

EPSON EXPRESSION™ 1680

EPSON EXPRESSION™ 1680 Pro

Scanner Software

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Reference Guide

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Introduction

Features

The CD-ROM that comes with your scanner contains the EPSON scanner software suite, including EPSON TWAIN Pro and TWAIN Pro Network (The network version of EPSON TWAIN Pro). The software suite is the perfect companion for your EPSON scanner. Using your scanner and the software from the CD-ROM, you can scan images in color, grayscale, or black and white, and save them as files or print them out. Other software such as EPSON Scanner Monitor and PageManager for EPSON support the Start Button feature to make scanning much easier. EPSON Scan Server allows your scanner to be used over a network.

- ❑ The software supports the following EPSON scanners:
EPSON Expression 1680/1680Pro
- ❑ EPSON TWAIN Pro and EPSON TWAIN Pro Network directly control all of the features of your EPSON scanner. This program is the standard cross-platform interface for other applications.

The CD-ROM also contains other applications that let you use your scanner in exciting new ways. For detailed information, refer to the supporting documentation.

- ❑ EPSON Scanner Monitor allows your scanner to access software that supports the Start Button feature in Windows 95.
- ❑ PageManager for EPSON is TWAIN-compliant software that supports the Start Button feature. This feature allows you to scan and send data to a target application with a single push of the Start button. For more information on PageManager, see your PageManager documentation.

About This Guide

The information in this guide is divided into four chapters, with a glossary and index provided for your reference.

- ❑ Chapter 1 explains the basic steps of scanning.
- ❑ Chapter 2 provides a complete description of EPSON TWAIN Pro and TWAIN Pro Network features. Refer to Chapter 2 when making scanning settings.
- ❑ Chapter 3 explains how to use the options available for your scanner.
- ❑ Chapter 4 contains troubleshooting information. If your software does not operate properly or scanned images are not what you expect, see this chapter.

Notes contain important information and useful tips about your scanner and software.

To set up and use the scanner, see your scanner's *Set Up Guide*. For more information on making settings in the EPSON TWAIN Pro and EPSON TWAIN Pro Network applications, see the online help in these applications.


Chapter 1

Optimizing Scanning

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Recommended Adjustment Order

The Adjust tools in EPSON TWAIN Pro's Preview window offer you a powerful means of improving image quality, but the order in which you use these tools can greatly affect your results.

For optimum image enhancement, first click the  Auto Exposure button to automatically adjust the Gamma, Highlight, and Shadow settings, then make any further adjustments in the order explained below.

Adjust the brightness and contrast

1. Adjust the Highlight and Shadow settings in the Image Controls dialog box. See "Making the Highlight setting" on page 1-3 and "Making the Shadow setting" on page 1-4.
2. Adjust the Gamma setting in the Image Controls dialog box. See "Making the Gamma setting" on page 1-5.
3. Adjust the tone curve with a predefined tone correction setting in the Tone Correction dialog box. See "Applying a preset tone curve" on page 1-6.

Make color adjustments


4. Adjust the Gray Balance Intensity setting in the Color Adjustment dialog box. See "Making the Gray Balance Intensity setting" on page 1-7.
5. Adjust the Saturation setting in the Color Adjustment dialog box. See "Making the Saturation setting" on page 1-9.
6. Manually adjust the tone curve for individual colors in the Tone Correction dialog box. See "Making tone curve settings" on page 1-9.

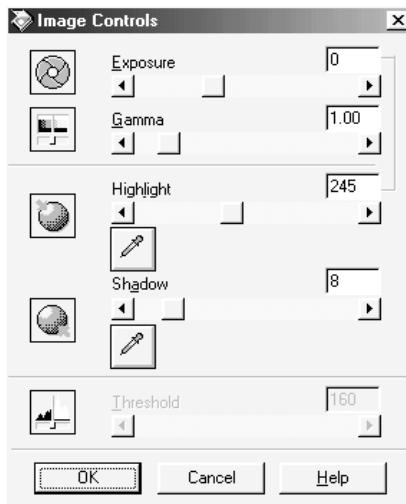
Adjusting Brightness and Contrast

Adjust brightness and contrast before adjusting image color. Brightness and contrast settings should be made in the order they appear in this section.

Making the Highlight setting

Highlights are the brightest areas of an image. Follow these steps to adjust the Highlight setting.

1. Click the  Image Controls button in the Preview window.
2. Click the eyedropper button under Highlight.



The pointer changes to an eyedropper, with movement restricted to within the Preview window.


3. Move the eyedropper to the location you want to select as the highlight point and click it.

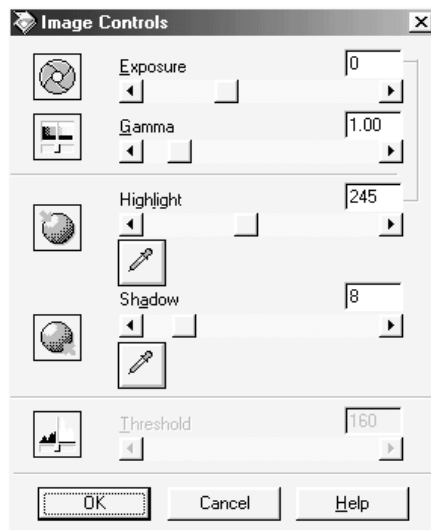
The brightness of the pixel at the point you click is set as the highlight level, and the other parts of the image are adjusted accordingly.

4. To change the highlight level of the point you selected, move the Highlight slider left or right, or enter a value between 61 and 490 in the text box.

Making the Shadow setting

Shadows are the darkest areas of an image. Follow these steps to adjust the Shadow setting.

1. Click the  Image Controls button in the Preview window.
2. Click the eyedropper button under Shadow.



The pointer changes to an eyedropper, with movement restricted to within the Preview window.

3. Move the eyedropper to the location you want to select as the shadow point, and then click.


The brightness of the pixel at the point you click is set as the shadow level, and the other parts of the image are adjusted accordingly.

4. To change the shadow level of the point you selected, move the Shadow slider left or right, or enter a value between 0 and 60 in the text box.

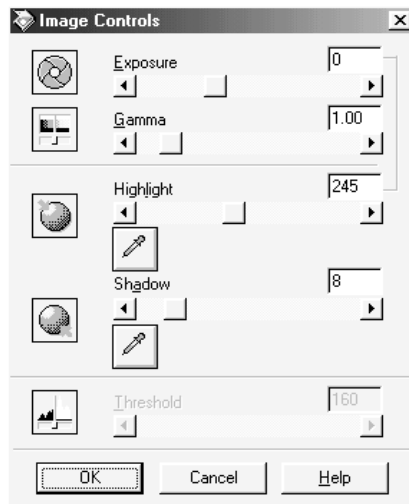
Making the Gamma setting

Gamma is the difference in contrast between the light tones and dark tones of an image. Changes in the gamma level only affect mid-tones, and can be effective for bringing out details normally hidden in shadow or highlights.

Follow these steps to adjust the Gamma setting.


1. Click the  Image Controls button in the Preview window.

2. Move the Gamma slider left or right, or enter a value between 0.5 and 5.0 in the text box.



Applying a preset tone curve

The Tone Correction feature provides preset tone correction curves that let you adjust the contrast within an image. This allows more control over the image when used in conjunction with the settings in the Image Controls dialog box.

Click the  Tone Correction button in the Preview window, then select a preset tone curve from the Tone Curve Name list. The preset tone curves are described below.

Linear

A linear tone curve has no tone correction. Use this setting if you are satisfied with the tone of the preview image.

Lighten

Adjusts darker images (like underexposed film) to make them slightly brighter.

Darken

Adjusts brighter images (like overexposed film) to make them slightly darker.

Flat Contrast

Flattens high contrast images to make them look more natural.

High Contrast

Increases the contrast of dull images.

Open Shadow

Improves details in the dark areas of images.

Note:


See “Tone Correction” on page -42 for more information on tone correction.

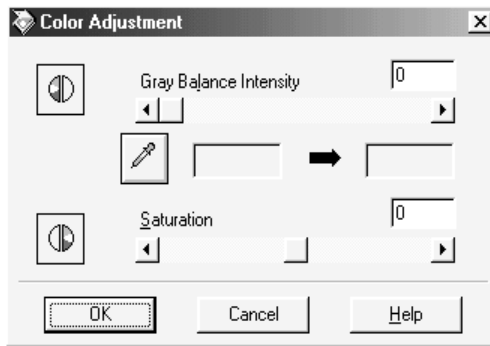
Adjusting Color

Color adjustments should be made after adjusting settings related to brightness and contrast. Color settings should be made in the order they appear in this section.

Making the Gray Balance Intensity setting

This setting allows you to remove a cast (tint) from a specific color.

1. Click the  Color Adjustment button in the Preview window.
2. In the Color Adjustment dialog box, click the eyedropper button under Gray Balance Intensity.



The pointer changes to an eyedropper, with movement restricted to within the Preview window.

3. Move the eyedropper to a location that contains the color whose gray balance intensity you want to adjust, and then click.

The color you selected appears in the two boxes below the Gray Balance Intensity slider.

4. To change the gray balance intensity level of the color you selected, move the slider left or right, or enter a value in the text box.

You can enter a value between 0 and 100. Changing the value causes the color in the right hand box to change accordingly. Your changes are also reflected in the image in the Preview window.


Note:

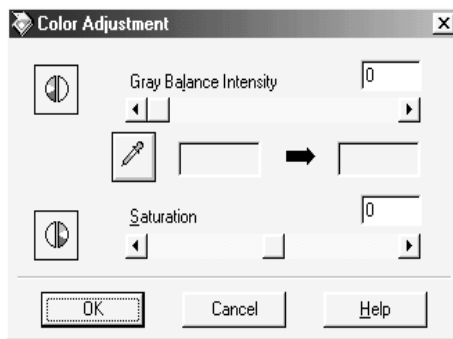
See “Color Adjustment” on page -44 for more information on adjusting the gray balance intensity level.

Making the Saturation setting

Saturation is the density of a color. Higher saturation makes the color appear richer, while lower saturation makes it appear paler.

Follow these steps to adjust the Saturation setting.

1. Click the  Color Adjustment button in the Preview window.
2. Move the Saturation slider left or right, or input a value between -100 (lowest color density) and 100 (highest color density).




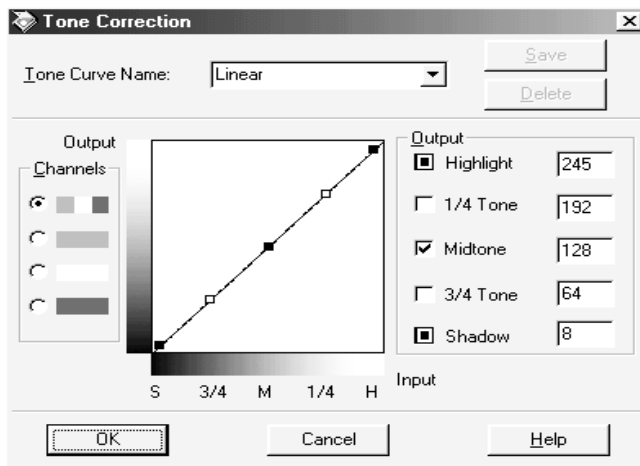
Making tone curve settings

After you have made the other color settings described in this section, you can use the tone curve to fine-tune the intensity of colors in your image.

Note:

The Tone Correction feature is unavailable whenever Black & White is selected as the Pixel Depth and None is selected for the Halftone.

Click the  Tone Correction button in the Preview window, select the Channels button for the color you want to adjust, then use the tone curve editor and Output options as explained below.



Tone curve editor

Moving the mouse pointer into the tone curve editor causes it to change to a finger. Use this pointer to drag any of the five points in the curve and change its shape. The x-axis of the curve is the brightness of the original (input values) while the y-axis is the brightness of the scanned image (output values).

To change the tone curve back to its default, select **LINEAR** from the Tone Curve Name list.

To add your settings to the Tone Curve Name list, type a name for the settings in the list, then click **Save**.

Output values

These are the current values for output data in accordance with the current locations of the points inside the tone curve editor. These values change when you drag points in the tone curve editor, or you can enter in values here to change the shape of the tone curve. Each value can be adjusted within the range of 0 to 255.


Note:

- Each output value name has a check box to the left of it. Highlight and Shadow are always selected, but you can select or clear 1/4 Tone, Midtone, and 3/4 Tone by clicking their check boxes.*
- When a value's check box is clear, its point on the tone curve editor automatically shifts to smooth out the tone curve when one of the other points is moved.*
- When a value's check box is selected, it means that its point is fixed and it will not shift when other points are moved.*

Improving Text Scanning for OCR

This section gives you suggestions and recommended settings in order to improve OCR (optical character recognition) performance when scanning text.

Follow these steps to improve character recognition performance.

1. In the EPSON TWAIN Pro main dialog box, make sure OCR is selected in both the Image Type and Destination list boxes. Then click the Image Type button. The Image Type dialog box appears.
2. Select None from the B/W Option list, and then click OK.
3. Click Preview, then click the  Image Controls button to display the Image Controls dialog box.



4. Use the Threshold slider to change the threshold value, monitoring the results of your changes in the Preview window. Depending on the lightness, darkness, and complexity of the background on which the text is printed, increasing or decreasing the threshold value can make it easier for OCR software to recognize characters.

If you still have problems...

1. In the EPSON TWAIN Pro main dialog box, try increasing the Resolution value to 400. Be aware that scanning at higher resolution takes longer and may not greatly increase the recognition rate.
2. If you still have problems, try using the enhancement tools in your OCR software to make adjustments.

Potential text recognition problems

The quality of the text in your original document greatly effects OCR results.

The following types of originals can make recognition difficult and should be avoided if possible:

- Items that have been copied from other copies
- Faxes
- Text with tightly-spaced characters or line pitch
- Text that is in tables or underlined
- Cursive or italic fonts, and font sizes less than 8 points

Remember that OCR software cannot recognize handwritten characters.

Chapter 2

Understanding EPSON TWAIN Pro Features

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Using the EPSON TWAIN Pro Main Dialog Box

When you start EPSON TWAIN Pro or EPSON TWAIN Pro Network through a TWAIN-compliant application, the main dialog box appears on your screen. In this dialog box you can specify values for a variety of settings and select special EPSON TWAIN Pro functions to attain the highest quality scanned images.

Note for Macintosh users:

Most illustrations shown in this section are for Windows, so they may vary in appearance from what actually appears on your screen. The instructions are the same, except as noted.

Note for EPSON TWAIN Pro Network users:

Although most illustrations and explanations of settings and functions in this guide are for EPSON TWAIN Pro, they also apply to EPSON TWAIN Pro Network.



Note:

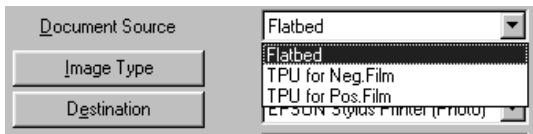
If you attempt to scan in image that exceeds your computer's available memory or disk space, an alert appears on the screen.

Selecting a Document Source

When scanning a reflective document placed on the document table of the scanner, leave the Document Source set to Flatbed. Other selections are available depending on whether an optional Automatic Document Feeder or Transparency Unit is installed. Settings for installed options are Automatic Document Feeder, and TPU for Neg. Film or TPU for Pos. Film.

Note:

Uninstalled options are not displayed.



Flatbed

Choose this setting to use the document table of the scanner.

Auto Document Feeder

Choose this setting to use the optional Automatic Document Feeder.

Note:

Some applications do not support feeding and scanning more than one sheet at a time.

TPU for Neg. Film, TPU for Pos. Film

Select one of these settings when using the Transparency Unit. If you are scanning negative film, select TPU for Neg. Film, and if you are scanning positive film (or slides), select the TPU for Pos. Film setting.

Selecting an Image Type

Use the Image Type list to select from a variety of predefined and user-defined settings, or use the Image Type button to make detailed changes to settings and to save custom settings.

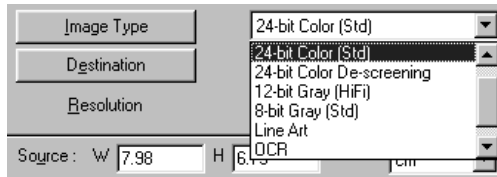


Image Type list

The Image Type list provides the predefined settings described below. There is a predefined setting to suit most image types, so EPSON recommends using the predefined settings first. If you later want to make fine adjustments to the Image Type setting, use the Image Type button. See “Image Type button” on page 2-7 for details.

48-bit Color(HiFi)

48-bit colors, best quality output when scanning colored documents

Note:

This setting is available only with certain applications, such as Adobe® Photoshop®.

24-bit Color(Std)

24-bit colors, high quality output when scanning colored documents

24-bit Color De-screening

24-bit colors, high quality with de-screening to remove moiré patterns

Note:

A moiré is a cross-hatch pattern that appears on scanned images when scanning printed material. It is a result of interference that occurs due to the difference between the pitches of the scanning and the halftone screens.

16-bit Gray(HiFi)

16-bit gray, best quality output when scanning gray documents

Note:

This setting only has an effect with certain applications, such as Adobe Photoshop.

8-bit Gray(Std)

256 grays, high quality, and de-screening is selectable (default is no de-screening)

Line Art

Black and white, draft quality

OCR

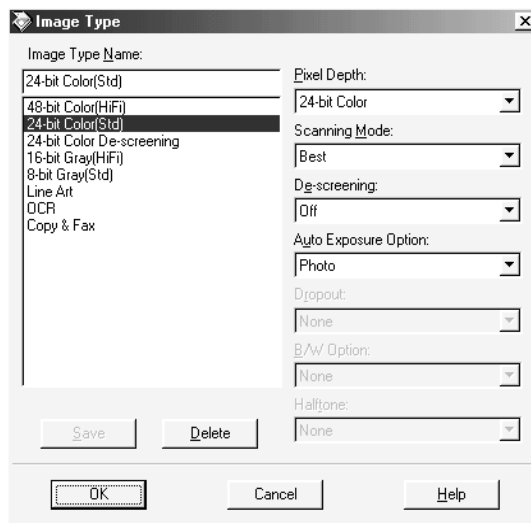
Black and white, best quality

Copy & Fax

Black and white, hard halftone, draft quality, Auto Area Segmentation

Image Type button

The Image Type button opens the Image Type dialog box, where you can customize the Image Type settings described in this section.



To save the settings you made as a group of custom settings, type a new name in the Image Type Name box, then click Save. To delete a custom Image Type setting, select the setting name then click Delete.

To apply the settings you made, click OK. You can see the effects of all settings except B/W Option in the Preview window. Click the Preview button in the main dialog box to open this window.

Image Type Name

The names of predefined settings and any custom settings you have saved appear in the Image Type Name list.

Pixel Depth

Select the pixel depth from:

48-bit Color, 24-bit Color, 16-bit Gray, 8-bit Gray, and Black & White.

Note:

- Depending on the model of your scanner, the 48-bit Color setting may be 42 or 36 bits, and the 16-bit Gray setting may be 14 or 12 bits.*
- The Pixel Depth setting determines which values are displayed in the Densitometer window. For more information, see "Using the Densitometer" on page -30.*

Scanning Mode

Use this setting to select between speed and quality. Best provides the best quality image, while Draft provides faster scanning with some loss of quality. Note that you can also change the scanning mode of the preview image using the Configuration dialog box. See "Making Configuration Settings" on page 2-18 for details.

