

**Kodak**

iNnovation Series Scanners

# Brightness and Contrast Control

# Reference Guide

A-61506  
Part No. 9E3722  
CAT No. 137 0337



# Using the Brightness and Contrast Control

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This Reference Guide provides information and procedures for the Brightness and Contrast Control.

Kodak provides a set of default color tables with the scanner. These tables are bundled and installed with the Scan Validation Tool (SVT).

A color table is a file that can be downloaded to the scanner which contains the information required for the scanner to output the desired representation of your color document.

If the default color tables do not meet your specific needs, this tool may be used to create your own custom color table. This custom color table can then be downloaded to the scanner and used in production.

The color table to be used for front and rear images are set independently. When scanning, only one color table can be applied to each image (front or back). You can use the same color table for both the front and the back, or use one color table for the front and one color table for the back.

Use the Scan Validation Tool or your own application to download a color table to the scanner.

For more information regarding the Brightness and Contrast Control, see Appendix A, *Color Concepts*.

**IMPORTANT:**

- *The Brightness and Contrast Control is not color management software. The output from the Brightness and Contrast Control cannot be used to modify monitors or printers. It is only intended to modify the color image as produced by the scanner.*
- *Images created using a custom color table created using a specific monitor may appear differently when viewed or printed on other monitors or printers.*
- *Images used in this Reference Guide are for concept purposes only and do not represent the expected image quality.*
- *Creation, use and management of any custom color table is your responsibility. Kodak provides no support beyond verifying scanner functionality using Kodak default color tables.*

## Before you begin

Before using the Brightness and Contrast Control, it is highly recommended that you review the information below.

- The *Kodak* Scan Validation Tool must be installed. This installation includes the TWAIN Datasource and the Kodak default color tables. Both the Scan Validation Tool and the TWAIN Datasource are required to run the Brightness and Contrast Control.
- Be sure your scanner is in good working order, cleaned and calibrated. Refer to your User's Guide for maintenance procedures.
- Verify that your scanner is capable of receiving custom color tables created using the Brightness and Contrast Control. If not, you should select the appropriate table from the default color tables provided by Kodak for your scanner. **You cannot use the Brightness and Contrast Control to modify the default color tables.** See the chart below to determine if your scanner has this functionality.

Scanners	Serial Number	Minimum Firmware Version	Upgrade Kit
<b>Kodak i800 Series Scanners</b>	12273100 and higher	2.0.11	Image Processing Upgrade Kit / for <i>Kodak</i> i800 Series Scanners (for serial numbers below 12273100) CAT No. 106 7974
<b>Kodak i1860 Scanner</b>			
<b>Kodak i600, i200, i100 Series Scanners</b>	all		Not applicable
<b>Kodak i30 and i40 Scanners</b>	all		Not applicable

- Before you create a custom color table, it is recommended that you scan a representative group of documents and run these documents with each of the Kodak default color tables. Analyze these images to determine if any of the default color tables meet your needs. If not, you may want to choose the color table which is closest to meeting your needs. This default color table would be a good table to use as a starting point to create your custom color table.
- When scanning color images, the following settings, in addition to color tables, will effect perceived image quality, resolution, color sharpening, JPEG compression (Good, Better, Best). Do not change the value of these settings when comparing color image results using the Kodak default color tables.
- When using Brightness and Contrast Control to create your own color tables, be sure to select the same resolution (DPI) you used when evaluating the sample images with the Kodak default color tables. Resolution is selected using the DPI option from the File menu.

## Supporting documentation

### **Kodak i800 Series Scanners**

- Image Processing Guide for *Kodak* i800 Series Scanners, A-61510
- Installation Planning Guide for *Kodak* i800 Series Scanners, A-61176
- User's Guide for *Kodak* i800 Series Scanners, A-61169

### **Kodak i1860 Scanner**

- Image Processing Guide for the *Kodak* i1860 Scanner, A-61580
- Installation Planning Guide for the *Kodak* i1860 Scanner, A-61578
- User's Guide for the *Kodak* i1860 Scanner, A-61555

### **Kodak i600 Series Scanners**

- Image Processing Guide for *Kodak* i600 Series Scanners, A-61504
- User's Guide for *Kodak* i600 Series Scanners, A-61500
- Quick Tips Guide for *Kodak* i600 Series Scanners, A-61501

### **Kodak i200 Series Scanners**

- User's Guide for the *Kodak* i200 Series Scanners, A-61167

### **Kodak i100 Series Scanners**

- User's Guide for the *Kodak* i100 Series Scanners, A-61514
- Image Processing Guide for *Kodak* i100 Series Scanners, A-61517
- Quick Tips Guide for *Kodak* i100 Series Scanners, A-61515

### **Kodak i30 and i40 Scanners**

- User's Guide for the *Kodak* i30 and i40 Scanners, A-61512
- Quick Tips Guide for *Kodak* i30 and i40 Scanners, A-61526

## System requirements

The PC which will be used to scan images must meet the system requirements for the scanner as documented in the Installation Planning Guide or User's Guide for your scanner.

