180 steps, but generally, the **Focus Offset** value should be between 5 and 20.
3. Set an aperture value by clicking on the **Auto** button and selecting the desired value in the pulldown menu that appears.

   > Note: The aperture value set in this dialog window is used for focusing purposes only.

4. (Optional) Save the settings.

   Click the **Save** button. A standard file dialog appears. Name the settings and save them to the **Polaris** folder.
5. Click on **OK** to accept new focus settings.

Use the **Load** button in the Focus window to open and apply a previously saved focus file.

Interactive Focus

Interactive Focus allows you to focus your drum scanner manually through Polaris. This feature is best used when Polaris' automatic focus is not precise enough, or when a special focus setting is required.

Using Interactive Focus

Interactive Focus works with a few lines of scanned data in the upper lefthand corner of a cropped area. During the process, a small portion of the cropped image is displayed on screen. Each time the lens focus position is changed, the same scan lines are displayed just below the previous area. This lets you compare the effects of different focus settings.

To use the Interactive Focus feature, proceed as follows:

1. Prescan the image.
2. Crop an area of the prescan so that the upper lefthand corner of the cropped area contains enough detail to evaluate the focus settings accurately (generally, an area of high contrast, see Figure 5–5).

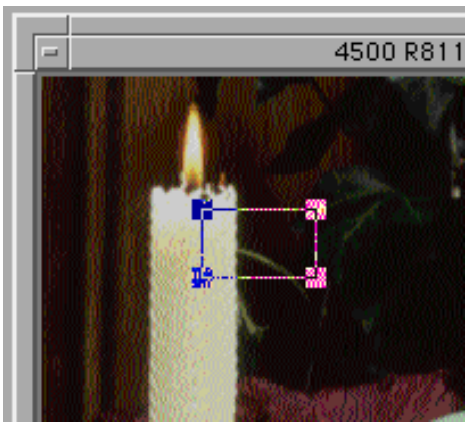


Figure 5–5
Cropping an area in Interactive Focus

3. Select **Interactive Focus** from the **Utilities** menu. The Interactive Focus window appears:

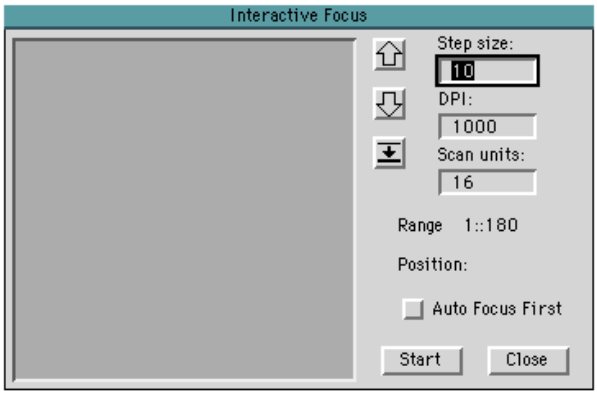


Figure 5–6
Interactive Focus window

4. Click on the **Auto Focus First** button if you want the scanner to use the Auto Focus setting as a starting point.

> Note: Using your scanner's Auto Focus position as a starting point is strongly recommended.

5. Enter a **Step size**.

   The step size represents the increment by which the focus position is changed each time, ranging from 0 (no movement) to 25. For fine details, enter a **Step size** of 1.

6. Enter a **DPI** value.

   This number represents the resolution used by the scanner to sample the cropped area. A value of 1000 is a good starting point for most images. For precise detail sampling, use 4000.

7. Enter a value for **Scan units**.

   The **Scan units** field represents the number of lines to be sampled (for example, a value of 1 equals 1/1000 of an inch at 1000 dpi). Be sure to use a sufficiently high value to get a sample large enough to evaluate.

8. Click on **Start**.

   The scanner first performs an Auto Focus (if **Auto Focus First** is selected), then scans the upper lefthand corner of the cropped area. The sampled scan lines appear in the Interactive Focus window (see Figure 5-7).

