TWAIN Data Source

TWAIN Data Source, the scanning module provided with your scanner combines simplicity with versatility of use. With it you can easily capture images to meet a wide variety of your color, gray or black-and-white image needs.

Scanner Setup dialog box

User-Definable Pattern dialog box

Brightness/Contrast dialog box

Gamma Setting dialog box

Level dialog box

Scanner Setup dialog box

The Scanner Setup dialog box is where you set up your scanner and perform the scanning function and enhancement functions. Setting up your scanner involves calibrating it to correct differences between input and output image colors or grayscale, adjusting the page length, image size, scan mode, scanning resolution, and scan velocity.

Adjust the Prescan page length

Obtain a quick (Prescan) image

Set the desired scan image size (sizing)

Select the desired scan mode

Color Scan Mode Considerations

Grayscale Scan Mode Considerations

Halftone Scan Mode Considerations

Line-art/Text Scan Mode Considerations

Select the desired resolution

Select the desired scan velocity

Click Scan

Image Enhancement

User-Definable Pattern dialog box This dialog box appears when you click USER DEFINED in the Halftone Cell Size box. It is used for creating your own halftone cell patterns if the provided six halftone cell patterns do not yield satisfactory results.

Saving User-Defined Cell Patterns

Opening a User-Defined Cell Pattern

Reset

Brightness/Contrast dialog box makes it possible for you to adjust the overall whiteness (brightness) and the range of gray shades (contrast) in your images. To display the Brightness/Contrast dialog box, click on the Brightness/Contrast icon.

To adjust brightness and contrast for color images:

By clicking on the RGB (Red-Blue-Green), or individual Red, Blue or Green boxes, you can then use the Brightness or Contrast scroll bars to increase or decrease the brightness or contrast of any or all the colors.

To adjust brightness and contrast for gray images:

By clicking on the Gray box, you can then use the Brightness or Contrast scroll bars to increase or decrease the brightness or contrast in your gray image.

Prescan

Click PRESCAN to see the effect of your change(s) on a low-resolution copy of your image.

Reset

Click RESET to return the visible image (depending on PREVIEW or PRESCAN selection) to default brightness and contrast settings.

Default

Click DEFAULT to retrieve the color or gray sample image

Gamma Setting dialog box makes it possible for you to selectively adjust the brightness in the hilight, shadow and midtone areas of your color and gray images.

Gamma type

User Defined

Prescan

Reset

Level Adjustment

Histogram Changes
Auto
Prescan
Ok

Adjust the (Prescan) page length

Adjust to the size necessary to obtain a complete Prescan of the desired image area. You can adjust the page length from Letter size (11 inches) up to Legal size (14 inches). Setting the page length is done by clicking and pulling down on the vertical ruler guide adjuster to the left of the PRESCAN WINDOW. Use the vertical ruler guide to the left of the PRESCAN WINDOW for precise measurements.

Obtain a quick (Prescan) image.

Select a Prescan scan mode (either color or grayscale) and click Prescan to get a quick scan of the entire original image. From this low-resolution scan you can get a clearer idea of the image area you want to include in the final scan.

Set the desired scan image size.

Click on one of the sides or corners of the CROP FRAME and drag it out or in to the desired length and width. You can move the entire CROP FRAME by positioning the mouse cursor inside it, clicking and holding the right mouse button and dragging.

Only the area inside the CROP FRAME will be included in the resulting scanned image when you click Scan. The size information is given in either inches, pixels, centimeters (cm) or millimeters (mm) and is automatically updated. The size information can be changed to a preferred unit of measurement by clicking on the UNIT box and selecting a unit of measure.

Select the desired scan mode

Select either color, gray (grayscale), halftone, or line-art/text. Choosing the right scan mode depends on your output requirements and system configuration.

Color Scan Mode Considerations

In this scan mode, the Flatbed Scanner captures 24 bits of color image information for every dot (pixel) in your resulting screen image. It is therefore possible to faithfully reproduce over 16.7 million colors in the resulting image. Truly impressive images for autodemos, multi-media presentations, or printed output can be obtained using this scan mode. However, to fully utilize 24-Bit True Color images, be sure that your system configuration is capable of handling them. Normally 24-Bit True Color images will require 2 MB or more of system memory to edit them and lots of disk space to store them. For instance, an A4-size 300-dpi image may require 24 MB of storage space. You will also need a 24-Bit video board in your computer to display all the color information.

Grayscale Scan Mode Considerations

When color is not necessary for your output but you need high quality copies of continuous tone originals or you are anticipating enhancing your images with an image-editing program, 8-Bit Grayscale will provide you with those images. Images scanned in 8-Bit Grayscale will show up to 256 shades of gray. Required disk space for saving images is also considerably less than that required for 24-Bit Color. An A4-size 300-dpi 8-Bit Grayscale image will require about 8 MB of disk space to save or roughly 1/3 of that needed for a 24-Bit True Color image of equivalent size.

