

Guidance on Using Scanning Software: Part 5. Epson Scan

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Epson Scan comes with Epson scanners and has simple manual adjustments, but requires vigilance to control the default settings that are not optimal for archival scanning and can reappear unexpectedly. The histogram display has low resolution and the manual settings do not provide precise, reliable handling of clipping when adjusting tone and color. Epson Scan has few options for saving and reusing settings and does not have built-in settings or automated processes for handling negative film. Extensive use of the histogram and curves can be needed to handle negatives.

The optimal use of Epson Scan for archival scanning would be to do the major tone and color adjustments in a separate step with image-editing software. Epson Scan might also be used for a small project or as an initial scanning program when efficiency is not a significant concern.

5.1 Workspace and Layout

As shown in Figure 5.1 the basic workspace for Epson Scan consists of a window with the preview image display and another window with scanning controls. For archival scanning Epson Scan should have the Mode field at the top of the scanning controls window set to Professional Mode.

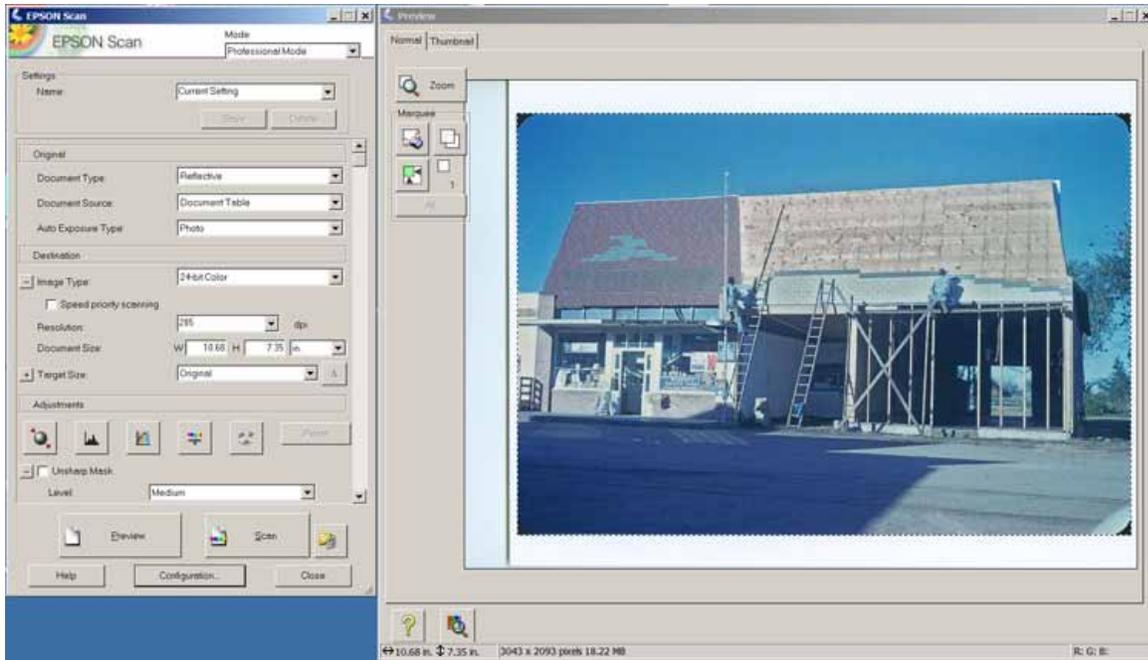


Figure 5.1. The main workspace for Epson Scan. A window displays the preview image and another window has scanning controls.

The preview display has tabs for two different types of display, Normal and Thumbnail. Normal displays the full scanning bed and is used with paper originals. Thumbnail is used with film by default and handles multiple images on the scanning bed. Other buttons on the preview display can be clicked to rotate or flip an image. The edges of the image window can be dragged to size the image independently from the controls window.

In Epson Scan the area selected for the final scan is called the *marquee* and is defined by clicking and dragging the mouse or by clicking the button with the icon with a green square to automatically locate the image. The selected area is identified with moving dotted lines. The active marquee area can be enlarged to fill the display area by clicking the Zoom button.

Like most scanning software (except VueScan), Epson Scan uses a low-resolution preview to set scanning adjustments and then applies the settings in a final high-resolution scan. Any changes to the settings require that the high-resolution scan be redone. This description is based on Epson Scan version 3.83.