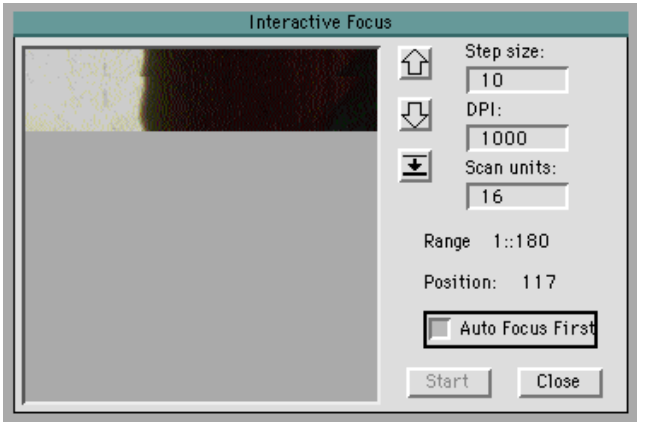


Figure 5–7
Sampled scan lines in the Interactive Focus window

In the above example, Polaris has performed a 1000 dpi scan at focus position 117 using a 10-unit step size.

9. Click on the up or down arrow button to adjust the focus position.

   The sample area is scanned at the new position and displayed in the window.

   > Note: To repeat the last scan line, click on the ( ) button.

10. Repeat step 9 until you are satisfied with the focus setting.

    Each sample scan is displayed below the previous one. Any of the settings can be adjusted between scan samples, but as the **DPI** value changes, the sample in the window changes in size (see Figure 5–8 for the relative sizes of scan samples).

Figure 5–8
Sample sizes at different resolutions.
①–2000 dpi.
②–1000 dpi.
③–500 dpi.

    When the window is full, the data wraps around and redisplays at the top of the window.

When you are satisfied with the focus position, click on **Close** in the Interactive Focus window.

This Focus position is used for all scans made after the above procedure until **Auto Focus** is selected in the **Focus** menu or another interactive focus procedure is performed.

Setting the Aperture (Drum Scanners Only)

The aperture used by your drum scanner's optics is normally chosen automatically and is optimized for the pixel size (as determined by the scanning resolution) set for each scan. To adjust your scanner's aperture manually, open the **Aperture** menu by clicking on the **Aperture** button ( ) in the Control Bar. The **Aperture** menu is shown in Figure 5–9.

Figure 5–9
Aperture menu

The aperture size is measured in microns and displayed in Polaris' Status Bar. When adjusting the aperture manually in the **Aperture** menu, keep in mind the following points:

- The lower the aperture number, the smaller the aperture.
- For lower resolution scans use larger aperture settings and vice versa.
- The aperture currently in use is selected in the menu (button depressed).
- The aperture Polaris has selected as optimal for the current scan resolution is indicated by an asterisk (*).

The automatic aperture setting is recommended for most scans. Whenever a manual aperture setting is selected, the **Aperture** button in the Status Bar appears depressed.

Using Manual Aperture Settings

Manual aperture settings are useful in the following cases:

- **Descreening:** Opening the aperture further than normal can help to soften (blur) an image. However, opening it more than 1–2 steps from the optimal number can lead to excessive blurring.
- **Improved sharpening:** Reducing the aperture by 1 step from the optimal number can help sharpen an image. This is particularly helpful when it is difficult to avoid oversharpening with unsharp masking.

> Note: Reducing the aperture setting increases scanning time.

6

Scanning to a File

Once scanned images have been adjusted and color corrected with Polaris, they are ready to be saved to disk for later processing or output. This chapter discusses how to scan your final image to a file in the format you need. It covers such topics as:

- Determining the output file format
- Scanning a single image to a file
- Using Polaris' Queue Manager

For details on image correction techniques, see Chapter 4. Chapter 5 deals with sharpening your images and setting focus positions.

