Help Manual for Scanner Driver Settings

Preface

A scanner driver is an application used on a computer operating system that enables a computer to obtain images from a scanner. To fully understand the functions of the scanner driver and be able to use it effectively, please read this help manual and the “Help Manual For Sealand Scanner Application” and the operation manual of the scanner equipment.

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I、Instructions before use

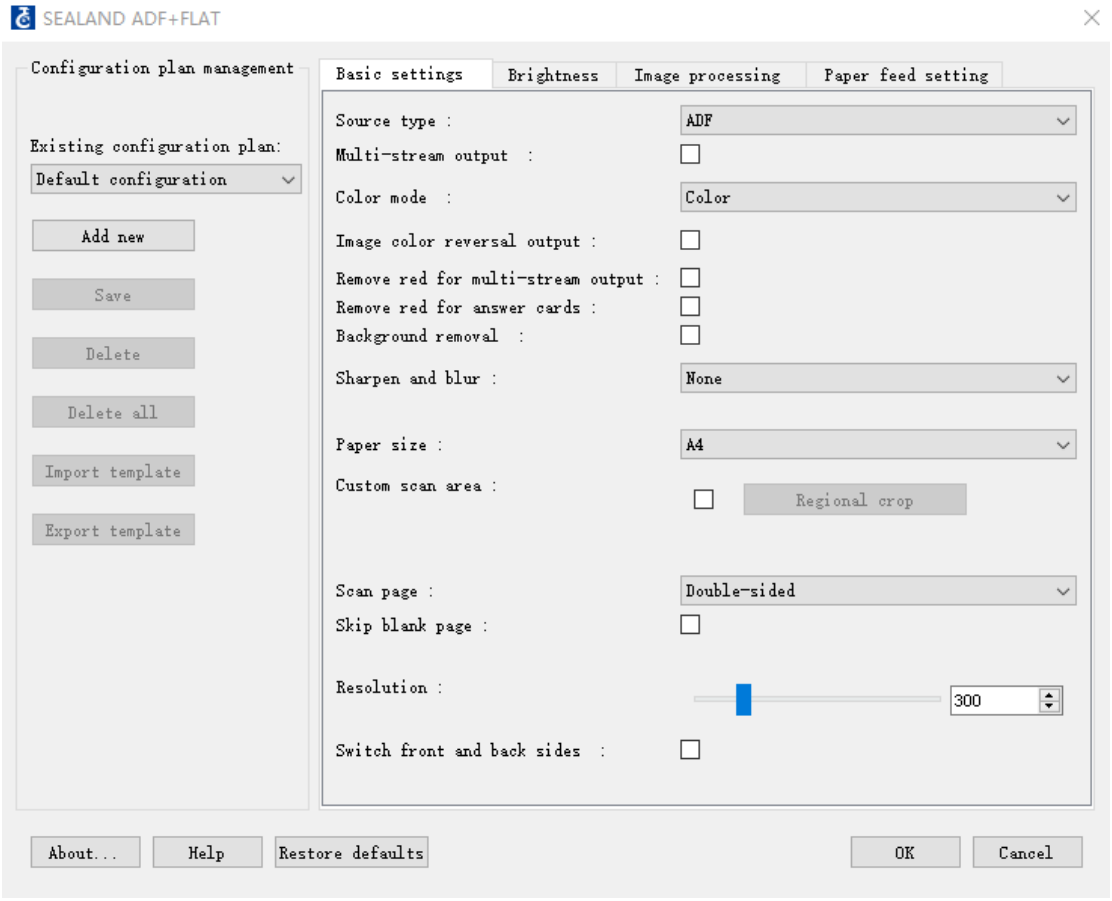
Please read the following explanations before use:
Global: Introduces the global function in the scan parameter settings dialog box.
Basic settings: Introduces the functions and settings of the scanner's basic parameters.
Brightness: Introduces the brightness/contrast/gamma settings of the scanner.
Image processing: Introduces image processing related functions and settings of the scanner.
Paper feed setting: Introduces paper feed related functions and settings of the scanner.

Important information

- **Confirm that the scanner is connected to the computer correctly and that the cable between the scanner and computer is firmly connected; otherwise, unstable exceptions will occur. Please refer to the operation manual of the scanner for detailed information.**
- **Depending on different models and different versions of the same model, some functions may not be available. These differences are not described in this manual.For more information, please contact the dealer or scanner manufacturer for after-sales technical support.**

II、Global

The user interface of the scanner's scan parameter setting dialog box is as follows:



The global function is not affected by the currently selected tab, including "Global function button" and "Configuration Plan Management".

Global function keys:

A. **Concerning...:** Display the relevant version information of the device and driver.
B. **Help:** Opens this help manual.
C. **Restore default device:** Restores all scan parameter settings on each tab to their default settings.
D. **OK:** Closes the dialog box and saves changed parameter configurations.
E. **Cancel:** Closes the dialog box and all parameter configurations changed this time will not be saved. Restores all parameter configurations to the configurations last saved.