- **Operating systems** — Windows 98SE, Windows Me, Windows 2000, Windows XP, Windows NT (for *Kodak* i800 Series Scanners only)
- TWAIN Datasource

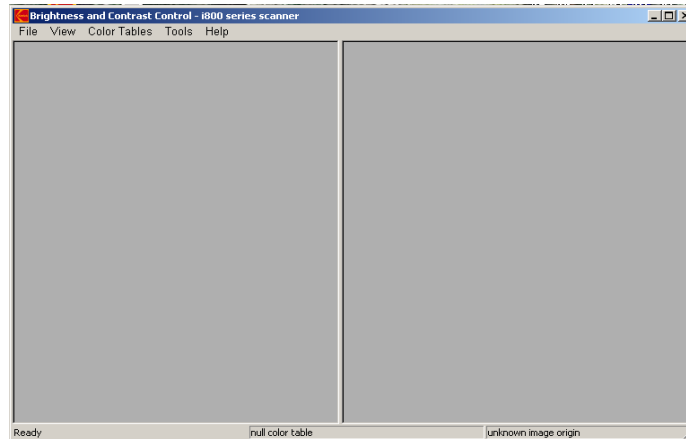
## Installation procedures

To install:

- Be sure you are logged into an account with ADMIN privileges.
- Insert the CD in the CD drive.
  - If you have Auto-run enabled, the installation will begin automatically.
  - If not, navigate to the setup.exe file on the CD to launch the installation.

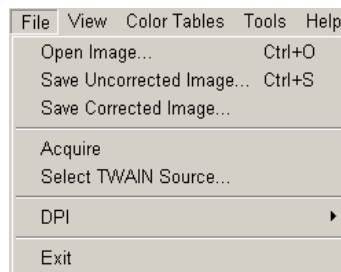
## The main window

Following is a description of the menu options on the Brightness and Contrast Control main window. See the section entitled, “Using the Brightness and Contrast Control” for procedures on how to use this software.



## File menu

The File menu provides the following options:



**Open Image** — displays the Open Image File dialog box, which allows you to open a previously saved uncorrected image from this application. Only TIFF files can be opened with this application.

**Save Uncorrected Image** — displays the Save Image File dialog box, which allows you to save the uncorrected image to disk as a color TIFF file with a .tif extension. When **Save Uncorrected Image** is selected, it saves the image which was captured using the Acquire option. This image represents an image with the null color table.

**Save Corrected Image** — displays the Save Image File dialog box, which allows you to save the corrected image to disk as a color TIFF or JPEG file. When **Save Corrected Image** is selected, it saves the image that is displayed on the right-side of the main window. This image represents what the scanner will produce when using any color table created with this image.

**Acquire** — used to scan and capture the starting null table image.

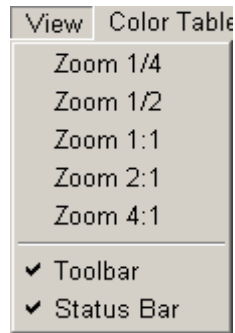
**Select TWAIN Source** — displays the Select Source dialog box which allows you to choose the TWAIN Source for the scanner you will be using.

**DPI** — allows you to select the resolution for the color image you will acquire from the scanner.

**Exit** — closes the application.

## View menu

The View menu provides the following options:



**Zoom 1/4** — displays the image at one quarter of the original size.

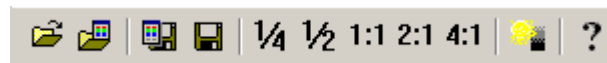
**Zoom 1/2** — displays the image at one half of the original size.








**Zoom 1:1** — displays the image at the original size.



**Zoom 2:1** — displays the image at twice the original size.

**Zoom 4:1** — displays the image at four times the original size.

**Toolbar** — displays/hides the toolbar. The toolbar buttons correspond to commonly used menu options.



Icon	Description
	<b>Open Image</b> — displays the Open Image File dialog box, which allows you to open a previously saved image from this application.
	<b>Load Color Tables</b> — displays the Open Color Table dialog box, which allows you to open the color table you want to use.
	<b>Save Color Tables</b> — displays the Save Color Table dialog box, which allows you to save the custom color table which, when used, will render an image that matches the image currently displayed on the right-side of the main window. The color table will be saved with an .ekct extension.
	<b>Save Uncorrected Image</b> — displays the Save Image File dialog box, which allows you to save the uncorrected image to disk as a color TIFF file with a .tif extension.
	<b>Zoom 1/4</b> — displays the image at one quarter of the original size.
	<b>Zoom 1/2</b> — displays the image at one half of the original size.
	<b>Zoom 1:1</b> — displays the image at the original size.

Icon	Description
2:1	<b>Zoom 2:1</b> — displays the image at twice the original size.
4:1	<b>Zoom 4:1</b> — displays the image at four times the original size.
	<b>Brightness/Contrast Tool</b> — displays the Brightness and Contrast dialog box which allows you to adjust the brightness and contrast values while comparing the original image (on the left) to the result (on the right).
	<b>Help</b> — displays the Brightness and Contrast Control software version number.

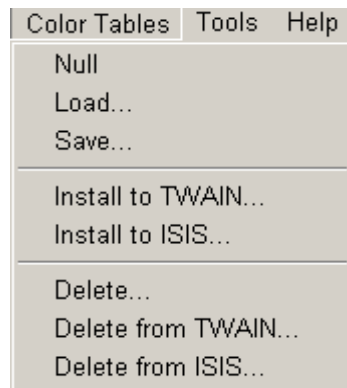
**Status bar** — displays the X and Y coordinates of the current location within the displayed image, the RGB values, the name of the color table currently being applied to the original image (displayed on the left side of the main window) and the scanner used to acquire the starting original.

Using RGB values will help you to compare and analyze images.



## Color Tables menu

The Color Tables menu provides the following options:



**Null** — when selected, will load the Null color table into the Brightness and Contrast Control.

**Load...** — displays the Open Color Table dialog box which allows you to select the color table you want to use.

**Save...** — displays the Save Color Table dialog box, which allows you to save the custom color table which, when used, will render an image that matches the image currently displayed on the right-side of the Brightness and Contrast Control main window. The color table will be saved with an .ekct extension.