Setting the Output File Format

Final scans in Polaris can be output in the following file formats:

- TIFF (Tagged Image File Format)
- EPS (Encapsulated PostScript)

To define the output file format for your final scan, proceed as follows:

1. Select **Output File** from the **Setup** menu.
2. In the dialog window that appears (see Figure 6–1), select a file format for each of the types of scans you are preparing.

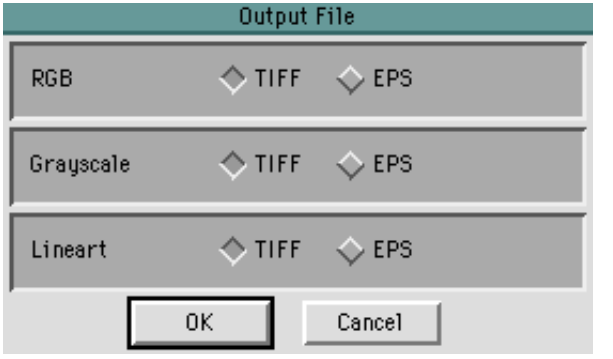


Figure 6–1
Output File dialog window

3. Click on **OK** to accept your settings.

Note: EPS files are saved in ASCII format without a preview image.

Scanning a Single Image to a File

Once all your image correction work is completed, all other parameters are set and you have selected the output file format (see previous section), the image is ready to be scanned to a file.

To scan an image to a file, follow this procedure:

1. Click on the **Scan** button in the Command Bar.
2. In the standard file dialog that appears, select the destination drive and folder (or create a new one) for your scan file.
3. Enter a name for the image file.
4. Click on **Save** (Macintosh) or **OK** (Windows) to accept the name and destination.

   To abort the final scanning process, select **Cancel** or press **Escape**.

The scanner scans the image to disk.

Batch Scanning

Polaris' batch scanning function is an extremely powerful tool for scanner operators. Multiple images can be queued in the Queue Manager and scanned to disk with one command. Each image is scanned to a file in the order listed in the queue. While the images are being scanned, new images can be corrected and added to the queue.

Polaris' Queue Manager also offers the following features, which are accessible before the batch is launched:

- Thumbnails of the images in the queue can be reviewed.
- The order of the images in the queue can be changed.
- Each image can be saved to a different destination.
- The list of parameters associated with each image can be reviewed.
- The entire queue can be saved to a queue file for later scanning.

The sections that follow explain how to use the Queue Manager.

Overview of the Queue Manager

The Queue Manager is opened by clicking on the **Batch...** button in the Command Bar (see Figure 6–2).

Figure 6–2
Queue Manager

The above example shows thumbnails of four images waiting in the queue.

Queue Manager Buttons

The Queue Manager buttons are located at the top of the window. They perform the following functions:

The **Load** button opens a previously saved batch file.

The **Save** button saves the images currently displayed in the Queue Manager to a batch file.

The **Cut** button removes the highlighted image from the queue and stores it in the Clipboard.

The **Paste** button is visible only when an image has been cut from the queue with the **Cut** tool. Clicking on this button pastes the cut image in front of the currently selected thumbnail.

The **Info** button appears only when a thumbnail is selected. Clicking on this button brings up detailed information about the selected image.

The **Cut All** button is used to delete all the images in the queue.

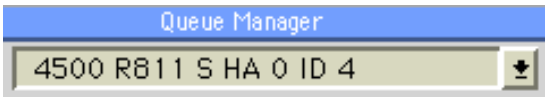
The **Launch** button starts batch scanning of the images in the queue in the order of their appearance. After the button is clicked, it changes to **Cancel**.

> Note: To select a thumbnail in the Queue Manager, click once on the desired image.

Queue Manager Status/Information Displays

The top of the Queue Manager window displays the name, firmware level, and SCSI ID of the connected scanner (see Figure 6–3).