De-screening

Select either On or Off. When On is selected, moiré patterns are automatically removed from scanned images, but scanning takes longer.

Note:

A moiré is a cross-hatch pattern that appears on scanned images when scanning printed material. It is a result of interference that occurs due to the difference between the pitches of the scanning and the halftone screens.

Auto Exposure Option

Allows you to specify the kinds of adjustments made by the Auto Exposure feature. When scanning photographs or documents that contain high quality images, select Photo. Select Document when scanning printed text.

Note:

You can see the adjustments made by the Auto Exposure feature in the Preview window. For details on using the Auto Exposure feature, see "Auto Exposure" on page -39.

Dropout

Select a color to subtract from a black and white scan of a colored original. Proper use of dropout can improve the quality of your black and white scans. Available dropout options are: None, Red, Green, and Blue.

Note:

- Dropout is available only when Pixel Depth is set to 8-bit Gray or Black & White.*
- Depending on the image, you may need to adjust the Threshold setting in the Image Controls dialog box before making the Dropout setting to achieve the desired effect. For more information on the Threshold setting, see "Image Controls" on page -40.*

B/W Options

These options are useful when scanning text or grayscale images.

Text Enhancement Technology (TET)

To improve recognition accuracy during OCR (Optical Character Recognition) scanning, select this option. This function eliminates the document background from scans.

Auto Area Segmentation (AAS)

To make grayscale images clearer and text recognition more accurate, select this option. This function separates text from graphics.

Note:

- The B/W Option setting is available only when Black & White is selected as the Pixel Depth setting.*

- When you need neither Text Enhancement Technology nor Auto Area Segmentation, select None.*

Halftone

Select a halftone or dither setting to reproduce images using special dot patterns:

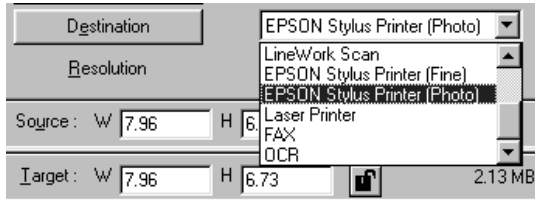
Mode A (Hard Tone), Mode B (Soft Tone), Mode C (Net Screen), Dither A (4 × 4 Bayer), Dither B (4 × 4 Spiral), Dither C (4 × 4 Net Screen), Dither D (8 × 4 Net Screen), or None.

Note:

Halftone is available only when Pixel Depth is set to Black & White.

Selecting a Destination

The Destination setting allows you to specify the application or the output device for which the scanned image is intended. Use the Destination list to select a predefined or user-defined destination, or use the Destination button to customize Destination settings.



Destination list

Select a predefined or custom setting from this list. The predefined settings have the Resolution and Unsharp Mask values shown in the following table.

| Destination name | Resolution | | Unsharp Mask |
|---------------------|--|--|--------------|
| | Line drawings and halftone images | Photos | |
| Screen/ Web | 96 dpi (for Windows) 72 dpi (for Macintosh) | 96 dpi (for Windows) 72 dpi (for Macintosh) | medium |
| Prepress 175 lpi | 350 dpi | 350 dpi | off |
| Prepress 150 lpi | 300 dpi | 300 dpi | off |
| Prepress 133 lpi | 266 dpi | 266 dpi | off |
| Prepress 120 lpi | 240 dpi | 240 dpi | off |

| | | | |
|-----------------------------|----------|---------|--------|
| LineWork Scan | 1200 dpi | 600 dpi | medium |
| EPSON StylusPrinter (Fine) | 360 dpi | 150 dpi | medium |
| EPSON StylusPrinter (Photo) | 720 dpi | 300 dpi | medium |
| Laser Printer | 600 dpi | 200 dpi | medium |
| Fax | 200 dpi | 200 dpi | off |
| OCR | 300 dpi | 300 dpi | off |

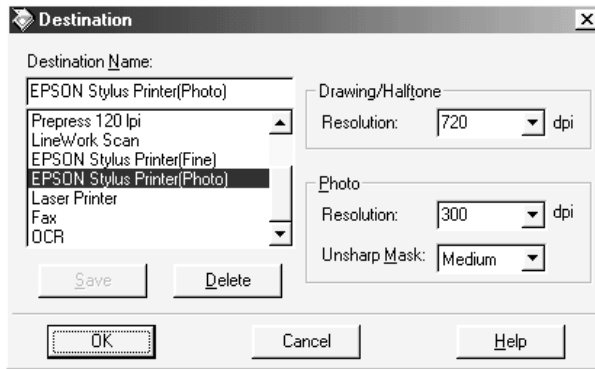
If you are using an EPSON Stylus printer and are printing scanned images with the Economy, Normal, or Fine Print Quality settings in your printer software, selecting EPSON Stylus Printer (Fine) is recommended. If you are printing with the SuperFine or Photo Print Quality settings, select EPSON Stylus Printer (Photo).

Note:

The effects of the Destination settings cannot be viewed in the Preview window.

Destination button

The Destination button opens the Destination dialog box, where you can change Resolution and Unsharp Mask settings and add your custom settings to the Destination list, as described below.



To save the settings you made, type a new name in the Destination Name box, and then click **Save**. To delete a custom Destination setting, select the setting name then click **Delete**.

To apply your settings, click **OK**. To cancel the settings, click **Cancel**.

Destination Name

Predefined and custom setting names appear in the Destination Name list. Select a setting from the list, or save new custom settings by typing a name in the Destination Name box, then clicking **Save**.

Resolution

Specify a scanning resolution for line drawing and halftone images, and for photos. You can select one of the dpi settings available in the list box, or you can type your own setting in increments of 1 dpi up to 6400 dpi. The maximum resolution available is 12800 dpi.

Note:

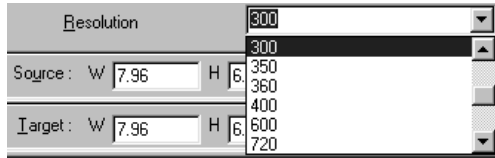
- ❑ *When the Pixel Depth setting in the Image Type dialog box is set to Black & White, the Drawing/Halftone settings take effect. For other Pixel Depth settings, the Photo settings take effect.*
- ❑ *When making Drawing/Halftone settings for printer destinations, make the Resolution setting the same as the resolution specified in the printer driver. When making Photo settings for printer destinations, specify a Resolution setting between 150 and 300 dpi. Selecting a resolution higher than 300 dpi slows down printing without improving the output quality.*
- ❑ *The Resolution setting is closely related to the Image Size and Scale settings. If you change them arbitrarily, the resulting image may not be what you expected.*

Unsharp Mask

The Unsharp Mask feature improves the sharpness of the scanned image. You can choose between four Unsharp Mask settings: Off, Low, Medium, and High. Selecting High improves image sharpness the most, but may cause your software to work more slowly. You can see the effects of your settings in the Preview window.

Setting the Resolution

You can change the resolution for the current scanning operation in the main dialog box by selecting a resolution from the list or by typing in a value up to 6400 dpi. The maximum resolution you can select is 12800 dpi. Changes made here override the resolution setting in the Destination dialog box.

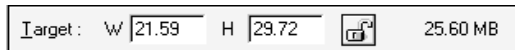


Specifying Source and Target Image Sizes

The Source values indicate the size of the image that is displayed or selected in the Preview window.



The Target values indicate what size the image will be when it is output.



Note:

The image size settings are closely related to the Resolution setting. If you change image size or Resolution settings arbitrarily, the resulting image may not be what you expect.

Width (W) and height (H) values

The width and height of an image are indicated in the selected unit of measure. To change the size, you can type in new values or you can change the image area in the Preview window by creating a marquee, or frame. Do this by dragging the mouse over the desired area. See “Using the Preview Window” on page -29 for more information on marquees.

Units

Select pixels, inches, or cm as the unit of measure.



Storage size indicator

The storage size of an image is indicated in KB or MB. As you change the image area in the Preview window, this value also changes.

Lock button



locked



unlocked

Clicking the lock button automatically scales the Source image size to fit the Target image size while preserving the image’s original width-to-height proportions. This is especially useful when printing. In this case, enter the width and height of the printable area of the paper as the Target image size and then click the lock button. The Source image size is automatically scaled to fit the paper while maintaining the current width-to-height ratio.

Scale

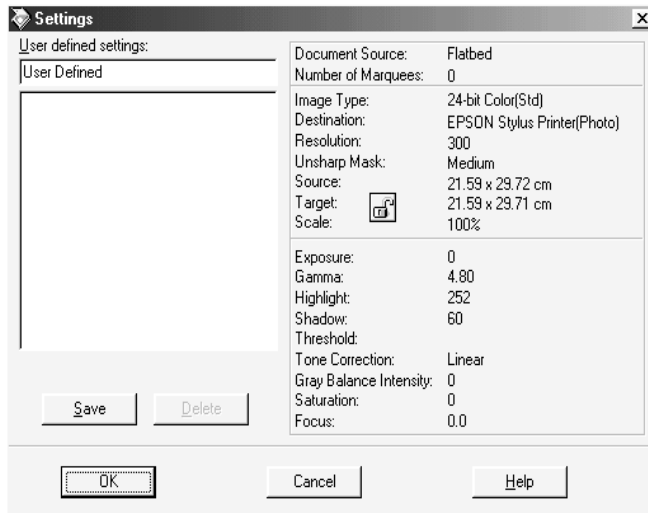


Use the Scale settings to reduce or enlarge the image. The range of possible reduction or enlargement varies depending on the current resolution setting.

Move the slider or click the left or right arrows to change the image size in 1% increments. You can also type a value in the Scale field.

Using the Settings Dialog Box

Clicking the Settings button opens the Settings dialog box, where you can view all current settings, save the current settings with a new name, and apply previously-saved custom settings.



Note:

- ❑ *Depending on your scanner model, the preset settings for using film holders may appear in the User defined settings list when the optional Transparency Unit is installed.*
- ❑ *Only custom settings related to the currently selected Document Source appear in the User defined settings list.*

To save the current settings , type a new name in the User defined settings box, then click **SAVE**. To delete a setting from the list, select the setting name in the list, then click **Delete**.

To apply saved settings, select a setting name from the list, then click **OK**. The image in the Preview window will reflect the settings you selected.

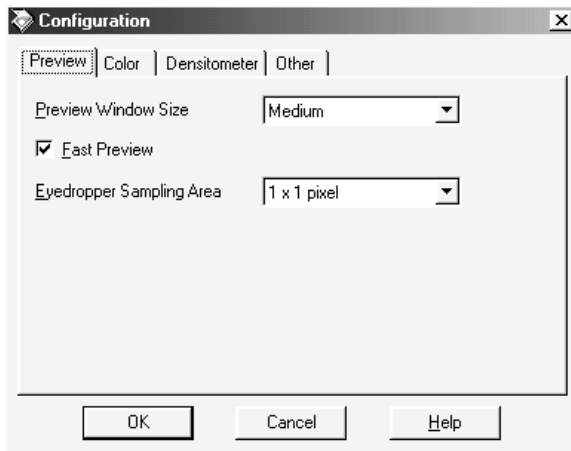
To restore the previous settings, click **Cancel**.

Making Configuration Settings

Click the **Configuration** button to open the Configuration dialog box, where you can make a variety of configuration settings related to the Preview window and the previewed image, color adjustment, and the Densitometer.

Preview menu

This menu allows you to make basic settings that effect the properties of the Preview window.



Preview Window Size

Select the size of the Preview window. Your choices are Large, Medium, and Small.

Fast Preview

Enables high-speed loading of the preview image. If this is selected, the preview image is scanned quickly at draft quality. If this is not selected, the preview image is scanned at a high quality, and you can get accurate values for the Highlight, Shadow, and Gray Balance Intensity by sampling with the eyedropper in the preview image.

Do not select this setting when quality is more important than speed.

Eyedropper Sampling Area

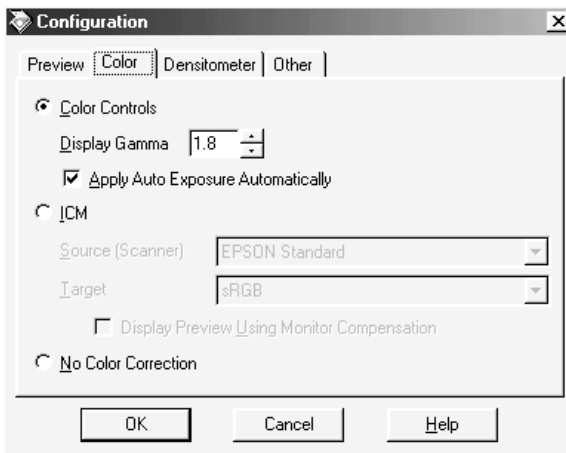
This setting allows you to specify the area in pixels that is sampled when using the eyedropper to make the Highlight, Shadow, and Gray Balance Intensity settings. You can choose from the following settings: 1 x 1 pixel, 3 x 3 pixels, and 5 x 5 pixels.

Note:

If you select the 3 x 3 pixels or 5 x 5 pixels setting, an average of the color values of the sampled pixels is used when adjusting the Highlight, Shadow, or Gray Balance setting.

Color menu

Click the Color tab to display the Color menu.



This menu allows you to specify whether you want to use a color management system with EPSON TWAIN Pro, and make a few basic settings for either case. You can also make a setting for scanning without adjusting the image quality. Choose the appropriate setting from the list below.

| Setting | When to Select |
|--|---|
| Color Controls (default setting) | When not using a color management system with EPSON TWAIN Pro |
| ICM (for Windows), or ColorSync (for Macintosh) | To use color management system profiles with EPSON TWAIN Pro |
| No Color Correction | To make a color profile using a color calibration device |

Note:


Depending on the version of Windows you are using, some settings may not be available. See below for details.

Color Controls


The Color Controls setting allows you to make settings that affect the gamma for your monitor and the way the Auto Exposure feature works.

Display Gamma

You can change the gamma value for your monitor by typing a value in the Display Gamma box, or by clicking the arrows next to the box. You can choose between values of 1.0 to 3.0 in increments of 0.1. The default setting is 1.8.

This Display Gamma setting also affects the Gamma setting in the Image Controls dialog box that results when you click the  Auto Exposure button in the Preview window.

Apply Auto Exposure Automatically

Select this check box to make the Auto Exposure feature work whenever you click the Preview button, modify the size of the preview with the zoom feature, make a marquee, or modify the size or change the location of a marquee. If this check box is clear, the Auto Exposure feature will only work when you click the  Auto Exposure button in the Preview window.

Note:

This feature is only available when Color Controls is selected.

ICM (for Windows) or ColorSync (for Macintosh)

The name of this setting depends on the type of computer you are using. In Windows, the name of the setting is ICM, and for Macintosh computers, the name of the setting is ColorSync.

Select this setting to reproduce the colors in your image using the available color management system for your computer: ICM for Windows, or ColorSync for Macintosh. Selecting this setting enables you to choose a color profile for your scanner in the Source (Scanner) list box, and a color profile for your monitor or output device (such as printer) in the Target list box. After the image is scanned, it is converted according to these settings before it is sent to the application.

Note:

- The ICM and ColorSync settings are provided for experienced users. If you do not have a working knowledge of color management systems, select Color Controls to avoid unexpected results.*
- If your printer and monitor do not support the available color management system (ICM or ColorSync), select Color Controls. See your printer and monitor documentation to check if they support ICM or ColorSync.*
- When ICM or ColorSync is selected, the Apply Auto Exposure Automatically setting is unavailable.*

- ❑ *If ICM or ColorSync is selected, whenever the Auto Exposure function is used, the Shadow setting in the Image Controls dialog box is automatically set to 8, and the Gamma setting is set to 1.0.*
- ❑ *ICM is not available in Windows NT 4.0.*
- ❑ *In Windows 95, you can select the ICM setting, but the Source (Scanner) and the Target settings, and the Display Preview Using Monitor Compensation dialog box are not available.*

Source (Scanner)

Choose a color profile for the scanner you are using from this list box. EPSON recommends selecting EPSON Standard when using an EPSON scanner.

Note:

This setting is not available in Windows 95 and NT 4.0.

Target

In this list box you can choose a color profile that matches either your monitor or other output device, such as your printer, or you can choose one of the RGB color space profiles that matches those available in Adobe Photoshop.

To use the same color profile that is currently being used by your computer monitor, select Monitor RGB. To choose a different profile for your monitor or printer, select from the monitor and printer profiles in the list.

To choose a color profile that matches the RGB color space you are using in Adobe Photoshop, select that color space from the list. For more information on color management in Adobe Photoshop, see the Adobe Photoshop's documentation.

Note:

- ❑ *If you made a color profile to calibrate your monitor using the Adobe Gamma utility, that profile appears in the Target list box.*

- ❑ *The default Target setting in Windows is sRGB, and for Macintosh the default Target setting is Monitor RGB.*
- ❑ *This setting is not available in Windows 95 or NT 4.0.*

Display Preview Using Monitor Compensation

This feature is helpful if you have chosen a color profile in the Target menu that matches the current RGB color space in Adobe Photoshop 5.0 or 5.5. In this case, make sure that the Display Using Monitor Compensation check box in Photoshop's RGB Setup dialog box is selected, then select EPSON TWAIN Pro's Display Preview Using Monitor Compensation check box to ensure that the colors in the Preview window image match the colors of the image once it is scanned and viewed in Photoshop.

Note:

- ❑ *Do not select this check box unless using Adobe Photoshop version 5.0 or later, or Adobe Illustrator 9.0.*
- ❑ *This setting is not available in Windows 95 and NT 4.0.*

No Color Correction

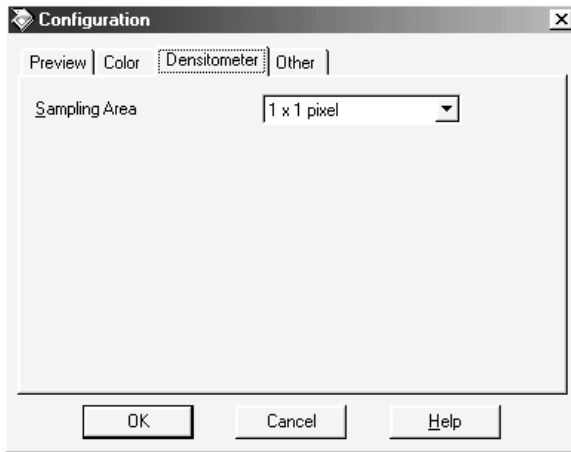
This setting allows you to scan images without the adjusting the quality of the image at all. Select this setting for best results when making your own color profile using a color calibration device.

Note:

This setting is unavailable in Windows 95 and NT 4.0.

Densitometer menu

Click the Densitometer tab to display the Densitometer menu.



