

Kodak

i800 Series Scanners
Image Processing Guide

User's Guide

A-61510

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1 Introduction

Kodak i800 Series Scanners

The i800 Scanners are high-volume production scanners which include image processing technology that can improve image quality and sometimes make the reproduction better than the original.

You can use the ISIS Driver or TWAIN Data source (both are available on the CD that is included with the scanner) or *Kodak Digital Science Capture Software* to enable image processing.



Other popular scanning applications are also compatible with these scanners, however, these applications may not be able to access all of the image processing options. Please refer to your application vendor's documentation for specific information.

The features

Four configurations of the i800 Series Scanners are available.

- ◆ **Kodak i810 Scanner (bi-tonal)** — provides bi-tonal scanning with throughput speeds up to 120 ppm.
- ◆ **Kodak i820 Scanner** — provides both color/grayscale and bi-tonal scanning simultaneously with throughput speeds up to 120 ppm.
- ◆ **Kodak i830 Scanner (bi-tonal)** — provides bi-tonal scanning with throughput speeds up to 160 ppm.
- ◆ **Kodak i840 Scanner** — provides both color/grayscale and bi-tonal scanning simultaneously with throughput speeds up to 160 ppm.

About this manual

This manual provides the following:

Chapter 1, Introduction – includes a brief summary of the *Kodak i800 Series Scanners*, a list of features available for each scanner and the support drivers.

Chapter 2, Best Practices – includes information to use when setting up applications, recommendations on how to handle jam recoveries, image addressing information, controlling print streams, electronic color drop-out and much more.

Chapter 3, Using the TWAIN Data source – information on using the dialog boxes presented by the TWAIN Data source and an explanation of the fields on each tab.

Chapter 4, Using the ISIS Driver – information on using the dialog boxes presented by the ISIS driver and an explanation of fields on each dialog box.

Appendix A – provides a list of differences between the traditional high-volume Kodak scanners vs. the *Kodak i800 Series Scanners*.

Appendix B – provides information about what type of setups are allowed and how they can be mixed and matched.

NOTE: The scanned images used in this guide were selected for the challenges presented to a typical scanner due to the low-contrast characteristics of the images.

Image outputs

i800 Series Scanners can return bi-tonal, grayscale or color images to the host. Below is a description of the valid combinations.

All i800 Scanners are duplex scanners. This means both the front and the rear side of each document may be captured. For each side captured, the scanner creates a bi-tonal/binary only (i810/i830) or a bi-tonal/binary and color/grayscale (i820/i840) image. The host application controls which of these images is transferred to the host to be stored as an image file. For example, for an i840 Scanner if all four images are returned to the host, the following four files could be created:

- **Front bi-tonal/binary:** FB.tif. This image file represents the contents of the front side of the document using one-bit per pixel.
- **Front color:** FC.jpg. This image file represents the contents of the front side of the document using 24-bits per pixel.
- **Rear bi-tonal/binary:** RB.tif. This image file represents the contents of the rear side of the document using one-bit per pixel.
- **Rear color:** RC.jpg. This image file represents the contents of the rear side of the document using 24-bits per pixel.

NOTE: Actual file formats are determined by the host application.

Through the application these image files can be controlled independently.



FB.tif (front bi-tonal)



FC.jpg (front color)



RB.tif (rear bi-tonal)



RC.jpg (rear color)

Another example of a simultaneous output where all four images are returned to the host would create the following four files:

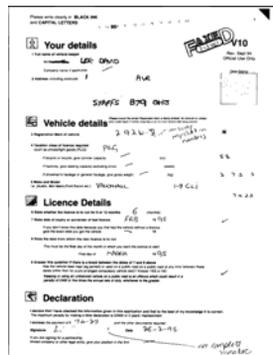
- **Front grayscale:** FG.jpg. This image file represents the contents of the front side of the document using 8-bits per pixel.
- **Front bi-tonal/binary:** FB.tif. This image file represents the contents of the front side of the document using 1-bit per pixel.
- **Rear grayscale:** RG.jpg. This image file represents the contents of the rear side of the document using 8-bits per pixel.
- **Rear bi-tonal/binary:** RB.tif. This image file represents the contents of the rear side of the document using 1-bit per pixel.

NOTE: Actual file formats are determined by the host application.

These image files can be controlled through the application independently.