Figure 6–3
Scanner information in the Queue Manager



The status line at the bottom of the Queue Manager window displays the image size, data format, resolution, scaling factor, and image type of the currently selected thumbnail (see Figure 6–4).

Figure 6–4
Status line (thumbnail selected)

If no thumbnail is selected, the status line displays the number of files in the queue and their combined required disk space (see Figure 6–5).

Figure 6–5
Status line (no thumbnail selected)

> Note: Total file size indicates the total disk space required for all the images in the queue. If the image files are being stored on different disks, this number does not accurately reflect the amount of space needed on any one disk.

You can get information about a specific image file any time in the Queue Manager by selecting the desired thumbnail and clicking on the **Info** button. The following information is displayed:

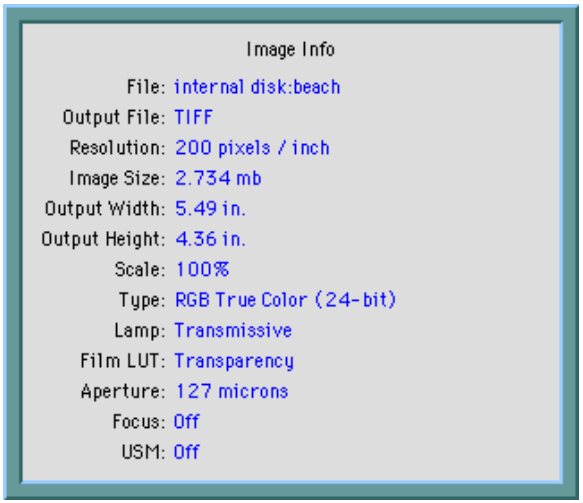


Figure 6–6
Image information in the Queue Manager

Placing Images in the Queue Manager

To place an image in the queue, follow these steps:

1. After applying any desired image corrections and crops, click on the **Queue...** button in the Command Bar.
2. Enter a name and select the destination folder and disk for the image.
3. Click on **OK**.

A thumbnail of the image and the name you entered now appear in the next available location of the Queue Manager.

> Note: Images can be placed in the Queue Manager even while the queue is being scanned to disk.

Automatic Naming of Images

When placing an image in the queue, Polaris automatically assigns it a name (step 3 in the above procedure) using the following naming convention:

S0400001

where

S04 = SCSI ID number
00001 = sequential number of images added to the Queue Manager since Polaris was launched.

> Note to Windows users: Windows places a three-letter extension after the automatic file name, which identifies the output file format you select (e.g. .TIF).

Viewing Images in the Queue Manager

The Queue Manager can hold an unlimited number of images. However, only five images are displayed at a time. If the queue contains more than five files, use the scroll bar at the bottom of the window to display the desired image.

Operations in the Queue Manager

The Queue Manager is designed to allow images to be added to the queue while an image is being scanned to file.

> Note: Images can only be added to the batch once it has been launched. No other functions are available.

Moving an Image within the Queue

To change an image's position in the queue, proceed as follows:

1. Click on the desired thumbnail, highlighting the image name.
2. Click on the **Cut** button ( ).
3. Select the thumbnail in front of which you want to place the image you deleted in step 2.
4. Click on the **Paste** ( ) button.

Scanning the Queue

To begin scanning the images in the queue, click on the **Launch** button. The scanner scans the images in the order of their appearance in the Queue Manager.

Changing an Image's Name or Destination

Files in the Queue Manager can be renamed and/or redirected as follows:

1. Double-click on the file name below the thumbnail.
2. In the standard file dialog that appears, enter a new name and/or destination for the file.
3. Click on **OK**.

Deleting an Image from the Queue

To delete an image from the queue, follow these steps:

1. Click on the desired thumbnail, highlighting the image name.
2. Click on the **Cut** button ( ).

The thumbnail file is deleted from the queue. However, the last image cut is still accessible from the Clipboard.