Sampling Area

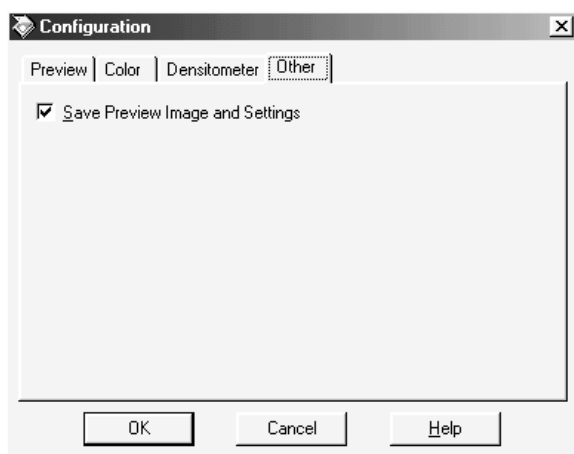
This setting allows you to set the area in pixels that the Densitometer samples. You can choose between 1 x 1 pixel, 3 x 3 pixels, or 5 x 5 pixels.

Note:

You can change the sampling area while viewing the Densitometer window by pressing your computer's Ctrl and E keys.

Other menu

Click the Other tab to display the Other menu.



Save Preview Image and Settings

When this check box is selected, the image that was shown in the Preview window the last time EPSON TWAIN Pro was used will appear with its associated settings the next time you start EPSON TWAIN Pro. This feature is useful when scanning the same document more than once, and is especially useful when using different TWAIN-compliant applications to scan the same document.

Note:

When this check box is selected, it is possible that when you start EPSON TWAIN Pro, the image shown in the Preview window is different than that of the document currently set to be scanned. Before scanning, make sure the correct document is set in the scanner.

Using the Scan Button

Clicking the SCAN button while the Preview window is open scans the image or images in the active and selected marquees according to the settings you made.

If you click the Scan button when the Preview window is not open, the scanner automatically locates the image and the auto exposure automatically adjusts the exposure of the image, then the image is scanned. In this case, any previous settings you may have made in the Image Controls, Tone Correction, and Color Adjustment dialog boxes are ignored.

During scanning, a progress indicator appears. If necessary, click the CANCEL button to cancel the operation.

After the scan is finished, the scanned image is transferred to the application you used to open EPSON TWAIN Pro or EPSON TWAIN Pro Network so that you can work with the image from within that application.

Note:

- ❑ *You cannot scan an image whose size exceeds available memory or disk space. If you attempt to scan an image that is too large, an error message appears.*
- ❑ *After an image is scanned, be sure to save it.*

Note when scanning over a network:

If the network connection is terminated before the scanned image is transferred, check the time out setting and increase the value, if necessary.

Using the Preview Button

Clicking the Preview button opens the Preview window, where you can view and adjust the quality of your image before scanning. For details on using the preview window, see “Using the Preview Window” on page -29.

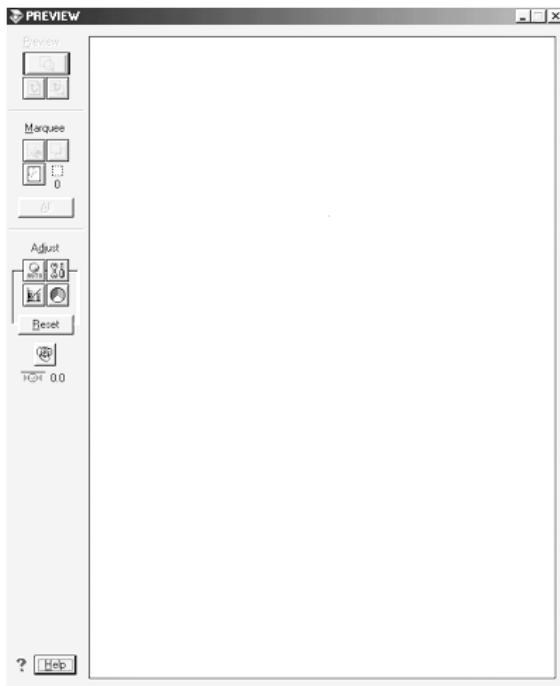
Using the Preview Window

Before you scan an image, you can use the Preview window to see the effects of most EPSON TWAIN Pro settings, and to make additional image adjustments. You can also use marquees (frames) to scan only selected portions of an image. In addition, the Preview window gives you access to the Densitometer, which you can use to sample a range of pixels in the previewed image.

Note:

You cannot preview an image that exceeds available memory or disk space.

To open the Preview window and the Densitometer, click Preview in the EPSON TWAIN Pro main dialog box.



The Preview window displays the effects of the following settings.

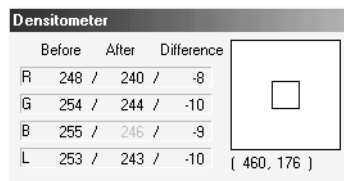
- Image Type: Pixel Depth, Dropout, and Halftone
- Destination: Unsharp Mask
- Image Controls: Exposure, Gamma, Highlight, Shadow, and Threshold
- Tone Correction
- Color Adjustment: Gray Balance Intensity and Saturation

Note:

Although the image in the Preview window changes as you make settings, the settings do not affect the real image until you scan or rescan the image.

Using the Densitometer

The Densitometer shows the RGB and luminosity (L) values of a selected pixel or group of pixels, and indicates the difference between these values before and after making adjustments to the previewed image.



The screenshot shows a window titled "Densitometer" with a table of values and a small image preview. The table has three columns: "Before", "After", and "Difference". The rows represent Red (R), Green (G), Blue (B), and Luminosity (L). The values are as follows:

| | Before | After | Difference |
|---|--------|-------|------------|
| R | 248 | 240 | -8 |
| G | 254 | 244 | -10 |
| B | 255 | 246 | -9 |
| L | 253 | 243 | -10 |

To the right of the table is a small image preview with a white square on a dark background. Below the preview, the coordinates [460, 176] are displayed.

To use the Densitometer, place the cursor over an area of the image in the Preview window to sample a pixel or group of pixels. A close-up of the area being sampled appears on the right side of the Densitometer window, and the values of the sampled pixel or group of pixels are displayed on the left side of the window.

The values that appear in the Densitometer window depend on the Pixel Depth setting in the Image Type dialog box. If Pixel Depth is set to one of the color settings, both RGB and luminosity values are shown. If Pixel Depth is set to one of the gray settings, only the intensity value is shown. If Pixel Depth is set to Black & White, then RGB and intensity values are replaced with a Bit value.

Note:

- ❑ *The luminosity value is calculated by the following formula:
 $0.2R+0.6G+0.2B$.*
- ❑ *For more information on the Pixel Depth setting, see “Image Type button” on page 2-7.*

Specifying the number of pixels to be sampled

You can choose to sample one pixel at a time, 3×3 pixels at a time, or 5×5 pixels at a time. To change the number of pixels being sampled, press the Ctrl and E keys on your keyboard. The square in the center of the close-up changes size to indicate the amount of pixels being sampled.

Note:


- ❑ *The values shown for a group of pixels are an average of each pixel's values.*
- ❑ *In the Configuration dialog box, you can specify the default number of pixels to be sampled when the Densitometer opens. See “Densitometer menu” on page 2-25 for instructions.*

Using the Preview Buttons



The Preview buttons let you zoom in on selected portions of the previewed image.


Zoom button

To enlarge a selected portion of the previewed image, click and drag the mouse over the portion to be enlarged, then click the  Zoom button. For more information on selecting portions of images, see “Using Marquees” on page -33.


Note:

The Zoom button is unavailable when one or more marquees are selected in addition to the active marquee.

Return button

Clicking the  Return button restores the image to a full preview. This button is available only when the image is zoomed as described above.

Restore Zoom button

Clicking the  Restore Zoom button restores the image to the previous zoom from memory, which is quicker than clicking the Zoom button again. This button is available only when the image has been previously zoomed.

Using Marquees

A marquee is a frame that you draw around a portion of a previewed image to select it. You can use marquees to specify the portions of an image to be scanned, and to select an area of the image that you want to enlarge using the Preview buttons. You can make multiple marquees.

Making and modifying marquees

To create a marquee, move the pointer over the image in the Preview window. The pointer becomes a set of cross-hairs. Hold down the mouse button and drag the cross-hairs over an area of the image, then release the mouse button to create the marquee. Follow the instructions in this section to resize and move marquees, and to create multiple marquees.

Making multiple marquees

You can make multiple marquees on one image, which allows you to scan specific portions of the image and crop out the rest. This feature is also useful when you want to scan several photographs or other small documents at one time. Extra marquees can be made anywhere except inside the frame of another marquee. Marquees can be different sizes, and they can overlap.

To resize or move one of several marquees, first click the edge of the marquee to make it active. The frame around the active marquee changes to a moving dotted line.



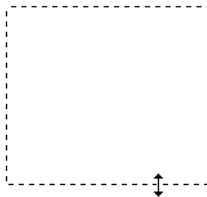
To move more than one marquee at once, first select the marquees that you want to move in addition to the active marquee. To select a marquee, click the marquee while holding down the Ctrl key (for Windows) or the Shift key (for Macintosh) on your keyboard. The frame around selected marquees changes to a static dotted line. You can unselect a selected marquee by clicking it while holding down the Ctrl key (Windows) or the Shift key (Macintosh).

Note:

- ❑ *To create a new marquee inside the active marquee, make the new marquee outside the active marquee first, then move it inside.*
- ❑ *You cannot make multiple marquees when Auto Document Feeder is selected as the Document Source.*

Resizing marquees

When you move the cross-hairs over the edge of an active marquee, the cross-hairs will change to a double-headed arrow as shown below. Drag the arrow to resize the marquee. To resize the marquee proportionally, press the Shift key while dragging the arrow.

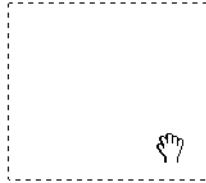


Note:

You cannot resize an active marquee if any other marquees are selected. To unselect a marquee, click the marquee while holding down the Ctrl button (for Windows) or the Shift button (for Macintosh) on your keyboard.

Moving marquees

To move an active marquee, move the cross-hairs inside the marquee until the cross-hairs change into a hand, then drag the marquee to move it. To move more than one marquee at a time, first select the marquees by clicking them while holding down the Ctrl key on your keyboard. To move the marquee or group of marquees in a straight line vertically or horizontally, press the Shift key while dragging an active or selected marquee.




Using the Marquee tools



The Marquee tools described below help you to work with marquees and to automatically place marquees around images in the Preview window.


Delete button

Clicking the  Delete button removes the active and selected marquees. To delete all marquees at once, first click the All button, then click the Delete button.

Note:

When the Preview window is active, you can also delete the active and selected marquees by pressing the Delete key on your keyboard.

Duplicate button


Clicking the  Duplicate button creates another marquee the same size as the active marquee. Clicking the duplicate marquee button while holding down the keys noted in the table below causes the duplicate marquee to appear in the specified orientation relative to the original marquee.

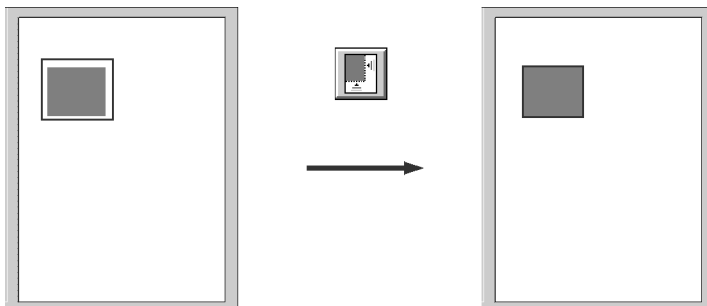
| | Horizontal | Vertical |
|-----------|-------------|------------|
| Windows | Ctrl key | Alt key |
| Macintosh | Command key | option key |

Note:

This button is unavailable when one or more marquees are selected in addition to the active marquee.


Auto Locate button

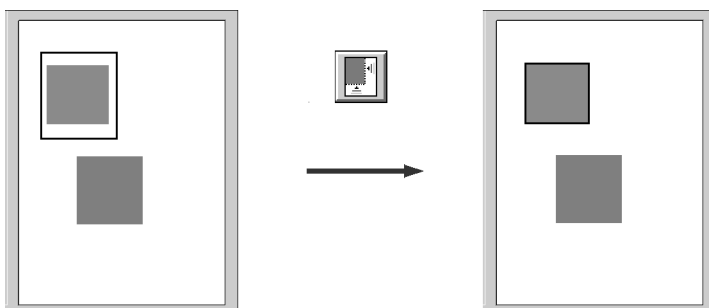
Click the  Auto Locate button to automatically frame a previewed image with a marquee, thus eliminating unnecessary borders.



Note:

- ❑ *The Auto Locate feature is automatically activated when scanning without previewing.*
- ❑ *The Auto Locate feature is unavailable when the Document Source setting in EPSON TWAIN Pro main dialog box is set to TPU for Neg. Film or TPU for Pos. Film.*

If a document contains more than one image, or if you are scanning more than one document at a time, select a target image by placing the mouse pointer over the image and clicking the  Auto Locate button.



Marquee number indicator



This indicates the number of marquees in the Preview window.

All button

Click this button to select all marquees in the Preview window. This feature is useful when you want to delete all marquees.

Using the Adjust Buttons



The Adjust buttons described in this section offer you a powerful means of improving image quality. All adjustments you make with these tools are shown in the previewed image. For further information on using these buttons to optimize scanning, see “Recommended Adjustment Order” on page 1-2.



Auto Exposure button



Image Controls button



Tone Correction button



Color Adjustment button




Reset button



Focus button


Auto Exposure

Click the  Auto Exposure button to optimize the exposure for the entire image, or that the part of the image that is surrounded by an active marquee. This feature adjusts the Gamma, Highlight, and Shadow settings automatically.

Note:

- ❑ *You can use the Configuration dialog box to set the Auto Exposure feature to work whenever you click the Preview button, modify the size of the previewed image with the zoom feature, make a marquee, or change the size or location of a marquee. For information on configuring the Auto Exposure feature, see “Color menu” on page 2-20.*
- ❑ *The Auto Exposure feature is not available when the Pixel Depth is set to Black & White and AAS is not selected in the Image Type dialog box.*
- ❑ *The Auto Exposure feature overrides any Gamma, Highlight, or Shadow settings made in the Image Controls dialog box. Be sure to use Auto Exposure before making any of these settings.*
- ❑ *The Auto Exposure feature is automatically activated when scanning without previewing.*

Image Controls

Click the  Image Controls button to open the Image Controls dialog box. This dialog box allows you to make a wide range of image adjustments, as described below.



Note:

- ❑ *The Image Controls settings are not available when TET (Text Enhancement Technology) is selected in the Image Type dialog box.*
- ❑ *The Image Controls button is unavailable when one or more marquees are selected in addition to the active marquee.*
- ❑ *The Image Controls settings are optimized automatically when you scan without previewing.*
- ❑ *If Pixel Depth is set to Black & White and Halftone is set to None in the Image Type dialog box, all settings except Threshold are not available.*
- ❑ *The Gamma, Highlight, and Shadow settings are overridden by the Auto Exposure feature. Be sure to use the Auto Exposure feature before making these settings. See “Auto Exposure” on page -39 for more information on using this feature.*

Exposure

The Exposure setting lightens or darkens an image. You can select from -10 (darkest) to 20 (brightest) by moving the slider.

The Exposure and Highlight settings are related. When the Exposure setting is changed, the Highlight value also changes automatically.

Gamma

The Gamma setting allows you to adjust the mid-tones in an image. You can select from 0.5 (darkest) to 5.0 (brightest) by moving the slider.

Highlight

The Highlight setting allows you to adjust the brightness level of the brightest parts of an image. You can select from 61 to 490 by moving the slider.

Click the eyedropper button beneath the slider, and the mouse pointer changes to an eyedropper. Move the eyedropper over the previewed image, and click a bright area. The eyedropper “picks up” the color from that area, and uses it as the highlight for the entire image. This effect appears immediately in the preview image. Click **Cancel** to restore the original image.

Shadow

The Shadow setting allows you to adjust the darkness level of the darkest parts of an image. You can select from 0 to 60 by moving the slider.


Click the eyedropper button beneath the slider, and the mouse pointer changes to an eyedropper. Move the eyedropper over the preview image, and click a dark area. The eyedropper “picks up” the color from that area, and uses it as the shadow for the entire image. This effect appears immediately in the preview image. Click **Cancel** to restore the original image.

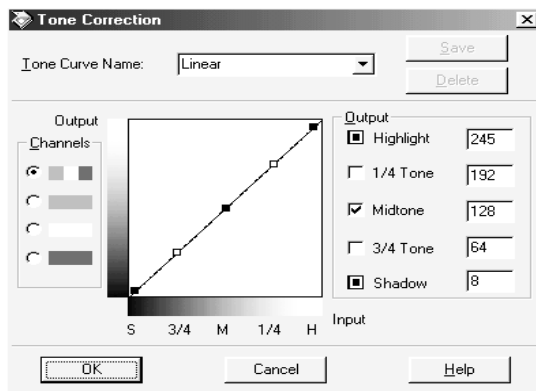
Threshold

Available only when Pixel Depth is set to Black & White and Halftone is set to NONE in the Image Type dialog box. The scanner scans gray shades as either black or white using this setting, and is useful for optical character reading (OCR).

You can select from 0 (lightest) to 255 (darkest) by moving the slider.

Tone Correction

Clicking the  Tone Correction button opens the Tone Correction dialog box. The settings described in this section allow you to adjust the tonal relationship between the original image and its reproduction on a monitor or printer.



Note:

- The Tone Correction button is unavailable when one or more marquees are selected in addition to the active marquee.
- The Linear setting is the default Tone Correction setting.

- ❑ *The Tone Correction feature is not available when Pixel Depth is set to Black & White, Halftone is set to None, and TET (Text Enhancement Technology) is selected in the Image Type dialog box.*
- ❑ *You can see the effects of the Tone Correction settings in the Preview window.*

To save your Tone Correction settings, type a new name in the Tone Curve Name box and click **Save**. To delete a setting from the Tone Curve Name list, select the setting and click **Delete**.

To apply your Tone Correction settings, click **OK**. To restore the original settings, click **Cancel**.

Tone Curve editor

The editor allows you to customize tone correction. Drag points on the tone curve to adjust the tone value. You can edit up to five tonal elements.

Output options

If you select the check box for a specific point, such as 1/4 Tone or Midtone, you can move that point and it will remain where you leave it; it will not be affected by the movement of other points on the curve. If the check box is cleared, the point will be affected by the movement of other points.

Channels options

You can select the combined red, green, and blue (RGB) channel to modify all colors, or select each of these colors separately.


Note:

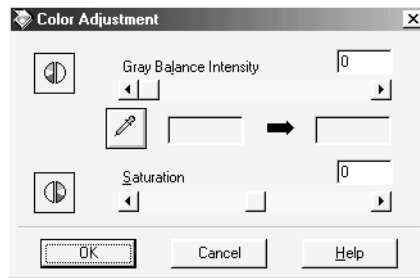
If Pixel Depth is set to Black & White or 8-bit Gray in the Image Type dialog box, you can only select the combined RGB channel option.

Tone correction list

Select a tone correction setting from this list. The custom settings you have saved appear in this list.

Color Adjustment

Click the  Color Adjustment button in the Preview window to open the Color Adjustment dialog box, where you can make Gray Balance Intensity and Saturation settings.