Halftone Scan Mode Considerations

When you are concerned about disk space, yet you want graphic images which reveal black and white and (simulated) shading detail, you can select 1-Bit Halftone scan mode. An image scanned with the Halftone setting is produced by arranging black and white dots into patterns to simulate different shades of gray. The patterns are arranged by a process known as dithering. Dithering simulates a gray shade by concentrating or dispersing the black and white dots. When there is a concentration of black dots, the gray shade will appear darker. When there are fewer black dots, the gray shade will appear lighter. An A4-size 300-dpi 1-Bit Halftone image will require about 1 MB of disk space to save or roughly 1/8 of that needed for an 8-Bit Grayscale image of equivalent size. Halftone images also print well on 300-dpi laser printers. When choosing the Halftone scan mode, you need to also select halftone cell size. You may also want to use the Halftone/Line-art Combination Scan mode option for some scanning tasks (see the section *Halftone/Line-art Combination Scans*).

Halftone Cell Size

Click on the OPTIONS button and choose HALFTONE CELL to select a halftone cell size. Select from 2x2, 3x3, 4x4, 5x5, 6x6, 8x8 or USER DEFINED. It is wise to experiment with the various halftone cell sizes since each halftone cell size produces a different pattern effect from the others. For instance, 64 gray shades can be simulated in an image with an 8x8 cell, but only 4 gray shades can be simulated in an image with a 2x2 halftone cell size. You can also try out the USER DEFINED setting if you are not satisfied with the pattern effects provided by the six cell sizes.

User Defined

When you click on USER DEFINED, the USER-DEFINABLE PATTERN dialog box opens. To create your own cell pattern, you first choose the Halftone cell size (the default is 8x8), by clicking in the appropriate box below the CELL PATTERN MAP. When a cell size is chosen, a mapped representation of the cell is displayed in the CELL PATTERN MAP. You can then click in the individual small cells in the CELL PATTERN MAP to change the values in them. Any values between 0 - 63 will be accepted. The cursor will automatically advance to the next box. Use the horizontal and vertical keyboard arrows to go to any of the boxes you wish to change next. Changes you make are automatically applied to the sample image provided in the box on the right. Click RESET to go back to the default 8x8 cell pattern.

Line-art/Text Scan Mode Considerations

This scan mode is best used for tasks where no colors (other than black and white) or gray shading are required such as when scanning text for conversion to word processing formats (OCR) or black-and-white art work. With this scan mode you should also consider a Halftone/Line-art Combination Scan mode option for some scanning tasks.

Halftone/Line-art Combination Scans

You can combine halftone and line-art modes in a single scanned image by creating up to 6 areas or Scan Regions in the PRESCAN WINDOW for one scan mode with the remaining area in the PRESCAN WINDOW being scanned using the other scan mode. This is especially useful when the document you want to scan contains pictures and text. You can scan the pictures using Halftone mode and scan the text using Line-art. The text will appear sharp and clear with no shadow while the pictures will show more varied detail and shading.

To create Scan Regions in the PRESCAN WINDOW:

a. Determine where in the prescanned image you want to create Scan Regions and what scan mode (Line-art or Halftone) you will use for them.

b. If you want the Scan Regions to be Halftone, select Line-art as your scan mode in the SCAN MODE box. This will automatically cause the scanner to use Line-art as the scan mode **outside** of the Scan Regions.

c. Next, position the mouse cursor at the upper left corner of the first Scan Region you want to create. Press and hold the left mouse button and drag diagonally down and to the right to create the Scan Region. If you do not succeed in creating a box with the required dimensions, simply click inside the box to make it disappear and try again.

d. Continue this process until all Scan Regions have been created.

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Select the desired resolution

Resolution is the measure of how much image detail information the scanner is to capture in a scan. Click and drag the scroll bar to increase or decrease the resolution. For the 600-DPI scanner, beginning at 72 dots per inch (dpi), the lowest resolution for the scanner, the resolution may be changed from 72 to 300-dpi in 3-dpi increments. From 300 to 600-dpi, the resolution may be changed in 30-dpi increments. An additional range of 600 to 1200 dpi (achieved by software interpolation) is incrementally adjusted in 60-dpi steps. For the 800-DPI Scanner, beginning at 72-dpi, the resolution may be changed from 72 to 400-dpi in 4-dpi increments. From 400 to 800-dpi, the resolution may be changed in 40-dpi increments. An additional range of 800 to 1600 dpi (achieved by software interpolation) is incrementally adjusted in 80-dpi steps. For the 1200-DPI Scanner, beginning at 72-dpi, the resolution may be changed from 72 to 600-dpi in 6-dpi increments. From 600 to 1200-dpi, the resolution may be changed in 60-dpi increments. An additional range of 1200 to 2400 dpi (achieved by software interpolation) is incrementally adjusted in 120-dpi steps.

Select the desired scan velocity.