5.2 Standard Option Settings

Clicking the Configuration button at the bottom of the main scanning controls window brings up the options for setting defaults. The configuration dialog box has four tabs. The settings are

identified here by the tab and item label. For example, *Preview > Quality Preview*: indicates the item or field labeled Quality Preview under the Preview tab.

Preview Tab

Preview > Preview image rotation: is a checkbox that when checked rotates the image 90 degrees.

This can be set to a default value that will be used most frequently and can be changed for an individual image after the preview scan has been done.

Preview > Quality Preview: is a checkbox that determines whether the preview image is higher or lower quality. Checking the box to make the higher quality preview is appropriate for archival scanning.

Preview > Eyedropper Sampling Area: determines how many pixels are used for the eyedroppers when sampling colors. The larger values of “5 x5 pixels” or “3 x 3 pixels” are preferable.

Preview > Auto Photo Orientation: determines whether the orientation of images on film is automatically determined. This does not always work properly and it is very easy to set the orientation manually, therefore I leave this blank.

Preview > Thumbnail Cropping Area: can be increased from the default of Small if the automatic selection of images on film is setting the images too small.

Other Settings

Color > Color Control: is checked if color management is not being used. I have little experience with this setting and am not sure what the optimal values for the fields associated with this are. The Epson Scan help recommends using the default settings if you are not sure what to select. Implementation of color management is described in a later section.

Film Size > Medium Format Film Size: is for specifying the size of medium format film for automatically identifying images. The numerical values are the approximate image size in cm.

Other > Correct Document Skew: applies to documents not photographs and is better left cleared for archival scanning.

Other > Save settings: saves the settings and preview when Epson Scan is closed and is usually convenient.

The button for File Save Settings to the right of the Scan button determines the folder, file name, and format for the output files. The Location section of the dialog box specifies where the

output files are written. I normally select the Other button and then Browse to identify the folder.

The output file names are limited to a prefix and number. The prefix can be set to identify the image. The added number is usually not needed and can be removed by renaming the file after it has been created.

The field for Image Format includes the usual TIFF and JPEG. Note that plain TIFF should normally be used for archival scanning, not the Multi-TIFF option.

The checkbox for “Show this dialog box before next scan” can be checked to give the opportunity to set the output file name for each scan. As noted above, the prefix part of the name can identify the image.

The checkbox for “Open image folder after scanning” can be checked to provide the opportunity to examine the final image and rename the output file. Epson Scan displays only the preview image and not the final high-resolution scan. Examining the output image with an image viewer or editor is a good practice. This examination is particularly important if Digital Ice infrared dust and scratch correction is applied because the preview image does not display the results for this option.

5.3 Workflow and Adjustments

A basic workflow for creating archival images with Epson Scan is:

1. Set the type of source material.
2. Create the preview image and select the area and resolution for scanning.
3. Set the image type and resolution.
4. Make sure unwanted default adjustments are turned off.
5. Adjust tone and color.
6. Turn on infrared dust and scratch correction if it is being used.
7. Make the high-resolution scan.
8. Check the output file, particularly if infrared dust and scratch correction is being used.
9. Rename the output file.

Set the Type of Source Material

The following settings are for fields in the main scan settings window.

Document Type: is set to “Reflective” for paper or “Film” for negatives or slides.

Document Source: appears for reflective scans and is typically set to “Document Table.”

Auto Exposure Type: appears for reflective scans and is typically set to “Photo.”

Film Type: appears for film scans and has options for “Positive Film,” “Color Negative Film,” and “B & W Negative Film.”

Image Type: has options that vary depending on the model of scanner. Common values include “48-bit Color,” “24-bit Color,” “16-bit Grayscale,” “8-bit Grayscale,” and “Color Smoothing.” 24-bit Color and 8-bit Grayscale make output images with 8 bits per channel; however, the actual scanning and processing in Epson Scan are done with 16 bits per channel. The conversion to 8 bits per channel is done for the final output. Color Smoothing is for graphical documents and will rarely be used for historical archiving.

Create the Preview Image and Select the Area and Resolution for Scanning

Click the Preview button to create the preview image. The marquee or area selected for scanning can be defined by clicking and dragging the mouse or by clicking the button with the icon with a green square to automatically locate the image. One or more marquees can be defined. The Zoom button can be clicked to increase the size of the display.

