WIDEcapture
For
Photoshop

A Wide Format Scanning Plug-in for Adobe Photoshop on
Apple Macintosh & Windows 95,98,NT

Wide Format Scanning Control

Version 1.0

USER'S GUIDE

CONTEX FULL SCALE SCANNING
SOFTWARE

II

PREFACE

In recent years, digital image technology has made wide format scanners an affordable solution for many graphics businesses. In fact, wide format scanners as input devices offer so many advantages that they are hard to overlook. Usage of Adobe Photoshop on Apple Macintosh or Windows platforms is widespread among graphics professionals and this software is designed to supply convenient, direct and problem-free access to Wide Format Scanning input while working with Adobe Photoshop.

This software is designed as a PLUG-IN, meaning it can just be inserted into Adobe Photoshop's plug-in folder and immediately accessed through the Photoshop interface.

The Plug-in can be obtained in a Macintosh version or a Windows version. For Macintosh users, this software is a necessary link between a Wide Format Scanner and an Apple Macintosh platform with a built in SCSI board, because the standard scanning software normally supplied with your Wide Format scanner is designed for Windows. For Windows users, the software is a handy scanning interface specifically useful when working in Adobe Photoshop.

Screen illustrations in this user guide display the Macintosh user interface. Dialog structures, options and functionality are identical in both the Macintosh and Windows versions and this user guide applies for both.

SYSTEM REQUIREMENTS

- Apple Macintosh Power PC computer and operating system or IBM PC and Windows operating system. see Chapter 2: "Installation" for more details.
- Supported Contex Full Scale Scanner. See the attached README.TXT file for updates on the exact scanner models that run with this software.
- Adobe Photoshop, version 5.0 or higher.

RELATED PUBLICATIONS

The "OPERATIONS GUIDE" which came with your computer.

The "OPERATORS GUIDE" which came with your Full Scale Scanner.

User Guide and other documentation that came with your Adobe Photoshop Software

See the README.TXT file on the distribution CD for latest information and news.

How To Use This Guide

This guide contains 5 chapters and 3 appendices. Make sure you read chapter 2: Installation, and that the scanner is installed on the SCSI interface port, before attempting to install or use the software described in this guide.

Chapter 1. An introduction to the Plug-in's features.

Chapter 2. Describes how to install the Plug-in.

Chapter 3. Overview of the application interface, and general instructions on Wide Format Scanning with the Plug-in

Chapter 4. Describes the scanning options in detail.

Chapter 5. Troubleshooting - Answers to Common problems.

Appendix A. Contains a glossary

Appendix B. Application License Agreement.

Appendix C. Index.

Document Conventions

The following typographical conventions are used throughout this user guide:

- Dialog, button, selection and option labels are capitalized as they appear in the application and written in Italics for enhancement.
  <u>Examples:</u> Select *Scan.*

- Names of application components appear in italics, conventional book title capitalization format (proceeding caps in each word).
  <u>Examples :</u> The *Scan Control Dialog.*

- Terms that are not tools but internal definitions related to the application's features will appear without italics but in conventional book title capitalization format.
  <u>Examples:</u> Scan Window

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1. Introduction

This is an application designed to interface your Full Scale Scanner with advanced graphics software on an Apple Macintosh or Windows-based platform. The application is developed for usage with Adobe Photoshop – the leading image software among graphics professionals.

The software is designed as a plug-in, meaning it is a full software program that extends the functionality of the Adobe Photoshop program by enabling access to Wide format scanning. Install the program into Adobe Photoshop's plug-in folder and it immediately becomes accessible through Photoshop. You select the application through Photoshop's File menu and thereby gain full control over advanced scanning features.

In Photoshop terms, this is an import plug-in meaning it imports images from the scanner into the Photoshop image editor. You can then use Photoshop's wide range of image manipulation options, just as if you had opened an image file from your hard disk.

Here are some of the main features obtainable through this application:

- Easy scanning directly into the Adobe Photoshop interface without leaving Photoshop.
- Convenient dialogs with full point and click control.
- Standardized paper size options fitted to popular input media sizes.
- Custom paper size options, enabling full control over non-standard input media sizes.
- Offsetting – Selecting specific areas on the original for scanning.
- Advanced tonal adjustment features at scan time through Gamma Curve setting.
- Easy adjustment of Brightness, Contrast and Blur.
- A wide range of scanning modes enabling you to obtain optimal quality or even improve quality in relation to your original.
- Full 24-bit color mode with scan-time color enhancement options.
- High quality monochrome scanning through selectable modes designed for different original types and needs.

- Advanced 2-D Adaptive thresholding that analyses the drawing while scanning, and varies the threshold to compensate for changes in background, faded areas and stains.
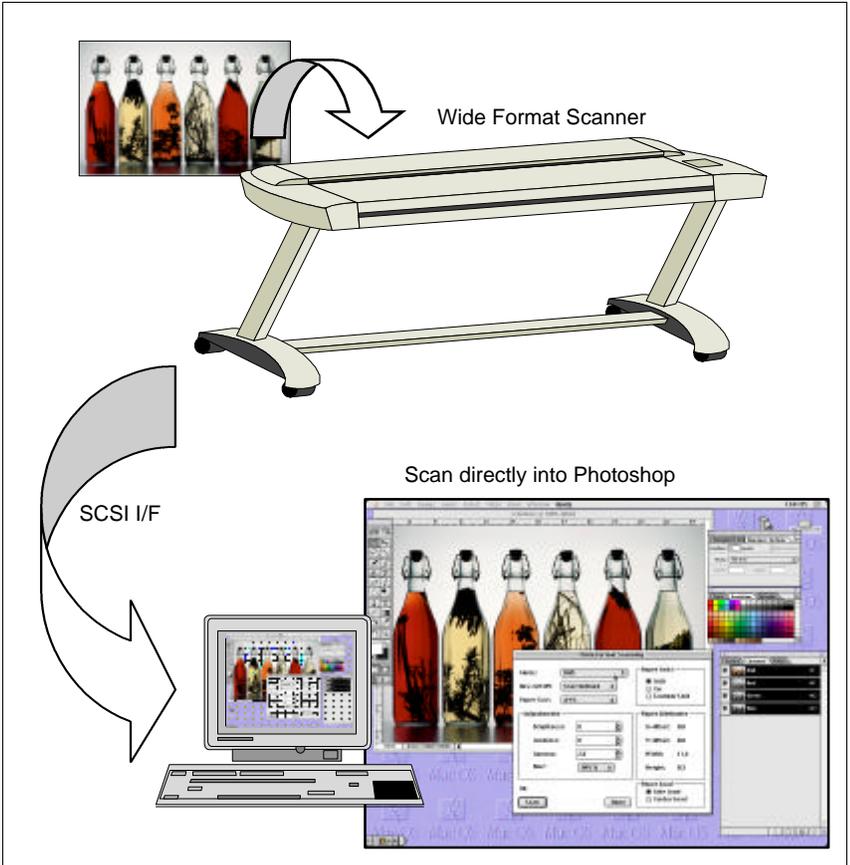
Fig. 1-1: Plug-in system – Wide Format Scan to Photoshop

2. Installation

The plug-in requires a Full Scale Scanner correctly installed and powered on, in order to function. See the documentation that came with your scanner for scanner installation instructions.

Always check the README.TXT file for updates describing installation procedures. The README.TXT file will also list scanner models compatible with this plug-in.

It is recommended to read Adobe Photoshop's documentation regarding Plug-in applications and their installation.

2.1 Install the plug-in on Macintosh PowerPC

System Requirements:
The README.TXT file contains instructions and tips for optimizing your scanning performance and Photoshop
system.