**Install to TWAIN...** — places a copy of the custom color table into the default directory used by the TWAIN Datasource (C:\“windows”\twain\_32\kodak\kds\_“scanner”\ColorTables\“scanner”).

**Install to ISIS...** — places a copy of the custom color table into the default directory used by the ISIS Device Driver (C:\“windows”\pixtran\ColorTbl\“scanner”).

**Delete...** — displays the Delete Color Table dialog box which allows you to delete custom color tables from your hard drive.

**Delete from TWAIN...** — deletes the custom color table from the default directory used by the TWAIN Datasource (C:\“windows”\twain\_32\kodak\kds\_“scanner”\ColorTables\“scanner”).

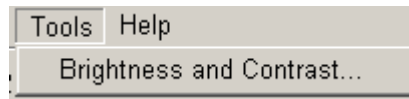
**Delete from ISIS...** — deletes the custom color table from the default directory used by the ISIS Device Driver (C:\“windows”\pixtran\ColorTbl\“scanner”).

NOTE: Using any Delete option permanently deletes the selected file from your hard drive and cannot be retrieved from the recycle bin. Once deleted, this file cannot be restored using this tool.



## Tools menu

The Tools menu provides the following options:



**Brightness and Contrast** — displays the Brightness and Contrast dialog box which allows you to adjust the brightness and contrast values while comparing the original image on the left side of the Brightness and Contrast Control main window to the resultant image on the right side.

## Help menu

Displays the Brightness and Contrast Control software version number.

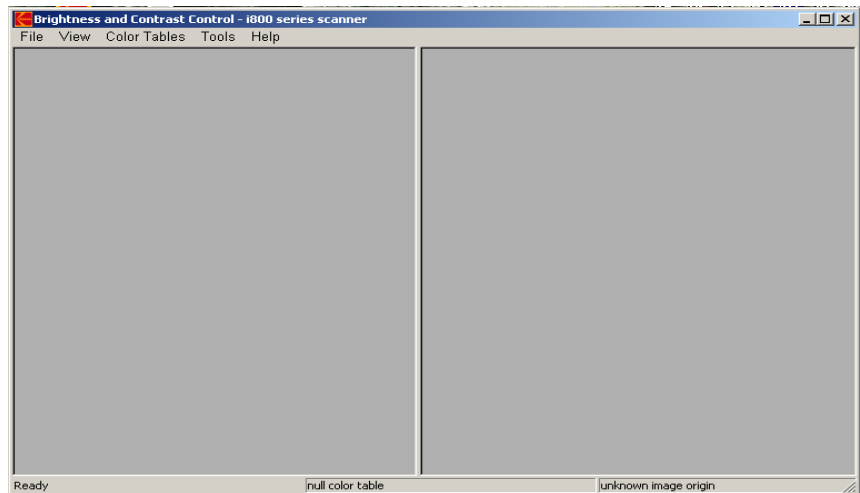
## Creating a custom color table

### Using a Kodak default color table as a starting point

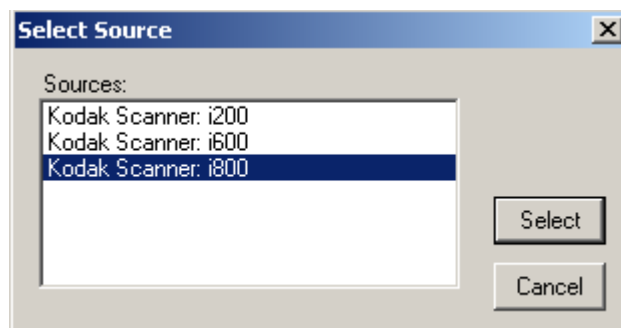
After you have reviewed the “Before you begin” section, you will be ready to start using the Brightness and Contrast Control.

Before you create a custom color table, it is recommended that you scan a representative group of documents and run this group of documents with each of the Kodak default color tables. Analyze these images to determine if any of the default color tables meet your needs. If not, you may want to choose the color table which is closest to meeting your needs. This default color table would be a good table to use as a starting point to create your custom color table.

1. Open the Brightness and Contrast Control application. The main window will be displayed.



2. Select **File>Select TWAIN Source**. The Select Source dialog box will be displayed.

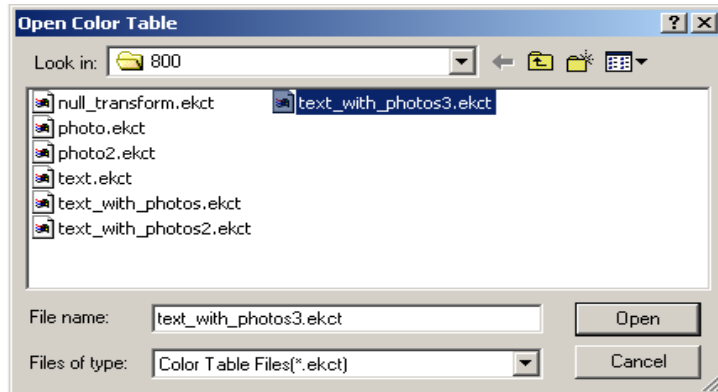


3. Highlight the desired source and click **Select**.
4. From the File menu select **File>DPI** and choose the resolution which you will use when capturing color images in your production environment.

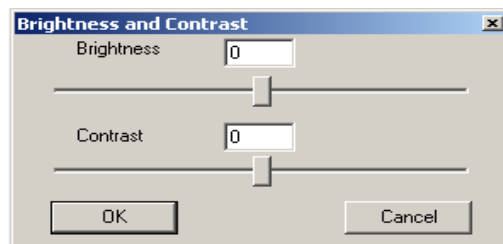
- From the Brightness and Contrast Control main window, select **File>Acquire**.
- Feed the document you have selected to use as a starting point to create your custom color table. When completed, the uncorrected scanned image will appear in both the left and right sides of the main window.