If the displayed image for a reflective scan needs to be rotated, click the Configuration button at the bottom of the main scan settings window. Then check or uncheck the box for *Preview > Preview image rotation*:. Clicking Ok on the dialog box will close the box and rotate the image. Epson Scan has limited rotation options and turning the item in the scanner may be necessary.

The field for Resolution sets the number of pixels per inch (ppi or dpi). The overall dimensions of the output image in pixels and inches and the output file size are displayed underneath the display image on the right. The size of the output image will match the size of the original by default. This should not be changed for archival scanning.

Make Sure Unwanted Default Adjustments Are Turned Off

Sometimes the automatic adjustments such as Unsharp Mask or Backlight Correction will get turned on when the preview scan is made. These normally should be turned off for archival scanning. For reliable results it is necessary to check these settings after each preview scan.

Adjust Tone and Color

As noted in the [Introduction](#) to this scanning guidance, adjustments to tone and color are described for three different conditions: (1) the scan is not adjusted for tone and color because those adjustments are made later with image-editing software, (2) the scan is adjusted for fading and exposure, and (3) the scan is adjusted for a reference target that is included to represent the

current condition of the item. First, the general operation of adjustments and the settings to handle negatives are described.

Epson Scan has default settings for the histogram adjustment that are set without regard for the characteristics of the scanned image. These settings will generally not be optimal and can cause clipping. The default settings must be modified for each scanned image because there is no way to modify the default values. Sets of settings can be named and saved for reuse, but the basic settings must be manually adjusted for each scan.

The first step in saving a set of settings is to set all the values. Typically this will include clearing the checkboxes for Unsharp Mask, Backlight Correction, etc. from the main scan control window. Then click the histogram icon to open the histogram dialog box and set the various options for all color channels. After closing the histogram, enter the name for the set of settings in the Settings Name field at the top of the main scan controls window and click the Save button. The saved settings will appear on the pick-list for future use. The saved settings include the selected marquee but the selection can be changed after the saved settings are applied.

Options for Negatives

Epson Scan does not have any special options or settings for different brands or types of negatives. The tone and color for negatives must be set using the usual adjustments such as histogram and curves, either with scanning software or image-editing software.

Condition 1. Scan Not Adjusted for Tone or Color

Two options are described for creating unadjusted output files. Digital ICE infrared dust and scratch correction can be applied to the option for converted output, but not to the option for raw output.

Converted Output. Epson Scan can apply the scanner color profile and convert the image to a working color space but not do any other adjustments to tone or color. Color Management is turned on in Epson Scan for this output as described later and the tone and color adjustments for the histogram and curves are set to have no effects. The default settings for the histogram must be modified, which can be done easily by saving and loading a set of settings as described above. Both the Input and Output sliders for the histogram would be set to the end values of 0 and 255. This set of settings would need to be manually selected for each scan.

Raw Output. The raw image from the scanner can be output without application of a color profile for the scanner and without conversion to a working color space. However, the raw image option is less useful for archival scanning because infrared dust and scratch correction cannot be applied. Image-editing software would be used to apply a scanner profile and to convert the image to a working color space as well as to make all needed adjustments to tone and color. This

unconverted output image is created by turning off color management, which turns off all tone and color adjustments. Click the Configuration button on the main scanner controls window, then select the Color tab, and click the button for No Color Correction. This outputs a raw file that apparently has gamma set to 1.8 because it exactly matches the raw output from SilverFast when the gamma in SilverFast is set to 1.8.

Condition 2. Scan Adjusted for Fading and Exposure

Set the Black and White Points. For optimal results, the black and white points for overall tone and for each color channel will need to be set manually on the histogram. The Channel buttons to the left of the histogram select which color channel is displayed.

The histogram display has limited resolution and no method to precisely determine when or which pixels are being clipped. The black and white point sliders can be moved to points outside the tones that have visible vertical lines indicating pixels in the image. In most cases any clipping that results from this practice will not significantly impact the content of the image. However, these manual adjustments are not as precise and reliable as is obtained with software that displays and tracks clipped pixels.

Clicking and holding down the button labeled Show Output shifts the histogram display to show the histogram for the output image after adjustments rather than for the input image before adjustments. Adjustments are made with the initial input histogram and then the Show Output button is clicked to see the final effect of the adjustments.

Minimize Distortion. As described in Chapter 3, borders, dust, and damage in an image sometimes interfere with setting the black and white points. Infrared dust and scratch correction is applied at the time of the high-resolution scan in Epson Scan and presumably does not reduce distortion by defects when making tone and color adjustments.