- Apple Macintosh PowerPC.
- Minimum 128 Mb. RAM
- Hard Disk with room for wide format image data. For example, an A4 sized image document, scanned in color at 300 dpi will use about 30 MB on your hard disk.
- Adobe Photoshop 5.0 installed

Installation
The plug-in executable WideFormatScanning.8ba must be inserted into Adobe Photoshop's Plug-in directory. Here's how:

⇒ Uncompress the file WFS.sit.
⇒ Save the README.TXT file in a folder of your choice.
⇒ Copy the file WideFormatScanning.8ba into the folder :
   Macintosh HD: Adobe Photoshop 5.0:Plug-Ins:Import-Export

⇒ **Control your installation**
⇒ If Adobe Photoshop was running when you inserted the plug-in, then exit Photoshop.
⇒ Start (or restart) the Adobe Photoshop application.
⇒ Select File > Import
⇒ You should have a new option in the import group called: "Wide Format Scanning"

2.2 Install the plug-in on Windows 95, 98, NT

System Requirements:
- IBM PC or compatible with Windows operating system.
- Minimum 128 Mb. RAM
- Hard Disk with room for wide format image data. For example, an A4 sized image document, scanned in color at 300 dpi will use about 30 MB on your hard disk.
- Adobe Photoshop 5.0 installed

Installation
The plug-in executable WideFormatScanning.8ba must be inserted into Adobe Photoshop's Plug-in directory. Here's how:

$\Rightarrow$ Uncompress the file WFS.zip
$\Rightarrow$ Save the README.TXT file in a folder of your choice.
$\Rightarrow$ Copy the file WideFormatScanning.8ba into the folder :
C:\ProgramFiles\Adobe\Adobe Photoshop 5.0\Plug-Ins\Import-Export

Where "C" is the drive in which your Adobe Photoshop 5.0 is installed.

Control your installation
$\Rightarrow$ If Adobe Photoshop was running when you inserted the plug-in, then exit Photoshop.
$\Rightarrow$ Start (or restart) the Adobe Photoshop application.
$\Rightarrow$ Select File > Import
$\Rightarrow$ You should have a new option in the import group called: "Wide Format Scanning"

3. Getting Started

3.1 Starting the application from Photoshop

This wide format scanning application is constructed as a plug-in to Adobe Photoshop, and must be accessed through the Photoshop user interface. In Adobe Photoshop terms, wide format scanning is an "Import" action in which the scanner imports images into the Photoshop editor. Once in the editor, the image can be manipulated as if it were opened from the hard disk. Follow the following steps to start the Wide Format Scanning plug-in.

$\Rightarrow$ Start the Adobe Photoshop application
$\Rightarrow$ Select File -> Import
$\Rightarrow$ From the list of import sources, select Wide Format Scanning as shown in Figure 3-1 below.
$\Rightarrow$ The Wide Format Scanning interface is shown in Figure 3-2.
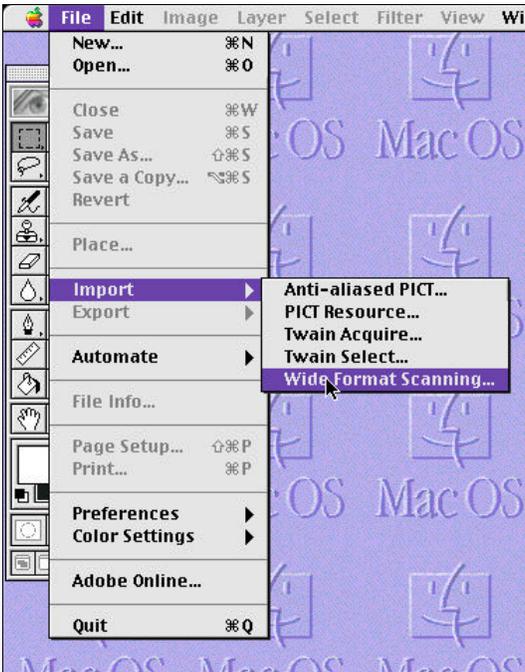
Fig. 3-1: Start the Wide Format Scanning Plug-in in Photoshop

3.2 An overview of the Plug-in user interface
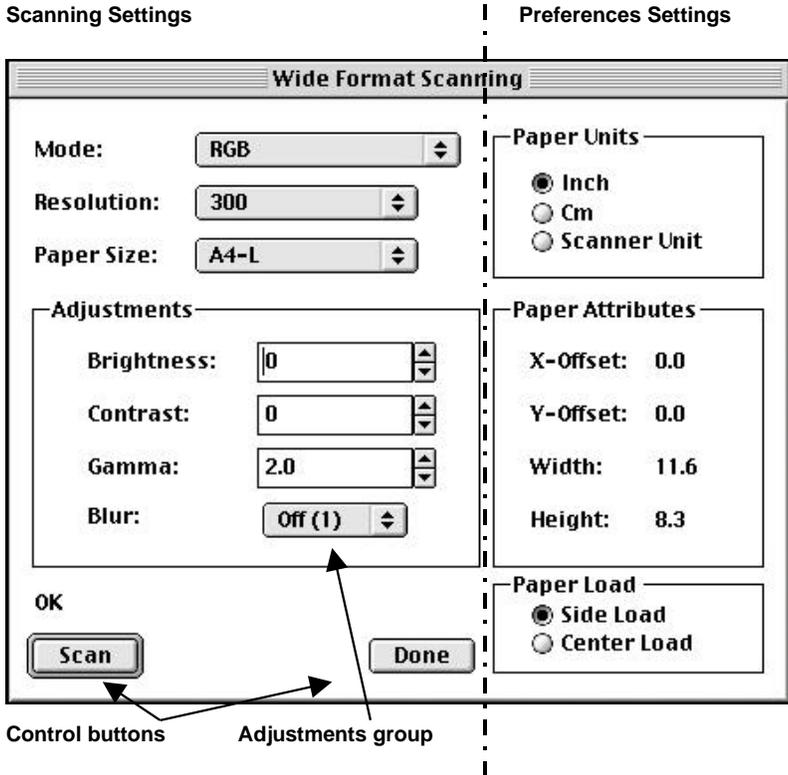
Fig. 3-2: Wide Format Scanning Interface

The Wide Format Scanning dialog can be divided vertically into two logical option areas.

On the dialog's left side you find the main options, i.e., those related to the **scanning settings** including image quality parameters and control (start/end) buttons. The *Adjustments* option group area contains options related to the current scanning *Mode* selected in the topmost option box. Therefore, the available *Adjustment* options and the appearance of the *Adjustment* group area changes with your selection of scanning *Mode*. In the above figure, the adjustment options for the *RGB* (color) mode are displayed.

The right side of the dialog contains central **preference settings**, i.e., your choice of measurement units and your choice of how the original

is going to be inserted into the scanner. Your current paper size settings are displayed below the unit option area, using the measurement units you selected just above.

3.3 Scan into Photoshop – Basic Steps

The following is a quick overview of the minimum you must perform to scan an image into Photoshop. In the next chapter "Scanning Options and Features", we will look at each of these steps in greater detail, focusing on the available possibilities for achieving the best scan quality for your current original. For now, let's just see how the plug-in works:

⇒ Your computer needs to register the scanner at startup. Make sure the scanner was turned on when you started your computer. If not, turn the scanner on and then restart/reboot the computer.

⇒ In the remainder of basic steps, it is assumed that you have installed the Wide Format Scanning plug-in as described in Chapter 2. If not, please do so before proceeding.

⇒ Start the Adobe Photoshop application.

⇒ In the Adobe Photoshop interface, select File > Import.