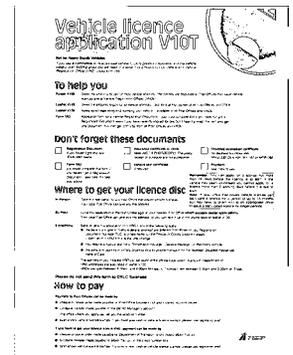
FG.jpg (front grayscale)



FB.tif (front bi-tonal/binary)



RG.jpg (rear grayscale)



RB.tif (rear bi-tonal/binary)

2 Best Practices

This chapter provides you with recommendations for program logic, which will allow you to interact efficiently with the i800 Scanner. This high-level information is not intended to be used as a coding guide. The following information is provided in this chapter:

- Basic image capture
- Controlling image transfer order – switching between color/grayscale and bi-tonal
- Jam recovery
- Image file storage locations
- Bar code recognition
- Starting image addresses
- Controlling print strings
- Electronic Color Dropout (form design, drop-out colors)
- Available image header information and its uses
- Zone processing (recombining images, especially for viewing)
- Programmable keys
- Patch reading
- Batching

NOTE: The term *host* in the sections that follow refers to either the driver or application depending on code logic.

Basic image capture

Basic image capture is the high-level logic flow for retrieving images from the scanner.

Follow this sequence to scan documents: set up the scanner, enable scanning, initiate polling, feed documents and disable scanning.

Scanner setup

To set up the scanner:

1. Set up your scanner operating conditions:
 - simplex/duplex
 - starting image address
 - image order
 - lamp timeout
 - transport timeout
 - transport timeout response
 - length detection status and response
 - multi-feed detection status and response
 - page-on-demand or batch count mode
 - starting document count
 - batching parameters (batch level, count, start and end-of-batch functions)
 - patch parameters (patch types to recognize, transfer patch definition)
 - printing parameters (printing status, print font, orientation and strings)
 - programmable keys
 - level to follow level rules
 - confirmation tone
 - image address formats

For information on programming these conditions, see Chapters 3 or 4 (depending on your driver). For other vendor tool kits, refer to their documentation.

2. Select your Color table as appropriate for color document scanning. See Chapters 3 or 4 (depending on your driver). For other vendor tool kits, refer to their documentation.

3. Determine if any changes to the Image Processing parameters need to be made for the current application.

NOTE: This check needs to occur for up to four separate images from the six available options depending on your application: Front Color, Front Bi-tonal, Front Grayscale, Rear Color, Rear Bi-tonal, Rear Grayscale.

Image Processing parameter changes remain in effect until one of the following conditions occur:

- The scanner is powered down using the power switch.
 - A SCSI bus device Reset command is executed.
 - New imaging parameters are sent from the host.
4. It is recommended that you calibrate the scanner. For procedures on how to do this, see the *Kodak i800 Series Scanners, User's Guide*.
 5. Prepare documents according to the instructions found in the *Kodak i800 Series Scanners, User's Guide*.

Enable scanning

The host must issue a Scan command to enable scanning before documents can be transported through the scanner. If scanning has not been enabled, the feeder and transport system will not turn on.

Initiate polling

Initiate host system polling of the scanner to ensure scanned document images are transferred from the image buffer to the host system. Polling should continue until scanning is disabled.

For more information see the sections entitled, "Controlling image transfer order" and "Image header information" later in this chapter.

Feed documents

Feed documents according to the instructions found in the *Kodak i800 Series Scanners, User's Guide*.

Disable scanning

Scanning is disabled to allow the host to download configuration/setup changes between jobs and to handle certain types of errors.

Scanning is also disabled when one of the following conditions occur:

- The scanner is first powered on using the power switch.
- A SCSI bus device Reset command is executed.
- An End-of-Job indicator is sent by the operator from the operator control panel.
- A scanner-unique End-of-Job command is issued by the host computer.
- An error occurs requiring fault recovery.

NOTE: When scanning is disabled, documents cannot be scanned until the host enables scanning.

Error handling

The scanner recognizes and reports a variety of error conditions. Some errors are reported to either the host (via the SCSI interface) or the operator control panel, while others are reported to both the host and the operator control panel.

An error (via the SCSI interface) is defined as either a current or deferred error.

A current error results from a problem in processing the current SCSI command. This can include sending an invalid command, trying to read from an empty image buffer, or an end-of-job condition. Since one or more errors may be pending at any time, current errors are reported first.

A deferred error results from an error condition within the scanner, such as a document jam. Deferred errors that may have occurred are reported after current errors.

NOTE: Low level SCSI commands and information will be handled by your device driver. The following information is provided for reference only.