NOTE: This image may be saved and used for the creation of future color tables.

- Select **Color Tables>Load**. The Open Color Table dialog box is displayed.



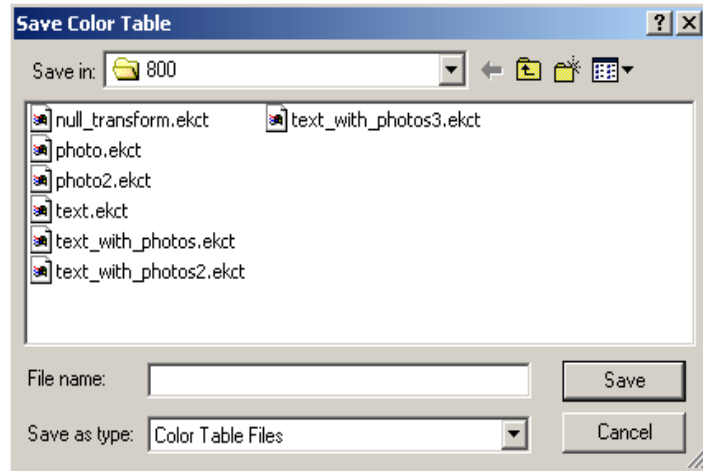
- Highlight the color table that you determined comes closest to matching your color requirements, and click **Open**. The color table you selected will be applied to the images displayed in both the left and right window.
- Select **Tools>Brightness and Contrast**. The Brightness and Contrast dialog box will be displayed.



- Adjust the Brightness and Contrast slider bars until you are satisfied with the color image quality of the image that is displayed on the right side of the main window. As you move the Brightness and Contrast slider bars, the changes in the brightness and contrast will be visible on the right side of the window when you release the mouse button. Optionally, you may enter a value in the Brightness or Contrast fields. Acceptable values are: -50 to +50.
- Click **OK** when the image displayed on the right side of the main window is acceptable.

NOTE: Selecting **Cancel** will undo any changes and restores the image on the right side to match the original image (on the left side).

12. Select **Color Tables>Save**. The Save Color Table dialog box will be displayed:



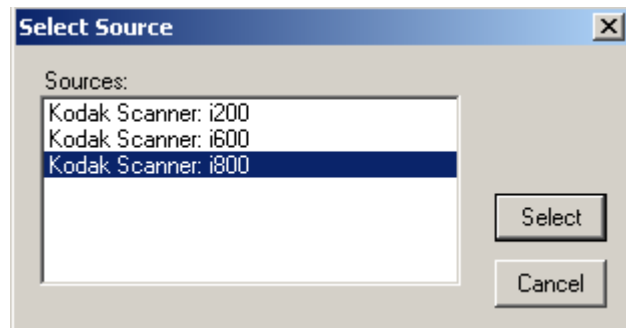
13. Enter a color table name in the Filename field and click **Save**. This custom color table will be saved in the directory shown in the Save Color Table dialog box and is available for download to your scanner to be used in production.

**NOTE:** If you change the default directory path which appears in the Save Color Table dialog box, you may have to navigate to find this table during production. The scanner TWAIN device driver uses this directory by default (C:\“windows”\twain\_32\kodak\kds\_“scanner”\ColorTables). For ISIS applications, color tables should be placed in the ISIS default directory (C:\“windows”\pixtran\ColorTbl\“scanner”). You can navigate to this directory using the Save Color Table dialog box or copy files manually after they have been saved, or use the Install to TWAIN or Install to ISIS options.

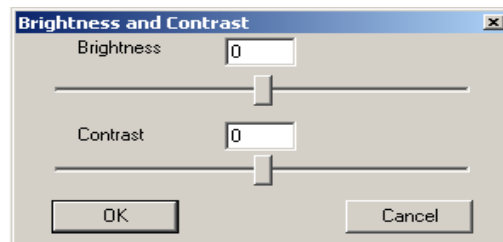
14. Select **File>Save Corrected Image**. The Save Image File dialog box will be displayed. This allows you to save the image on the right side of the main window to your hard drive for future reference when verifying your custom color table.

## Using an Uncorrected image as a starting point

1. Open the Brightness and Contrast Control application. The main window will be displayed.
2. Select **File>Select TWAIN Source**. The Select Source dialog box will be displayed.



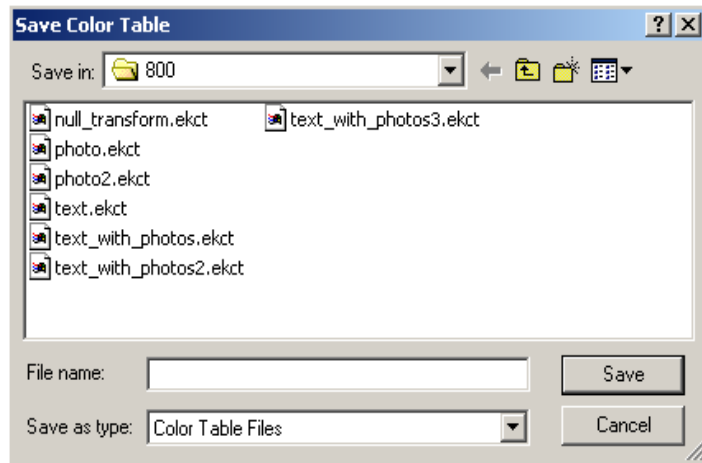
3. Highlight the desired source and click **Select**.
4. From the File menu select **File>DPI** and choose the resolution which you will use when capturing color images in your production environment.
5. Select **File>Acquire**.
6. Feed the document you have selected to use as a starting point to create your custom color table. When completed, the uncorrected scanned image will appear in both the left and right sides of the Brightness and Contrast Control main window.
7. Select **Tools>Brightness and Contrast**. The Brightness and Contrast dialog box will be displayed.