⇒ Select the "Wide Format Scanning" import device

⇒ The Wide Format Scanning interface pops up

⇒ Set your scanning *Mode*. Here you must decide if you wish to perform color, graytone of B/W scanning. With B/W scanning, you can select from different automatic image enhancement modes. Scanning modes, together with their specific characteristics and usefulness, will be described in the next chapter.

⇒ Set your scan *Resolution*, i.e., the image resolution in the resulting Photoshop image. You can select one of the common resolutions or else specify your own resolution. Tips on choosing the best resolution for your specific job will be given in the next chapter.

⇒ Set the *Paper Size* of your original drawing. The scanner needs this information to determine the size of the area you want captured. It would be uneconomical to scan too much background by over estimating original dimensions and undesirable to scan only a portion of the image you wish captured. You can select commonly used standard sizes or you can customize new sizes for special originals. You can also pick out a limited area for scanning

using *Offsets*, *Width* and *Height* settings. These features will be described in the next chapter.

⇒ Select your insertion method in the *Paper Load* option group area. Central loading is recommended for most sizes and guide marks for many standard sizes are printed near the scanner insertion slot at the center loading point. Make sure your setting complies with the actual insertion position of the original (side or center).

⇒ Adjust your scanning mode through its specific adjustment parameters. In Figure 3-2, the adjustment parameters for the RGB (color) mode are shown. *Brightness, Contrast, Gamma* values and a color *Blur* filter can be set/adjusted with the *RGB* mode. Other parameters apply for *BW* and *Adaptive* modes. Mode and tonal adjustments are described in detail in the next chapter.

⇒ When you have made all your settings, select the *Scan* button on the dialog's lower left side.

⇒ Check the image input by the scanner. If you are satisfied with your results, i.e., image size, adjustments, etc., then select the *Done* button. This action will remove the Wide Format Scanning dialog and return all control to Photoshop's editor with the scanned image loaded.

⇒ If you are not satisfied and wish to repeat the scan, make the revised adjustments and select the *Scan* button. Repeated scanned images will be opened in new Adobe Photoshop edit windows, or as long as the Wide Format Scanning interface remains active. This enables you to re-scan an original with different settings, compare the results at the end and then choose the best one for further editing in Photoshop.

⇒ The <ESC> key can be used at any time to back-step and finally abort the Wide Format Scanning dialog. Hitting <ESC> will also interrupt an ongoing scanning process.

4. Setting Scanning Options and Features

In the last chapter, we covered the steps necessary to scan into the Photoshop editor. You probably recall, that the bulk of the steps mentioned involve setting options relevant to your scanning task and your current original. In this chapter, we will look at each option separately and describe how best to use them. The options described here control your scanner's built-in enhancement features and if you use them optimally, they can make a big difference to your end result.

4.1   Scanning Modes and Adjustments
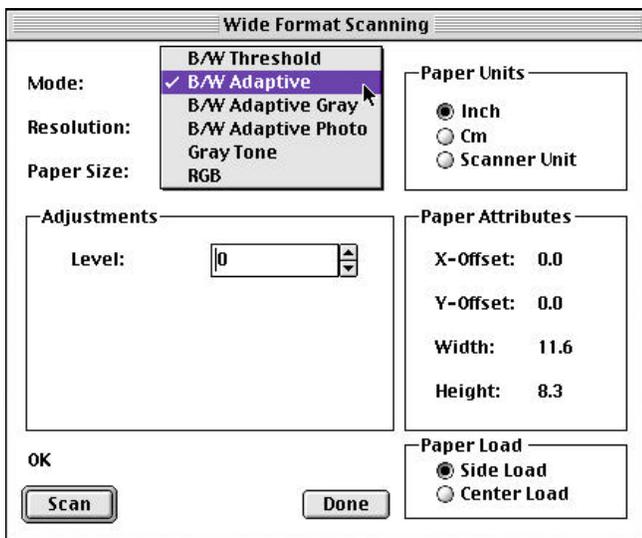
Fig. 4-1: Scan Mode Selection

The scanning mode is your central option. This is where you evaluate the kind of original you are scanning and determine the kind of image you wish produced. Some of the available scanning modes can be used to enhance the quality of unclear and low contrast originals. With the adaptive modes, the scanner makes scan-time assessments of your drawing using 2-Dimensional Adaptive Thresholding in which graytone information on each pixel is stored and compared with its neighboring pixels in order to rebuild a high image quality. The color and graytone modes are for reproducing images with all the colors/tones intact.

Each scanning mode has its own set of adjustments options. Only adjustments relevant to your selected scanning mode will be displayed in the dialog's adjustment area. Adjustment options relevant to the

scanning *Mode* appear immediately in the *Adjustments* area when you select or change your scanning *Mode*.

Each scanning *Mode*, its characteristics, typical usage, and adjustment options are described in the next sections. Use these descriptions to find and adjust the scanning *Mode* that best suites your particular original or scanning task.

4.1.1 Scanning in B/W Threshold Mode

This mode uses a threshold to determine whether a pixel is black or white. Use this mode for drawings and line art. You set the threshold value in the *Adjustments* area.

Setting the *Threshold*

When a camera in the scanner looks at a drawing, it converts what it sees to graytone levels between 0 and 255 with the dark tones represented by low values and the light tones by high values and middle tones by middle values. When scanning at a specific threshold all gray tones below the selected threshold value will be represented as black pixels, and all gray tones above will be represented as white pixels.

For example, if you have a very faded line drawing, you might want to increase clarity by setting a high threshold, thus forcing more shades of gray to black. In other words: the higher the threshold, the darker the result.

The Threshold value, ranging from 0 to 255, can be set in the *Adjustments – Threshold* edit field.

⇒ Set the threshold value in the *Adjustments* area edit field using the guidelines above.

⇒ Evaluate your setting in the resulting image loaded in the Photoshop window.

⇒ If the image is too dark, repeat the process with a lower threshold and if you wish it darker, try a higher threshold

Fig. 4-2: Drawing Scanned at threshold setting of 45.

Fig. 4-3: Same drawing at threshold setting of 210

4.1.2 Scanning in B/W Adaptive Mode

In this mode the threshold **adapts** to darker or lighter areas in the original as opposed to the B/W threshold mode that uses a singular global threshold. The *BW Adaptive* mode is suitable for scanning all kinds of line drawings including difficult blueprints, brown transparencies (sepias), etc. A stained or faded original can be renewed as good sections are retained and bad ones clarified. This mode provides minimum file sizes and is, thereby, well suited for digitizing. The *BW Adaptive* mode uses the scanner's 2D Adaptive technology.

Setting the adaptive *Level*
Adaptive *Level* works like a threshold - the lower the value, the more of the background is picked up during scanning. You set the adaptive *Level* in the *Adjustments* area.

Fig. 4-4: 2D - Adaptive Scan – Before(original) and After(scanned image)

4.1.3 Scanning in B/W Adaptive Gray Mode

Thresholding works like the B/W Adaptive mode but toned shades of gray are added to enhance image quality. The toned shades of gray are added in regions between black and white levels using the scanner's built-in ADL (Area Diffusion Logic). This mode is suitable for displaying or printing files scanned from light to medium dark drawings. The added grays provide a pleasing result for drawing printouts. Uses the scanner's 2D Adaptive technology.

Setting the adaptive *Level*
You set the adaptive *Level* in the *Adjustments* area. Adaptive *Level* works like a threshold - the lower the value, the more of the background is picked up during scanning.

4.1.4 Scanning in B/W Adaptive Photo Mode

This is a 2D-Adaptive halftone mode suitable for photos and printouts of photos. Halftones are distributed throughout the image using the scanner's built-in ADL (Area Diffusion Logic) for softer transitions between black and white. The overall half-toning provides a good result with photos.