Interrupting Batch Scanning

To interrupt batch scanning, proceed as follows:

1. Click on the **Cancel** button in the upper righthand corner of the Queue Manager.

   The scanner stops and the Queue Manager returns to the pre-launch state. The image file that was being scanned is saved and is now the first image in the queue. At this point images can be reordered, cut, renamed or added.
2. Continue scanning when you are ready by clicking on the **Launch** button in the upper righthand corner of the Queue Manager.

> Note: Interrupted batches can be saved to a file for later continuation. To do so, make sure you save them in a batch file *before* starting to scan the queue (see the next section).

Saving a Batch File

The images in a particular queue can be saved in a batch file to be scanned to disk at a later time.

> Note: If you are placing many scans in the queue, it is advisable to save the batch file often (approximately every third image).

To save a batch file, proceed as follows:

1. After placing all the images you want in the queue, click on the **Save** button ( ).
2. In the standard file dialog that appears, select the destination folder for the batch file. Polaris provides a folder named **BCH** within the **Polaris** folder for your batch files.
3. Enter a file name.
4. Click **Save** (Macintosh) or **OK** (Windows) to save the batch file.

Loading a Saved Batch File

To load a previously saved batch file, proceed as follows:

1. Click on the **Batch...** button.
2. Click on the **Load** button ( ) in the Queue Manager.
3. In the standard dialog that appears, select the disk and folder where the batch file is stored.
4. Select the desired batch file.
5. Click **OK** to load the batch file.

7

ICC Profiles

The ICC (International Color Consortium) has defined an industry accepted format for storing and communicating a device's profile. The device can be a scanner, monitor, printer or press. Color management systems can now use those profiles to achieve an accurate color match from original to monitor to printed output.

An ICC scanner profile characterizes how the scanner "sees" colors. A scanner profile is created with a third party software package. These packages have an industry standard IT8 color patch target and set of color data for that target. The target is scanned and the software compares the scanned image data to the target data file. The software then creates a scanner profile. This profile is saved in an ICC format.

This ICC scanner profile can then be attached to any image you scan and is then available for use by any color management software.

An ICC monitor profile is created with a Monitor calibration software package. This comes with a color measurement device that attaches to the monitor screen. The software cycles through the RGB color ranges and then creates an ICC profile for that monitor.

An ICC printer (or press) profile is created with an output software package. The software provides a color patch file which is printed. The printed output is then measured with a colorimeter and the actual color values are compared to the color patch file. An ICC output profile is then created by the software for that output device.

> Note: It is very important to realize that output profiles depend on the paper used. A different profile may need to be created for several paper types. In general the output profiles have a greater impact on the image appearance than scanner profiles do.

Polaris and ICC Profiles

Polaris (Mac version) uses the ColorSync® Color Management System and has the capability to work with ICC scanner, monitor and output device profiles. You can embed or apply these profiles to the scanned images. The effect on the image of these profiles is simulated and can be seen on the monitor and data values read with the probe tool.

The actual profiles must be located in the **ColorSync® Profiles** folder. This is located in the **Preferences Folder**, which is in the **Systems Folder**.

Using Polaris and ICC files (Mac only)

The ICC profile capability is accessed by clicking on the ColorSync® button on the command bar.

The ICC profile window should appear (see Figure 7-1).

Figure 7-1
ICC Profile Window

Embed/Apply/Off

Embed

Embed attaches the source (scanner) profile to the image file. The scanner image data is not modified in any way. This allows the option in the future of using or not using the attached profile.

The embed option only activates source (scanner) and monitor profiles. The image data is processed through the source (scanner) profile and the monitor profile before it is put on the screen. Any data shown in the color meter is after the application of those profiles

Apply

Apply activates Source (scanner), monitor and output profiles; and the Quality and Matching Styles pulldown menus.

The Apply option will apply the selected source (scanner) and output profiles to the scanned image data during scanning. The image data is changed based on the profiles. No profile information is stored with the final scan.