Note:

- ❑ *The Color Adjustment button is unavailable when one or more marquees are selected in addition to the active marquee.*
- ❑ *If Image Type setting is not Color Photo or Color Photo De-screening, or Pixel Depth is set to 8-bit Gray or Black & White, the Color Adjustment feature is not available.*
- ❑ *You can see the effects of the Color Adjustment settings in the Preview window.*

Gray Balance Intensity

The Gray Balance Intensity setting removes unwanted color casts and tints by balancing color saturation.

Click the eyedropper button beneath the slider. The mouse pointer changes to an eyedropper. Then click the color you want to represent as gray. The eyedropper “picks up” the color and displays it in the box beside the eyedropper button. You can then correct the cast level for that color from 0 to 100 by moving the slider. The corrected color appears in the box on the right, and the effect shows up immediately in the preview image. Click Cancel to restore the original image.

Note:

You can use the Auto Exposure feature to automatically adjust Gray Balance Intensity when Document is selected as the Auto Exposure Option in the Image Type dialog box. To change the Auto Exposure Option setting, see “Auto Exposure Option” on page 2-9.


Saturation

Saturation is the property that defines color depth. Select a saturation level from -100 (less color) to 100 (more color) by moving the slider.

Reset

Use the Reset button to return any image control settings you made to their default settings. If you did not alter any image control settings, this button is not available.

Focus

Click the  Focus button to set the focus position to either 2.5 or 0.0. The current setting is indicated under the button.

If TPU for Neg. Film or TPU for Pos. Film is selected as the Document Source, the value of the focus position is automatically set to 2.5. If you are using film holders, you do not need to change the focus setting. If you set the film directly on the scanner's document table, EPSON recommends changing the focus position to 0.0.

If Flatbed, or Auto Document Feeder is selected, the value is automatically set to 0.0. EPSON does not recommend changing the setting unless you intend to have the scanned images out of focus or you are scanning an object that is not flat.

Chapter 3

Setting Up the Start Button

| | |
|---|-----|
| Overview of Start Button Features | 3-2 |
| Making Windows Me, 98, and 2000 Settings. | 3-2 |
| Making PageManager Settings | 3-4 |

Overview of Start Button Features

When your scanner is connected directly to your computer, you can set up the scanner's Start button to operate in the following ways:

- ❑ Open an application of your choice
(for Windows Me, 98, and 2000 users only)
- ❑ Scan and send the scanned document to a specified application
(if you have installed Presto! PageManager for EPSON from the CD-ROM that came with your scanner)

Note:

If you are using your scanner over a network, you cannot use the scanner's Start button in the ways described above.

If you are using Windows Me, 98, or 2000, read "Making Windows Me, 98, and 2000 Settings" on page 3-2 first.

If you are using Windows 98 or NT 4.0, or a Macintosh computer, read "Making PageManager Settings" on page 3-4.

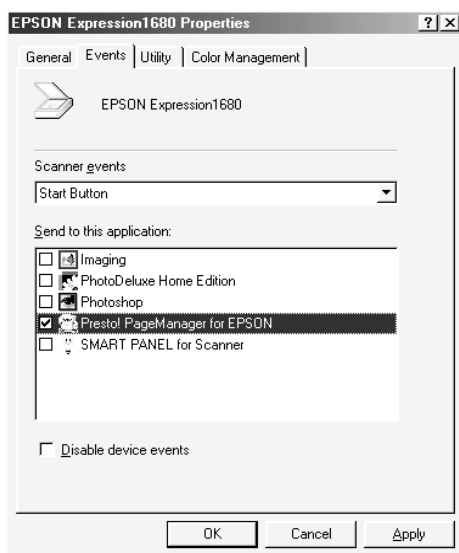
Making Windows Me, 98, and 2000 Settings

This section explains how to make settings that control which application opens when you press the scanner's Start button. You can specify one application to open automatically when you press the Start button, or you can have a window open allowing you to choose from a list of applications. Follow the steps below to make these settings.

Note:

These settings do not apply to Windows 98 or NT 4.0, or to Macintosh computers.

1. Click Start, point to Settings, and select Control Panel.
2. Double-click the Scanners and Cameras icon. The Scanners and Cameras Properties dialog box appears.
3. Select your scanner from the list of installed scanners and cameras, click the Properties button, then click the Events tab.



4. In the Scanner events list, make sure Start Button is selected.
5. To have an application open automatically when you press the Start button, select the check box next to that application in the Send to this application window, and clear the check boxes of all the other applications.

To have your document scanned and sent to an application with one press of the Start button, select Presto! PageManager for EPSON, then after completing the steps in this section see "Making PageManager Settings" on page 3-4.

If you want to choose from a list of applications when you press the Start button, select the check boxes of the applications you want.

Note:

- Depending on the application, EPSON TWAIN Pro may also open when you press the Start button.
- Some applications do not support linkage to scanners and digital cameras. Linkage is available only with the applications that appear in the Send to this application list.

6. To save your settings, click OK, then click OK again.

If you did not select Presto! PageManager for EPSON, or if you selected multiple applications, close all applications and try pressing the Start button on the scanner to confirm that everything is set up correctly.

If you selected Presto! PageManager for EPSON only, see the next section to make settings for scanning and sending the scanned document to a specified application.

Making PageManager Settings

This section explains how to set up Presto! PageManager for EPSON to scan and send a document to a specified application with one press of your scanner's Start button.

Note for Windows Me, 98 and 2000 users:

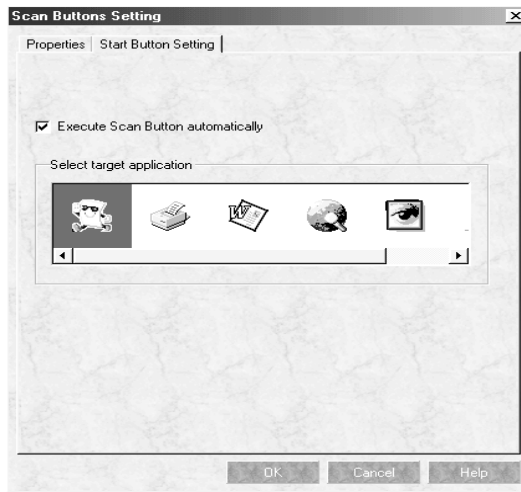
Before setting up PageManager, make sure that your system is set to automatically start up PageManager when you press the Start button. For instructions, see "Making Windows Me, 98, and 2000 Settings" on page 3-2.

1. Start Presto! PageManager for EPSON.

Note:

If EPSON TWAIN Pro appears on your screen, close the main dialog box.

2. From the File menu, select Scan Buttons Setting.
3. In the Scan Buttons Setting dialog box, click the Start Button Settings tab. The Start Button Settings menu appears.



The icons in the Select target application window represent the applications and devices to which PageManager can automatically send scanned data after you press the Start button.

Note:

If the application or device you want to select does not appear in the Select target application window, you can add its icon to the window. For instructions, see your PageManager documentation.

4. To choose an application or device, click the appropriate icon. Make sure the Execute Scan Button automatically check box is selected, then click OK.

The selected application is now assigned to the scanner's Start button. Close all applications and try pressing the Start button on the scanner to confirm that everything is set up correctly.

Chapter 4

Options

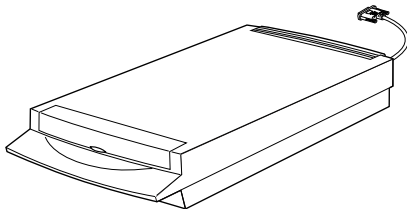
| | |
|---|------|
| Using the Transparency Unit | 4-2 |
| Unpacking the Transparency Unit | 4-2 |
| Removing the shipping screw | 4-3 |
| Installing the Transparency Unit | 4-4 |
| Placing transparencies into film holders | 4-6 |
| Positioning transparencies for scanning | 4-14 |
| Scanning normal reflective documents | 4-16 |
| Using the Automatic Document Feeder | 4-18 |
| Unpacking the Automatic Document Feeder | 4-18 |
| Installing the Automatic Document Feeder | 4-18 |
| Loading documents into your Automatic Document Feeder | 4-21 |
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| Using the IEEE 1394 Scanner I/F Card | 4-26 |
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| Installing the IEEE 1394 Scanner I/F Card in your scanner | 4-27 |
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| Connecting the scanner | 4-29 |

Using the Transparency Unit

The optional Transparency Unit (B81318*) makes it possible to scan transparencies and slides. Once you install the Transparency Unit, you can leave it in place even when you scan other types of documents.

Unpacking the Transparency Unit

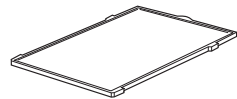
Make sure that all the items shown below are included and have not been damaged during shipping. Contact your EPSON dealer if any item is missing or damaged.



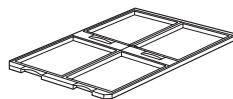
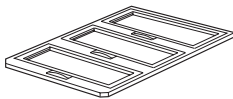
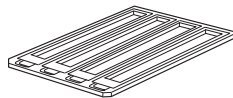
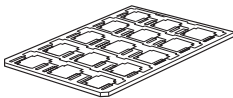
Transparency Unit



installation
screws (2)



reflective
document mat

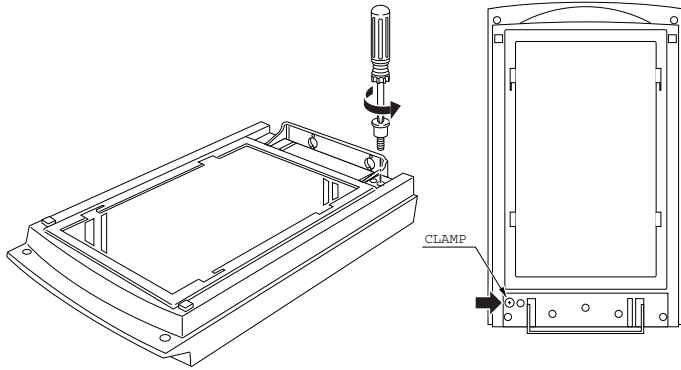


film holders

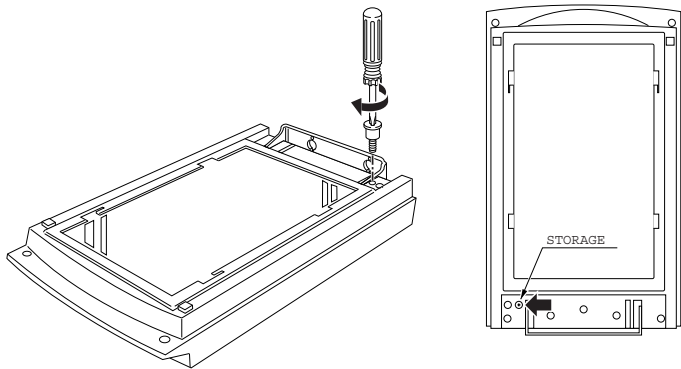
Removing the shipping screw

A shipping screw is installed on the Transparency Unit to prevent damage during shipping. Be sure to use the following procedure to remove this screw before attempting to use the unit.

1. Turn over the Transparency Unit so its glass side is facing up.
2. Remove the shipping screw as shown below.



3. Screw the shipping screw into the storage hole as shown.



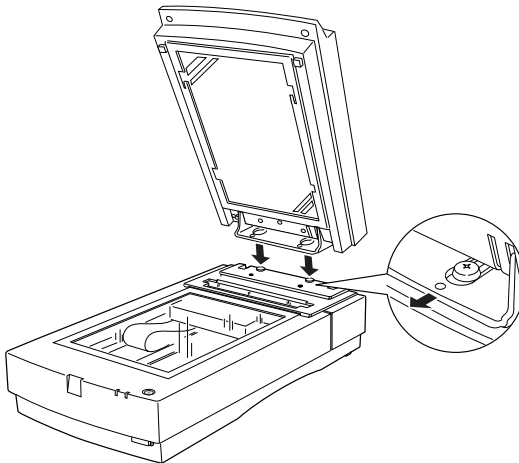
Note:

Before transporting the scanner, remove the Transparency Unit and return the shipping screw to its original shipping hole. See “Transporting the Scanner and the Transparency Unit” on page 5-3 for details.

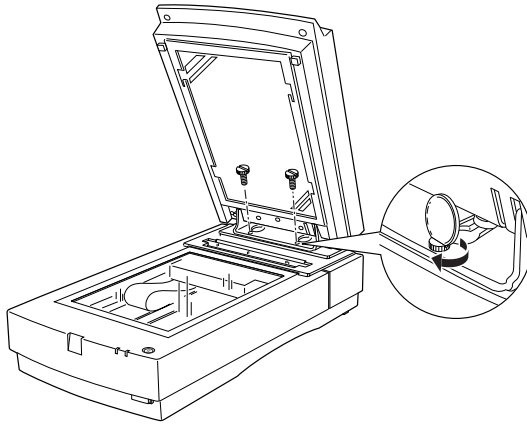
Installing the Transparency Unit

Follow the steps below to install the Transparency Unit on the scanner.

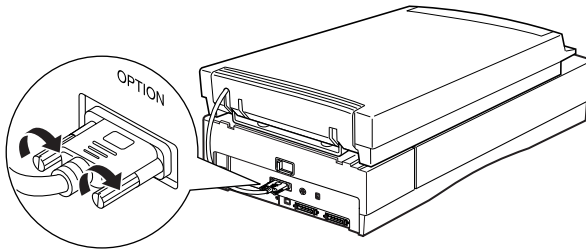
1. Make sure the scanner is turned off, and unplug the power cord.
2. Remove the document cover from the scanner by lifting straight up on its back edge.
3. Slide the mounting slots on the Transparency Unit under the two installation screws attached to the scanner.



4. Insert the two installation screws provided with the Transparency Unit into the holes as shown below, and then tighten the screws with a coin.



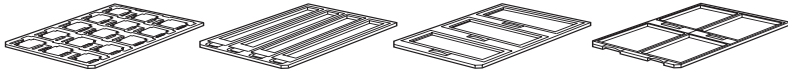
5. Close the Transparency Unit.
6. Connect the Transparency Unit's connector to the option connector on the scanner.



Preparing transparencies for scanning

Four film holders for scanning various types of transparencies are included with this unit.

For instructions on loading your transparencies into the film



holders and positioning them on the scanner, go to the section listed below that matches the type of transparency you want to load.

Note:

Be sure to wipe the Transparency Unit glass, the scanner's document table, and the narrow window near the mounting bracket with a soft cloth before scanning transparencies.

For instructions on scanning normal paper documents, see "Scanning normal reflective documents" on page 4-18.

35-mm film strips... page 4-7

Mounted slides... page 4-9

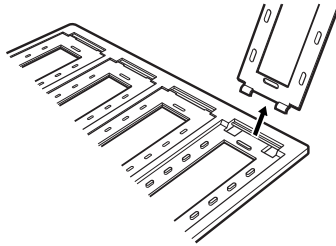
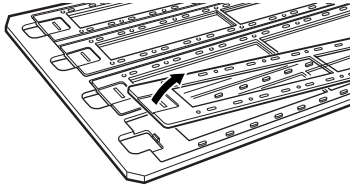
120/220 film... page 4-11

4 × 5 inch film... page 4-14

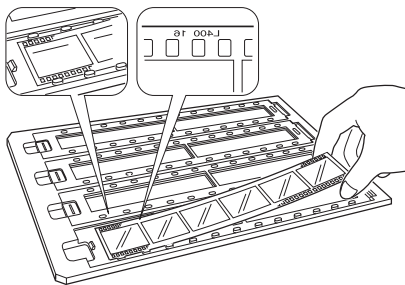
Non-standard film sizes... page 4-17

35-mm film strips

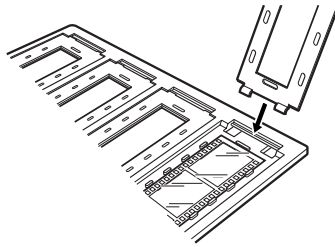
1. Place the 35-mm film strip holder on a flat surface, and remove a strip cover.



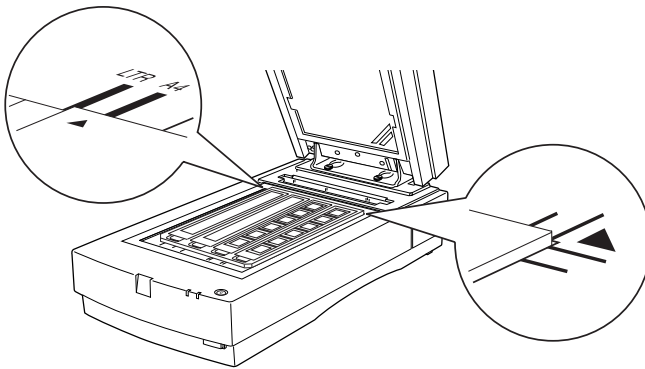
2. Insert a strip of film in the film strip holder, making sure the glossy (smooth) side of the film is facing down.



3. Replace the strip cover that you removed in step 1. Repeat steps 1 through 3 for all the film strips you scan.



4. Open the Transparency Unit, then place the film strip holder on the document table and align it as shown below.

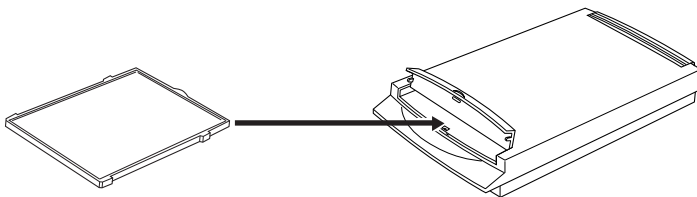


5. If the reflective document mat is installed on the Transparency Unit, remove it, then close the Transparency Unit.

Note:

- ❑ *Make sure the Transparency Unit is completely closed. Otherwise an option error will occur and scanning will be cancelled.*

- ❑ *Store the reflective document mat in the Transparency Unit pocket when not in use.*



Caution:

Do not put anything but the reflective document mat into the Transparency Unit pocket.

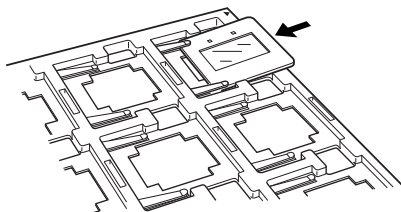
You are now ready to scan the transparencies using your scanner software.

Note:

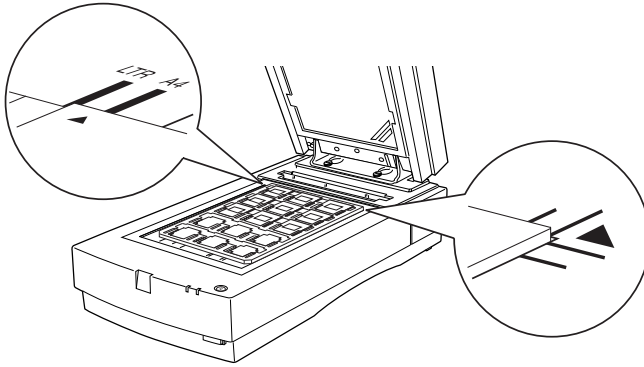
- ❑ *Make sure to select TPU for Neg. film or TPU for Pos. film as the Document Source setting in EPSON TWAIN Pro.*
- ❑ *When TPU for Neg. film or TPU for Pos. film is selected as the Document Source setting, the focus position is automatically set to 2.5 to accommodate the use of the film holders.*

Mounted slides

1. Load slides in the 35-mm slide holder face down, as shown below. Repeat this step for all the slides you scan.



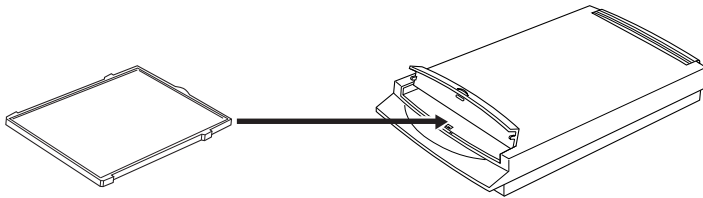
2. Open the Transparency Unit, then place the slide holder on the document table. Align the slide holder as shown below.