Setting the adaptive *Level*
You set the adaptive *Level* in the *Adjustments* area. Adaptive *Level* works like a threshold - the lower the value, the more of the background is picked up during scanning.

4.1.5 Scanning in Graytone Mode

In this mode 256 gray levels are recognized for each pixel (1 byte, 8 bits per pixel). Gives good reproduction of complicated B/W images like B/W photos. You adjust *Contrast, Brightness, Gamma and Blur* in the *Adjustments* area*.*

Graytone Mode adjustments

- **Brightness**
  Use brightness to compensate for a light or dark original being scanned. Numeric values for brightness are defined by clicking on the up/down arrow buttons or by editing directly in the fields. The normal position is zero with negative values for reducing brightness and positive values for intensifying brightness.

- **Contrast**
  Contrast is the range between light and dark in an image. An image with little midtone detail, heavy shadows and bright highlights has too much contrast and, conversely one mainly with midtone detail, grayish shadows and highlights has to little contrast. Numeric values for contrast are defined by clicking on the up/down arrow buttons or by editing directly in the fields. The normal position is zero with negative values for reducing contrast and positive values for adding contrast.

- **Gamma**
  Gamma adjustment can be used to make tone distribution lighter or darker in an image with emphasis on midtones rather than the extreme (black, white) ends. Turn up the Gamma value to lighten the image tones and turn down the Gamma value to darken the tones.

- **Blur**
  The *Blur* filter blends graytones and thus removes unwanted "noise" from the image. The value you set determines the degree of graytone blending.

4.1.6 Scanning in RGB Color Mode

24 bit true color mode for capturing all of the image's colors. Distribution of tones can be adjusted in the *Adjustments* area.

RGB Mode adjustments

As with the Graytone mode, you can adjust *Contrast, Brightness, Gamma and Blur* in the *Adjustments* area, but here, the adjustments apply to the color tone channels.

- **Brightness**
  Use brightness to compensate for a light or dark original being scanned. Numeric values for brightness are defined by clicking on the up/down arrow buttons or by editing directly in the fields. The normal position is zero with negative values for reducing brightness and positive values for intensifying brightness.

- **Contrast**
  Contrast is the range between light and dark in an image. An image with little midtone detail, heavy shadows and bright highlights can have too much contrast and, conversely one mainly with midtone detail, dull shadows and highlights can have little contrast. Adjusting the contrast can make colors more vivid and

realistic. Numeric values for contrast are defined by clicking on the up/down arrow buttons or by editing directly in the fields. The normal position is zero with negative values for reducing contrast and positive values for adding contrast.

- **Gamma**
  Gamma adjustment can be used to make tone distribution lighter or darker in an image with emphasis on midtones rather than the extreme (black, white) ends. All three (Red, Green , Blue) color channels are effected together with each change. Turn up the Gamma value to lighten the image tones and turn down the Gamma value to darken the tones. For example, if you are scanning a picture of a blue sea, a lower Gamma value will change the sea's color towards a darker marine blue, and turning up the Gamma value will change the normal sea color to a light sky-like blue.

- **Blur**
  The *Blur* filter blends colors and thus removes unwanted "color noise" from the image. The value you set determines the degree of color blending.

4.1.7 Overview of Scanning Modes*

Mode	Usage	Adjustments
BW Threshold	Drawing and lineart	Threshold value
BW Adaptive	Line drawings difficult blueprints, sepias, faded/stained drawings.	Adaptive Level
BW Adaptive Gray	Copying light to medium dark drawings. The added grays provide a pleasing result for drawing printouts.	Adaptive Level
BW Adaptive Photo	Photos and printouts of photos.	Adaptive Level
Graytone	Monochrome image reproduction with all tones retained.	Brightness, Contrast, Gamma, Blur
RGB	True Color image reproduction	Brightness, Contrast, Gamma, Blur

* The availability of specific scanning modes will depend on your scanner model.

4.2 Setting Scanning Resolution

Scanning resolution is the number of pixels per inch (dpi) in the end (scanned) image. An image with a high resolution will contain more and thereby smaller pixels than an image with equal dimensions with a lower resolution. High resolution images will therefore normally display more detail and wider color ranges than low resolutions. However, high resolutions produce larger files with the usual setbacks in relation to disk space, load time, etc.

Your selection of resolution will therefore depend mainly on how you intend to display the image. For offset printing, high resolutions work

best while for screen and web display, lower resolutions will suffice. Normally, 300 dpi and above are considered high resolutions. High resolutions can also be necessary if small details (like in maps) must be displayed clearly. Often, your printing device documentation will contain recommendations about scanning resolutions.

The image resolution should be determined before scanning i.e., before your original is digitized and the image transformed to pixel data. Using Photoshop to increase resolution of an image scanned at low resolutions will normally not improve the image's quality.

Click on the Resolution list arrow to reach the list of available resolution settings. The Wide Format Scanning plug-in offers two methods for setting resolution – Standard and Custom.
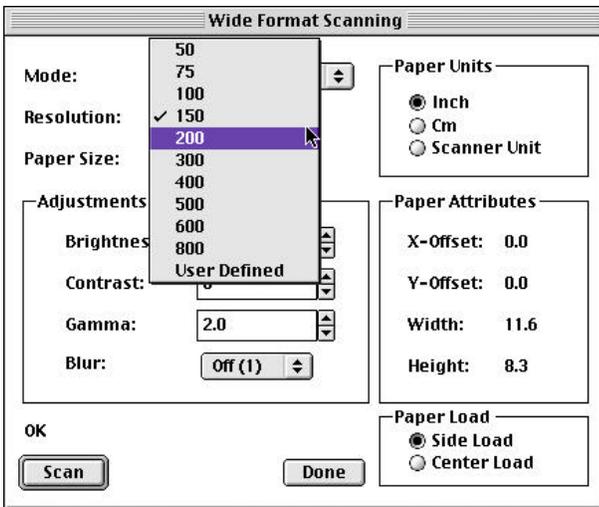
Fig. 4-5: Setting the Scan Resolution

Standard resolutions are round value settings from 50 dpi and up to the highest resolution supported by your scanner model. The application will detect your scanner model's capabilities and only valid resolutions will be listed. See the technical specifications that came with your Wide Format Scanner for information on its maximum resolution capabilities.

Custom Resolutions – Sometimes you will need to set the resolution to a specific value in order to match your image with a specific display device, printer or software application. Or, you may be working with another image already loaded in Photoshop and wish to match the resolution of the new image with that of the existing one. If the resolution you need is not among the standard resolutions then perform the following steps:

⇒ Click the *User Defined* option at the bottom of the resolution list.
⇒ A new dialog with a single edit field appears in which you can write a specific resolution. Only whole numbered resolutions within the range of 50 and the scanner's maximum resolution are valid.
⇒ Your new resolution is called "User Defined" in the resolution field and its value is displayed directly to the left as shown below.

Custom resolution value
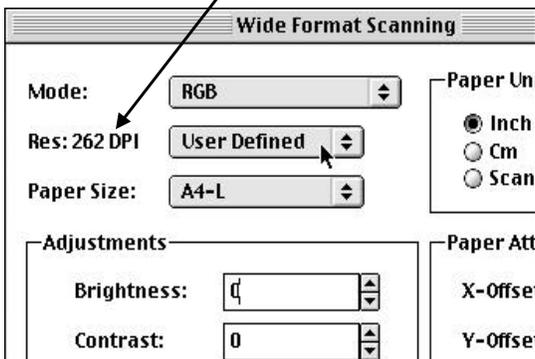
Fig. 4-6: User Defined Resolution

Your Adobe Photoshop manual also gives pointers on determining image/ scanning resolutions.