8. Adjust the Brightness and Contrast slider bars until you are satisfied with the color image quality of the image that is displayed on the right side of the main window. As you move the Brightness and Contrast slider bars, the changes in the brightness and contrast will be visible on the right side of the window when you release the mouse button. Optionally, you may enter a value in the Brightness or Contrast fields. Acceptable values are: -50 to +50.
9. Click **OK** when the image displayed on the right side of the Brightness and Contrast Control window is acceptable.

**NOTE:** Selecting **Cancel** will undo any changes and restores the image on the right side of the main window to match the original image (on the left side).

10. Select **Color Tables>Save**. The Save Color Table dialog box will be displayed:



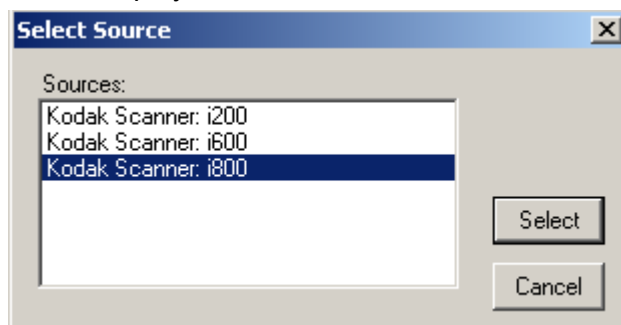
11. Enter a color table name in the Filename field and click **Save**. This custom color table will be saved in the directory shown in the Save Color Table dialog box and is available for download to your scanner to be used in production.

**NOTE:** If you change the default directory path which appears in the Save Color Table dialog box, you may have to navigate to find this table during production. The scanner TWAIN device driver uses this directory by default (C:\“windows”\twain\_32\kodak\kds\_“scanner”\ColorTables). For ISIS applications, color tables should be placed in the ISIS default directory (C:\“windows”\pixtran\ColorTbl\“scanner”). You can navigate to this directory using the Save Color Table dialog box or copy files manually after they have been saved, or use the Install to TWAIN or Install to ISIS options.

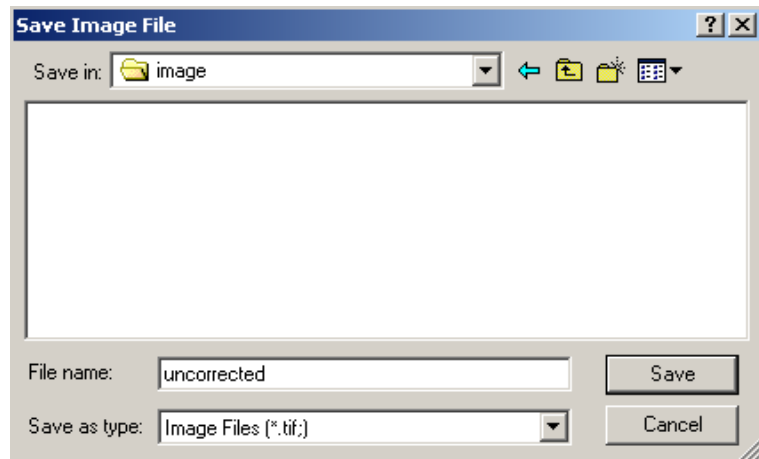
12. Select **File>Save Corrected Image**. The Save Image File dialog box will be displayed. This allows you to save the image on the right side of the main window to your hard drive for future reference when verifying your custom color table.

## Saving the original image

1. Open the Brightness and Contrast Control application. The main window will be displayed.
2. Select **File>Select TWAIN Source**. The Select Source dialog box will be displayed.



3. Highlight the desired source and click **Select**.
4. From the File menu select **File>DPI** and choose the resolution which you will use when capturing color images in your production environment.
5. From the Brightness and Contrast Control main window, select **File>Acquire**.
6. Feed the document you have selected to use as a starting point to create your custom color table. When completed, the uncorrected scanned image will appear in both the left and right sides of the main window.
7. Select **File>Save Uncorrected Image**. The Save Image File dialog box will be displayed:

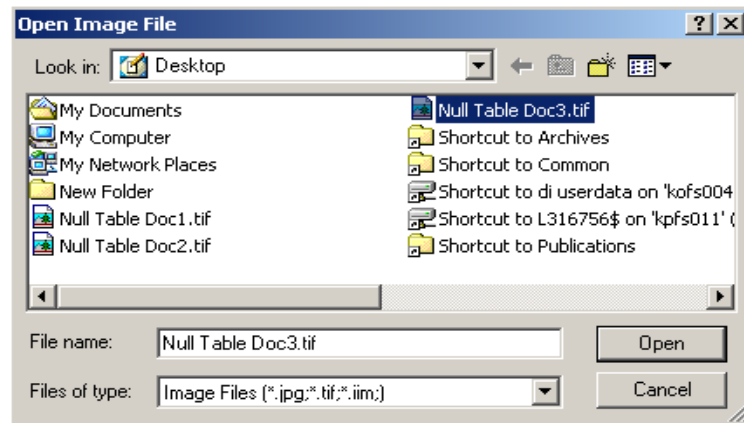


NOTE: This file may now be used as a starting point for any future activities with the Brightness and Contrast Control. For example, you may use the **File>Open Image** option to work with these files off-line when a scanner is not available.