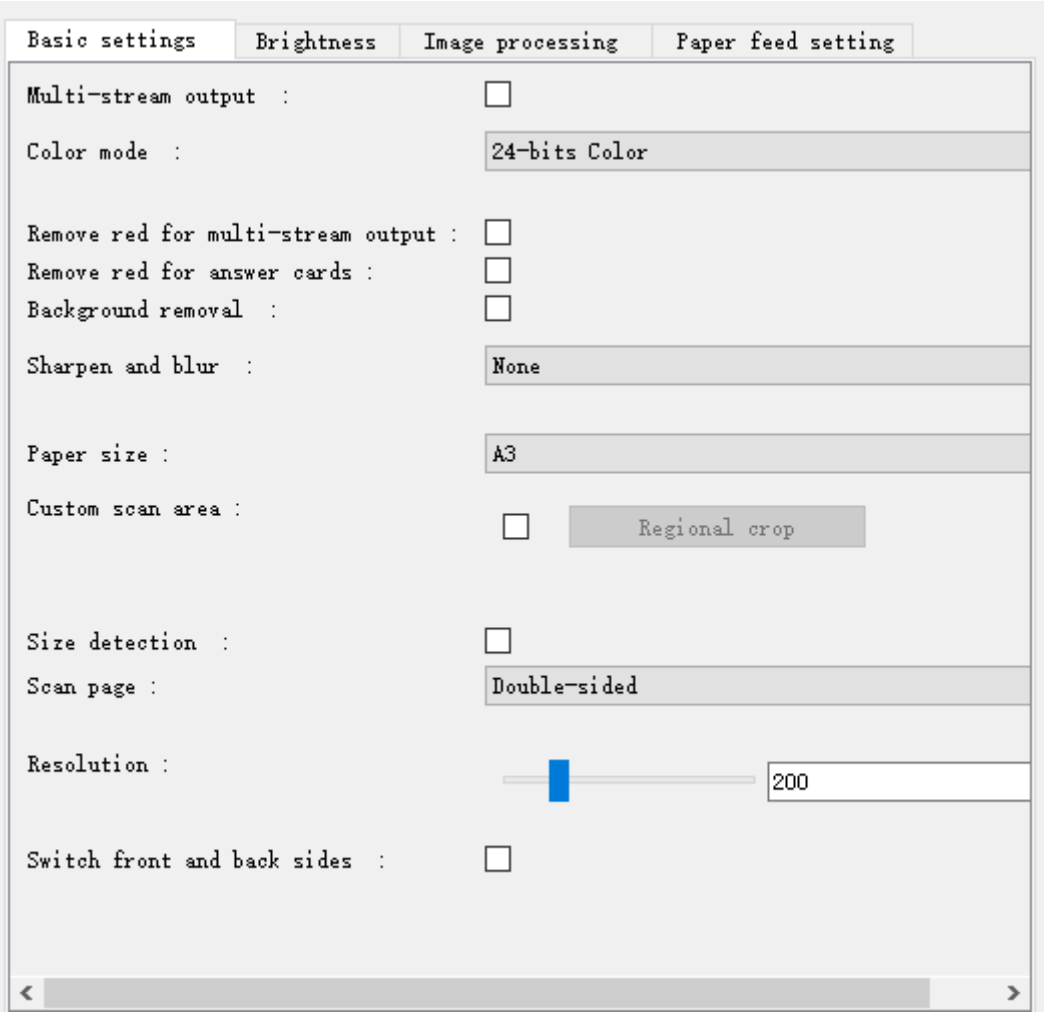
Configuration plan management：

A. **Existing configuration plan:** Click to expand the configuration list to switch the saved user configuration.

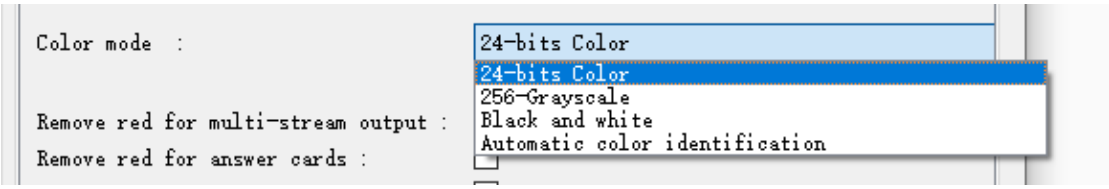
B. **New scheme:** The current parameters can be saved as a new configuration scheme.You need to name the new plan before saving; after saving, the plan can be selected in the “Existing Configuration plan”.
C. **Save:** Overwrite and save the current parameters to the currently selected configuration scheme.
D. **Delete current scenario:** Delete the currently selected configuration scenario.
E. **Delete all:** Delete all custom configuration schemes and keep only the default setting scheme.
F. **Import Template**: Import external configuration files to quickly apply preset parameters.
G. **Export Template**: Save the current configuration scheme as an external configuration files.

III、Basic settings

The basic settings tab contains four basic parameter options: **color mode, paper size, scanned page, and resolution**. At the same time, there are other options that may change or force on/off based on basic parameters.



1. Color mode



Allows configuring the color of the document scanned by the scanner, which includes the four modes **24-bit color (default), 256 level grayscale, Black and white and Automatic color identification**.

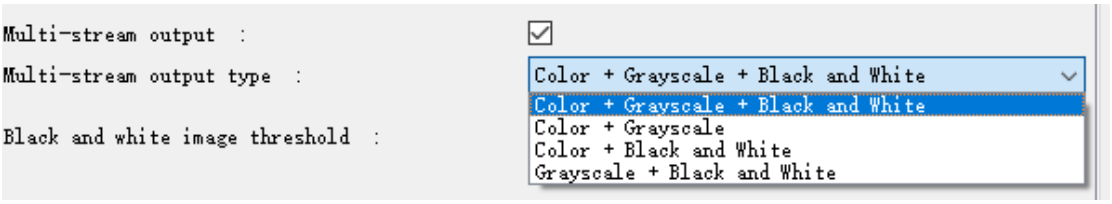
- **24-bit color:** Under this mode, the scanned document image is displayed in RGB three-channel colors.

- **256 level grayscale:** Under this mode, the scanned document image is displayed in 256 level single-channel grayscale.
- **Black and white:** Under this scale, the scanned document image is displayed as a binary image.
- **Automatic color identification:** Under this mode, the scanner will automatically identify and output the corresponding image according to the color situation of the document. Documents that contain color information will be outputted as color images; documents that only contain black and white information will be outputted as grayscale images.

The following functions may be enabled/disabled according to the color mode selected:

Function	24-bit color	256 level grayscale	Black and white	Automatic color identification
Multi-stream output	ON	ON	ON	ON
24-bit color image-Remove red for multi-stream output	ON	OFF	OFF	OFF
24-bit color image-Remove red for answer cards	ON	OFF	OFF	OFF
Background removal	ON	OFF	OFF	OFF
Sharpen and blur	ON	ON	ON	ON
Grayscale or black and white images-color removal and enhancement	OFF	ON	ON	OFF
Black and white image threshold	OFF	OFF	ON	OFF
Anti-color output of black and white images	OFF	OFF	ON	OFF
Noise optimization of black and white images	OFF	OFF	ON	OFF
Error diffusion	OFF	OFF	ON	OFF

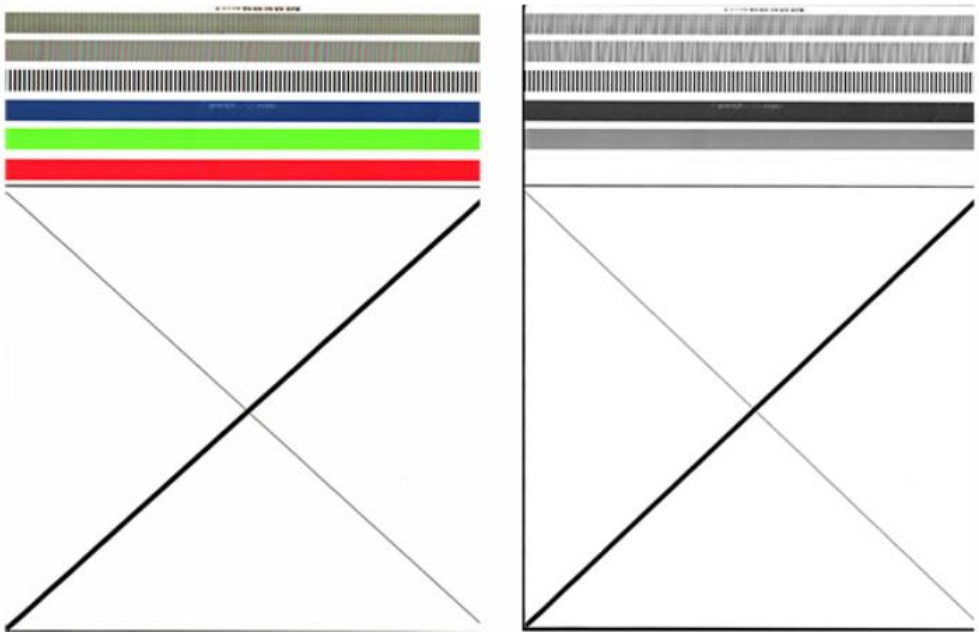
A. Multi-stream output: images in multiple color modes can be selected for simultaneous output.



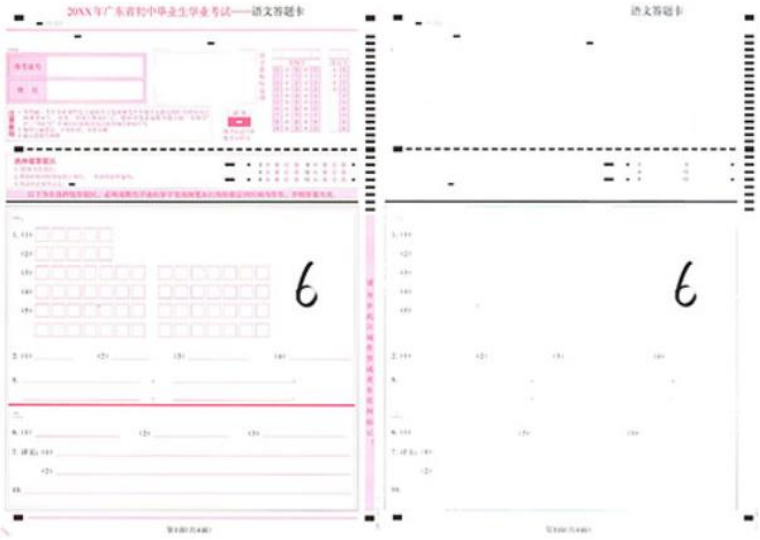
Note

In multi-stream output mode, the relevant image processing functions in each color mode by default will not take effect.However, if you choose a multi-stream output mode with "black and white", two options will be provided: "Black and white image threshold" and "black and white image anti-color output" for use.

B. 24-bit color image-remove read for multi -stream output: scan a document and output it as a 24-bit color image and a 256-level grayscale image with red removal effect at the same time.