3. If the reflective document mat is installed on the Transparency Unit, remove it, then close the Transparency Unit.

Note:

- ❑ *Make sure the Transparency Unit is completely closed. Otherwise an option error will occur and scanning will be cancelled.*
- ❑ *Store the reflective document mat in the Transparency Unit pocket when not in use.*



Caution:

Do not put anything but the reflective document mat into the Transparency Unit pocket.

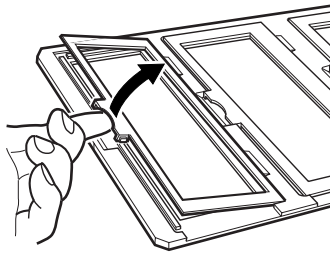
You are now ready to scan the transparencies using your scanner software.

Note:

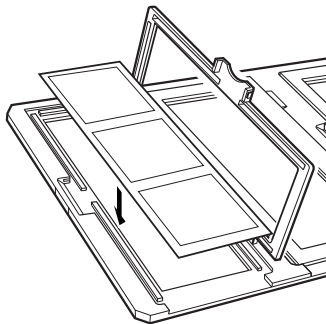
- ❑ *Make sure to select TPU for Neg. film or TPU for Pos. film as the Document Source setting in EPSON TWAIN Pro.*
- ❑ *When TPU for Neg. film or TPU for Pos. film is selected as the Document Source setting, the focus position is automatically set to 2.5 to accommodate the use of the film holders.*

120/220 film

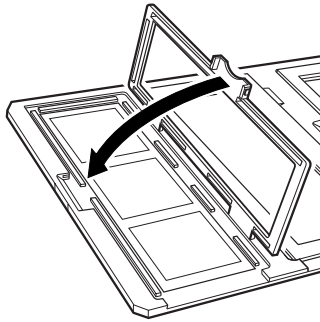
1. Place the 120/220 film holder on a flat surface, and open a strip cover.



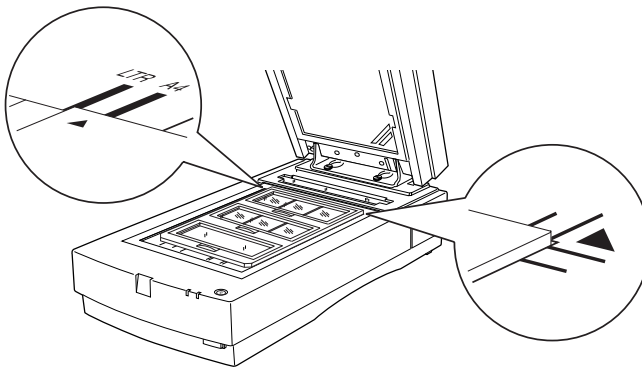
2. Insert the film in the film holder, making sure the glossy (smooth) side of the film is facing down.



3. Close the cover. Repeat steps 1 through 3 for all the film you scan.



4. Open the Transparency Unit, then place the film holder on the document table and align it as shown below.

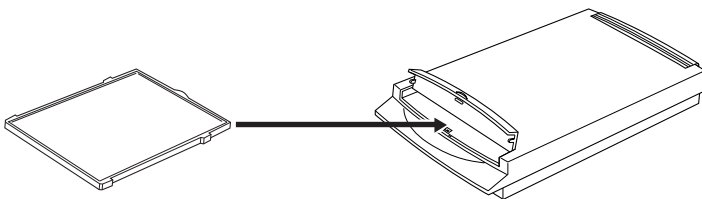


5. If the reflective document mat is installed on the Transparency Unit, remove it, then close the Transparency Unit.

Note:

- ❑ *Make sure the Transparency Unit is completely closed. Otherwise an option error will occur and scanning will be cancelled.*

- ❑ *Store the reflective document mat in the Transparency Unit pocket when not in use.*



Caution:

Do not put anything but the reflective document mat into the Transparency Unit pocket.

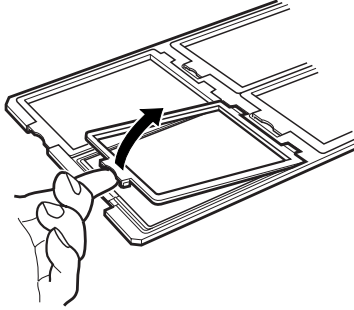
You are now ready to scan the transparencies using your scanner software.

Note:

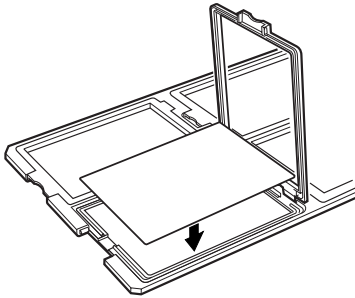
- ❑ *Make sure to select TPU for Neg. film or TPU for Pos. film as the Document Source setting in EPSON TWAIN Pro.*
- ❑ *When TPU for Neg. film or TPU for Pos. film is selected as the Document Source setting, the focus position is automatically set to 2.5 to accommodate the use of the film holders.*

4 x 5 inch film

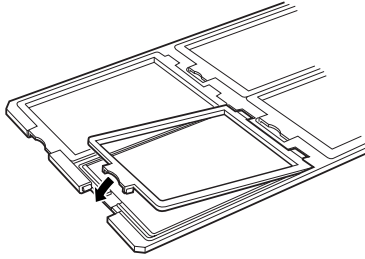
1. Place the 4 × 5 inch film holder on a flat surface, and open a cover.



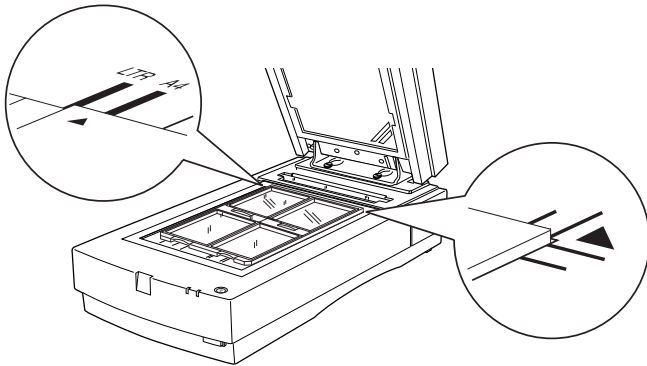
2. Insert the film in the film holder, making sure the glossy (smooth) side of the film is facing down.



3. Close the cover. Repeat steps 1 through 3 for all the film you scan.



4. Open the Transparency Unit, then place the film holder on the document table and align it as shown below.

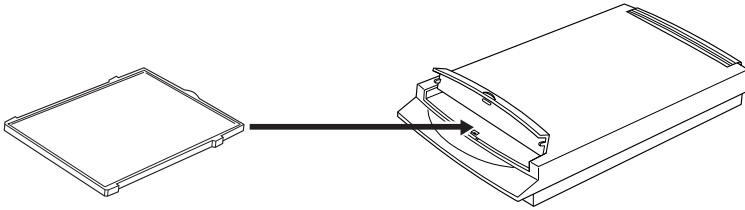


5. If the reflective document mat is installed on the Transparency Unit, remove it, then close the Transparency Unit.

Note:

- ❑ *Make sure the Transparency Unit is completely closed. Otherwise an option error will occur and scanning will be cancelled.*

- ❑ *Store the reflective document mat in the Transparency Unit pocket when not in use.*



Caution:

Do not put anything but the reflective document mat into the Transparency Unit pocket.

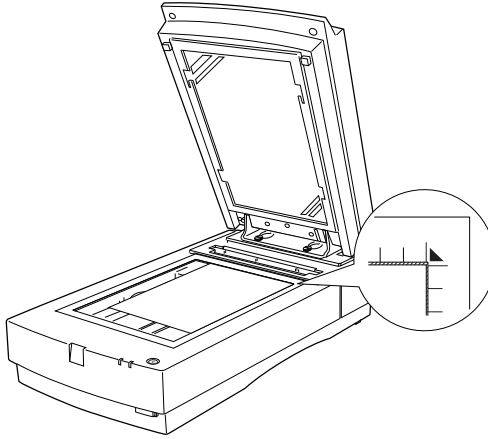
You are now ready to scan the transparencies using your scanner software.

Note:

- ❑ *Make sure to select TPU for Neg. film or TPU for Pos. film as the Document Source setting in EPSON TWAIN Pro.*
- ❑ *When TPU for Neg. film or TPU for Pos. film is selected as the Document Source setting, the focus position is automatically set to 2.5 to accommodate the use of the film holders.*

Non-standard film sizes

1. Open the Transparency Unit, then place the film directly onto the scanner's glass document table, making sure the glossy (smooth) side of the film is facing down.



Note:

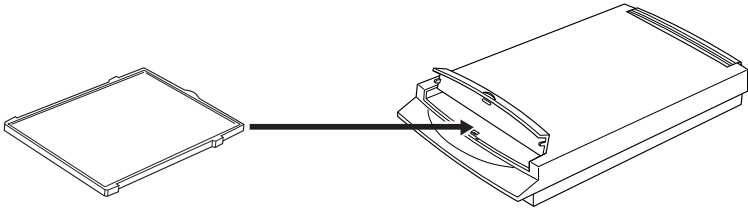
An area approximately 1.6 mm from the horizontal and 1 mm from the vertical edges of the document table glass will not be scanned.

2. If the reflective document mat is installed on the Transparency Unit, remove it, then close the Transparency Unit.

Note:

- Make sure the Transparency Unit is completely closed. Otherwise an option error will occur and scanning will be cancelled.*

- ❑ *Store the reflective document mat in the Transparency Unit pocket when not in use.*



Caution:

Do not put anything but the reflective document mat into the Transparency Unit pocket.

You are now ready to scan the transparency using your scanner software.

Note:

When placing film directly on the document table, make sure to select TPU for Neg. film or TPU for Pos. film as the Document Source setting, and 0.0 as the focus position in EPSON TWAIN Pro.

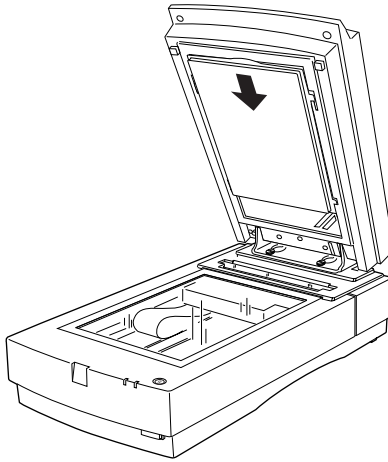
Scanning normal reflective documents

When scanning normal reflective documents, you should always insert the reflective document mat included with the Transparency Unit. Also, make sure you remove the transparency guide from the scanner's document table.

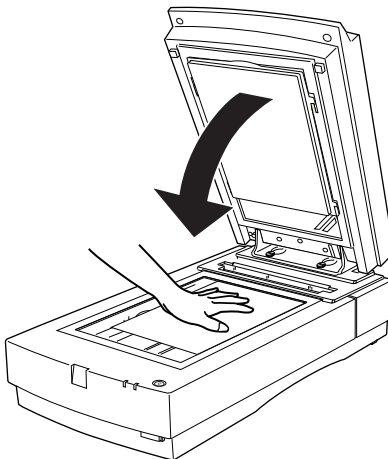
Insert the reflective document mat as described below.

1. Open the Transparency Unit.

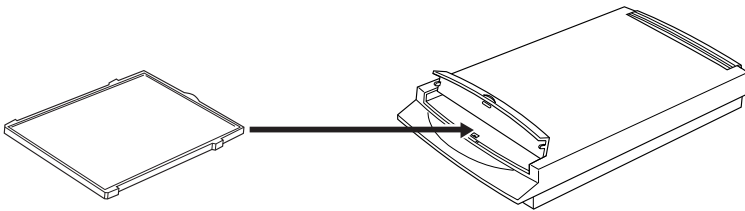
2. Insert the tabs on the reflective paper document mat into the slots on the Transparency Unit and slide the mat into place.



3. Position the reflective document and close the unit.



To remove the reflective document mat, slide it up and out of the slots on the Transparency Unit. Be sure to store the reflective document mat in the Transparency Unit pocket when not in use.



Caution:

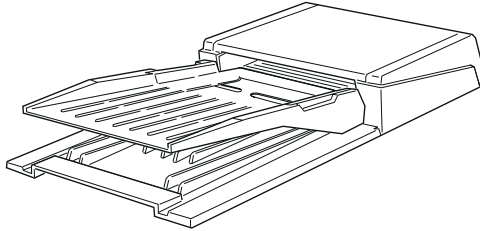
Do not put anything but the reflective document mat into the Transparency Unit pocket.

Using the Automatic Document Feeder

The Automatic Document Feeder (B81316*) allows you to automatically load multiple-page documents into your scanner. This document feeder is particularly useful for OCR (optical character recognition) scanning, or for creating an image database.

Unpacking the Automatic Document Feeder

When you unpack your Automatic Document Feeder, make sure you have all the parts shown below and that none are damaged. If you find any missing or damaged items, contact your EPSON dealer immediately.



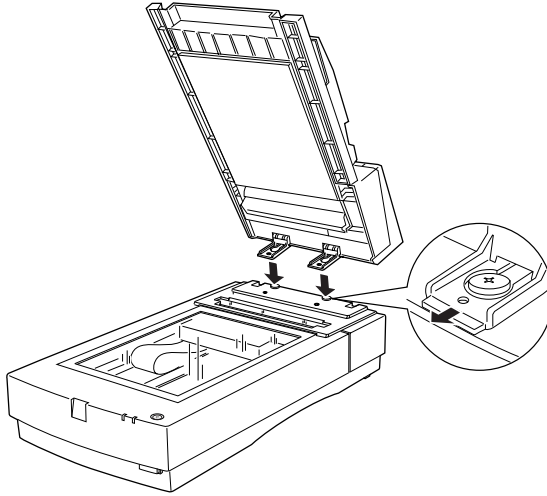
Automatic Document Feeder

Installing the Automatic Document Feeder

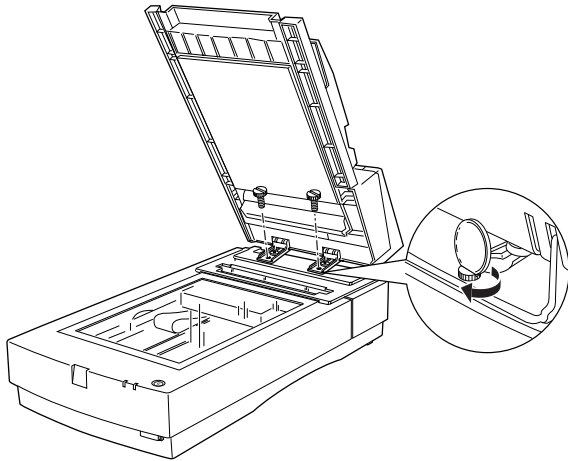
Follow the steps below to install the Automatic Document Feeder on your EPSON scanner.

1. Make sure your scanner is turned off, and unplug the scanner's power cord.
2. Remove your scanner's document cover by holding the cover behind the hinge and lifting the back of the cover straight up.

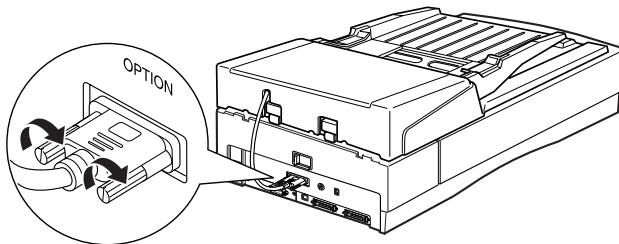
3. The scanner comes with two installation screws attached; slide the mounting slots on the Automatic Document Feeder forward, underneath these two screws. Do not remove the protective materials from the Automatic Document Feeder's mounting hardware yet.



4. Insert the installation screws included with your Automatic Document Feeder into the holes in the scanner, then use a coin to tighten them.



5. Remove the protective materials from the Automatic Document Feeder's mounting hardware.
6. Close the Automatic Document Feeder.
7. Attach the Automatic Document Feeder's connector to the scanner's option interface.



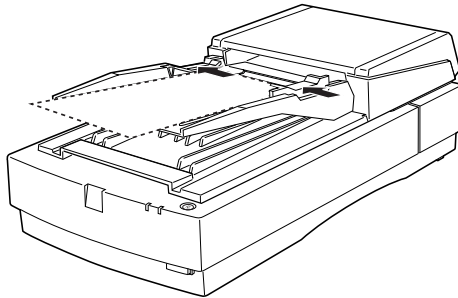
Loading documents into your Automatic Document Feeder

Your Automatic Document Feeder can automatically load up to 30 sheets of the following paper sizes (based on a paper weight of 17 lbs and a stack thickness of 6.0 mm or less):

| | |
|--------|------------------------------------|
| Checks | 76 × 127 mm (3 × 5 inches) |
| B5 | 182 × 257 mm (7.17 × 10.1 inches) |
| A4 | 210 × 297 mm (8.27 × 11.69 inches) |
| Letter | 215.9 × 279.4 mm (8.5 × 11 inches) |
| Legal | 215.9 × 355.6 mm (8.5 × 14 inches) |

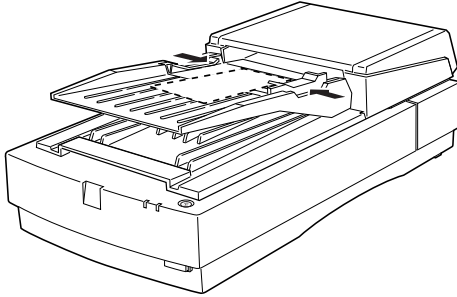
Follow the steps below to load documents into the Automatic Document Feeder.

1. Slide the left edge guide all the way to the left and place your document in the feeder tray. Then move the right edge guide so it is flush with the right edge of your document.

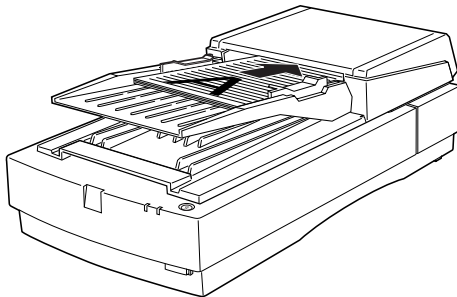


Note:

For checks, move the left edge guide to the center until it stops, then place your checks in the tray and move the right edge flush against them.