4.3   Setting the Original's Paper Size

In order to perform effective and high quality scanning, the scanner needs to know the size of your original. This size is called the *Paper Size* and it directly defines the "scan field", which is the area on the image that the scanner will capture. One could of course choose to let the scanner digitize everything within it's maximum width, always capturing data over the original's edges, and then crop away the part you don't need. But with this method you would at best produce a lot of unnecessary and unusable data and at worse disturb effective thresholding and adaptive processing.

Sometimes, you will want to scan only a portion of the whole original. This can be performed by setting a *Paper Size* that best fits that portion you wish scanned and then repositioning the scan field through *Offsets*.

4.3.1   About Paper units

Before selecting a paper size, select the measurement unit (*Paper Units)* that best fits your purpose. Paper sizes can be entered and displayed in : *Inches, centimeters* or *Scanner Units*. *Scanner Units* are marked above the scanner's insertion slot, so you can make size measurements directly off the scanner. Your choice of *Paper Unit* will be reflected in the *Paper Attributes* (display only) option group just under the *Paper Units* group.

4.3.2 Paper Attributes

The *Paper Attributes* value group is a display-only area that informs you of the current *Paper Size* dimensions and offsets. Whether using standard or custom sizes, paper dimensions are displayed in the measurement units selected in the *Paper Units* option group.

Standard Size List   **Paper Units**   **Dimensions & Offsets**
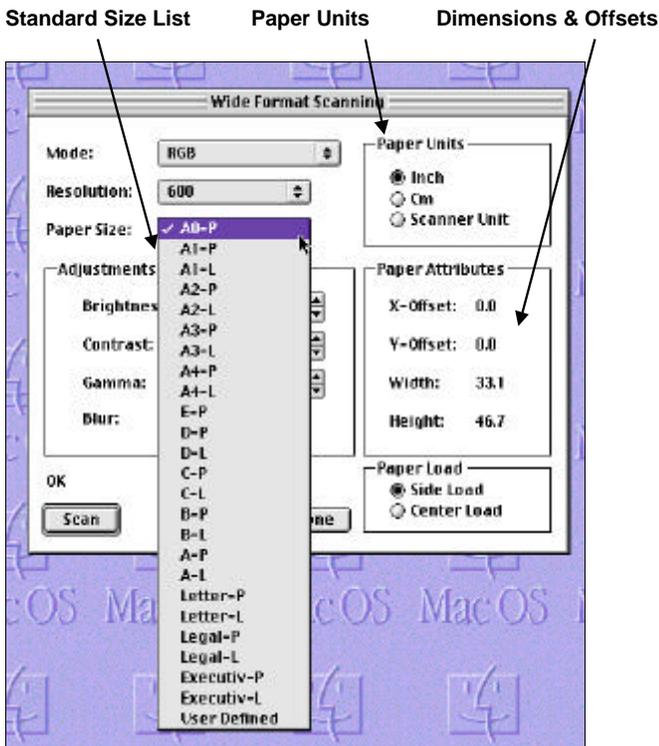
Fig. 4-7: Setting a standard Paper Size

4.3.3 Setting Standard Sizes

The available standard sizes will cover most of your needs. Click on the drop box arrow to view the available predefined standard sizes. Portrait and Landscape positioning is indicated by the letters "P" and "L" attached by hyphens to each standard size, for example, A4-P, Letter-L, etc. The *Paper Size*'s actual dimensions in inches, centimeters or scanner units is displayed to the right in the *Paper Attributes* group.

4.3.4 Setting Custom Sizes

Sometimes you will have an original that does not fit with any standard size or you may wish to crop an original to special dimensions in a specific image area. You can do both of these through the "*User Defined*" option which is selectable at the bottom of the Paper Size List as shown in Figure 4-6. Here's how you set a custom size.

⇒ Click on the down arrow in the Paper Size field.
⇒ Select *User Defined* at the bottom of the size list.
⇒ Enter *Paper Size* dimension values in the new dialog.
⇒ Enter your Offset values for scan area repositioning or leave them at 0,0 for normal top left corner positioning. (Details follow below)
⇒ Select OK. Your custom *Paper Size* (named simply *"User Defined"*) becomes the *current Paper Size*.

Custom Size Setting   **Paper Units**   **Dimensions & Offsets**
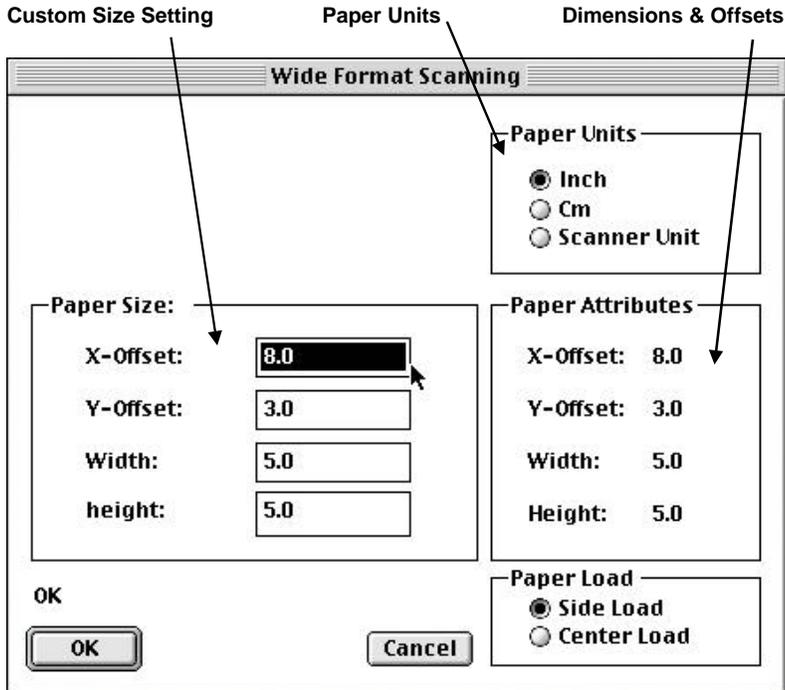
Fig. 4-8: Setting a custom Paper Size

The *User Defined* paper size retains its settings until they are changed. If you need a new custom Paper Size, repeat the process above and overwrite the previous values.

## Move the scan area with offsets (X,Y)

The scanner's capture area is the area picked up by the scanner's cameras and its size is defined by the *Paper Size*. Normally and per default, the scanner's capture area is positioned over the original's top left corner.

The *X and Y Offsets* in the *Paper Size* dialog, allow you to move the position of the scan capture area, which means that you can point out any specific area on the original for scanning. The X and Y values you enter are like coordinates on a map and the scanning start-point will be shifted from the original's top left corner to the position indicated. Scanning itself will then cover the area specified in the dimensions fields. This could be a standard size or a custom size. For example, you might need to capture a logo imprinted somewhere in the middle of a large poster :

Example : Capture the Logo on a large Poster

⇒ Select the *User Defined* paper size option from the list of paper sizes.

⇒ Set the paper size to 5" x 5" or any size slightly bigger than the logo. This is the size of the scanner's capture area.

⇒ Use a ruler to measure the logo's position, using the measurement units selected in the Paper Units area. You measure from the 0,0 point which is at the original's top left corner.

⇒ Calculate and enter your offset coordinates so that your scanner's capture area (Paper Size) covers the logo. The coordinates you enter will indicate the position of the scan capture area's top left corner.