When an error occurs, the host will receive a SCSI Check Condition Status. This indicates to the host that there may be one current error and potentially one or more deferred errors. The host must follow a Check Condition Status with a SCSI Request Sense command. The Sense data will indicate the type of error that has occurred.

To receive subsequent pending errors, the host must execute a SCSI Test Unit Ready command. If a deferred error is pending, the Test Unit Ready command will terminate with a Check Condition Status. The host follows with a SCSI Request Sense command. The combination of Request Sense followed by Test Unit Ready must be repeated until a "good" status is returned on the Test Unit Ready command. A "good" status indicates no errors (current or deferred) are pending.

IMPORTANT: *If at any point the host receives a Check Condition for a command and fails to issue a subsequent Request Sense command, the scanner will clear all (current and deferred) Sense data.*

Some error conditions disable scanning and cause the document transport to stop. These errors are reported on the operator control panel. This is done to prevent additional images from entering the image buffer while allowing the host to perform fault recovery activities.

NOTE: The scanner cannot determine exactly which images were affected by the error and which images were not.

If an error occurs that disables the scanner, the host can continue to read images from the image buffer without enabling the scanner. However, when the image buffer has been emptied, an error will be generated indicating fault recovery is required. This differentiates between an end-of-job disable and a disable caused by an error. The operator may continue scanning documents after the host enables the scanner.

Controlling image transfer order

This section provides job stream examples which can be used in scanning applications.

The host application is responsible for determining the order in which the scanner returns images. Front images must always be retrieved before rear images.

Bi-tonal only duplex

This job stream is available for all i800 Series Scanners.

1. Prepare documents.
2. Start the scanner to do bi-tonal duplex scanning (front bi-tonal and rear bi-tonal).
3. Setup the scanner to retrieve bi-tonal images.
4. Enable the scanner and start polling.

Loop

 Read front bi-tonal image header
 Read bi-tonal image
 Read rear bi-tonal image header
 Read bi-tonal image

End loop

Color only duplex

This job stream is available for i820 and i840 Series Scanners.

1. Prepare documents.
2. Start the scanner to do color duplex scanning (front color and rear color).
3. Setup the scanner to retrieve color images.
4. Enable the scanner and start polling.

Loop

 Read front color image header
 Read color image
 Read rear color image header
 Read color image

End loop

Grayscale only duplex

This job stream is available for i820 and i840 Series Scanners.

1. Prepare documents.
2. Start the scanner to do grayscale duplex scanning (front grayscale and rear grayscale).
3. Setup the scanner to retrieve grayscale images.
4. Enable the scanner and start polling.

Loop

 Read front grayscale image header

 Read grayscale image

 Read rear grayscale image header

 Read grayscale image

End loop

Dual stream simplex

This job stream is available for i820 and i840 Series Scanners.

1. Prepare documents.
2. Start the scanner to do dual stream simplex scanning (front bi-tonal and front color).
3. Setup the scanner to retrieve bi-tonal images first.
4. Enable the scanner and start polling.

Loop

 Read front bi-tonal image header

 Read bi-tonal image

 Read front color image header

 Read color image

End loop

Dual stream duplex

This job stream is available for i820 and i840 Series Scanners.

1. Prepare documents.
2. Start the scanner to do dual stream duplex scanning (front bi-tonal, front color, rear bi-tonal and rear color).
3. Setup the scanner to retrieve bi-tonal images first.
4. Enable the scanner and start polling.

Loop

Read front bi-tonal image header

Read bi-tonal image

Read front color image header

Read color image

Read rear bi-tonal image header

Read bi-tonal image

Read rear color image header

Read color image

End loop

**Single-stream duplex
alternating between bi-tonal
and color/grayscale using
the scanner Toggle patch**

This job stream is available for i820 and I840 Series Scanners.

The Toggle patch is a type 4 patch that is used to trigger the scanner to switch from the current image stream (bi-tonal) to the alternative image stream (color/grayscale).

The example illustrates using patch type 4 in the same way which the “color patch” is utilized on *the Kodak Digital Science Scanner 3590C* where it starts using bi-tonal.

1. Prepare documents with a patch Type 4 before and after any color/grayscale documents.
2. Configure image processing parameters for all four images. Before initiating the scanner, select only the front and rear bi-tonal images to be retrieved.
3. Select both sides from the Toggle Patch drop-down box.
4. Start scanning.

Images will begin in bi-tonal and will change to color/grayscale when the first toggle patch is detected. Images will remain color/grayscale until the next toggle patch is detected. Images of the toggle patch sheet will not be returned to the host unless you also enable patch reading and select the Type 4 patch.