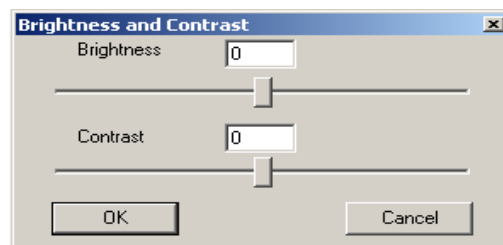
## Using a previously captured image as a starting point

**IMPORTANT:** You must use an uncorrected image as your starting point for any activity which will result in the creation of a custom color table. If you do not choose an uncorrected image the following message will be displayed, **The origin of this image cannot be determined from the file! It may not have been originally scanned with NULL color tables, and is therefore not a valid image for use in this application.**

1. Open the Brightness and Contrast Control application. The Brightness and Contrast Control main window will be displayed.
2. Select **File>Open Image**. The Open Image File dialog box will be displayed.



3. Select the desired image file and click **Open**. The selected image will be displayed on both sides of the main window.
4. Select **Tools>Brightness and Contrast**. The Brightness and Contrast dialog box will be displayed.



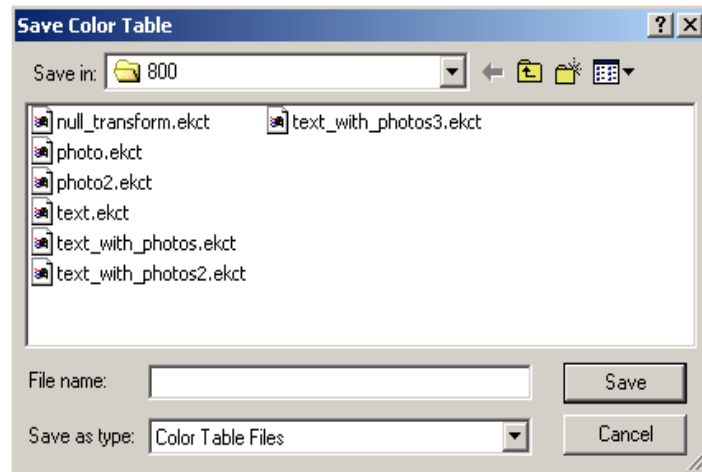
5. Adjust the Brightness and Contrast slider bars until you are satisfied with the color image quality of the image that is displayed on the right side of the main window. As you move the Brightness and Contrast slider bars, the changes in the brightness and contrast will be visible on the right side of the window when you release the mouse button. Optionally, you may enter a value in the Brightness or Contrast fields. Acceptable values are: -50 to +50.



- Click **OK** when the image displayed on the right side of the Brightness and Contrast Control main window is acceptable.

NOTE: Selecting **Cancel** will undo any changes and restores the image on the right side of the Brightness and Contrast Control main window to match the original image (on the left side).

- Select **Color Tables>Save**. The Save Color Table dialog box will be displayed:



- Enter a color table name in the Filename field and click **Save**. This custom color table will be saved in the directory shown in the Save Color Table dialog box and is available for download to your scanner to be used in production.

NOTE: If you change the default directory path which appears in the Save Color Table dialog box, you may have to navigate to find this table during production. The scanner TWAIN device driver uses this directory by default (C:\“windows”\twain\_32\kodak\kds\_“scanner”\ColorTables). For ISIS applications, color tables should be placed in the ISIS default directory (C:\“windows”\pixtran\ColorTbl\“scanner”). You can navigate to this directory using the Save Color Table dialog box or copy files manually after they have been saved, or use the Install to TWAIN or Install to ISIS options.

- Select **File>Save Corrected Image**. The Save Image File dialog box will be displayed. This allows you to save the image on the right side of the main window to your hard drive for future reference when verifying your custom color table.

## Verifying a custom color table using the Scan Validation Tool

Following are procedures for verifying a custom color table using the Scan Validation Tool. For detailed procedures on using the Scan Validation Tool see the Image Processing Guide for *Kodak i800 Series Scanners*, A-61510 or the Image Processing Guide for *Kodak i600 Series Scanners*, A-61504.

1. Open the Scan Validation Tool.

NOTE: Be sure **Save Images to Files** is checked.

2. From the Imaging tab, select the custom color table from the drop down list you want to verify.

NOTES:

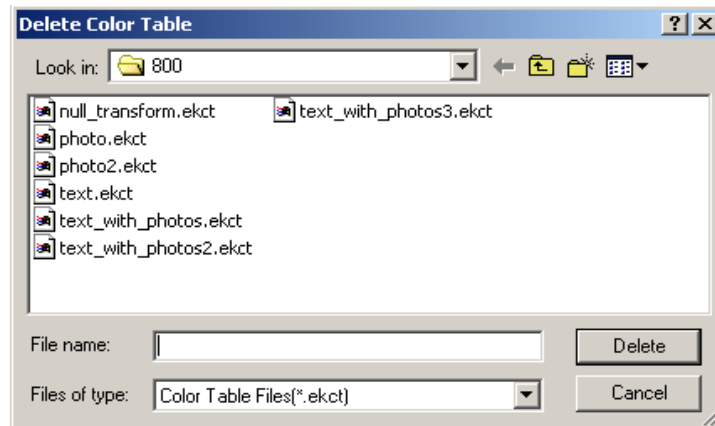
- When duplex scanning, you must specify the desired table for both the front image and rear image.
- If you have not saved your custom color table in the default directory, it will not appear in the drop-down list and you will need to go to the Setup tab. Click **Download** to locate and download the desired table.

3. Click **OK** on the Kodak Scanner Properties dialog box.
4. Scan your representative documents to capture your images.
5. Exit the Scan Validation Tool.
6. Use an image viewer, e.g., Imaging for Windows, to open and compare the image files you just captured to the corrected image you saved previously when creating your custom color table.