The above procedure is illustrated in Figure 4-9. The scan capture area is normally positioned in the top left corner of the original with offsets at X = 0 and Y = 0. The scan capture area dimensions (Paper Size) are set to 5" x 5". The offsets are then set to 8,3" in the *User Defined Paper Size* dialog. This moves the effective scan capture area 8" to the right and 3" down in relation to the original's top left corner.
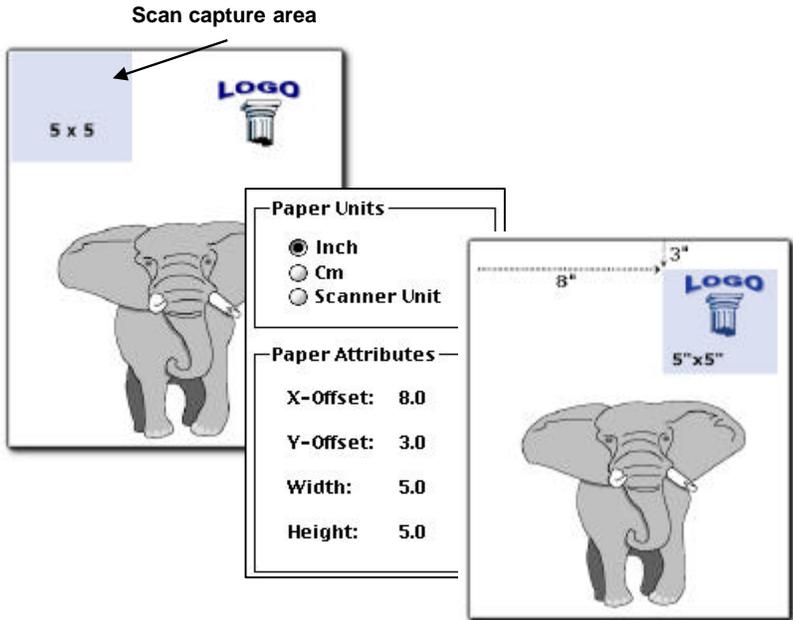
Fig. 4-9: Placing a Scan Window with Paper Size Offsets

Remember :

- The offset coordinates use the measurement units specified in the *Paper Units* area (inches, cm or scanner units.)
- Control your *Paper Load* setting with the original's position in the insertion slot. The *Paper Load* option will be described in the next section.
- The X and Y offsets should be set to zero for normal scanning of whole originals, i.e. with *Paper Size* dimensions that match the original's size.

4.4 Setting the paper feeding parameter

The *Paper Load* setting is found at the bottom right corner. Here you determine if you prefer center loading or loading from the scanner's edge. *Center* loading works best with most originals and is strongly recommended when scanning thick originals such as cardboard, foamboard etc. *Side* loading is convenient when using *Scanner Units* for size and offset settings because of the left aligned Scanner Units Ruler imprinted just above the scanner's insertion slot.

5. Trouble Shooting – Common Problems

No Scanner found   - The Wide Format Scanning plug-in dialog tells you that no scanner is detected or known. This is likely because the scanner was not turned on and ready when you booted your computer. The scanner must be turned ON prier to booting for the SCSI connection to take effect. If this is not the case, see the next problem.

Scanner ON still no scanner found – If the scanner was ON during booting and you still get the message that no scanner was found/detected, then try to close and restart Adobe Photoshop. If you have just installed the plug-in, Photoshop needs to detect it's existence in the plug-in folder when it starts up.

Blank (white) image created after scanning - Check the *Paper Load* (*Center/Side*) setting. If your original was not placed according to this setting, for example, you inserted from the center but your setting is on "*Side Load*", then the scanner will scan and capture the white background plate. Make sure your *Paper Load* setting complies with your original's actual insertion position.
If the *Paper Load* setting is correct then you may have "exaggerated" your Threshold or Adaptive Level settings, rendering them much too extreme for the image being scanned.

Modes described in this manual not in Mode list – If you are looking for a scanning *Mode* described in this manual and it does not appear as an option in the Mode List, then it is probably not supported by your scanner model. See the documentation that came with your scanner for specifications on available scanning modes and features.

Part of the scanned image is cropped out – Check the *Paper Size* setting. The scanner only captures the size defined by the *Paper Size Width* and *Height* settings.

Large white frame around the scanned image – Check the *Paper Size* setting. The scanner captures the whole size defined by the *Paper Size Width* and *Height* settings. If these setting extend the capture area over the originals dimensions, then the scanner picks up the white background plate.

Can't set/find the desired high resolution – If you are looking for a high scanning *Resolution* and it does not appear as an option in the Resolution List, then it is probably not supported by your scanner model. The highest resolution you can set will be the highest resolution in the list and the *User Defined* option will only accept values up to this maximium resolution for the scanner. See the documentation that came with your scanner for specifications on its maximum scanning resolution.

Slow and jumpy scanning - The more available RAM in Photoshop, the smoother the Scanning Plug-in will process data and run. If the progress of the original through the scanner seems slow and in jerky movements the problme could be that Photoshop does not have optimal 'memory cash' size. Follow the instructions below to optimize your system:

- See Help > Help Contents....
- Under Index, type Memory and go to the bottom of the help page
- Click on: ... Increase the application memory size. The help text that appears (on Photoshop for Macintosh versions) is copied below:

1) Quit Adobe Photoshop if it is running.
2) Start all applications - except Photoshop - that you must use simultaneously with Adobe Photoshop. Keep in mind however, that running other applications with Photoshop uses RAM that could be allocated to Photoshop.
3) Return to the 'Finder'. Choose 'About this Computer' from the Apple Menu.
4) Note the 'Largest Unused Block' value (You will need this value in step 6). This value shows the amount of memory currently available.
5) In the 'Finder', select the 'Adobe Photoshop Program Icon' (Not the folder or the alias icon). And choose File > Get Info.
6) In the Adobe Photoshop Info Window, set the Preferred Size option to no more than 90% of the 'Largest Unused Block value' you noted in step 4.
7) Close the Adobe Photoshop Info Window.

In tests the Preferred Size was increased from 22Mbyte to 102 Mbyte. Scanning of a picture (A2-L 300DPI 24-bit color) went from 7 min to 47 seconds, and the scanning became smooth. Less RAM will also work fine, but the more RAM Photoshop has available, the faster the scanning will be preformed.

Not enough room on disk - Photoshop uses temporary space on the hard disk to store scanned pictures. If the picture size is too large to be saved on the hard disk, scanning is not performed, and a message appears" No scanning performed, Scratch Disk probably too small". If you have more than one hard disk the all should be in use. To control this, choose menu File: Preferences: Plug-Ins and Scratch Disks...
Note that Photoshop uses about 25% more than the theoretical size of the picture, when temporarily saving the picture on the hard disk. Example: An original with Paper Size = A0-P (33.1 Inch * 46.8 Inch)

scanned at 300 DPI in RGB Color (3 byte per pixel) mode will have a theoretical size of 33.1*300 * 46.8*300 * 3 = 400 Mbyte. Despite this, Photoshop would use 500 Mbyte for storing such a scanned picture.

6. Appendix A: Glossary (Scanning Terms)

AdaptiveThresholding

Advanced 2-D Adaptive Thresholding estimates the background gray level in a window area around each pixel. The difference between the actual pixel value and the background is then compared to the adaptive settings to determine if a pixel is thresholded as a black or a white pixel.

Additive Colors

The additive primary colors are red, green and blue. These additive primaries represent the three main components of white light. Used individually or together, these three colors of light can be mixed to create nearly all colors. When these three primary colors are mixed in equal parts they produce white. Additive color is used in scanners and computer displays.