Jam and Fault recovery

This section provides recommendations for application logic associated with scanner jam and fault recovery.

If your scanner is enabled and you are polling when a document jam or other fault occurs, use the following procedure to restart scanning.

IMPORTANT: *Before beginning fault recovery, make sure all the headers and images have been transferred from the image buffer to the host system.*

When a document jam or other fault occurs, the feeder and the transport will stop and the scanner will be disabled.

1. When all images have been retrieved from the scanner (image buffer empty), display the last image retrieved for operator viewing.
2. Use the image header of the last image retrieved to determine the image address and sequential counter.
3. Use the information above +1 to seed the next image address and sequential counter before re-enabling the scanner.
4. Instruct the operator to sort through the stack of documents being scanned to find the document that produced the last successfully scanned image. They must rescan all of the documents that follow the last successfully scanned document.
5. Enable the scanner.

Image file storage locations

This section provides general recommendations regarding the impact of image file storage locations on the overall throughput of the scanner.

Depending upon the model of your scanner, you can receive up to four image files per document. Decisions about where to write these files when retrieving them from the scanner could impact the overall throughput of the scanner. In order to prevent overwriting data the scanner stops feeding paper when the internal image buffer reaches two-thirds capacity. Scanning will not resume until buffer memory reaches one-third. In order to minimize the number of times this condition might occur, it is recommended that image files are written to a local hard drive in order to avoid the potential overhead of transferring files across the network to remote drives during scanning.

Bar code recognition

This section provides general information about bar code recognition and read rates.

Unlike previous high-volume scanners from Kodak, the i800 Series Scanners do not include a bar code accessory. Bar code functionality is now the responsibility of the host system. The main imaging parameter, which may affect bar code read rates, is *resolution*. Depending upon your scanner model, either bi-tonal, grayscale or color images may be used for bar code applications. Refer to your software documentation for their recommendations and/or requirements for image file quality to achieve desired read rates.

Image addressing

Unlike previous high-volume scanners from Kodak, the i800 Series Scanners moved all image address functionality to the host. This includes index format, starting image address, image address format and level rules.

Image address format

The image address format can be from one to four fields. Each field may be up to 9 characters. Total image address length with delimiters is 30 characters. Each field may use level 1, level 2, level 3, and fixed fields, and must be explicitly defined by the application. Image address format is flexible and includes the ability to define four fixed fields. See Chapter 3 or 4 (depending on your driver) for more information.

The order of importance for the fields (from highest to lowest) is fixed, level 3, level 2, level 1. When defining an image address, the field with the highest importance must always be to the left. For example, F321 is a valid format. F123 is not a valid format.

You are not required to use all four fields. If you chose to use fewer than four fields, you must specify a field width of 0 for any unused field. 0 width fields may not be between two non-zero width fields.

When defining fields, you can only have one field assigned to each individual level. For example, FF21 is a valid format. FF11 is not a valid format.

When defining more than one fixed field the fixed field values must be to the left of any index value. Fixed fields may not be between level fields. For example, FFF1 is a valid format. FF1F is not a valid format.

Starting image address/ next image address

The host application must always seed the scanner with the starting image address. It is no longer controlled within the scanner. The scanner will return the image address associated with each image in the image header. The application can track this image address for use in setting the next image address when restarting the scanner.

Indexing schemes

Documents are scanned to record the information in an easily accessible form. The scanner offers the following indexing schemes:

- Single level
- Two level
- Two level offset
- Three level
- Three level offset

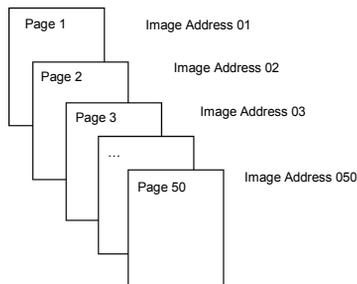
Single level indexing

When using single level indexing, the image address assigned to each document is defined as follows:

- Field D is defined as a Level 1 field having a field length greater than 0.
- Fields C, B and A may be defined as fixed fields if desired.

For example, if you scan a book with 50 pages and do not want a fixed field in the image address, the image address is defined as follows:

- Field D has a field length of 2 characters and is defined as a Level 1 field.
- Fields A, B and C have 0 characters.



The first page is assigned image address 01. The second page is assigned image address 02, and so on, through the remainder of the book.