## Deleting a custom color table

To delete a custom color table:

1. Open the Brightness and Contrast Control application.
2. Select **Color Tables>Delete**. The Delete Color Table dialog box will be displayed:



3. Select the color table you want to delete and click **Delete**.
4. The message, **Are you sure you want to delete this color table?** is displayed. Click **Delete** to confirm the deletion.

### NOTES:

- Deleting a color table will permanently remove this file from your hard drive and cannot be retrieved from the recycle bin.
- Kodak default color tables cannot be deleted.

## Glossary

**Brightness** — Brightness and Contrast Control uses a brightness scale from -50 (darkest) to +50 (lightest). Changing the Brightness value will effect all color pixels in the image uniformly making all colors in the entire image darker or lighter according to the values selected.

**Contrast** — Brightness and Contrast Control uses a contrast scale from -50 (subtle) to +50 (sharp). As Contrast values become more positive, darks become darker, and lights become lighter in order to create as much distinction as possible between lights and darks.

**GUI** — graphical user interface.

**Color Table** — a file downloaded to the scanner which contains the information required for the scanner to output the desired color. Only one table may be resident in the scanner. Multiple tables may be saved as files on the host PC. Each scanner family has a unique file format. Color tables cannot be shared across scanner platforms. Color tables are stored using the file extension .ekct. Kodak provides default color tables which are bundled and installed with the Scan Validation Tool. For more information about these default tables (a description of each and when you would use it), see the Image Processing Guide for your scanner. One or more of the default color tables should meet your needs, if not, this tool may be used to create your own custom color table. For Kodak service testing purposes a Kodak default color table will be used.

**SVT (Scan Validation Tool)** — a diagnostic application provided by Kodak to test your scanner to verify scanner functionality. For detailed information about the SVT, see the Image Processing Guide for your scanner.

**JPEG** — Joint Photographic Experts Group (compressed image format).

**NULL color table** — a table used by the scanner in place of a color table which does not modify the raw image data, and therefore, can be used to create an uncorrected image.

**RGB** — Red, Green, Blue. Brightness and Contrast Control uses 24-bit color images. Each pixel in the image has an 8-bit Red value (0 to 255), an 8-bit Green value (0 to 255) and an 8-bit Blue value (0 to 255).

**Uncorrected image** — a color image created using a NULL color table (raw image from the scanner).

## Error messages

Following is a listing of error messages that you may encounter when using the Brightness and Contrast Control.

**Message:** *The origin of this image cannot be determined from the file. If it was not originally scanned with NULL color tables, then it may not be a valid image for use in this application.*

**Description/Action:** You tried to open an image that is not a valid file for use with the Brightness and Contrast Control. **File>Open Image** can only be used for files created using the **File>Save Uncorrected Image** option.

**Message:** *This image was originally obtained from a scanner of a type different from the one currently selected. It may not be a valid image for use in this application.*

**Description/Action:** Be sure that the image you selected was acquired with the same TWAIN Source you are currently using.

**Message:** *Warning: The current scanner type is not known!*

**Description/Action:** The Brightness and Contrast Control can only be used with Kodak scanners. Be sure the TWAIN Source you selected is for a Kodak scanner.

**Message:** *You can only save EKCT files with this command!*

**Description/Action:** When using the option **Color Tables>Save**, the Brightness and Contrast Control will create your custom color table. The file extension for these tables must be .ekct in order for use in your production application.

**Message:** *Source Manager is already open.*

**Description/Action:** If you want to change scanners, exit and restart the Brightness and Contrast Control then select the desired TWAIN Source. You cannot change sources while the Brightness and Contrast Control is running.

**Message:** *Unable to load the Source Manager.*

**Description/Action:** Exit and restart the Brightness and Contrast Control application. If the error occurs again, open the Scan Validation Tool to verify that it is working properly. If it is, call Kodak Service for assistance with the Brightness and Contrast Control. If the Scan Validation Tool is not working properly, contact Kodak Service for assistance with the scanner.

**Message:** *Unable to find the DSM\_Entry point.*

**Description/Action:** Call Kodak Service.

**Message:** *Source Manager must be opened first.*

**Description/Action:** Prior to using the **File>Acquire** option, you must use **File>Select TWAIN Source** and choose the scanner.

**Message:** *There is already an open Source in use.*

**Description/Action:** If you want to change scanners, exit and restart the Brightness and Contrast Control then select the desired TWAIN Source. You cannot change sources while the Brightness and Contrast Control is running.

**Message:** *Unable to open the Source Manager selection dialog box.*

**Description/Action:** Exit and restart the Brightness and Contrast Control application. If the error occurs again, open the Scan Validation Tool to verify that it is working properly. If it is, call Kodak Service for assistance with the Brightness and Contrast Control. If the Scan Validation Tool is not working properly, contact Kodak Service for assistance with the scanner.

**Message:** *Unable to enumerate first TWAIN Data Sources.*

**Description/Action:** Be sure the Kodak Scan Validation Tool is installed on the PC where you are currently running the Brightness and Contrast Control.

**Message:** *Unspecified TWAIN error.*

**Description/Action:** Exit and restart the Brightness and Contrast Control application. If the error occurs again, open the Scan Validation Tool to verify that it is working properly. If it is, call Kodak Service for assistance with the Brightness and Contrast Control. If the Scan Validation Tool is not working properly, contact Kodak Service for assistance with the scanner.

**Message:** *Source could not return color table information.*

**Description/Action:** Exit and restart the Brightness and Contrast Control application. If the error occurs again, open the Scan Validation Tool to verify that it is working properly. If it is, call Kodak Service for assistance with the Brightness and Contrast Control. If the Scan Validation Tool is not working properly, contact Kodak Service for assistance with the scanner.