2. Insert the document stack into the Automatic Document Feeder until it meets resistance. Make sure that the side you want to scan is facing up.



Documents are fed into the lower tray after scanning is finished.

Loading documents manually

You can load documents manually even when the Automatic Document Feeder is installed.

To load manually, lift the Automatic Document Feeder and place the document on the scanning surface. Then lower the Automatic Document Feeder and scan the document.

Note:

- ❑ *Opening the Automatic Document Feeder or its cover while it is operating results in an option error and paper feeding stops.*
- ❑ *Always close the Automatic Document Feeder and its cover before using it.*

Scanning from the Automatic Document Feeder

The scanning instructions are divided into two sections; read “Scanning the full document area” on page 4-26 to scan an entire document or image, or read “Scanning only part of the document area” on page 4-27 to scan only a certain part of an image or document.

Scanning the full document area

You do not need to use the preview feature when scanning a full document or image. The scanner automatically find and scans the whole image. Follow the steps below to scan an image or document.

Note:

The steps below describe the scanning procedure when using Presto! PageManager for EPSON. The procedure may vary slightly when using another application.

1. Load the document in the Automatic Document Feeder as described in “Loading documents into your Automatic Document Feeder” on page 4-24.
2. Start the Presto! PageManager for EPSON software.
3. Select EPSON TWAIN Pro from the File menu’s Select Source option if necessary.

4. Select **Acquire** from the **File** menu. The EPSON TWAIN Pro main dialog box appears.
5. Select **Auto Document Feeder** from the **Document Source** list, then make appropriate settings for the type of document you are scanning.
6. Click **Scan**. The Auto Document Feeder feeds the first sheet and scanning begins.

After the entire document is scanned, a window with thumb-nail images will appear in PageManager. In this window you can select and change the orientation of the scanned images.

Scanning only part of the document area

To scan just a part of an image, follow the steps below.

Note:

The steps below describe the scanning procedure when using Presto! PageManager for EPSON. The procedure may vary slightly when using another application.

1. Load only the first page of the document in the Automatic Document Feeder as described in “Loading documents into your Automatic Document Feeder” on page 4-24.

Note:

Only set one page of the document at this time. If you set multiple pages at this time, the second page will be fed right after the first page is scanned and may become stuck in the middle of the document path as if the paper is jammed. In this case, you have to remove the second page from the document path and load it again.

2. Start Presto! PageManager for EPSON and select **Acquire** from the **File** menu. EPSON TWAIN Pro’s main dialog box appears.

3. Click the Preview button. The first sheet of the document is fed into the scanner, then ejected after being previewed.
4. Draw a marquee around the part of the image you want to scan by dragging the mouse pointer over that area.
5. Load the ejected first page and all remaining pages of the document in the Automatic Document Feeder.
6. Make EPSON TWAIN Pro settings as needed for your document type and click the SCAN button. The Auto Document Feeder feeds the first sheet and scanning begins.

After scanning the entire stack of documents, a window with thumbnail images appears in PageManager. In this window you can select and change the orientation of the scanned images.

Document specifications

| | |
|----------------|---|
| Size: | Width: 3 to 8.5 inches (76 to 215.9 mm) Length: 5 to 14 inches (127 to 355.6 mm) |
| Thickness: | 0.07 to 0.16 mm |
| Weight: | 52.3 to 127.9 g/m ² |
| Paper quality: | High-quality bond or thermal paper |
| Document type: | Documents printed with impact printers, laser printers, or facsimile machines |

Document conditions

Make sure of the following before feeding a document:

- Ink on the document is dry.

- ❑ The document has no holes, is not ripped or wrinkled, and has nothing attached to it.
- ❑ The document has no staples or other objects attached that might damage the feeder mechanism.
- ❑ The document has no folds closer than 8 mm from its edge.
- ❑ The document is neither bound nor a multipart form.
- ❑ The document has no rear carbon coating.
- ❑ The document has no cut out areas.

Other precautions

Do not feed photographic sheets or particularly valuable original artwork into this Automatic Document Feeder; misfeeding a document may result in accidental wrinkling or damage.

When you are scanning high-quality color or halftone documents, it is recommended you open the Automatic Document Feeder and scan documents individually.

Using the IEEE 1394 Scanner I/F Card

The optional IEEE 1394 Scanner I/F Card (B80834*) offers high-speed data transfer and flexible connectivity for your scanner. It supports a peak data transfer rate of 400 Mbps. You can connect or disconnect the interface cables without having to turn off the scanner or your computer. You can connect multiple IEEE 1394 devices simultaneously in either a daisy-chain or tree configuration.

System requirements

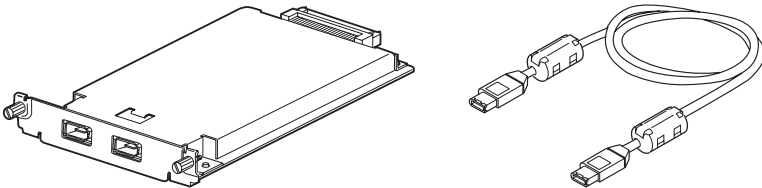
- Hardware: Macintosh equipped with built-in IEEE 1394 (FireWire) port, or with an IEEE 1394 (FireWire) PCI card, supported by Apple® Computer.
- OS: Mac OS 8.6 with FireWire 2.1 or later.
Microsoft® Windows® Millennium Edition or 2000

Note for Windows users:

Unless your computer already has built-in IEEE 1394 ports or an IEEE 1394 board installed, you need to install an IEEE 1394 board.

Installing the IEEE 1394 Scanner I/F Card in your scanner

To use your scanner as an IEEE 1394 device, you need to install the optional IEEE 1394 Scanner I/F Card.

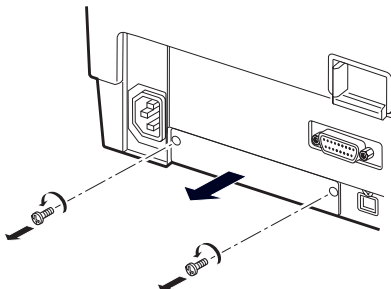


1. Turn off the scanner. Unplug any power cords, then disconnect all cables from the back panel of your scanner.
2. Use a cross-head screwdriver to remove the two screws securing the shield plate to the optional interface slot; then remove the plate. Be sure to keep both screws; you may need to use them again if you re-install the shield plate.

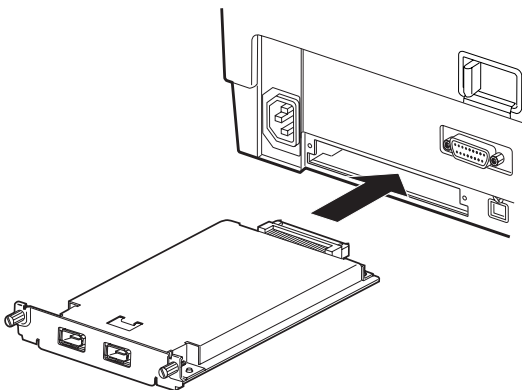
Caution:

Static electricity can damage electronic components.

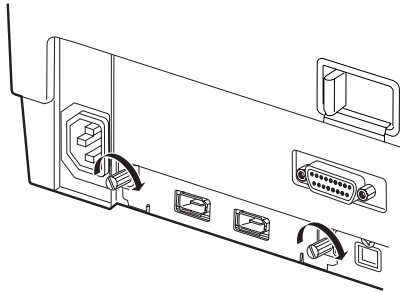
Discharge static electricity by touching the metal frame of your scanner before handling the interface board.



3. Insert the Scanner I/F Card along the side guide rails into the expansion slot in the optional interface slot.



- Secure it with the retaining screws.



- Reconnect all cables.

Understanding IEEE 1394 connections

The Scanner I/F Card is equipped with two cable connectors. One is used to connect the card to the computer, and the other is used to connect other IEEE 1394 devices in a daisy chain or tree configuration. Use the cable supplied when making the connection. The cable can be connected without switching off the power supply to the computer or the scanner because it complies with the IEEE 1394 standard. Cables can be connected whether the scanner or computer are on or off.

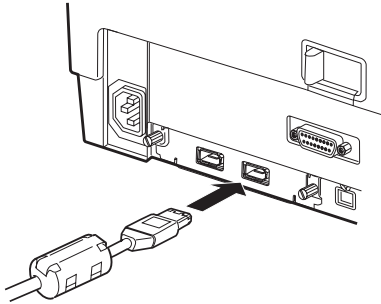
Caution:

Do not connect or disconnect IEEE 1394 cables when the scanner is in use.

Connecting the scanner

To connect the scanner to your computer or other IEEE 1394 device:

1. Connect one end of the cable to any available IEEE 1394 port on the Scanner I/F Card.



2. Connect the other end of the cable to the IEEE 1394 port on your computer. If other IEEE 1394 devices are already connected to the computer's IEEE 1394 port, connect the scanner to an available IEEE 1394 port on the last device in the chain.

Note:

The cable supplied with the IEEE 1394 Scanner I/F Card has 2 six pin connectors at each end. If IEEE 1394 devices with four pin connectors are used in a daisy chain or tree, you will need to use a 6:4 converter cable.

Chapter 5

Maintenance and Troubleshooting

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Maintenance

Cleaning the scanner

To keep your scanner operating at its best, you should clean it periodically, as described below.

1. Unplug the power cord.
2. Clean the outer case with mild detergent and water.
3. If the glass of the document table gets dirty, clean it with a soft dry cloth. If the glass is stained with grease or some other hard-to-remove material, use a small amount of glass cleaner and a soft cloth to remove it. Wipe off all remaining liquid.

Make sure that no dust builds up on the glass of the document table. Dust can cause spots in your scanned image.

Caution:

- ❑ *Be careful not to scratch or damage the glass of the document table, and do not use a hard or abrasive brush to clean it. A damaged glass surface can decrease the scanning quality.*
- ❑ *Never use alcohol, thinner, or corrosive solvent to clean the scanner. These chemicals can damage the scanner components as well as the case.*
- ❑ *Be careful not to spill liquid into the scanner mechanism or electronic components. This could permanently damage the mechanism and circuitry.*
- ❑ *Do not spray lubricants inside the scanner.*
- ❑ *Never open the scanner case.*

Replacing the fluorescent lamp

The luminosity of the fluorescent lamp declines over time. If the lamp breaks or becomes too dim to operate normally, the scanner stops working and both the READY and ERROR lights rapidly flash. When this happens, the lamp assembly must be replaced. For details, contact your dealer.

Caution:

Never open the case of the scanner. If you think repairs or adjustments are necessary, consult your dealer.

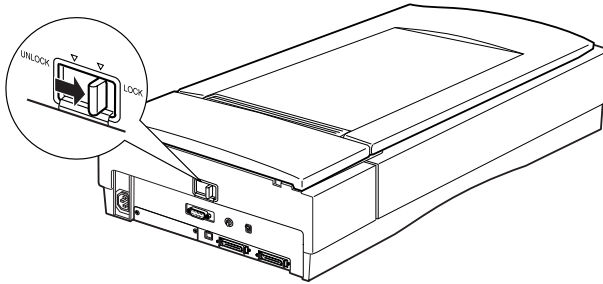
Transporting the Scanner and the Transparency Unit

When transporting the scanner or the Transparency Unit over a long distance, or when storing them for an extended period, you need to lock the scanner's carriage and the Transparency Unit's lamp assembly to prevent damage. Follow the procedures below.

Preparing the scanner for transportation

1. Make sure the transportation lock lever is in the UNLOCK position.
2. Align the SCSI ID rotary switch with “*”.
3. Turn on the scanner.

4. After the carriage moves to the back of the scanner, slide the transportation lock lever to the LOCK position.



Preparing the optional Transparency Unit for transportation

1. With the Transparency Unit attached, turn on the scanner and wait until the unit's lamp assembly moves to its home position. Then turn off the scanner and remove the Transparency Unit.
2. Raise the front of the Transparency Unit, hold it upright, and gently shake it up and down once so that the lamp assembly slides down toward the back of the unit. Wait until the lamp assembly comes to rest.
3. Install the shipping screw in its original shipping hole.

Problems and Solutions

Most problems you encounter while operating your scanner and software have simple solutions. This section divides the problems into the following categories:

- “Error indicators” on page -5
- “Scanner operation problems” on page -7
- “Quality problems” on page -16
- “Software setup problems” on page -21

Read the appropriate section to find your problem; then follow the recommended steps.

Note:

If some settings appear dimmed in EPSON TWAIN Pro, they cannot be selected because of the capability of your scanner or your choice of other settings.

If you cannot solve a problem after reading and following the information in this section, contact your dealer or a qualified customer support person for assistance.

Error indicators

When an error occurs, the scanner stops operating and the ERROR and READY lights indicate the error type as described below.

| ERROR Light | READY Light | Error Type |
|--------------------|--------------------|-------------------|
| On | On | Command error |
| Flashing | Off | Interface error |
| Flashing | Flashing | Fatal error |
| Off | Off | Option error |

Command error

The scanner has received incorrect commands from your scanning software.

When this error occurs, try to rescan the document. The scanner returns to normal when it receives correct commands. Normally you do not need to reset the scanner when this type of error occurs.

Interface error

The interface setup is wrong or the scanner is not properly connected to the printer.

When this error occurs, check the interface connection and then push the **operate** button to turn the scanner off and then back on again to reset it.

Fatal error

This type of error indicates one of the following problems:

- The fluorescent lamp needs to be replaced.
- The transportation lock lever is not released.
- The scanner is malfunctioning.

Check that the transportation lock lever is released and check any installed options for problems. Next, turn the scanner off and then back on again. If this does not correct the problem, consult your dealer.

Option error

This indicates a problem with an installed option, such as a paper jam, an empty document feeder, or an open cover.

Check the option and correct the cause of the problem.

Scanner operation problems

Problems you may have while using the scanner often involve the operation of your software and computer. Operation problems usually occur because of:

- ❑ Incorrect setup of the interface
(See Chapter 2 of the *Setup Guide*, “Setting Up the Scanner” on page X-XX.)
- ❑ Inappropriate selection of the scanner functions
(See Chapter 4 of the *Setup Guide*, “Using Your Scanner” on page X-XX.)
- ❑ Incorrect setup of your computer or software
(See the *Setup Guide*.)
- ❑ Incorrect operation of your software
(See Chapter 4 of the *Setup Guide*, “Using Your Scanner” on page X-XX. Also see the sections “Optimizing Scanning” on page X-XX and “Understanding EPSON TWAIN Pro Features” on page X-XX in this guide.)

Also see the documentation that came with your computer and printer for possible solutions.

The READY light does not come on.

- ❑ Press the operate button to turn on the scanner.
- ❑ Make sure the power cord is connected to the scanner and is plugged into a power outlet.

The scanner does not scan.

- ❑ Wait until the READY light stops flashing and remains on (ready for scanning).

- ❑ Make sure your interface port and software settings are correct. Also make sure that your computer's interface board is installed properly.
- ❑ For SCSI interface users, make sure the scanner's SCSI ID and terminator are set correctly. See "After changing the SCSI ID number or the SCSI board, the scanner does not scan" on page -14.
- ❑ For SCSI interface users, if you have other expansion boards in your computer, make sure that their interrupt settings are not interfering with your SCSI board. See your computer's documentation for details.
- ❑ For USB interface users, try connecting the scanner directly to the computer's USB port, or use an EPSON USB cable.
- ❑ For USB interface users, try connecting your scanner to a different port on your hub, or a different hub, if one is available.
- ❑ For Macintosh and IEEE 1394 interface users, make sure that the following Extensions are selected in the Extensions Manager: EPSON FW Scanner Enabler; EPSON FW Scanner Expert; and EPSON FW ScannerLib.

The scanner software does not work properly.

- ❑ Make sure your software is installed correctly.
- ❑ For Windows Me, 98, and 2000 users, check if your scanner is listed more than once in the Scanners and Cameras Properties dialog box. To view the dialog box, double-click the Scanners and Cameras icon in Control Panel. Remove your scanner every place it appears in the dialog box, then reinstall EPSON TWAIN Pro following the instructions in the *Setup Guide*.

Note:

When reinstalling the scanner software, if a dialog box does not appear and a message box appears instead, followed by a dialog box requesting the EPSON Scanners Driver Disk, insert the scanner software CD in the CD-ROM drive. Make sure to specify the correct drive letter, the EPSON folder, the folder of your preferred language, and the Win98 folder as the location.

- ❑ Make sure your computer meets the memory and other system requirements specified for the software you are using.
- ❑ Make sure the computer has enough memory for your software. If the computer does not have enough memory available, see your software and computer documentation for information on adding more memory.

The scanner cannot be selected or is listed as unavailable in Windows.

- ❑ Turn off the scanner and PC, and check that they are connected properly.
- ❑ Make sure that a scanner supported by EPSON Scan Server and EPSON TWAIN Pro Network is connected to the scanner server PC.
- ❑ Change the scanner's SCSI ID number to one that is not being used by any other SCSI device.
- ❑ Check the connection sequence and make sure the scanner's terminator switch of the end device of daisy chain is set correctly. See your *Setup Guide*.
- ❑ Install EPSON TWAIN Pro (Version 2.0 or later) on the scanner server PC (the PC which is connected to the EPSON scanner).

Scanning does not start by pressing the Start button.

- ❑ For Windows 95, NT 4.0, and Macintosh users, make sure the Scanner Monitor software is running and check that the Scanner Monitor's Launch Application path is set correctly.
- ❑ For Windows Me, 98, and 2000 users, click the Events tab in your scanner's Properties dialog box and make sure the Disable device events check box is clear. Also make sure that the Start Button is selected as the Scanner events option, and that at least one application in the Send to this application box is selected. See "Setting Up the Start Button" on page 3-1 for details.

EPSON TWAIN Pro does not start.

- ❑ Make sure to turn on the scanner before turning on the computer.
- ❑ Make sure the interface cable meets the requirements of your interface board. See the manual that comes with the interface board.
- ❑ Turn off the scanner and computer and check the connection between the scanner and the computer.
- ❑ Make sure the interface board is installed correctly.
- ❑ Make sure that EPSON TWAIN Pro is selected in your application.

EPSON Scan Server does not start.

- ❑ Turn on the scanner and then your computer.
- ❑ Turn off the scanner and computer and check that they are connected properly.

- ❑ Make sure the interface cable meets the requirements of your interface board. See the documentation that came with the interface board.
- ❑ Make sure the interface board is installed correctly.
- ❑ For network users: Make sure that a scanner supported by EPSON Scan Server and EPSON TWAIN Pro Network is connected to the scanner server PC.
- ❑ For Windows Me, 98, and 2000 users: Install EPSON TWAIN Pro (version 2.0 or later) on the scanner server (the PC which is connected to the EPSON scanner).

EPSON TWAIN Pro Network does not start.

- ❑ Turn on the scanner then the scanner server.
- ❑ Make sure that TCP/IP is selected as the networking protocol. If you are not sure how to select the networking protocol, consult your network administrator.
- ❑ Make sure that the cables which connect the EPSON scanner, the scanner server PC and the client PC meet system requirements and are properly connected.
- ❑ Make sure the interface card is installed correctly.
- ❑ Enter the correct IP address in the EPSON TWAIN Pro Network setup dialog box.