With Epson Scan the scanning marquee can be set to a smaller selected area for defining tone and color adjustments and then these settings applied to a larger area by expanding the marquee. If the settings are not changed, the final scan will include the larger area but use the settings defined with the smaller area. This allows borders and damage to be excluded when determining tone and color adjustments. Clipped pixels may appear in the histogram after the scanning area has been expanded and that is acceptable.

Set Output Tones for Black and White. As discussed in Chapters 2 and 3, it is good practice to make the darkest and lightest tones in the output image not be pure black and pure white. Chapter 3 noted that the optimal method for achieving this with software that does not provide precise tracking of clipping with the histogram is to set the black and white points on the histogram a short distance away from the darkest and lightest tones in the image. This method is appropriate for Epson Scan, particularly given the poor resolution of the histogram. The output

histogram after adjustments have been applied should show that the darkest and lightest tones in the image do not extend completely to the ends of the histogram horizontal axis. As noted above, the Show Output button displays the output histogram.

Epson Scan has an output slider on the histogram that can be used to set specific values for the darkest and lightest tones in the output file. However, as discussed in Chapter 3 that method is most appropriate for software that displays or otherwise precisely tracks clipping. Epson Scan is not in that category and those types of adjustments would be more reliably made with image-editing software.

Adjust the Mid-Tone Slider if Needed. The middle slider below the histogram is a mid-tones slider and is normally applied after the black and white points have been set. As described in Chapter 2, this slider adjusts tone without changing the black and white points.

Gray Eyedropper and Color Adjustments. Epson Scan has two gray eyedroppers, which often produce similar results. One eyedropper is the middle button right below the histogram and the other button is labeled Gray Balance Intensity at the bottom of the histogram dialog box. The Gray Balance Intensity button has a slider that can vary the degree that the adjustment is applied. This adjustment also seems to have a greater tendency to move the histogram sliders and can cause clipping.

With either eyedropper button, when the button is clicked the mouse pointer becomes an eyedropper. Move the tip of the mouse pointer over a spot on the image that should be a shade of gray and click the mouse. This adjusts color to make the spot gray with the same overall tone. The eyedropper is deactivated after it has been clicked. Tapping the Esc key also deactivates the eyedropper. Applying the eyedropper to a different spot switches the active adjustment point to the new spot. Different points can be tried until a good adjustment is found. If additional color adjustments are needed the mid-tone sliders can be manually adjusted for individual colors.

Adjust Contrast. The Tone Correction button on the main scan controls window brings up a typical curves adjustment dialog box that is useful for further refining the tone and color adjustments in some cases. Clicking the curve creates an adjustment point that can be dragged with the mouse to alter the curve. As described in Chapter 3, curves are usually used to increase or decrease contrast. However, other adjustments with curves sometimes may be needed because Epson Scan does not have built-in settings for negatives.

Other Options. The button for Image Adjustment on the main scan settings window brings up tone and color adjustments that should generally be avoided for archival scanning. These adjustments shift the black and white points and can cause significant clipping. If these adjustments are applied, the histogram for the output image should be carefully checked using the Show Output button on the histogram dialog box.

The checkboxes for Color Restoration and Backlight Correction on the main scan settings window may sometimes provide useful adjustments and can be explored. These would be tried before applying the other adjustments. The primary methods for adjusting tone and color are the histogram and curves. The buttons for Auto Exposure or Reset can be clicked, but the resulting settings will rarely be optimal.

Condition 3. Scan Adjusted for a Reference Target

The black and white eyedropper buttons under the histogram can be used to set the black and white points when a reference target is included in the image. Clicking on the black or white eyedropper button activates the corresponding eyedropper. The mouse pointer becomes an eyedropper, which is placed over the appropriate color patch on the reference target and then clicked. The specific tone values for black and white in the output image can be set with the Output sliders on the histogram. The gray eyedropper can be applied to a gray patch to remove color casts. After the eyedroppers have been applied, the mid-tone slider on the histogram is adjusted to set the needed tone value for the mid-gray patch on the reference target.

The numeric color values for the location of the mouse pointer on the image are displayed in the lower right corner below the image display. These values can be used to check the color patches on the reference target.