Bitmapped Image

A bitmapped image is a computer file representing a line-art image that was scanned with a scanner. Refers to the pattern (map) of bits that are either black or white.

Blueprint

A process of photographic printing used mainly for copying architectural and mechanical drawings; produces blue lines on a white/bluish background.

Blur

The averaging of pixel elements.

Brightness Adjustment

An adjustment on a scanner that allows the user to compensate for a light or dark original.

Calibration

Adjusting equipment so that it performs in accordance with an established standard, e.g., scanner calibration, minimizing color deviation between scanned ANSI IT8 reference color patches and the known color reference values.

CCD

Charge Coupled Device, CCD is the image sensor in the scanner that converts light to voltages. These voltages are converted by the scanner into the image.

CMYK

The subtractive printing colors. Cyan, Magenta, Yellow, Black.

Color

Electromagnetic energy that exists in the form of wavelengths creates the perception of color. There is a huge difference between the visible spectrum we

can see with our eyes and the colors which can be reproduced on a computer screen and then printed on a color printer. The total number of colors that a device can produce is called its color gamut. The visible spectrum is larger than the color gamut of a color monitor, which in turn is larger than that which can be reproduced by a color printer. No system can produce all the colors visible to the human eye.

Color bit depth

The simplest pixel has two options: black or white. (A pixel with two choices is known as a 1-bit image, or two raised to the power of one). Adding more bit information increases the number of color options. The number of potential color options for a pixel is called color bit depth. For example a 4-bit pixel would have 16 color options, and an 8-bit pixel would have 256 color options, while a 24-bit pixel would have 16,777,216 color options.

Color Cast

An image is said to have a color cast if its colors are not true. A color cast will usually be described by stating the particular color predominant in the image, e.g., the grass appears to have a red color cast.

Color Correction

Correcting for, and eliminating an unwanted color cast.

Color Management System

Color Management System (CMS) software increases the accuracy of color interchange between scanners, displays and printers based on profiles for each device. The CMS is a layer of software resident on the computer that negotiates color reproduction between the application and color devices. The CMS performs the color transformations necessary to exchange accurate color between diverse devices. The Color manager needs access to characterization data for the device. The format and content of such device profiles is standardized by the International Color Consortium (ICC.)

Color Separation

Converting an RGB color image into CMYK color image. Color separation is a technical function during which critical settings such as GCR, black ink limit and total ink limit are applied to the image.

Color Space

A color space is a particular language used to describe color. Examples of color spaces are: RGB, CMYK, HSV, CIE LAB.

Compressing

Reducing file sizes of images by encoding the data (see also Run Length Encoding and CCITT Group 3 and 4).

Contrast

The range between light and dark in an image. Proper contrast is important for an image to appear realistic.

Density

The light stopping ability of a film. Density is inversely proportional to the amount of light reflected or transmitted by an image.

Density units

Photographers and printers measure transmission in base-10 logarithmic density units, where transmission of unity corresponds to a density of 0, transmission of 0.1 corresponds to a density of 1, transmission of 0.01 corresponds to a density of 2, and so on

Device Dependent Color Space

For example RGB. A device dependent color space, e.g., the same scan file will appear different when viewed on different computer displays.

Device Independent Color Space

For example CIE LAB. A device independent color space is one in which color values are absolute, e.g., defined by CIE standard. CIE LAB is the central color space in color management systems (CMS) and is used to translate between different device dependent color spaces such as scanner RGB and display RGB.

Device Profile

A file used as part of a Color Management System (CMS). A device profile contains information about the characteristics of a scanner, computer display or printer. The format for device profiles (Win95, Colorsync. etc.) is standardized by ICC (International Color Consortium).

Display

Also called Graphic display or Monitor. The computer screen attached to your computer, or to the portion of a drawing image, menu, etc., shown on the screen.

Dithering

A printing or display device may have only a small number of grayscale or color values for each device pixel. However, if the viewer is sufficiently distant from the printed page or display, the value of neighboring pixels can be set so that the viewer's eye integrates several pixels to achieve an apparent improvement in the number of levels or colors that can be reproduced.

DPI

Dots Per Inch, equivalent to Pixels Per Inch. An expression of resolution of a scanned image.

DSP

Digital Signal Processor, does image enhancement in real-time while scanning.

Dynamic Range

A measurement of scanner quality; the density difference between highlights and shadows.

Equalizing

Distributing all color or tone equally along a density range.

File

Image, text or program information stored on a computer disk, with a file name for retrieval (an extension to the name is often added to distinguish between different types of files).

Folder

An organizational aid on a hard disk. Like office folders, it allows a user to group related files together.

Foreground

Foreground when scanning raster data (black and white, or monochrome data) refers to the pixels that represent data of interest (background refers to everything else). Typically, lines and shapes are represented by black pixels (foreground) and empty space is represented by white pixels (background).

When scanning grayscale data, background means the gray level of a region of pixels that surrounds some desired foreground data.

Gamma Adjustment

An adjustment that makes the tone distribution lighter or darker in an image.

Gamut

The color range scanable, printable or displayable by a device; e.g., if some of the displayable colors are outside of the gamut of the printer they cannot be printed.

Gamut Transformation

Color Management System function, where out-of-gamut colors are converted to colors within the gamut of the targeted device, e.g., a printer.

GCR

Gray component replacement. A color separation setting used on color photographs where cyan, magenta and yellow inks are replaced by black ink (in a balance that would yield a gray value). The advantages are a reduction in overall ink usage and some increase in image detail.

Gigabyte

Computer storage equal to 1024 megabytes.

Grayscale

A term for a black and white photographic image or a scanner setting. Refers to the range of 256 gray tones that make up the image.

Gray Balance Adjustment

A color correction adjustment to insure that gray elements within a scanned image appear as a neutral gray. It is generally considered proper technique to adjust the image so that neutral gray elements appear neutral gray. If this is done, it will usually be true that other elements within the image will also have true color reproduction.

Halftoning

The processes of offset printing and laser printing are intrinsically bilevel. However, these devices can reproduce a range of tone levels by halftoning; e.g., an array of widely spaced dots produces the perception of light gray, and an array of tightly spaced dots produces dark gray. Halftone dots are usually placed in a regular grid. In color printing it is conventional to use cyan, magenta, yellow and black grids that have exactly the same dot pitch but different carefully-chosen screen angles.

Histogram

A bar graph representing the statistical distribution of Graytones or colors in an image. Each column represents the number of pixels at that gray level or color.

HLS

A color space with the three variables of Hue, Lightness, Saturation. See HSV.

HSV

A color space with the three variables of Hue, Saturation, Value. Hue means color (as in the color wheel.) Saturation is an indication relating to the richness or vibrancy of the color. Value is a term best related to the intensity of light illuminating the object.

Hue

A measurement of color that can be related by pointing towards a certain color on the color wheel. Hue indicates the relative redness, blueness, greenness, yellowness, etc., of a color.

ICC

The International Color Consortium (ICC) was formed to address the need for a common color framework. The ICC has developed a standard device profile that contains information about how various devices render color. This concept is supported by Apple (Colorsync), Microsoft for Windows 95, Sun for Solaris, and by Silicon Graphics for Irix.

ICS

Integrated Component Scanner, integrates copying function into an existing plotting environment.

Ink-Jet Printer

Inkjet printers transfer color to a page by squirting cyan, magenta, yellow and black liquid ink onto the page. The ink dries on the paper through evaporation.

Interpolation

Using the interpolation method of resampling generates values for points in between the actual pixels by looking at the surrounding colors or intensities. In a scanner resolution is increased beyond the actual number of CCD cells. As each line of pixel data arrives from the cameras, new interpolated pixels are added between original pixels. The added pixels enhance line edge definition.