To use EPSON scanners in a network environment, you need to assign IP addresses to the scanner server PC and client PCs.

If EPSON scanners are installed in an internal LAN (Local Area Network), that is, isolated from the Internet, the following IP addresses can be assigned to the scanner server PC.

Note:

If you use IP addresses from these ranges, you will not be able to connect this LAN to the Internet in the future, otherwise there will be IP address conflicts.

10.0.0.0 - 10.255.255.255

172.16.0.0 - 172.31.255.255

192.168.0.0 - 192.168.255.255

If you plan to use a scanner server PC in a network connected to the Internet, you should acquire a formal IP address for the scanner server PC from the Internet organization of your country.

- ❑ Make sure one of the naming services such as DNS, WINS, or LMHOSTS is used in your network. Otherwise use an IP address to specify the EPSON TWAIN Pro setup dialog box.

The Auto Document Feeder or Transparency Unit cannot be selected.

Make sure the optional equipment is installed correctly. For installation instructions, see Chapter 4, "Options."

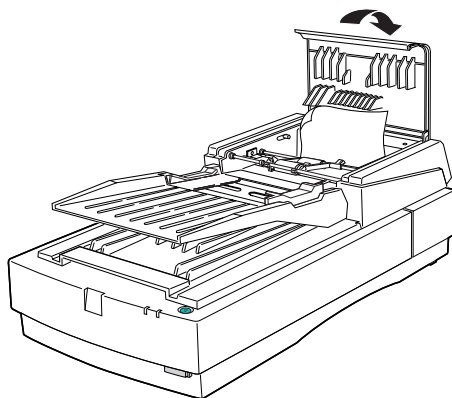
You cannot scan from the Automatic Document Feeder.

- ❑ Make sure Auto Document Feeder is selected as the Document Source in EPSON TWAIN Pro.
- ❑ If the Automatic Document Feeder is open, close it and try again. If the Automatic Document Feeder is opened while scanning, remove any jammed paper, and reload any document which has not yet been scanned, then restart EPSON TWAIN Pro.
- ❑ Take the jammed paper out and reload the document, then restart EPSON TWAIN Pro.

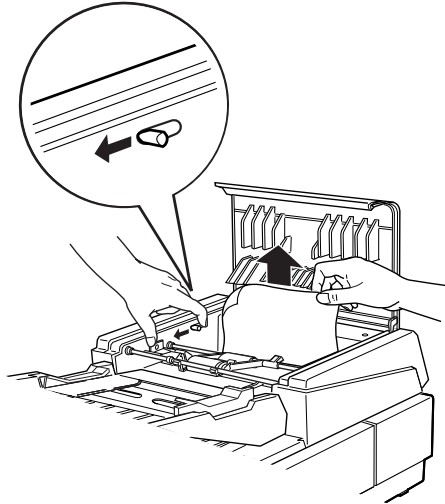
Paper jams in the Automatic Document Feeder

Follow these steps to remove the jammed paper.

1. Open the Automatic Document Feeder's cover.



2. Pull forward on the jam-release lever and slowly pull the jammed paper out of the feeder mechanism. (Be careful not to pull too hard; the paper may tear, making it more difficult to remove.)

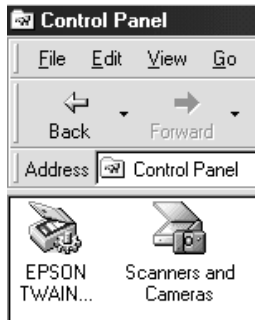


3. Close the document feeder cover and make sure the READY light is on and not flashing, and the ERROR light is off.

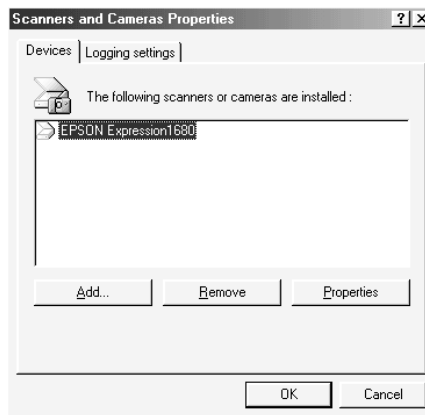
After changing the SCSI ID number or the SCSI board, the scanner does not scan

- ❑ If you are using your scanner with Windows 98, 2000, or Millennium Edition, and you want to change the scanner's SCSI ID number, or replace the SCSI board with a new one, you need to remove the scanner software from the computer and reinstall it as described below.

1. Double-click the Scanners and Cameras icon in the Control Panel.



2. Select your scanner in the installed devices list, then click Remove.



3. Click OK and close the dialog box.
4. Shut down Windows and turn off your PC and scanner.
5. Change the SCSI ID number, or replace the SCSI board.

To change the SCSI ID number, see “Installing a SCSI interface board” on page X-XX.

6. Turn on your scanner and then your PC.
7. Follow the instructions on the screen to complete the installation procedure.

Note:

If the EPSON Scanners Driver Disk is requested, insert the Scanner Software CD in the CD-ROM drive and make sure to specify the correct drive letter, the EPSON folder, the folder of your preferred language, and the folder of your Windows version as the location.

Quality problems

The image is distorted or blurred.

- Make sure the document is flat against the document table.
- Make sure you do not accidentally move the document during scanning.
- Make sure the scanner is on a flat, stable surface.
- Make sure the document is uniformly flat against the document table.

Caution:

Do not place heavy objects on the document table.

- A document that is very thick or warped at the edges can cause distortion or discoloration. Cover the edges of the document with paper to block outside light.

The image is faint.

- Adjust your software’s Exposure setting.

- ❑ Adjust your software's Gamma setting.

Edges of the document are not scanned.

- ❑ Position the document so the area you want to scan is within the edge guide limits of the document table. Note that an area 1.6 mm from the horizontal guide and 1 mm from the vertical guide will not be scanned.

The image is too dark.

- ❑ Check your software's Brightness setting.
- ❑ Check the brightness and contrast settings of your computer display.

Image is dark, with little or no detail.

- ❑ Select Screen/Web as the Destination setting in EPSON TWAIN Pro. For details, see "Selecting a Destination" on page 2-11.

Note:

Though selecting a printer may cause on-screen colors to differ from the colors of the original, the colors will be reproduced correctly when printed.

You cannot scan an image or you only get a few dots for the scanned image.

- ❑ Make sure you have placed a document on the document table.

- ❑ Adjust the Threshold setting. When OCR is selected as the Image Type, click the Image Type button and change the B/W Option from Text Enhancement Technology to None. Then, in the Image Controls dialog box, adjust the Threshold setting.
Or change OCR to Line Art, then change the Threshold setting in the Image Control dialog box. For details on the Threshold setting, see “Image Controls” on page -40.

Character recognition is poor.

- ❑ Make sure OCR is selected as the Image Type setting.
- ❑ Try adjusting the Threshold setting in the Image Controls dialog box.
- ❑ Select Text Enhancement Technology from the B/W Option in the Image Type dialog box. This helps to eliminate background noise.

Straight lines in the image come out jagged.

- ❑ Make sure the document orientation is perfectly straight on the document table. Align vertical and horizontal lines with the scales at the top and side of the document table.

The image does not look the same as the original.

- ❑ Try different image setting combinations in your scanner software.
- ❑ Your software may not have sufficient color matching and color management features, or these components may not be installed correctly. See the documentation that comes with your software and computer.
- ❑ If you are importing an image file, make sure the file format is one your software can read. Also, make sure the image settings of your software are appropriate for the type of image you want to scan.

A line of dots is always missing from the scanned image.

- If a line is missing on printouts only, the print head may be damaged or defective. See your printer documentation.
- If a line is missing on both screen images and printouts, the scanner sensor may be damaged or defective. Contact your dealer.

A line of dots always appears in the scanned image.

- Wipe and remove any dirt on the window with a soft cloth.

Moiré (cross hatch) patterns appear in the scanned image.

- Select the 24-bit Color De-screening setting in the Image Type list or select On as the De-screening option in the Image Type dialog box.
- Place a transparent sheet between the document and document table to defocus the image.
- Move or angle the document slightly on the document table.
- Clear the check from the Unsharp Mask check box in EPSON TWAIN Pro.
- Make the image size slightly smaller.
- Change the focus setting.

Colors differ from the original.

- Make sure the Image Type and Destination settings are correct. To change these settings, see “Selecting an Image Type” on page 2-5 and “Selecting a Destination” on page 2-11.
- When using the Transparency Unit, make sure the opening near the hinges on the document table is uncovered, or the Transparency Unit is closed when scanning.

Monitor colors

- ❑ Calibrate the screen. See your *Setup Guide* for instructions.
- ❑ Check the image settings of your scanner software, especially data format (bits, pixel, color), gamma correction, and color correction. Try different combinations of these settings.
- ❑ Check the color matching and color management capabilities of your computer, display adapter, and software. Some computers can change the color palette to adjust the colors on your screen. See your software and hardware manuals for details.
- ❑ Exact color matching is very difficult. Check your software and monitor documentation for information on color matching and calibration. Also see your *Color Guide*.

Printed colors

- ❑ Exact color matching is very difficult to achieve. Check your software documentation or contact your printer company for information on color matching and calibration.
- ❑ Printed colors will not exactly match the colors on your monitor, since printers and monitors use different color systems: monitors use RGB (red, green, and blue), while printers typically use CMYK (cyan, magenta, yellow, and black).

Scanned image is too large.

- ❑ Select Screen/Web as the Destination setting. See “Selecting a Destination” on page 2-11 for instructions. In some applications, if you select a printer as the Destination setting, the print will appear in the correct size even if the image is enlarged on the screen.

The printed image is larger or smaller than the original.

- ❑ The image size settings of your software determine the size of the printed image. Do not use the size of the monitor image to judge the printed size.

Scanned images cannot be printed or come out garbled when printed.

- ❑ Make sure your printer is properly connected to the computer, correctly set up, and maintained. See your printer manual for details.
- ❑ Check that your software is properly installed. For installation instructions, see the *Setup Guide*, "Installing the Software" on page X-XX.

The colors of negative film preview images look strange.

- ❑ Make sure the EPSON TWAIN Pro Document Source setting is TPU for Neg. Film.
- ❑ The dark area around the film, such as the frame of the film holder, is perceived as white, which alters the exposure of the scanning area and causes scans to appear darker. To view the correct color, click and drag the mouse over an area, and then click the zoom preview button.

Software setup problems

You cannot install EPSON TWAIN Pro.

- ❑ Check if your computer and operating system meet the system requirements in the *Setup Guide*, "Installing the Software" on page X-XX.
- ❑ Make sure your computer has enough memory to run the application.

You cannot install EPSON TWAIN Pro Network and/or EPSON Scan Server.

- ❑ Check that both your computer and operating system match the system requirements in the *Setup Guide, "Installing the Software"* on page X-XX.
- ❑ Make sure your computer has enough memory (RAM) to run the application.

The scanner does not appear in the Port list of the EPSON TWAIN Pro dialog box in the Control Panel when you connect the SCSI model to your PC running Windows (in Windows 95 and NT 4.0).

- ❑ Turn off the computer and scanner and check the connection between your hardware.
- ❑ Change the SCSI ID number to one that is not being used by any other SCSI device.
- ❑ Check the connection sequence and make sure the scanner's terminator switch is set correctly. See "Connecting the Scanner Using the SCSI Interface" on page X-XX for details.

The Scanner Status does not indicate "Device Ready" after you click Test in the EPSON TWAIN Pro dialog box or the Scanner's Properties dialog box (Windows 98 and 2000) in the Control Panel.

- ❑ Make sure the interface cable meets the requirements of your interface board. See the manual that comes with the interface board.
- ❑ Turn off the scanner and computer and check the connection between the scanner and computer.
- ❑ Make sure the SCSI interface board is installed correctly.

- ❑ Turn off the scanner and computer. Turn on the scanner and then turn on the computer.
- ❑ Make sure the SCSI driver is properly installed.
- ❑ Change the scanner's SCSI ID number to one that is not being used by any other SCSI device.
- ❑ Check the connection sequence and make sure the scanner's terminator switch is set correctly. See "Connecting the Scanner Using the SCSI Interface" on page X-XX for details.

Recovering from Scanner Software Installation Problems on Windows 98, 2000, and Millennium Edition

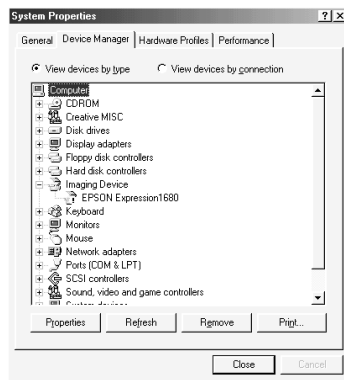
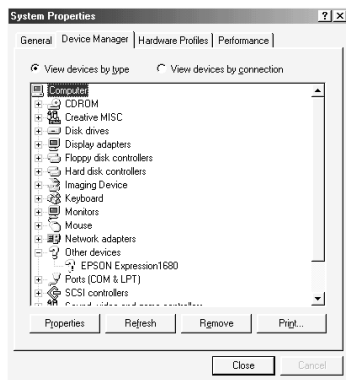
If you canceled the plug-and play driver installation before the procedure was completed, EPSON TWAIN Pro may be incorrectly installed.

Follow the steps below to check the installation.

1. Turn on your scanner and then your computer. Plug the interface cable into your scanner and the computer.
2. Right-click the My computer icon on your desktop, then click Properties.
3. In Windows Me and 98, click the Device Manager tab. In Windows 2000, click the Hardware tab, then click the Device Manager button.

If your EPSON TWAIN Pro is correctly installed, EPSON Expression 1680 should appear under Imaging Device when you click the plus (+) sign next to Imaging Device.

If EPSON TWAIN Pro is not correctly installed, EPSON Expression1680 appears under Other Devices with a ? mark, or under Imaging Device with an ! mark, as shown in the illustrations below. Follow the instructions below to reinstall the driver.

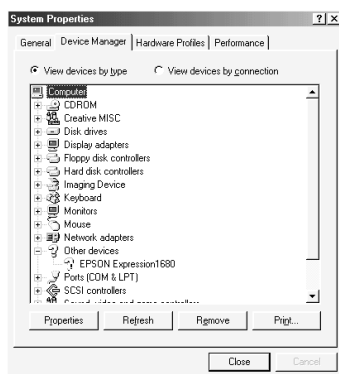


If EPSON Expression1680 appears under Other Devices

Note:

Make sure your scanner is on and connected to your computer. If your scanner is off or not connected to your computer, you cannot reinstall the driver properly.

1. If ? EPSON Expression1680 appears under Other Devices, click ? EPSON Expression1680. Then click Remove.



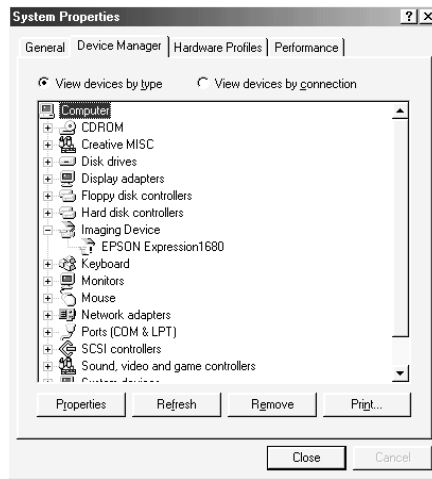
2. The Confirm Device Removal dialog box appears. Click OK.
3. Click Close to close the System Properties window.
4. Make sure your scanner is on and restart your computer.
5. The Add New Hardware Wizard dialog box appears. To install the driver again, follow the instructions in Chapter 3, “Installing the Software” on page X-XX of the *Setup Guide*.

If EPSON Expression1680 appears under Imaging Device

Note:


Make sure your scanner is on and connected to your computer. If your scanner is off or not connected to your computer, you cannot reinstall the driver properly.

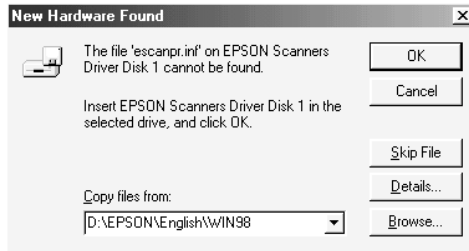
1. If ! EPSON Expression1680 appears under Imaging Device, click ! EPSON Expression1680. Then click Remove.



2. The Confirm Device Removal dialog box appears. Click OK.
3. Click Close to close the System Properties window.
4. Make sure your scanner is on and restart your computer.
5. When the following dialog box appears, insert the scanner software CD in the CD-ROM drive, then click OK.



If the following dialog appears, click , then browse and select or type in the CD-ROM drive letter, EPSON folder, the folder of your preferred language, and folder of your Windows version as the location, as shown below, then click OK.



Sizing Up Your System

Your scanner is sufficient for most scanning needs, but if you are not satisfied with the quality of the images on your monitor or with the speed of image processing, read this section. While it does not contain specific recommendations, it describes various possibilities for improving your scanning system. For further information, seek advice from your dealer or an experienced scanner user.

RAM and hard disk size

Scanned images use much more memory than text files, so you may need more RAM (Random Access Memory) in your computer and a larger hard disk than you have used previously.

Accelerator boards

In addition to memory, processing speed is important because large files take longer to process than small ones. Therefore, you may want to add an accelerator board to your computer.

Video cards

A video card that is sufficient for text may not be good enough for displaying graphic images, especially in color. If all your scanned images look coarse on your monitor, you may want to upgrade your video card. You will need 24-bit color, also called true color or millions of colors, to make the highest quality image reproductions.

Monitors

The resolution of your monitor affects the quality of the image you see. Consider a high resolution monitor if you do precise color work, but also be sure you have a high quality video card.

File compression software

Many different programs are available to make image files smaller for storage or transmission. For example, some compression software can store a 3 MB image file on a 1.44 MB floppy disk, and compress images and restore them with no loss of data or quality; others compress images more, but the restored file is not exactly the same as the original. The difference between the original and restored files is, however, almost unnoticeable.

Contacting Customer Support

If your EPSON product is not operating properly and you cannot solve the problem using the troubleshooting information in your product documentation, contact customer support services for assistance. If customer support for your area is not listed below, contact the dealer where you purchased your product.

Customer support will be able to help you much more quickly if you give them the following information.

- ❑ Product serial number
(The serial number label is usually on the back of the product.)
- ❑ Product model
- ❑ Product software version
(Click About, Version Info, or similar button in the product software.)
- ❑ Brand and model of your computer
- ❑ Your computer operating system name and version
- ❑ Names and versions of the software applications you normally use with your product

For users in the United Kingdom and the Republic of Ireland

If you purchased your product in the UK or the Republic of Ireland, EPSON (UK) LTD provides a range of customer services and technical support.