The image on the monitor will have the source profile, and the monitor profile applied to the image data is the “Output Simulation” is not selected. If output simulation is selected then the source profile, output profile and then monitor profile will be applied to the image data.

Off

This turns off the ICC profile capability in Polaris.

Profiles

Source Profiles

This pull down will list all the source profiles Polaris finds in the ColorSync® Profile Folder (under System... Preferences... ColorSync® Profiles).

Monitor Profiles

This pull down will list all the Monitor profiles Polaris finds in the ColorSync® Profile Folder (under System... Preferences... ColorSync® Profiles).

Output Profiles

This pull down will list all the Output profiles Polaris finds in the ColorSync® Profile Folder (under System... Preferences... ColorSync® Profiles).

Styles

Quality

The source profile is applied to the image data to transform it into a device independent (CIE) color space. The output profile is then applied to transform the image data to the output devices color space (CMYK or RGB). These transformations can be done to different levels of accuracy and detail. They are **Draft**, **Normal** and **Best**. The tradeoffs are quality of the conversions against the computing time needed.

When profiles are created, a default level is chosen and encoded into the profile. Choosing **Profile Default** with Polaris uses this.

Matching

The range of colors a device can "see" or output is called the color gamut of the device. In many cases the scanned image will have colors outside the gamut (range) of the output device. There are several ways to handle this. Polaris (mac) with the ICC capability has the following choices:

Profile Default:

When a device profile is created, a profile matching approach is selected and encoded into the profile. Selecting this option in Polaris will use the "default" approach encoded into the selected profiles.

Perceptual:

All the colors of a given gamut are scaled to fit within another gamut. The relationship of the colors in the image is maintained so the final output would look similar to the original, however, the colors could be different.

Colorimetric:

Colors that are within output and source gamuts are not changed, so overall good color match is achieved. Colors outside the gamuts are converted (clipped) to colors at the edge of the gamut. If that happens, it is possible to lose detail in saturated colors, highlights or shadows.

Absolute Colorimetric

Colors are referenced to a perfectly (hence absolute) reflecting diffuser. If the Dmin of the output media is different than the input media then clipping will occur and there will be differences seen in the amount of highlight areas.

Relative Colorimetric

Colors are now referenced to the paper (or other substrate). The output image may now be lighter or darker than the input, but the blank (highlight) areas will coincide.

Saturation:

In many cases color matching is not as important as maintaining color saturation (e.g., computer generated graphics, charts). With this approach the relative saturation of colors is maintained from gamut to gamut.

Show All

If this is off, each profile pulldown will show only the profiles of the type that Polaris finds in the ColorSync® profile folder.

If "Show All" is selected, then each profile pull down will show all the profiles found in the ColorSync® folder.

Output Simulation

When this is selected, the effect of applying the output profile is simulated on the monitor and shown in the color probe data.

Color Correction with ICC Profiles

If an output profile for a RGB device is selected, then the color meter will show both raw and corrected RGB data. The color correction tools will work as they do when the ICC capability is not selected.

If an output profile for a CMYK device is selected, then the color meter will only show the final CMYK values. If does not show the raw data because that is RGB data. The color correction tools can still be used, however, they are RGB tools and affect the original RGB scan/data. This is then run through the ColorSync® engine and converted to CMYK. The color correction tools are not CMYK tools. This can be confusing.

For example, the Neutral red adjustment tool is a slider that can be moved towards red (to add red) or towards cyan. Moving it towards cyan does not add cyan but rather removes red. This will show not as an increase in the cyan values of the probe but rather a decrease in the magenta and yellow values.

Appendix A: Polaris Utilities

Polaris provides two utilities that may occasionally be used to enhance your scanning work. This appendix describes those utilities.