JPEG Compression

Joint Photographic Experts Group Compression. A method to save storage space by compressing files. JPEG achieves a high degree of compression by discarding non-important picture detail.

Kilobyte

Computer storage equal to 1024 bytes of computer information.

Laser/LED Printer

Laser/LED printers transfer toner to a page by discharging an Electro-statically charged drum using the information modulated light from a laser or LED (Light Emitting Diodes) array. Toner then attaches to the remaining charged areas of the drum, and is subsequently transferred to the paper

Lossless Compression

File compression and subsequent de-compression without any loss of data.

Lossy Compression

File compression that will compress data to a high degree. When subsequently un-compressed, data will have been lost.

LZW

Method of lossless compression used with many file formats; developed by Lempel, Zev and Welch.

Megabyte

Computer storage equal to 1024 kilobytes.

Monochrome

An image composed of a single color.

Neutral

An area of no color; white, gray or black.

Noise

A term used to describe the occurrence of pixels that contain random colors within an image.

Palette

The set of colors available for an image.

Pixels

The word pixel is a combination of the two words picture and element. It is the smallest building block within a scanned line-art or photographic image. A pixel is the small square picture element that is filled with a color, black or white.
The value of a pixel depends on the luminance of the area, and is either a single bit for a black and white image, or multi-bit for a color or gray-tone image.
Pixels come in various sizes and their size is expressed in terms of resolution. Resolution is measured in pixels per inch (ppi) or the equivalent dots per inch (DPI.)

Plotter

A physical device that receives information of a digital image and reproduces it on paper (see also Inkjet and Laser/LED plotter).

Printable Color

A color that falls within the gamut of a particular output device.
A printable color will output as expected, compared to a color that falls outside the gamut which will print as an unexpectedly different shade. See also Gamut.

Printer

A physical device that receive information of a digital image and reproduces it on paper (see also Inkjet and Laser/LED printer).

PROM

Programmable Read Only Memory.

RAM

Random Access Memory. RAM is a computer resource; having more RAM in a computer makes it faster and more capable.

Raster File

Also called Raster Image or Bitmapped Image. A picture composed of individual dots (picture elements, pixels) the way a scanner perceives it. The rows in a high-resolution raster file typically contain 200 or 300 dots per horizontal inch of the

original drawing, and there are typically 200 or 300 rows per vertical inch. As each of these dots is defined by location, and by whether it is on or off, raster images generally result in large data files.

Resolution

Defines the level of detail that can be captured or shown by a scanner, display, or output device. For scanners, the resolution is defined by the number of dots (pixels) per inch (DPI) that can be captured horizontally and vertically, e.g. 300 DPI equals 90,000 pixels per square inch.

Resolution of a Scanner

Expressed as DPI (dots per inch) or the equivalent ppi (pixels per inch). The higher the resolution of a scanner, the smoother the scanned images.

RGB

Red, Green, Blue. These additive primary colors are the basic elements of white light. By mixing them on a computer monitor or in a scanned image file, other colors can be created. For instance, Red and Green produces Yellow, and equal amounts of all three produce gray.

RIP

Raster Image Processor. A RIP is a special software that converts scanned images into a color dithered (halftone) image that can be output directly. An image must be 'ripped' before it can be output on a CMYK device, e.g., an inkjet printer.

Runlength Encoding

A method of compressing raster or bitmap data by representing "runs" of white or black dots along a scanned line as the number of dots in each run. Many variations of this scheme exist, with varying compression efficiency. Typically, runlength compression formats yield a file 20-25% the size of an uncompressed file.

Saturation

Saturation is one attribute of color in the color space called HSV (Hue Saturation, Value). Saturation is a characteristic indicating the vibrancy or intensity of a hue. A color with high saturation will appear more intense than the same color with less.

Scanning

The process of running a hardcopy original through an optical scanner. The scanner produces a digital image (raster image) of the hardcopy drawing, which is then stored in RAM or on a disk.

SCSI

Small Computer System Interface. Specification of interface to computer equipment like disks, printers, scanners etc.

Shadow Detail

The amount of detail contained in the dark parts of an image. It is desirable to maintain shadow detail, but there is a risk of decreasing overall contrast if one lightens the shadow too much in an attempt to expose additional detail. If an image is scanned without shadow detail, it will be impossible to regain detail using an image editing program.

Sharpness

An attribute of a scanned image and also an attribute of scanner quality.

Stitching

In large format multiple CCD camera scanners, electronic stitching adjusts for overlap in the field of view of adjacent cameras. Automatic stitching at start of scan ensures that each camera captures the correct number of pixels independently of mechanical and thermal changes.

Subtractive Colors

The subtractive primary colors: cyan, magenta, yellow. As ink applied to a piece of paper by a printer, these colors absorb light and alter the colors seen by looking at the printed paper. Cyan ink absorbs the red third of the spectrum, magenta ink absorbs the green third, and yellow ink absorbs the blue third. This should theoretically cause the viewer to see a black color, but due to unavoidable impurities in the inks, there is still light reflected and the viewer sees a muddy brown. The absence of CMY pigments results in white.

TIFF

Tagged Image File Format. One of the most common graphic file formats for line-art and photographic images.

Tonal Distribution

Tonal Distribution describes the distribution of various bright or dark tones within an image. During the scanning or image editing stage, tones can be redistributed, lightening a dark image or darkening a light one.

Tone

Any color or neutral that is denser than white.

Tone Compression

A term used in scanning and image editing that refers to compressing the broad range of tones and colors in an image down to the narrower range available on a printer.

Tone Curves

The shape of the tone transfer curves can be adjusted by the user to alter color or tone correction. The lower left end of the curve typically represents the dark portions of a picture and an upward bend will typically lighten the shadows. Similar capabilities exist by working with the middle or highlight parts of the curve. In this way it is possible to alter only certain tonal ranges of an image without making un-wanted changes to other parts of the image.

True color

True color systems provide eight bits for each of the three components (red, green and blue). Therefore true color is often referred to as 24-bit color.

UCR

Under Color Removal. A color separation setting used on color photographs where cyan, magenta and yellow inks are removed from dark, neutral areas and substituted by black ink. The advantages are a reduction in overall ink usage. See also GCR.

Vector Drawing

Also called Vector File. Consists of mathematically defined elements, such as "Line from A to B", "Circle with center and radius", etc. CAD systems use vector drawings because of their accuracy, relatively low memory requirement and data-file sizes compared to raster images.

Vectorization

Also called raster-to-vector conversion (RTV). The process of automatically converting a raster (bit-mapped) image into a vector (CAD) drawing.

Viewing Conditions

Different light sources affect the colors that you see. For instance, a color viewed under fluorescent light will look radically different when viewed under incandescent light. Fluorescent light adds green to colors while incandescent light adds red. For this reason the printing industry developed a standard viewing condition known as the D50 (5000 Kelvin) light source in addition to a neutral gray background surround. This light source replicates daylight with equal parts of red, green, and blue.

XYZ

The CIE system is based on the description of color as a brightness (luminance) component Y (as described above), and two additional components X and Z. The spectral weighting curves of X and Z have been standardized by the CIE, based on statistics from experiments involving human observers. XYZ tri-stimulus values can describe any color.

Zoom

Changing the size of the viewing area, to examine a larger or smaller area in greater detail.

7. Appendix B: Program License Agreement

You should carefully read the following terms and conditions before opening the diskette package. Opening the diskette package indicates your acceptance of the terms and conditions. If you do not agree with them you should promptly return the package unopened, and your money will be refunded.

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CONTEX

8. Appendix C:Index

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