C. 24-bit color image-remove read for answer cards: Remove the red component in the answer card image。



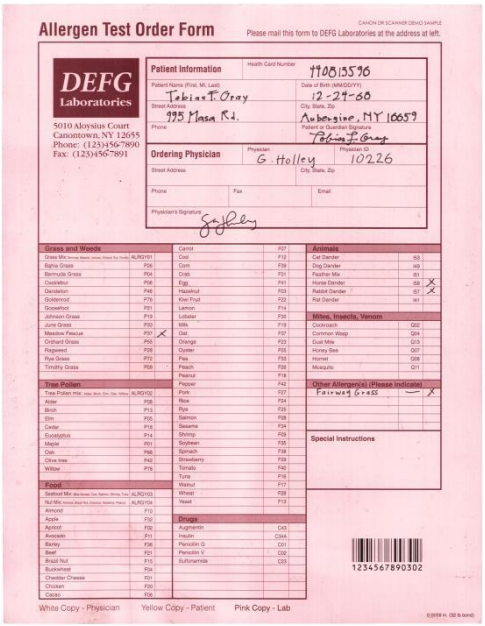
Description

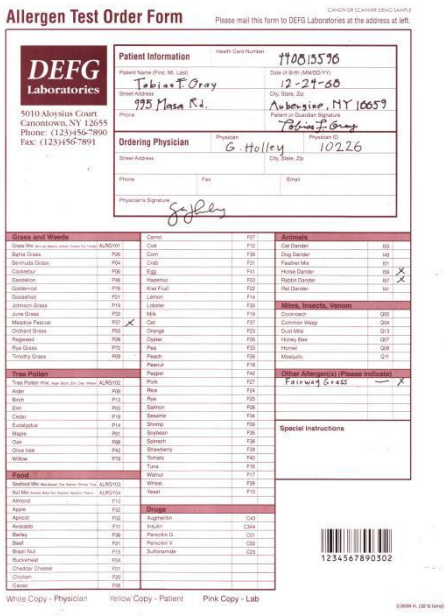
The difference from the "Grayscale or black and white image-Color Removal and Enhancement>Red Removal" function：

Grayscale or black and white images-color removal and enhancement>Red removal: Only the R-channel components in the pixel RGB information are removed, and the output is a 256-level grayscale image or a black and white image；

24-bit color image-remove read for answer cards: Comprehensively judge the RGB information, when it is judged to be red, all the three channels of color RGB here are removed, and the output is a 24-bit color map.

D. Background removal: Remove a large area of background color at the bottom of the document pattern or text.





Description

Background color floating range: When the image processing algorithm confirms that a certain color is the background color of the document, the RGB value of this color will be used as a reference to verify the RGB value of all pixels.When the deviation of the gray values of the three channels R, G, and B of a pixel is within the set background color floating range, it will be determined that the pixel is the background color; on the contrary, if any channel value of R, G, and B exceeds the background color floating range, it is determined that the pixel is a non-background color and will not be processed.

Example

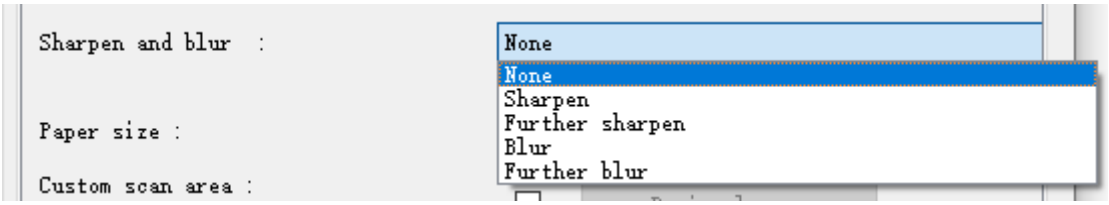
Through the calculation of the entire image, the image processing algorithm obtains that the reference value of the background color of the document is RGB (230, 75, 128), and the floating range of the background color is set to 20.It can be seen that when the RGB value of any pixel satisfies the range of R (210~250), G (55~95), and B (108~148), it will be regarded as the background color.

- For pixel 1 (RGB =210,55,108), it is determined to be the background color and will be processed；
- For pixel 2 (RGB = 250, 95, 148), it is determined to be the background color and will be processed；
- For pixel 3 (RGB = 198, 75, 128), its red component is determined to be out of the background color range and will not be processed；
- For pixel 4 (RGB = 254, 75, 128), its red component is determined to be out of the background color range and will not be processed；
- For pixel 5 (RGB = 230, 47, 128), its green component is determined to be out of the background color range and will not be processed；
- For pixel 6 (RGB = 230, 105, 128), its green component is determined to be out of the background color range and will not be processed；
- For pixel 7 (RGB = 230, 75, 106), its blue component is determined to be out of the background color range and will not be processed；
- For pixel 8 (RGB = 230, 75, 225), its blue component is determined to be out of the background color range and will not be processed.

E. Sharpen and blur: Make the image sharper or more blurred.



F. Color removal and enhancement (grayscale / b&w image): Removes or enhances the display of the specified color. This includes seven effects**: Do not remove color, Remove red, Remove green, Remove blue, Enhance red, Enhance green and Enhance blue.**



Effects of the color removal options:

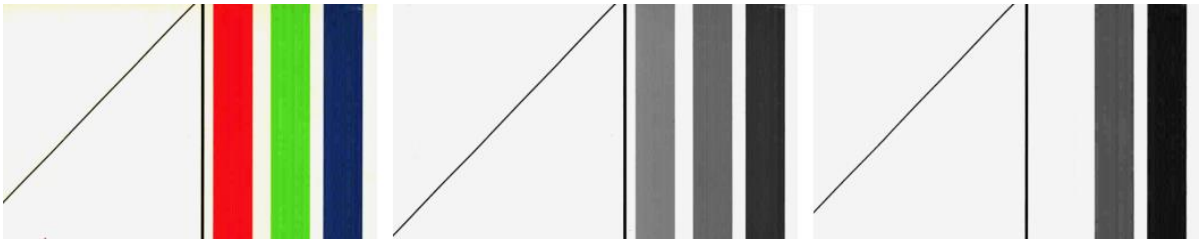
- Remove red: Reduces or eliminates the red component in images.
- Remove green: Reduces or eliminates the green component in images.
- Remove blue: Reduces or eliminates the blue component in images.

Effects of the enhance option:

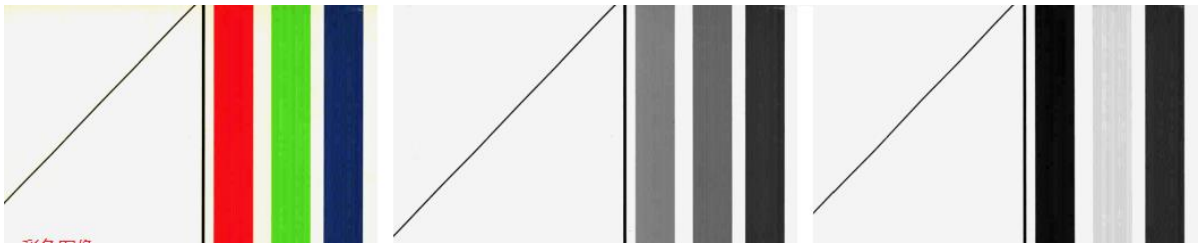
- Enhance red: Makes the red component in the image darker.
- Enhance green: Makes the green component in the image darker.
- Enhance blue: Makes the blue component in the image darker.

Example

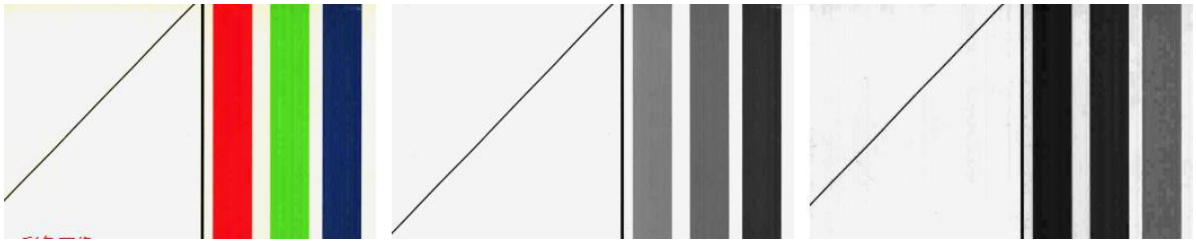
Comparison of Remove red image effects:



Comparison of Remove green image effects:



Comparison of Remove blue image effects:



Comparison of Enhance red image effects:



Comparison of Enhance green image effects:



Comparison of Enhance blue image effects:



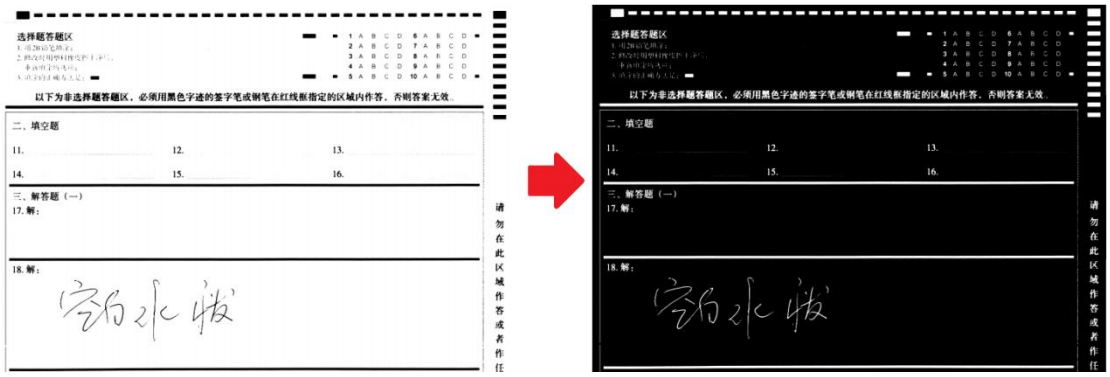
Description

The color removal function is a separate processing effect of the three channels R, G and B in color images; therefore, when processing non-pure colors, they cannot be removed completely. To achieve better color removal effects, there are higher requirements for the color purity of the scanned document image and the cleanliness of the paper.

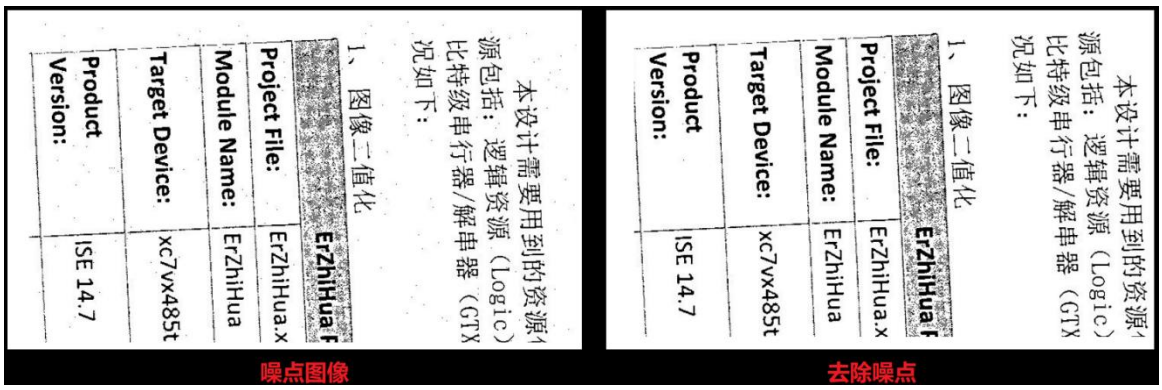
G. Black and white image threshold: Allows adjusting the gray scale determination threshold of black and white pixels when converting images to binary images. Pixels lower than the threshold value will be determined as black (which is 0), and pixels higher than the threshold value will be determined as white (which is 1).



H. Black and white image inverse color output: Interchanges the black and white colors in black and white binary images. (Mainly applied for pnm format image outputs)



I. Black and white noise optimization: Removes the noise that exists in images.



Description

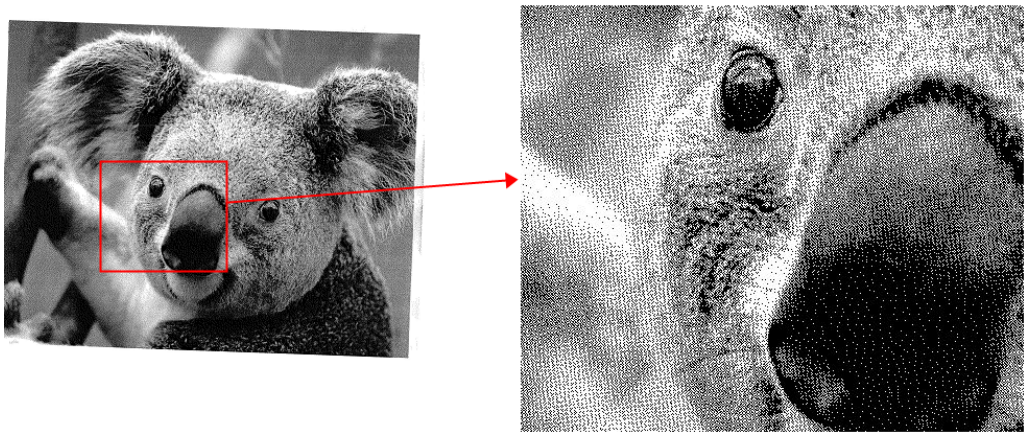
Noise optimization size: This means the number of connected black pixels. Removes the black isolated points with the number of connected points less than the value set on the entire image.

Example

Calculation of the number of connected noise points:



J. Error diffusion: Draws the document image using black points in the form of a dot matrix.

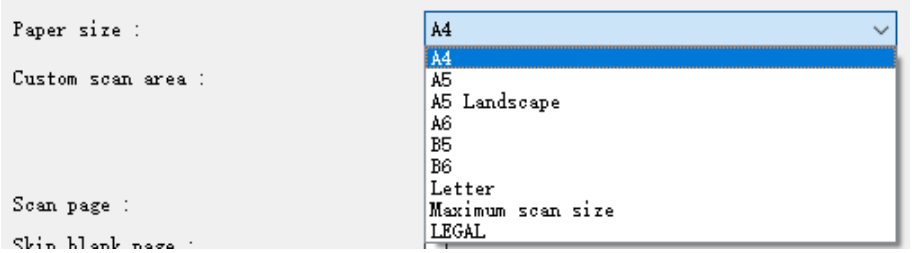


2. Paper size

Allows configuring the size of the document image scanned with the scanner.

Note

Available paper size options may vary according to the different model devices.



There are some configurable scanning sizes **for the A4 format scanner;** the actual paper width and height corresponding to each size is as shown in the table below:

Selected size	width (mm)	height (mm)
A4	210	297
A5	148	210
A5 Landscape	210	148
A6	105	148
B5	176	250
B6	125	176
letter	216	279
Maximum scan size	216	ADF:356, Flatbed:297
LEGAL	216	356

If you are a professional user：

- Please make sure that the paper does not deviate too much in the horizontal direction during the feeding process of long documents, otherwise the

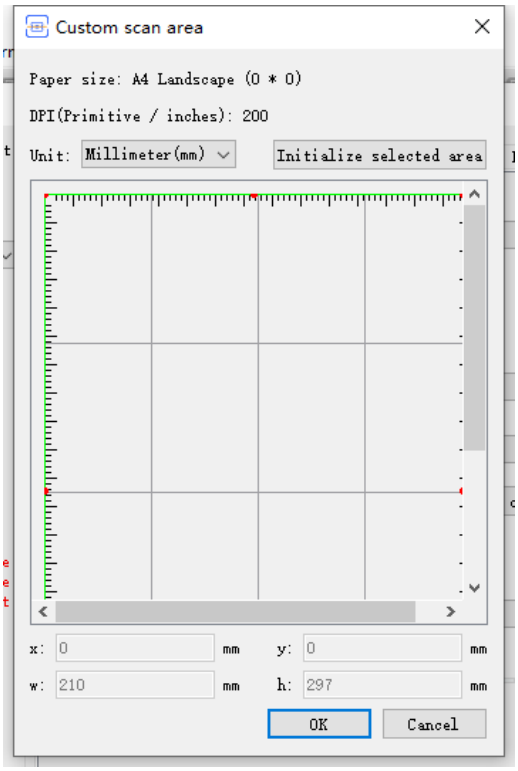
document may be damaged. When you use “Maximum scan size” , if too many scanner settings are selected, scanning may become abnormal.

- When this occurs, please scan by using one or several of the following methods: lower the resolution, use gray scale or black and white color modes, scan a single side, or cancel the selection of image processing effects.

A. Custom scan area: When the size selected is a fixed format size, additional regional cropping can be performed based on the current size to customize the area of the output image.