You can increase the speed at which the image will be scanned by the scanner. You can choose from one of 6 speeds. The slowest speed will usually offer the best quality.

Click Scan.

When you click SCAN, the SCANNER SETUP dialog box will disappear and the resulting image will be displayed in the main screen of the image-editing application.

Image Enhancement

Once you have scanned an image and viewed the results, you can use TWAIN Data Source image enhancement controls to improve the quality of succeeding scans and thereby optimize your scanner's output. The image enhancement controls consist of contrast, brightness (adjusted through the Brightness/Contrast dialog box), gamma correction (adjusted through the Gamma Setting dialog box) and histogram adjustment (adjusted through the Level dialog box).

Saving User-Defined Cell Patterns

To save a User-Defined cell pattern:

1. Click SAVE in the USER-DEFINABLE PATTERN dialog box. The SAVE PATTERN FILE dialog box will open.
2. From the DIRECTORIES box, select the directory or disk you want to save the file to.
3. In the FILE NAME box, type the name for your defined cell pattern. If you want to save the file in another subdirectory you also must include the DOS pathname.
4. Click SAVE to save the file and close the dialog box.

Opening a User-Defined Cell Pattern

To open a User-Defined cell pattern:

1. Click LOAD in the USER-DEFINABLE PATTERN dialog box. The OPEN PATTERN FILE dialog box will open. A list box shows a list of files in the current directory. If the user-defined pattern file is not in the current directory, select [..], another directory, or disk drive.
2. When the list box shows the file you want, click the file to select it.
3. Click OPEN to load the file and close the dialog box.

Reset

Click RESET to return to the default 8x8 cell pattern

Gamma Type

Select:

STANDARD -- to keep default settings for output
MONITOR -- to change monitor display of output
LASERJET -- to change black and white printer output
PAINTJET -- to change color printer output
GAMMA VALUE -- to enter gamma curve change values

By choosing MONITOR, LASERJET or PAINTJET, pop-up menus will appear from which you can select from six standard settings to change the shadows, midtones or hilights of your image.

Gamma Value

Click GAMMA VALUE to enter a value from 0.1 to 7.9 in the pop-up menu which appears. Values of 0.1 to 2.0 will primarily affect the shadow areas of your image. Values of 2.1 to 6.0 will primarily affect the midtone areas of your image. Values of 6.1 to 7.9 will primarily affect the hilight areas of your image.

User Defined

USER DEFINED is provided so that you can directly edit the gamma curve of an image and make very precise changes to the shadow, midtone or hilight areas of the image.

To do this:

1. Click USER DEFINED to display a gamma curve with several nodes visible along its length.
2. Position the mouse cursor directly on any of the nodes and click and drag the node to a new location. You can move any of the nodes up to the lightest value or down to the darkest value. Horizontally, the movement of any node is limited by the position of nodes before or after it. The two end nodes are also limited by the beginning or end of the gamma curve. Changes are automatically applied to the (DEFAULT) or (PRESCAN) image as you make them.

PreScan

Click PRESCAN to see the effect of your change(s) on a low-resolution copy of your image.

Reset

Click RESET to return the gamma curve of an image back to its default settings.

Histogram Changes

The histogram reveals a graphic representation of the concentration or dispersion of pixels in an image according to brightness levels.

To use the Histogram:

Click the HISTOGRAM icon. The LEVEL dialog box will appear with a default histogram, mapping curve and sample color or gray image.

Horizontally, the histogram displays the possible pixel brightness levels from the darkest on the left to the lightest on the extreme right. The height of the individual bars or lines at any particular point in the histogram, indicate the percentage of pixels in the image possessing those particular brightness characteristics. The mapping curve serves to reflect the changes that you may make in the LEVEL dialog box. The three arrow controls below the histogram allow you to selectively change the concentration of pixels in the darkest (shadow) middle (midtone) and lightest (hilight) areas of your images. By moving the left (shadow) and right (hilight) arrow controls in or out you can shorten or lengthen the actual range of brightness levels in an image. By moving the middle arrow, you can lighten or darken the midtones of your image.

The CHANNEL options below the histogram allow you to adjust the histogram for all colors in a color image, individual colors, or the grayl levels in a grayscale image. The sample image will automatically change as you switch channel options.

The INPUT LEVEL boxes indicate the actual range of the shadow, midtone, and hilight brightness levels in the input image. The BLACK RATIO registers the amount of blackness in the output image.

Auto

Click AUTO to conform the mapping curve to a new histogram (created by adjusting the arrow controls). By referring to the new mapping curve, you can easily see the beginning and ending points of the new range and any changes to the midtones. The sample image will automatically change as you adjust the arrow controls.

Prescan

Click the PRESCAN option to see how changes affect a previously obtained prescan of your image.

OK

Click OK to confirm these changes. The LEVEL dialog box will disappear and the SCANNER SETUP dialog box will reappear, allowing you to re-scan. Click CANCEL to quit the LEVEL dialog box without any changes taking affect.