Turn on Infrared Dust and Scratch Correction if It is Being Used

As described in Chapter 2, infrared dust and scratch correction can be very useful for color negatives and slide but is not applicable for most black and white film. Many Epson scanners include the Digital Ice infrared dust and scratch correction. The checkbox to turn on Digital Ice is on the main scanner settings window. The usual options are Standard or Fine, but may vary for different scanners. Some Epson scanners can apply Digital Ice to reflective scanning.

The results of the Digital Ice corrections are not displayed on the preview image and can only be seen using other image-viewing software on the output file.

Make the High-Resolution Scan

The high-resolution scan is initiated by clicking the Scan button. This also automatically creates the output file.

Check the Output File, Particularly if Infrared Dust and Scratch Correction is Being Used

The image from the high-resolution scan is not displayed by Epson Scan and is viewed by looking at the output file using other image-processing software. As noted earlier, it is good practice to examine the final output image. This is particularly important if Digital Ice dust and scratch correction has been applied. If the results are not optimal, the scan may need to be redone. The Epson Scan option described earlier to open the folder that has the output file after each scan is helpful in examining the final scan.

Rename the Output File

As noted earlier, the output file has a number added that is typically not wanted. The number can be removed and other corrections to the name made after the output file has been examined. The Epson Scan option described earlier to open the folder that has the output file after each scan allows the file to be easily renamed.

5.4 Scanning Multiple Frames

For reflective scans, the Normal preview tab is used by default and more than one marquee or area selected for scanning can be defined by dragging a new rectangle that is started outside any existing marquee. Marquees that are not active are shown with a solid orange line. A marquee is made active by clicking inside it. The settings for document type, image type, and resolution apply for all marquees. Adjustments to tone and color apply to the active marquee and can be different for different marquees.

Multiple marquees can be made active by holding down the control key while clicking inside them, or by clicking the All button to make all marquees active. When the scan button is clicked, an output image is made for each active marquee. A marquee can be deleted by making it active and then tapping the Delete key or by clicking the button to delete the selected marquees.

When the document type is film, Epson Scan automatically uses the Thumbnail preview display and attempts to identify the different images. Epson Scan is surprisingly effective at identifying different images on film. The configuration setting for *Film Size > Medium Format Film Size*: may need to be reset to obtain the proper images.

A small copy of each image is displayed. If one of the small images is double-clicked or selected with a single click and then the icon for one image is clicked, the selected image is enlarged and displayed. Other buttons on the Thumbnail preview display can be clicked to rotate

or flip an image. Separate tone and color adjustments can be made for each image. Clicking the Scan button with the Thumbnail preview display makes an output file for each of the identified images, unless the checkbox below the thumbnail has been cleared for an image. The display has to be showing the thumbnail images rather than one zoomed image in order for the Scan button to be active. Clicking one of the Thumbnail buttons will display the thumbnail images.

With the Thumbnail preview display, the marquee or scanning area for an image can be reduced by clicking and dragging a new marquee. As noted in the earlier section on default settings, a configuration option for thumbnail cropping area determines whether the images that are automatically identified have a larger or smaller area.

When scanning film, the Normal preview tab can also be clicked, which allows manually identifying and working with each image on the film. Multiple marquees can be defined and processed as described above for reflective scans.

5.5 Color Management

Using Profiles

Color management is implemented in Epson Scan by clicking the Configuration button on the main scan controls window and then clicking the Color tab. Epson Scan can use a custom scanner profile that is created by other software, but does not include methods for creating a custom scanner profile.

Color> *ICM*: is the button that is clicked to turn on color management.

Color> *Source (Scanner)*: is a field with a pick-list to select the color profile for the scanner. A default profile named Epson Standard may be used if a custom profile has not been developed.

Color> *Target*: is a field with a pick-list to select the working color space for the image. The options include sRGB and Adobe RGB, but may not include Gray Gamma 2.2.

Color> *Display preview using monitor compensation*: is a checkbox that sets Epson Scan to display images using the monitor color profile defined by the operating system.

Output Files

A checkbox that determines whether the working color space profile is embedded in the output files is found by clicking the button for File Save Settings to the right of the Scan button,

and then clicking the Options button just to the right of the image format Type field. The options include a checkbox for “Embed ICC Profile.”

Epson Scan does not write the EXIF color space field or any other EXIF documentation to the output files.

5.6 Additional Information

The settings for the main scan settings window can be named and saved for reuse. This can be useful, but the section for the adjustments checkboxes should be watched carefully because those settings can change when the preview is made. The curves adjustment settings can also be named and saved, which may be useful when scanning negatives.

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