Click the “Regional crop” button to open the custom scan area window:



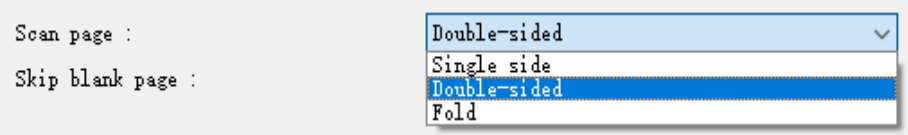
The unit used for area adjustment can be selected; three units are supported: millimeter, inch and pixel.

The range of the area to crop can be adjusted by dragging the crop frame manually; the crop area can also be confirmed by editing data in the input frame below:

x, y: The coordinates of the starting vertex position of the crop area; it represents the relative position of the distance from the vertex at the top-left corner of the crop area to the vertex at the top-left corner of the current paper size;

w, h: The width and height of the crop area.

3. Scan page



The scanner has a total of five configurable page conditions that can be used to scan documents, including **Single side, Double-sided (default), and "Fold"**.

A. Single side: Only scans the front side of the document.

Description

Paper is placed on the paper feed tray of the scanner, and the side facing down is the front. When Single side mode is selected, the front side is scanned.

B. Double-sided: Scans both the front and back sides of the document.

C. Fold: Applicable for scanning documents that are larger than the maximum size of the scanner. The scanner will scan both sides of the document automatically, and stitch the front and back images of the document into a complete image for output.

Description

The folding direction of the paper and the stitching methods are shown below:



The following functions may be enabled/disabled according to the scan page selected:

Function	Single side	Double-sided	Fold
Sensitivity for skipping Blank pages	OFF	OFF	OFF
Switch front and back sides	OFF	ON	ON
Fold mode	OFF	OFF	ON

Image split	ON	ON	OFF
Automatic correction	ON	ON	OFF

A. Sensitivity for skipping blank pages: Allows adjusting the software's strength for determining blank pages. The larger the value, the more easily the image will be determined as a blank page and skipped.

B. Switch front and back sides: Using this option will switch the order in which the front and back side images of the document scanned are outputted.

Example

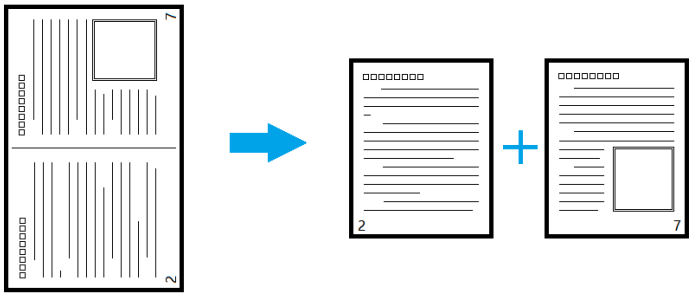
The front side of the document is marked as "_f" and the back side of the document is marked as "_b". If three documents were scanned continuously, the order of the image output is: 1_f, 1_b, 2_f, 2_b, 3_f, 3_b.

When "Switch front and back sides" is selected, the order of the image output is changed to: 1_b, 1_f, 2_b, 2_f, 3_b, 3_f.

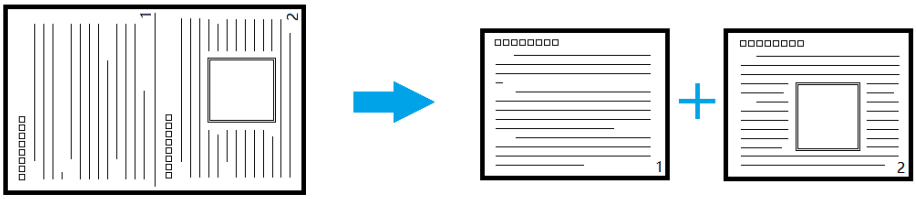
C. Fold mode: Allows selecting the splicing direction of the folded file. If "Auto fold" is selected, the driver will determine the length and width of the outputted image automatically, and use the long side as the folding line to splice images.

D. Image split: Each image scanned is split into two independent images.
This function will automatically determine whether the image should be split horizontally or vertically according to the length and width of the size selected.

Processing method for vertical documents:



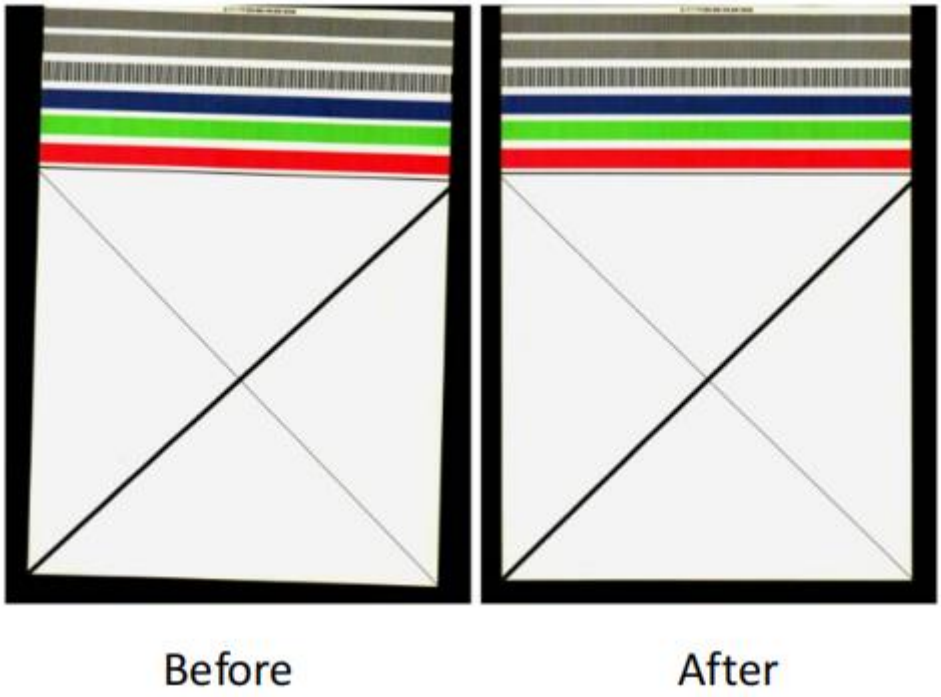
Processing method for horizontal documents:



Description

- When a “Landscape/Horizontal” size is selected for the “Paper size” option, the processing method for horizontal documents will be applied automatically; processing method for vertical documents will be applied automatically for all other fixed format sizes.
- When automatic detection related sizes are selected for the “Paper size” option, the system will first identify the size of the document fed, and then compare the length and width of the document to automatically determine whether to apply the processing method for horizontal document or vertical documents.
- This function is usually used with the “Book sorting” function in the scanner's own scanning application.

E. Automatic correction: Automatically detects the skew condition of the paper, and automatically adjusts the outputted image to the horizontal and vertical state.



4. Resolution



Set the resolution for the scanner to scan the document. The available range is from 100 to 1200 dpi. The default is 300 dpi.

Take A4-sized paper as an example. The influence of resolution on the image is as shown in the following table:

Selected resolution	Number of pixels in the horizontal direction	Number of pixels in the vertical direction
100	826	1169
200	1653	2338

300	2480	3507
400	3307	4677
500	4133	5846
600	4960	7015
900	7440	10523
1200	9921	14031

The size of the image resolution affects the maximum clarity of the image. Please select higher resolution modes when scanning fine objects.

Example

Font zoom display under 300 DPI:

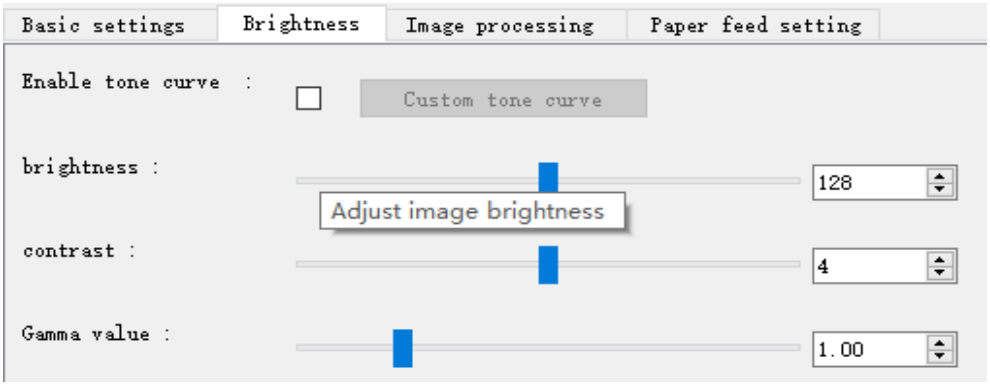


Font zoom display under 100 DPI:



IV、Brightness

The brightness tab includes four parameter options: Brightness value, contrast, gamma value and tone curve.