Support Via the World Wide Web

- ❑ For information on the latest EPSON products, software drivers, online user guides, and answers to frequently asked questions:

<http://www.epson.co.uk>

- ❑ To e-mail EPSON Technical Support:

<http://www.epson.co.uk/support/email/>

- ❑ For a full list of EPSON Customer and Warranty Support services:

<http://www.epson.co.uk/support/>

Support Via Telephone

Our Customer and Warranty Support teams can be contacted by calling 0870 163 7766 in the UK or 0044 0870 163 7766 from the Republic of Ireland. They can provide the following services:

- ❑ Technical information on installing, configuring, and operating your EPSON products
- ❑ Arranging for faulty EPSON products to be repaired within the warranty period

Pre-Sales Enquiry Desk

Our Enquiry Desk team can be contacted by calling 0800 220546 in the UK or 1 800 409132 from the Republic of Ireland, by faxing 01442 227271 in the UK or 0044 1442 227271 from the Republic of Ireland, and via e-mail at info@epson.co.uk. They can provide the following information:

- ❑ Pre-sales information and literature on new EPSON products (also available via our world wide web site at <http://www.epson.co.uk>)

- ❑ Where to purchase genuine EPSON consumables, accessories, and options

For users in Australia

EPSON Australia wishes to provide you with a high level of customer service. In addition to your product documentation, we provide the following sources for obtaining information:

Your Dealer

Don't forget that your dealer can often help identify and resolve problems. The dealer should always be the first call for advice on problems, they can often solve problems quickly and easily as well as give advice on the next step to take.

Internet URL <http://www.epson.com.au>

Access the EPSON Australia World Wide Web pages. Worth taking your modem here for the occasional surf! The site provides a download area for drivers, EPSON contact points, new product information and technical support (e-mail).

EPSON Faxback service

EPSON Faxback service will fax you the latest specifications for most EPSON products offered in Australia. Phone (02) 9903 9075 and the system will guide you through a number of choices before faxing the information to your fax machine.

EPSON Helpdesk

EPSON Helpdesk is provided as a final backup to make sure our clients have access to advice. Operators on the Helpdesk can aid you in installing, configuring and operating your EPSON product. Our Pre-sales Helpdesk staff can provide literature on new EPSON products and advice where the nearest dealer or service agent is located. Many types of queries are answered here.

The Helpdesk numbers are:

Phone: 1300 361 054

Fax: (02) 9903 9189

We encourage you to have all the relevant information on hand when you ring. The more information you prepare, the faster we can help solve the problem. This information includes your EPSON product documentation, type of computer, operating system, application programs, and any information you feel is required.

For users in Singapore

Sources of information, support, and services available from EPSON Singapore are:

World Wide Web (www.epson.com.sg)

Information on product specifications, drivers for download, Frequently Asked Questions (FAQ), Sales Enquiries, and Technical Support via e-mail are available.

EPSON HelpDesk (Phone: (065) 5863111)

Our HelpDesk team can help you with the following over the phone:

- Sales enquiries and product information
- Product usage questions or problem
- Enquiries on repair service and warranty

For users in Hong Kong

To obtain technical support as well as other after-sales services, users are welcome to contact EPSON Hong Kong Limited.

Internet home page

EPSON Hong Kong has established a local home page in both Chinese and English on the Internet to provide users with the following information:

- ❑ Product information
- ❑ Answers to Frequently Asked Questions (FAQs)
- ❑ Latest versions of EPSON product drivers

Users can access our World Wide Web home page at:

<http://www.epson.com.hk>

Electronic bulletin board system

An electronic bulletin board system (BBS) is also available to obtain product information and the latest versions of product drivers. You can log on to the following number for the BBS service:

BBS: (852) 2827-4244

Technical Support Hotline

You can also contact our technical staff at the following telephone and fax numbers:

Phone: (852) 2585-4399

Fax: (852) 2827-4383

For users in Malaysia

Contacts for information, support, and services are:

World Wide Web (www.epson.com.my)

Information on product specifications, drivers for download, Frequently Asked Questions (FAQ), and Email Enquiries are available.

EPSON Trading Shah Alam Head Office

Phone: 03 5191366

Fax: 03 5191281

For users in India

Contacts for information, support, and services are:

World Wide Web (www.epson.co.in)

Information on product specifications, drivers for download, Frequently Asked Questions (FAQ), Products Enquiry, and Technical Query are available.

EPSON India Bangalore Head Office:

Phone: 5321 266-70

Fax: 5581799 / 5321095

Help Desk Phone: -5321 625

For users in the Philippines

To obtain technical support as well as other after sales services, users are welcome to contact the EPSON Philippines Representative Office at the telephone and fax numbers below:

Phone: (632) 813-6552

Fax: (632) 813-6545

BBS: (632) 814-0595

Appendix A

Technical Specifications

| | |
|----------------------------------|------|
| Scanning | A-2 |
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| IEEE 1394 Scanner I/F Card | A-11 |

Scanning

| | |
|-----------------------|--|
| Scanner type: | Flatbed, color |
| Photoelectric device: | Color CCD line sensor |
| Effective pixels: | 13600 × 18720 pixels at 1600 dpi, 100% |
| Document size: | 216 mm × 297 mm (8.5 inches × 11.7 inches) A4 or US letter size (The reading area can be specified from your software.) |
| Scanning resolution: | 1600 dpi (main scan) 3200 dpi with Micro Step (sub scan) |
| Output resolution: | 50 dpi to 9600 dpi (50 to 4800 dpi in 1 dpi increments, 7200 dpi, and 9600 dpi. 7200 dpi and 9600 dpi performed with zoom function) |
| Color separation: | RGB color filters on CCD |
| Reading sequence: | |
| Monochrome | One-pass scanning |
| Color page sequence | Three-pass scanning (R, G, B) (This sequence is not supported by EPSON TWAIN Pro) |
| Color byte sequence | One-pass scanning (R, G, B) |
| Color line sequence | One-pass scanning (R, G, B) |
| Zoom: | 50% to 200% in 1% increments |
| Image data: | 12 bits per pixel per color internal 1 to 12 bits per pixel per color external |

| | |
|---------------------|---|
| Brightness: | 7 levels (In EPSON TWAIN Pro, Gamma correction controls Brightness) |
| Line Art settings: | Fixed threshold Text Enhancement Technology (enable/disable selectable) |
| Halftoning process: | AAS (Auto Area Segmentation) Enable/disable selectable 3 halftoning modes (A, B, and C) and 4 dither patterns (A, B, C, and D) for bi-level and quad-level data (2 downloadable dither patterns) |
| Gamma correction: | 2 types for CRT display 3 types for printer 1 type for user-defined |
| Color correction: | 1 type for CRT display 3 types for printer output (available in color byte sequence mode and color line sequence mode) 1 type for user-defined (Only user-defined Color correction is available in EPSON TWAIN Pro) |
| Interface: | SCSI (50 pin half pitch connectors), USB (Type B Receptacle Connector), and optional IEEE 1394 Serial Bus Interface |
| Light source: | Xenon gas fluorescent lamp |
| Reliability: | 100,000 cycles of carriage movement (main unit MCBF) |
| Dimensions: | Width: 332 mm (13 inches) Depth: 562 mm (22.1 inches) Height: 133 mm (5.3 inches) |
| Weight: | Approx. 8.5 kg (18.7 lb) |

Electrical

| | 100 to 120 V AC | 220 to 240 V AC |
|---------------------|--|-----------------|
| Input voltage range | AC 90 to 132 V | AC 198 to 264 V |
| Rated frequency | 50 to 60 Hz | |
| Rated current | 0.8 A | 0.4 A |
| Power consumption | Approx. 30 W (operating) Approx. 10 W (standby) | |

Note:

Check the label on the back of the scanner for voltage information.

Environmental

Temperature:

Operation 5° C to 35° C (41° F to 95° F)
 10° C to 32° C (50° F to 89° F)
 when using the ADF

Storage -25° C to 60° C (-13° F to 140° F)

Humidity:

Operation 10% to 80%, without condensation

Storage 10% to 85%, without condensation

Operating conditions: Ordinary office or home conditions.
 Extreme dust should be avoided.
 Operation under direct sunlight or near
 a strong light source should be avoided.

Note:

Specifications are subject to change without notice.

Standards and Approvals

U.S. model:

| | |
|--------|---|
| Safety | UL 1950 CSA C22.2 No. 950 |
| EMC | FCC Part 15 Subpart B Class B CSA C108.8 Class B |

European model:

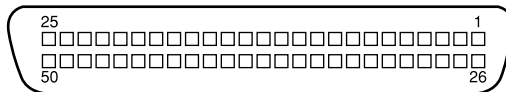
| | |
|---------------------------------|--|
| Low Voltage Directive 73/23/EEC | EN 60950 |
| EMC Directive 89/336/EEC | EN 55022 Class B EN 55024 EN 61000-3-2 EN 61000-3-3 |

Australian model:

| | |
|-----|---------------------|
| EMC | AS/NZS 3548 Class B |
|-----|---------------------|

SCSI Interface

- Interface type: ANSI X3T9.2/375R Revision 10L (SCSI 2)
- Functions: BUS FREE phase
ARBITRATION phase
SELECTION/RESELECTION phase
COMMAND phase (Logical Unit Number is fixed to 0 and command link function is not supported.)
DATA phase
 Data in phase
 Data out phase
STATUS phase
MESSAGE phase
 MESSAGE IN phase
 MESSAGE OUT phase
ATTENTION condition
RESET condition
- Logic level: TTL compatible
- Electrical standard: ANSI X3T9.2/375R Revision 10L (SCSI 2)
- ID Setting: Selectable from 0 to 7
- Terminator: Internal terminator selectable (enable/disable)
- Connector type: Two half pitch 50-pin connectors
- Connector pin arrangement:



USB Interface

Interface type: Universal Serial Bus Specification
Revision 1.0

Configuration:

| Element | Description |
|----------------------|---|
| Device | Full Speed mode (12 Mbit/s) Class: Vendor-specific Vendor ID: 0x04B8 (SEIKO EPSON CORP.) Product ID: 0x0107 |
| Configuration | Characteristics: Self-powered Remote wake up feature: Not supported Maximum power consumption from VBUS: 2 mA (5 V) |
| Interface | No alternate setting Number of endpoints used by this interface (excluding endpoint 0): 2 Class: Vendor specific |
| Endpoint 1 | Bulk IN transfer Maximum data transfer size: 64 byte |
| Endpoint 2 | Bulk OUT transfer Maximum data transfer size: 64 byte |
| String Descriptor | Language ID: US English 1: iManufacturer: "EPSON" 2: iProduct: "Expression 1680" |

Electrical standard: Full Speed mode (12 Mbit/s) of Universal
Serial Bus Serial Bus Specification
Revision 1.0.

Connector type: One receptacle (Type B)

Option Interface Connector

Interface type: For use with the optional Automatic Document Feeder (B81316*) and Transparency Unit (B81318*) only.

Electrical specifications:

Output voltage: DC 21.6 to 26.4V
DC 4.75 to 5.25V

Output current: 0.6A (24 V)
0.3A (5 V)

Initialization Methods

The scanner can be initialized (returned to a fixed set of conditions) in the following ways:

SCSI

| | |
|-------------------------|---|
| Hardware initialization | The scanner is turned on. The scanner receives a SCSI Reset signal from the SCSI interface. |
| Software initialization | Software sends the ESC @ (initialize the scanner) command. The scanner receives a SCSI Bus Device Message. |

USB

| | |
|-------------------------|---|
| Hardware initialization | The scanner is turned on. The USB cable is unplugged from the USB port on the scanner. |
|-------------------------|---|

| | |
|-------------------------|--|
| Software initialization | Software sends the ESC @ (initialize the scanner) command. The scanner receives a Bus Reset from the USB interface. |
|-------------------------|--|

Transparency Unit

Electrical Specifications:

| | | |
|-------------------|-------------------|-------------------|
| Supplied Voltage: | DC 21.6 to 26.4 V | DC 4.75 to 5.25 V |
| Rated Current: | 0.6 A | 0.1 A |

Environmental Conditions:

Temperature

Operation: 5° C to 35° C (41° F to 95° F)

Storage: -20° C to 60° C (-14° F to 140° F)

Humidity

Operation: 10% to 80%, without condensation

Storage: 10% to 85%, without condensation

Reliability: 100,000 cycles for the MCBF

Document:

Transparencies up to 8.5 × 11.7 inch film

35-mm strip film

35-mm slide

120/220 size (6 × 9 cm) strip film

4 × 5 inch film

Manuscript: Up to 8.5 × 11.7 inches

Readable area: 216 × 297 mm

| | |
|-------------|--|
| Dimensions: | Width: 324 mm (12.8 inches) Depth: 540 mm (21.3 inches) Height: 92 mm (3.6 inches) |
| Weight: | Approx. 5 kg (11 lb) |

Automatic Document Feeder

General specifications:

| | |
|-------------------------|---|
| Paper supply: | Face up load |
| Paper out: | Face down eject |
| Paper setting quantity: | 30 pcs (55 g paper, maximum total thickness under 6 mm) |

Electrical specifications:

| | |
|----------------|--|
| Input voltage: | DC 22.8 to 25.2 V DC 4.75 to 5.25 V |
| Input current: | 24 V: 0.6 A 5 V: 0.3 A |

Environmental conditions:

| | |
|--------------|--|
| Temperature | |
| Operation: | 10° C to 32° C (50° F to 89° F) |
| Storage: | -20° C to 60° C (-4° F to 140° F) |
| Humidity | |
| Operation: | 20% to 80%, without condensation |
| Storage: | 95% or less, without condensation |
| Reliability: | 100,000 sheets (Load/Eject MCBF) |
| Dimensions: | Width: 310 mm (12.2 inches) Depth: 528 mm (20.9 inches) Height: 92 mm (3.6 inches) |

Weight:

Approx. 4.5 kg (9.9 lb)

IEEE 1394 Scanner I/F Card

Interface type: IEEE 1394-1995 compatible

Data transfer method: Half-duplex Data/Strobe differential serial

Synchronization method: Clock synchronization with DS-Link

Encoding/decoding: DS-Link

Logic level: 3.3 V

Compatible connectors: IEEE 1394-1995 compatible

Connector pin signal layout:

| Pin number | Signal name | Function |
|-------------------|--------------------|---|
| 1 | VP | Cable power supply |
| 2 | VG | Cable ground |
| 3 | TPB* | Strobe during receipt, data during transmission (differential pair) |
| 4 | TPB | |
| 5 | TPA* | Data during receipt, strobe during transmission (differential pair) |
| 6 | TPA | |

Power class:

Power class code 100

No power supply from external sources

Fitted with a repeat function with bus power

Environmental Conditions:

Temperature

Operation: 5° to 35°C (41° to 95°F)

Storage: -25° to 60°C (-13° to 140°F)

Humidity

Operation: 10% to 80%, without condensation

Storage: 10% to 85%, without condensation

Glossary

additive primary colors

The colors of red, green and blue (RGB) - which give the perception of white when combined equally. These are the colors of the color system used by monitors and scanners.

bi-level data

Image data that is composed of 1 bit per pixel. A pixel is represented by a single bit of digital data that can be expressed as only 1 (light) or 0 (dark).

bit

Short for binary digit. The smallest unit of data in computer processing. A bit can represent one of two values: on, represented by a 1, or off, represented by a 0.

pixel depth

The unit that indicates the number of bits allocated for a pixel. The larger the bit value, the more detail of a pixel will be reproduced.

brightness

A scanner function to lighten or darken the output image data.

byte

A unit of information consisting of eight bits. A byte can represent a control code or character.

carriage

A component of the scanner that contains the optical sensor and light source for scanning.

color correction

A method of adjusting the color image data for a particular type of device so that the reproduction results are as close as possible to the original colors.

color separation

A process of converting full-color images into a limited number of primary colors. Additive primary colors (red, green, and blue) are used by the scanner, and the subtractive primary colors (cyan, magenta, and yellow) plus black are used for printing press separation.

daisy chain

A SCSI bus arrangement that allows several devices to be connected simultaneously in a line to a single computer. See *SCSI*.

default

A set of values used when no other selections have been made. These are sometimes called factory defaults if the original values have not been changed since the scanner left the factory.

dithering

A process in which software or an output device simulates continuous tones with groups of dots.

document

The item, such as a sheet of paper or a book, that is placed on the document table for the scanner to read.

dpi

Short for dots per inch. A unit of measurement for resolution. The higher the value, the higher the resolution.

dropout color

A color the scanner does not recognize and ignores. You can select and deselect dropout colors in the scanner software.

ESC/I

Abbreviation for EPSON Standard Code for Image scanners. A system of commands that allows you to control image scanners from your software.

ESC/P

Abbreviation for EPSON Standard Code for Printers. A system of commands that allows you to control printers from your software.

gamma

Gamma is a value that expresses the relationship between the input and output of a device. By adjusting the gamma, the brightness of the mid-tones of an image can be changed without affecting the shadows and highlights.

grayscale

Images represented with various shades of gray in addition to black and white.

halftoning

A method of reproducing images with patterns of dots to improve the quality of the output.

home position

The position at the rear (nearest the cover hinge position) of the scanner where the carriage rests before a scanning operation.

imagesetter

A device that uses computer files to produce high-resolution text and graphics output on film or paper. These are usually found in service bureaus and printing companies.

impact dot printer

A printer that transfers ink onto the paper by striking an ink ribbon with a number of small pins.

ink jet printer

A printer that transfers ink onto the paper by spraying the ink through a number of small nozzles.

interface

A piece of hardware, a method, or a standard used for connection between or among computer devices.

moiré

A moiré is a cross-hatch pattern that appears on scanned images when scanning printed material. It is a result of interference that occurs due to the difference between the pitches of the scanning and the halftone screens.

monochrome

Black and white images, or images represented only by the intensity of luminosity.

OCR (Optical Character Recognition)

The technology that allows computers to "read" text from physical objects. OCR requires a graphical representation of text to interpret, which usually comes from a scanned image.

pixel

Short for picture element. Each image is composed of a number of pixels. Pixels are also counted in units of dots.

port

An interface channel through which data is transmitted between devices.

primary colors

Basic colors. See *additive primary colors* and *subtractive primary colors*.

resolution

Indication of how finely an image is resolved into pixels. Can be measured in dots per inch (dpi), pixels per inch (ppi), or samples per inch (spi).

scan

An operation performed by the sensor and the carriage. The image is divided into pixels by scanning.

scanning area

The physical size of the image that can be scanned by the scanner.

SCSI

Small Computer System Interface. This is one method used to connect your computer to peripherals such as scanners, hard disk drives, CD-ROM drives, and others.

SCSI ID

The numbers that all devices in a SCSI connection (see *daisy chain*) use to identify each other. If the same ID number is used by two devices in the same daisy chain, the devices cannot operate properly.

subtractive primary colors

The colors of cyan, magenta, and yellow (CMY) which produce black when mixed in certain amounts. In printing, black is often added to give more definition as mixing of actual inks cannot produce pure black.

terminator

A device that stops electronic signals, and prevents them from proceeding or returning to other devices. This is necessary to stop a signal from continuously reflecting between devices.

threshold

A reference point that is used to determine whether data will be processed as "on" or "off". In the case of color image data, "on" means that a certain color will appear in a pixel or dot, and "off" means that color will not appear there.

tone correction

A method of adjusting the tone curve so that the reproduction results on different types of output devices have gradations similar to the original image.

tone curve

The graph that shows the contrast ratio between the input (original image) and output (image data) in image processing.

unsharp mask

Originally a photographic process in which a sharply focussed and a slightly out-of-focus image are combined to produce a sharper image. This process is simulated by software to produce the same effect.

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