Calibrating Your Monitor

To improve the fidelity of your monitor to your printed proofs, Polaris contains a utility to adjust your monitor's screen gamma. Changing monitor gamma affects only the display of RGB TIFF images. The gamma setting is written into the header information of the TIFF file, so your image manipulation application (e.g., Adobe Photoshop) can make the necessary adjustments.

To set your monitor's screen gamma, proceed as follows:

1. Launch Polaris.
2. Select **Calibrate** from the **Utilities** menu and drag your cursor to the right to select **Monitor...**
3. In the dialog window that appears (see Figure A–1), enter the desired gamma value.

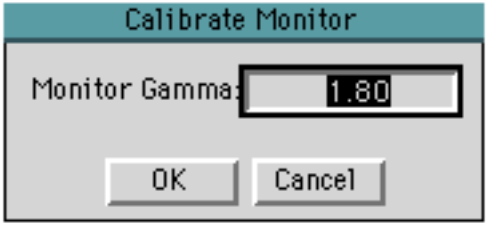


Figure A–1 Calibrate Monitor window

Note: A screen gamma of 1.80 is generally a satisfactory setting.

4. Click **OK** to accept the new setting.

Downloader

Occasionally Howtek releases a new version of scanner firmware (called FLASH) to improve the performance of your scanner or to add new functionality.

The Downloader feature in Polaris makes those firmware upgrades quick and easy.

If you receive new scanner firmware from your Howtek dealer, proceed as follows to install it:

> **CAUTION: Use only the FLASH software for your specific scanner model. The scanner's name appears on the FLASH diskette.**

1. Make sure your scanner is connected to the host computer and power up the system.
2. Insert the diskette containing the new FLASH software into the floppy drive of your computer.
3. Launch Polaris.
4. Close the Prescan window and select **Downloader...** from the **Utilities** menu.

> Note: If the Prescan or a Detail window is open, the Downloader... option is grayed out.

5. In the dialog window that appears (see Figure A–2), verify your connected scanner's number and SCSI ID in the **Select Scanner** field.

Figure A–2
DownLoad window

6. Read the license agreement in the window.
7. If you accept the terms it outlines, click on **Accept**; if not, click on **Cancel** to end the download process.

   When you click on **Accept**, a standard file dialog appears.
8. Select the floppy drive containing the FLASH diskette.
9. Select the FLASH software file to download and click on **Open** (Macintosh) or **OK** (Windows).
10. Click on the **Download** button.

    A status bar indicates the progress of the download.

The FLASH download is complete when your scanner's control panel indicates **READY TO SCAN** and the DownLoad window disappears. The complete download process takes five to ten minutes.

B

Appendix B: Tips and Tricks

This appendix lists helpful hints and shortcuts to assist you in your work with Polaris.

- If you accidentally close a Prescan or Detail window, you can reopen it by selecting the window's title in the **Window** menu. If the Prescan window is not listed in the **Window** menu, select **Acquire...** from the **File** menu.
- Any Polaris window, including the main window, can be resized by dragging its corners to the desired position or by clicking on the resize box in the upper righthand corner of the frame.
- Each time the Polaris application is launched, the windows and images appear just as they were when the application was last closed. All image correction settings, however, are reset to their defaults.
- To stop a scan or prescan in progress, press **Escape**. This feature is helpful in prescanning only the portion of the drum or platen surface you need.
- Polaris allows you to determine how often your 2500 scanner calibrates. Select **Scanner Preferences** from the **Preferences** menu. In the Calibrate window that appears (see Figure B–1), select the desired option.

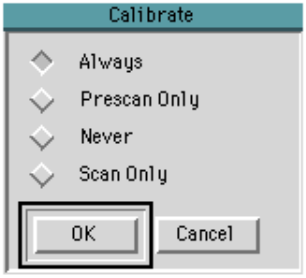


Figure B–1
Calibrate window

- Final scan files can be opened automatically in Adobe Photoshop by double-clicking on their icons.