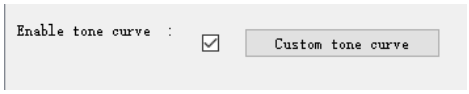


1. Tone Curve

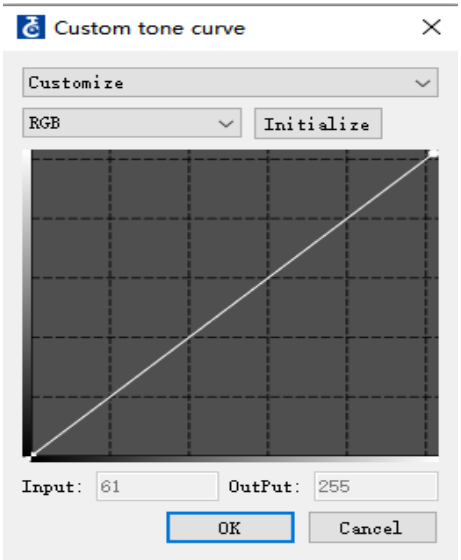
By using this option, the brightness and color components of the image can be configured in a visual curve manner.

Important

When this feature is enabled, the brightness, contrast, and gamma value functions will automatically become invalid.



Check "Enable Tone Curve", click the "Customize Tone Curve" button, and open the Tone Curve window:

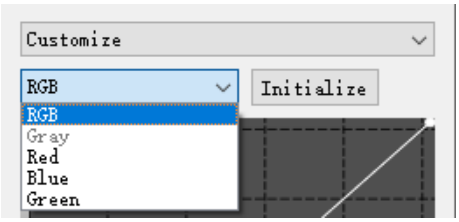


You can choose preset curve schemes or customize curves.

When choosing the custom curve, you can add control points in the curve window by clicking with the left mouse button; you can also change the shape of the curve by dragging the control points.

Description

You can adjust by selecting the corresponding color curve:



RGB: In a color image, the red, green, and blue color components change synchronously according to the same curve; this effect is valid in color mode..

Gray: In grayscale images, the gray level changes according to a curve; Effective in grayscale mode.

Red: In a color image, the red component changes along a curve; Effective in color mode.

Blue: In color images, the blue component changes along a curve; Effective in color mode.

Green: In a color image, the green component changes along a curve; Effective in color mode.

2. Brightness level

Use this option to configure the brightness of the document image scanned with the scanner.

Adjustment range: 1~255

Default value: 128

Adjustment method:

- Use the mouse to drag the slide in the center;
- Input numbers in the value frame using the keyboard;
- Click the up and down arrows to the right side of the value frame using the mouse;

The brightness affects how light or dark the image is. The lower the brightness, the darker the image; the higher the brightness, the lighter the image.

3. Contrast

Use this option to configure the contrast of the document image scanned with the scanner.

Adjustment range: 1~7

Default value: 4

Adjustment method:

- Use the mouse to drag the slide in the center;
- Input numbers in the value frame using the keyboard;
- Click the up and down arrows to the right side of the value frame using the mouse;

Contrast affects how dark and light the image is in places with dark and light colors.

The lower the contrast, the closer the dark and light parts of the image will be, and the easier it is to expose highlights and dark details; the higher the contrast, the darker the dark parts and the lighter the light parts of the image will be, and the more easily it is to lose highlights and dark details.

4. Gamma Value

Use this option to configure the gamma value of the document image scanned with the scanner.

Adjustment range: 0.01~5.00

Default value: 1.00

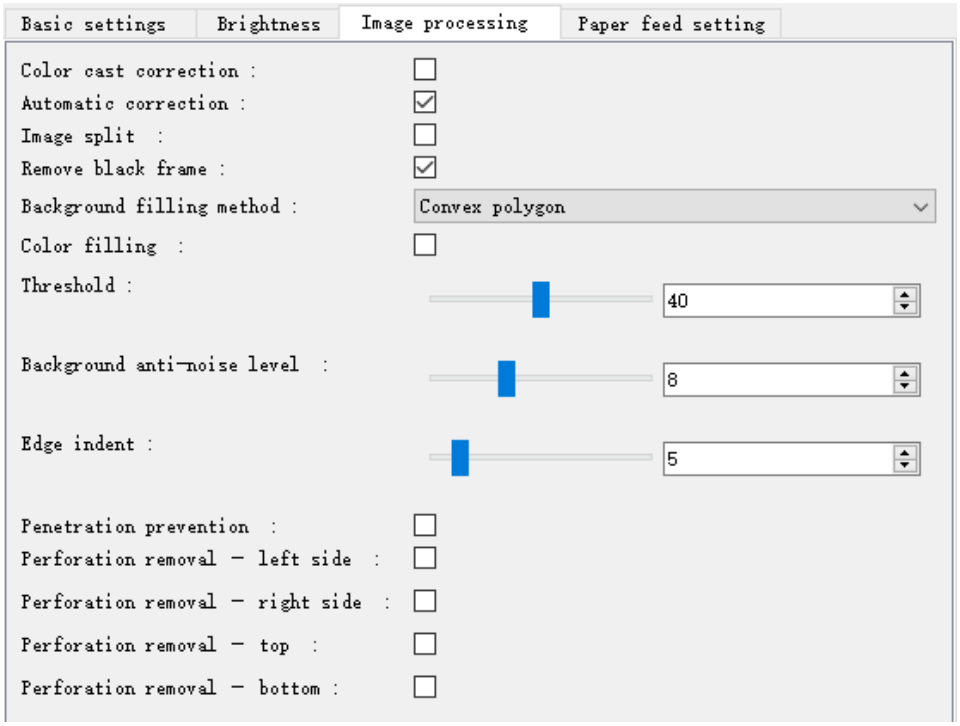
Adjustment method:

- Use the mouse to drag the slide in the center;
- Input numbers in the value frame using the keyboard;
- Click the up and down arrows to the right side of the value frame using the mouse;

The gamma value can adjust the light and dark levels of the image, showing the acceleration of changes in different light and dark pixels. The smaller the gamma value, the darker the overall image, and the closer the light and dark parts will be; the higher the gamma value, the brighter the overall image will be, the level at which the light parts become lighter will be faster than the dark parts becoming lighter as the value increases.

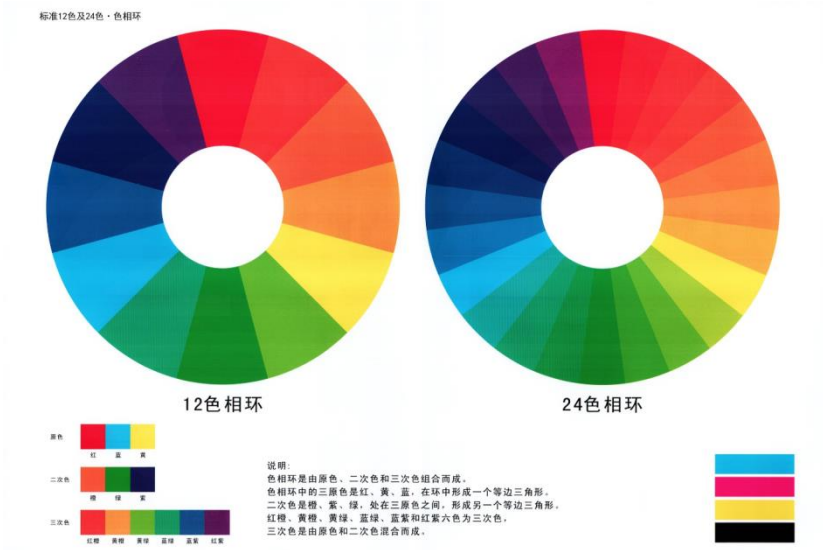
V、Image processing

The image processing tab has five parameter options, including: **Automatic correction, Image splitting, Remove black frame (including advanced parameter settings), Penetration prevention and Perforation removal**.