Any one of the 50 pages may later be located and retrieved using its unique image address.

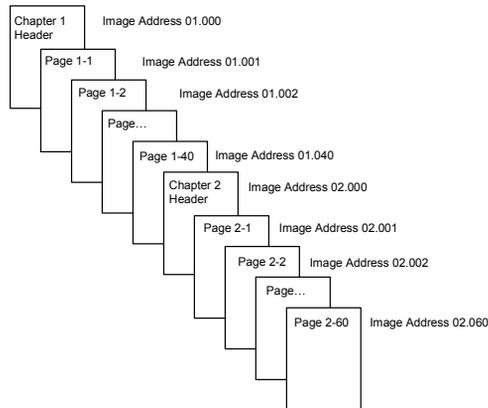
Two level indexing

When using two level indexing, the image address assigned to each document is defined as follows:

- Field D (Level 1) defined as having a field length greater than 0.
- Field C (Level 2) defined as having a field length greater than 0.
- Fields B and A may be defined as fixed fields if desired.

For example, if you scan a book with 2 chapters (Chapter 1 has 40 pages and Chapter 2 has 60 pages) the image address has been defined:

- Field D has 3 characters
- Field C has 2 characters
- Field B has 0 characters
- Field A has 0 characters



The header page for Chapter 1 is assigned image address 01.000. The first page of Chapter 1 is assigned image address 01.001; the second page is assigned image address 01.002, and so on through Chapter 1.

The header page for Chapter 2 is assigned image address 02.000. The first page of Chapter 2 is assigned image address 02.001; the second page is assigned image address 02.002, and so on through Chapter 2.

Any one of the pages may later be located and retrieved using its unique image address.

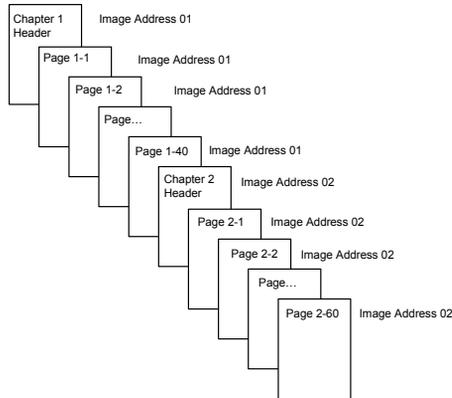
Two level offset indexing

When using two level offset indexing, the image address assigned to each document is defined as follows:

- Field D (Level 2) defined as having a field length greater than 0.
- Fields C, B and A may be defined as fixed fields if desired.

For example, if you scan a book with 2 chapters (Chapter 1 has 40 pages and Chapter 2 has 60 pages), the image address has been defined:

- Field D has 2 characters
- Field C has 0 characters
- Field B has 0 characters
- Field A has 0 characters



The header page for Chapter 1 is assigned image address 01.
The remaining pages of Chapter 1 are also assigned image address 01.

The header page for Chapter 2 is assigned image address 02.
The remaining pages of Chapter 2 are also assigned image address 02.

Either one of the chapter header pages may later be located and retrieved using its unique image address. Pages within a chapter may be located and retrieved by first finding the chapter header and then manually scrolling through the remaining pages of the chapter.

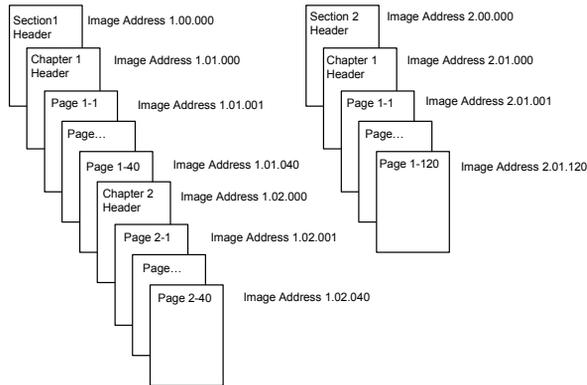
Three level indexing

When using three level indexing, the image address assigned to each document is defined as follows:

- Field D (Level 1) defined as having a field length greater than 0.
- Field C (Level 2) defined as having a field length greater than 0.
- Field B (Level 3) defined as having a field length greater than 0.
- Field A may be defined as fixed field if desired.