**Message:** *Source does not support ICAP\_XFERMECH.*

**Description/Action:** The Brightness and Contrast Control can only be used with Kodak scanners. Be sure the TWAIN Source you selected is for a Kodak scanner.

**Message:** *ICAP\_XFERMECH not support NATIVE transfers.*

**Description/Action:** The Brightness and Contrast Control can only be used with Kodak scanners. Be sure the TWAIN Source you selected is for a Kodak scanner.

**Message:** *Failed to set ICAP\_XFERMECH.*

**Description/Action:** The Brightness and Contrast Control can only be used with Kodak scanners. Be sure the TWAIN Source you selected is for a Kodak scanner.

**Message:** *Source is in wrong state for enabling.*

**Description/Action:** Exit and restart the Brightness and Contrast Control application. If the error occurs again, open the Scan Validation Tool to verify that it is working properly. If it is, call Kodak Service for assistance with the Brightness and Contrast Control. If the Scan Validation Tool is not working properly, contact Kodak Service for assistance with the scanner.

**Message:** *Source failed to enable.*

**Description/Action:** Exit and restart the Brightness and Contrast Control application. If the error occurs again, open the Scan Validation Tool to verify that it is working properly. If it is, call Kodak Service for assistance with the Brightness and Contrast Control. If the Scan Validation Tool is not working properly, contact Kodak Service for assistance with the scanner.

**Message:** *Unsupported scanner.*

**Description/Action:** The Brightness and Contrast Control can only be used with Kodak scanners. Be sure the TWAIN Source you selected is for a Kodak scanner.

**Message:** *Unsupported or non-existent scanner.*

**Description/Action:** The Brightness and Contrast Control can only be used with Kodak scanners. Be sure the TWAIN Source you selected is for a Kodak scanner.

**Message:** *Cannot open specified Color Table file.*

**Description/Action:** There may be a problem with the specified color table. If the table selected is a default Kodak color table, reinstall the Scan Validation Tool. If this is a custom color table, you may need to recreate the color table unless you are able to restore from a backup copy.

**Message:** *The specified color table file is not writable.*

**Description/Action:** The Brightness and Contrast Control was unable to open the specified color table file for output. This error may occur if the color table is an original distribution color table (e.g., photo.ekct) and the Brightness and Contrast Control will not overwrite it. It could also mean that there is a bad file name, the file is write-protected or the disc is full.

**Message:** *The specified color table format is unsupported.*

**Description/Action:** Color tables must have the .ekct extension. Only tables provided by Kodak or created with the Brightness and Contrast Control are supported.

**Message:** *Incorrect checksum detected in Color Table file.*

**Description/Action:** Color tables must have the .ekct extension. Only tables provided by Kodak or created with the Brightness and Contrast Control are supported.

## Troubleshooting / Problem solving

**Message:** *An error occurred while writing the image file.*

**Description/Action:** Be sure your account has write access to the output directory.

**Message:** *Unable to delete the selected color table.*

**Description/Action:** Be sure your account is authorized to delete color tables.

**Message:** *You cannot delete an original distribution color table.*

**Description/Action:** Kodak default color tables cannot be deleted.

Use the information below as a guide to check possible solutions to problems you may encounter when using the Brightness and Contrast Control.

### ***Brightness and Contrast Control will not run***

- Check to be sure you have Administrative privileges. If you do, be sure the Brightness and Contrast Control was installed using an Admin account. If not, contact your System Administrator.

### ***Cannot scan***

- Exit the Brightness and Contrast Control software and run the Kodak Scan Validation Tool to verify that the scanner is in good working condition. If the scanner is working correctly and you still cannot scan using the Brightness and Contrast Control, verify that the path that you are trying to save the image to is correct.

### ***No drivers are displayed in the Select Source dialog box***

- Be sure the Scan Validation Tool is installed.

### ***Unable to download a custom color table***

- Be sure the scanner is turned on and ready to use (no error condition exists).
- Be sure the table you are attempting to download is compatible with your scanner.
- Run the Scan Validation Tool to be sure that the scanner is in good working condition.

### ***Cannot save a custom color table***

- Check the destination path for saved files.

### ***Poor color image quality from the scanner***

- Download and use a Kodak default color table. If the problem persists, be sure the scanner is in good working condition. You may need to clean the scanner, calibrate it, run the Scan Validation Tool, etc.

If the color image quality improved with the use of a Kodak default color table or by cleaning the scanner, etc. do not use the originally selected custom color table without adjusting it to meet your color quality needs.



## Appendix A    Color Concepts

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### **What is a color image?**

A digital color image contains information about a scanned document subdivided into many small regions called pixels (picture elements). Each pixel is represented as a 24-bit value. These 24 bits are used to indicate the amount of red, green and blue for each pixel. Pixels are arranged in a matrix to collectively represent the image. Each pixel represents a single color, present at that location in the image.

### **What is a color table?**

The color cameras in a scanner typically deliver three channels of data to the image processing system, representing the Red, Green, and Blue content of the image.

This raw data can then be fine-tuned to more closely represent the original document by mapping raw input colors to the desired output colors. This is usually done with a color table. The color table is simply a list of input values matched to the desired output colors.

### **What is the Brightness and Contrast Control?**

The purpose of the Brightness and Contrast Control is to provide a tool whereby a user can adapt or develop a custom color table for a *Kodak* Innovation Series Scanner, to suit the needs of a particular application. The Brightness and Contrast Control provides a graphical user interface which allows the user to preview the effect a color table will have on a representative customer image. It can acquire a representative image from the *Kodak* Innovation Series Scanner or load it from a file. The utility provides tools which permit creating, modifying and saving custom color tables.

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