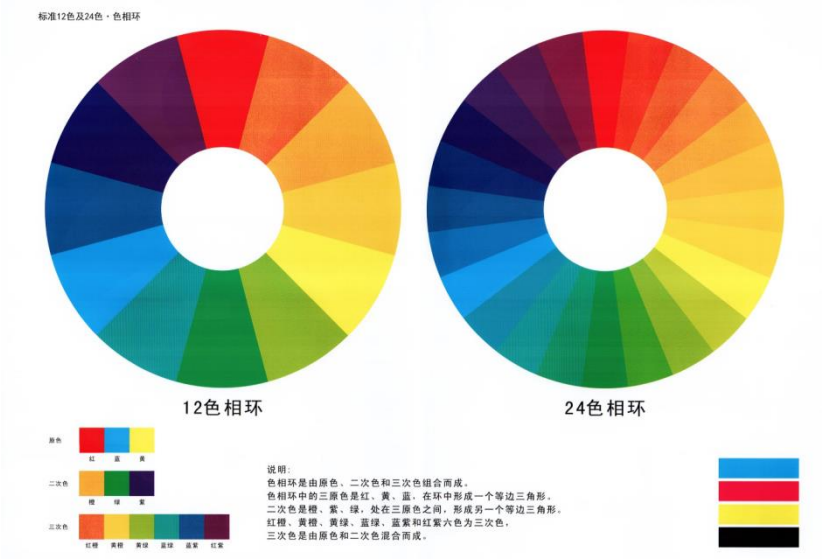


1. Color cast correction

When turned on, the original color of the scanned document will be restored more accurately.



Color cast correction is not turned on



Color cast correction is turned on

2. Automatic correction

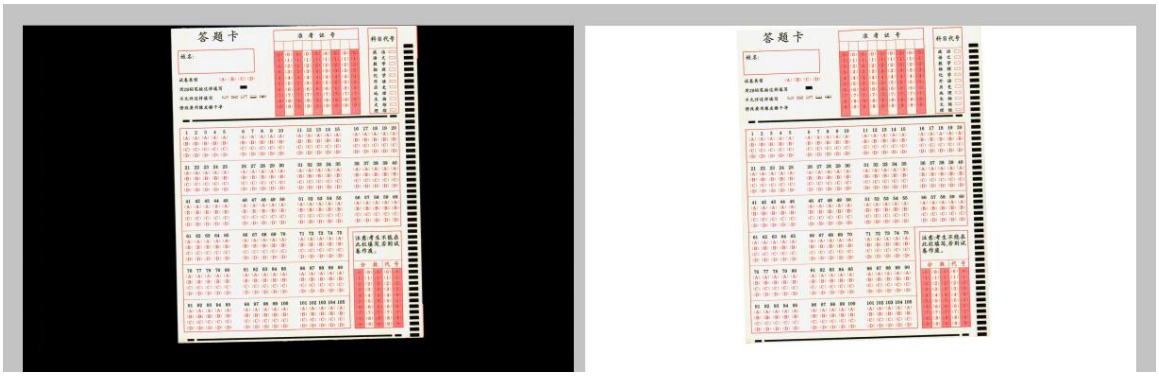
Refer to Chapter "**III. Basic settings > 3. Scan page**" for related introductions.

3. Image split

Refer to Chapter "**III. Basic settings > 3. Scan page**" for related introductions.

4. Remove black frame (including advanced parameter settings)

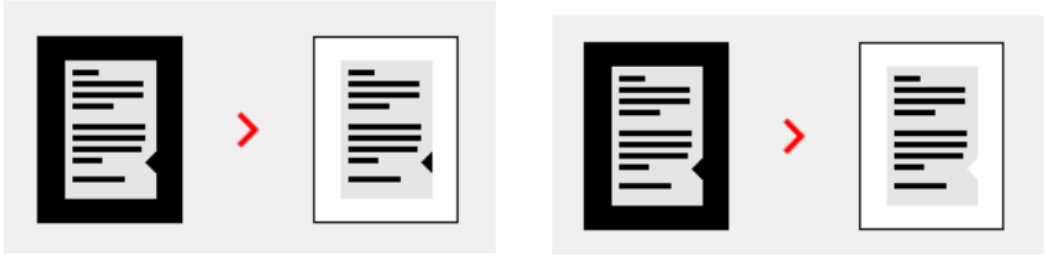
Removes the black background parts outside the edge of the paper, and fill the removed areas with white.



Advanced parameter settings:

Affects all processing effects involved in finding the edge of the paper in image processing, including text thresholding, background noise reduction level, and edge indentation.

A. Background filling method: Represents the filling method for the background color of documents with irregular edges, as shown in the figure below:

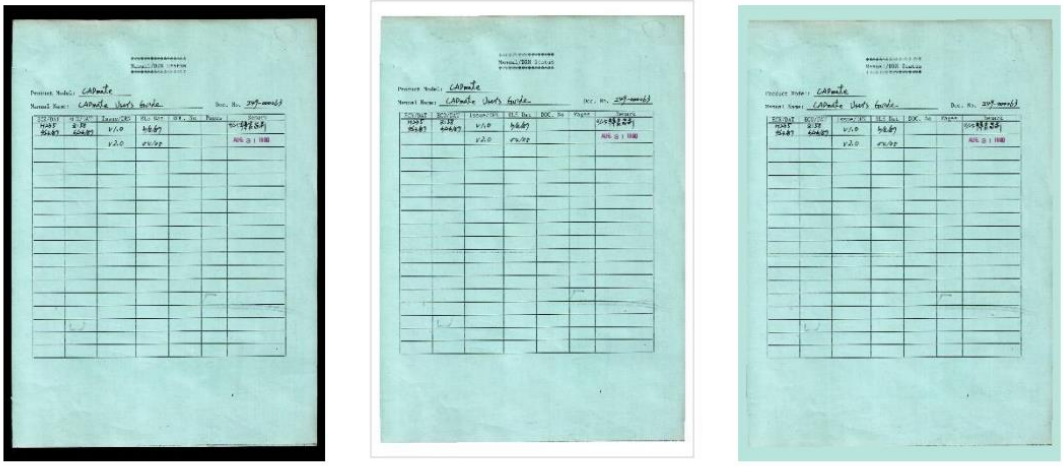


Convex Polygon　　Concave Polygon

Important

It is recommended that non-professional users to set and use the default values; there is no need to change the Advanced setting parameters to avoid imaging anomalies.

B. Color filling: The black frame areas are filled with pure white by default. When this option is selected, the software will determine the background color of the document automatically and fill the black frame areas with this color.



Original (black)　　Unchecked (white)　　Checked (color)

C. Text Threshold: Represents the grayscale difference between the background and the contents of the document. The closer the gray scale of the background and the background color of the document, the smaller this value needs to be set. The default value is 60.

D. Background anti-noise level: Represents the tolerable width of abnormal variegated stripes that exist in the background. This value can be increased appropriately when the background is not clean enough. The default value is 12.

E. Edge indent: Represents the degree of intrusion into the edge of the document when Remove black frame fills the background color automatically. The

larger the value, the more content is lost at the edges of the document. The default value is 16.

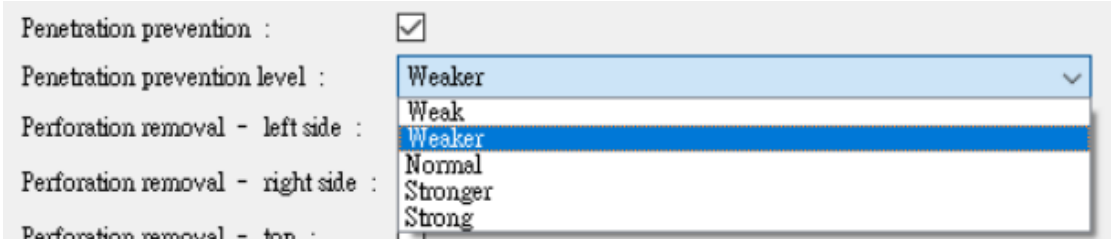
5. Penetration prevention

Removes or lightens image contents that penetrate from the back of the paper to the front of the paper.