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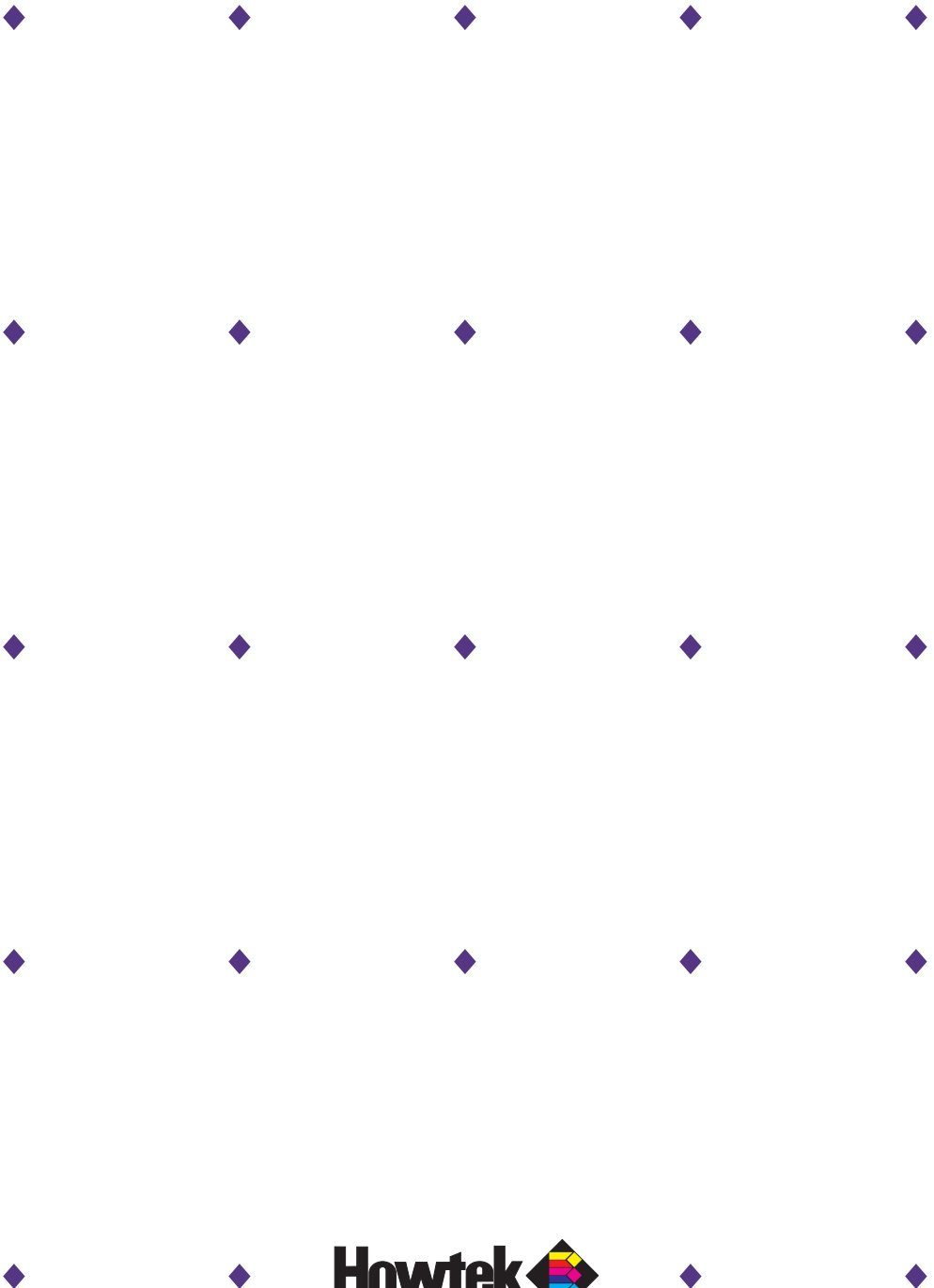

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