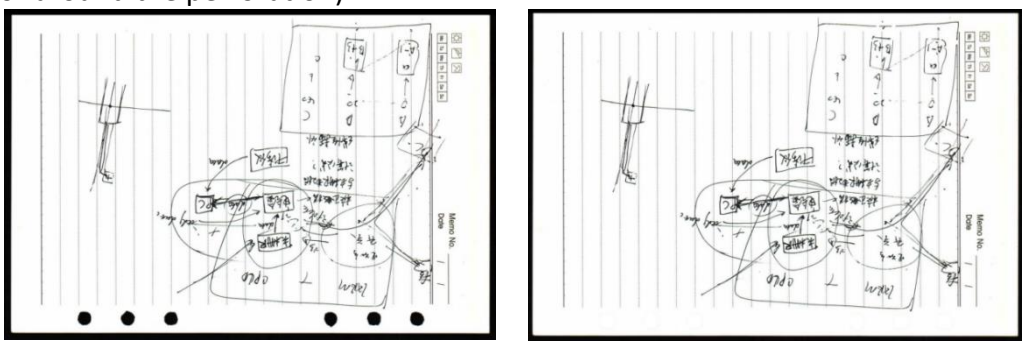
Unchecked Checked

There are five strengths that can be selected for Penetration prevention; the processing strength increases sequentially: Weak, Weaker, Normal, Stronger, Strong.



6. Perforation removal

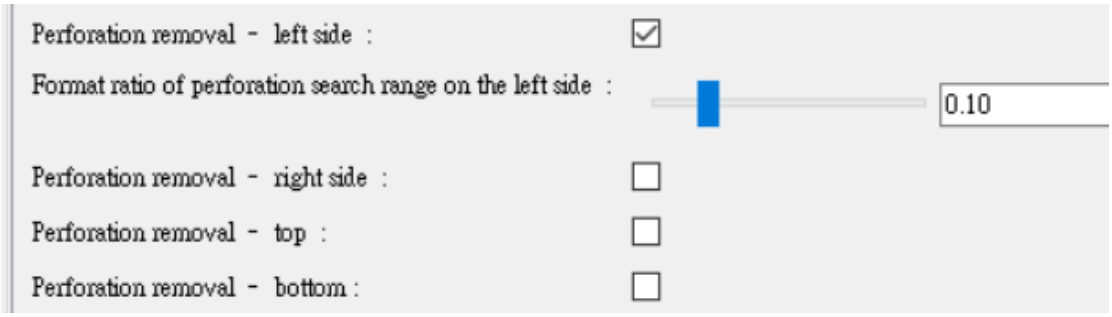
Fills the perforations on the images with colors (fills automatically based on the color around the perforation).



When Perforation removal is enabled, the search range for perforations can be set:

Adjustment range: 0.00 (0%) ~ 0.50 (50%)

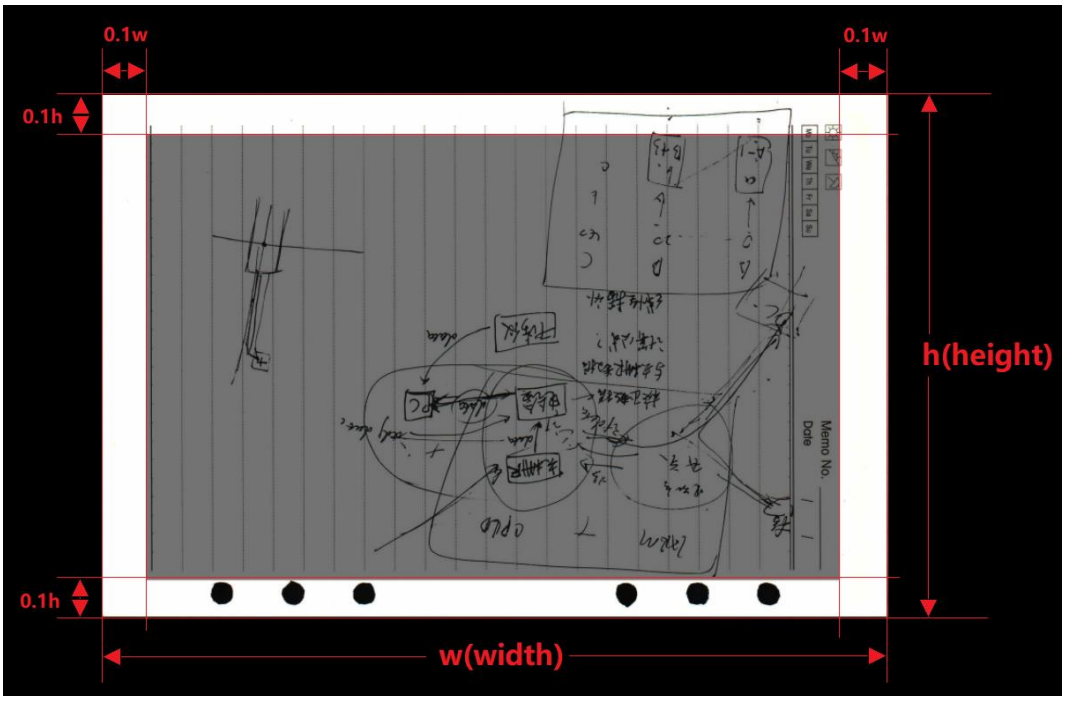
Default value: 0.10 (10%)



Description

- The Format ratio of the perforation search range refers to the area in which the image processing algorithm detects and removes perforations.

For example: When the Format ratio of the perforation search range for the left side is set to 0.10, it means that perforations will be removed for 10% of the paper format from the left edge of the paper towards the center of the paper.



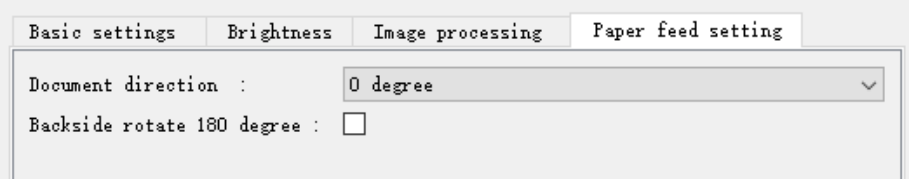
Schematic diagram of the detection range when Perforation removal is enabled for all four sides and the search ranges are all set as 0.10

- If the perforation search range is set as 0.50, it means to search within the range from that side to the mid-line position of the paper along the direction of that side. If Perforation removal is enabled in all four directions and the search ranges are all set to 0.50, it means Perforation removal will be performed for the entire format.

- When the perforations are larger, the perforation may be determined as black images and not be eliminated.

VI、Paper feed setting

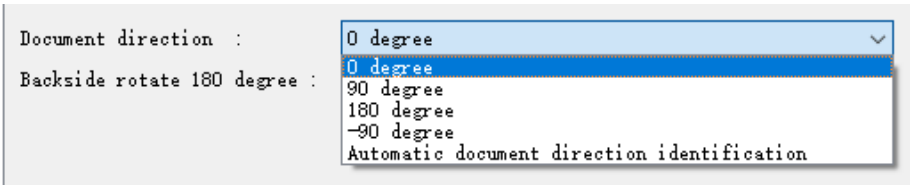
The paper feed tab includes four types of options: **Document Direction.**



1. Document direction

Configures the direction which the scanner outputs the image of the scanned document. There is also an option to rotate the image on the back 180 degrees.

A. There are five options for Document direction: They are **0° (default), 90°, 180°, -90° and Automatic document direction identification**.



Description

The “Automatic document direction identification” function is affected by the contents of the document; there may be rotation errors and failures. If the following situations exist for the document, please use a fixed rotation direction:

- Document contains large numbers of images or background colors.
- Document contains large numbers of lines and frames, such as table frames, etc.
- Some of the texts of the document are too small, use special fonts or contain large numbers of symbols, etc.
- Some of the texts in the document have different orientations.

B. Rotate the back 180°: When this function is selected, the output image of the back will be further rotated 180° on the basis of the rotation direction set for the document.

Note

The Rotate the back 180° function will be disabled and become invalid automatically when the scan page is in “Single side” or “Fold” mode.