For example, if you scan a book with two sections (Section 1 contains 2 chapters, each having 40 pages; Section 2 contains only 1 chapter, having 120 pages) the image address has been defined:

- Field D has 3 characters
- Field C has 2 characters
- Field B has 1 character
- Fixed field has 0 characters



The header page for Section 1 is assigned image address 1.00.000. The header page for Chapter 1 of the section is assigned image address 1.01.000. The pages within the Chapter are assigned image address(es) 1.01.001 through 1.01.040. The header page for Chapter 2 of the section is assigned image address 1.02.000. The pages within the chapter are assigned image address(es) 1.02.001 through 1.02.040.

The header page for Section 2 is assigned image address 2.00.000. The header page for Chapter 1 of the section is assigned image address 2.01.000. The pages within the chapter are assigned image address(es) 2.01.001 through 2.01.120.

Any one of the pages may later be located and retrieved using its unique image address.

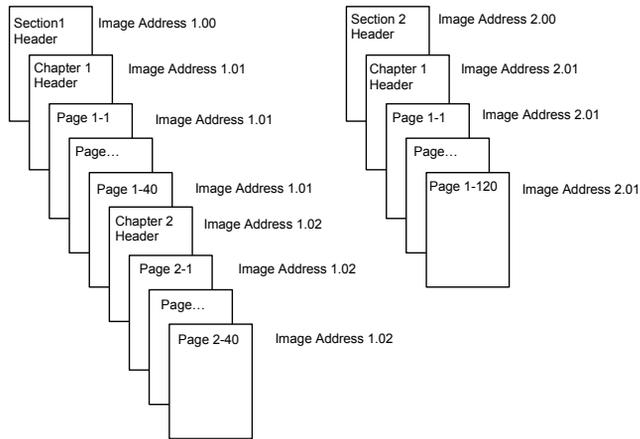
Three level offset indexing

When using three level offset indexing, the image address assigned to each document is defined as follows:

- Field D (Level 2) defined as having a field length greater than 0.
- Field C (Level 3) defined as having a field length greater than 0.
- Fields B and A may be defined as fixed fields if desired.

For example, if you scan a book with two sections (Section 1 contains 2 chapters, each having 40 pages; Section 2 contains only 1 chapter, having 120 pages) the image address has been defined:

- Field D has 2 characters
- Field C has 1 characters
- Field B has 0 character
- Field A has 0 characters



The header page for Section 1 is assigned image address 1.00. The header page for Chapter 1 of the section is assigned image address 1.01. The remaining pages of Chapter 1 are also assigned image address 1.01. The header page for Chapter 2 of the section is assigned image address 1.02. The remaining pages of Chapter 2 are also assigned image address 1.02.

The header page for Section 2 is assigned image address 2.00. The header page for Chapter 1 of the section is assigned image address 2.01. The remaining pages of Chapter 1 are also assigned image address 2.01.

Either one of the section header or chapter header pages may later be located and retrieved using its unique image address. Pages within a chapter may later be located and retrieved by first finding the chapter header and then manually scrolling through the remaining pages of the chapter.

Controlling document level changes

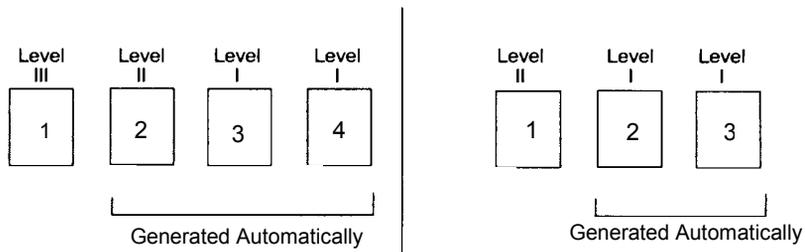
The previous Indexing Scheme examples have illustrated how document levels change within a single group of documents. There are four document image levels: 3, 2, 1, and 0.

There are a number of ways in which you can set or change the document level:

- You can change image address level via the Level icon  on the Operator Control Panel. Selecting the Level icon increments the image address level to Level 1, Level 2 or Level 3.
- You can send a new image address from the host PC.
- You may use the Patch Reader; feeding a document containing a particular type of patch can change document levels.
- Starting a new batch can cause the image address level to change depending on the application.

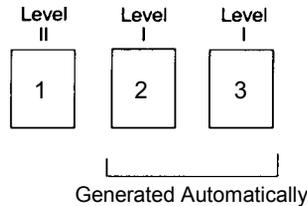
If you do not set or change the document level using one of the methods listed, the document level will be set automatically based upon the level rules (i.e., Level 2 is followed by Level 1, etc.) defined during scanner setup.

The following diagram illustrates how document levels are set or changed:

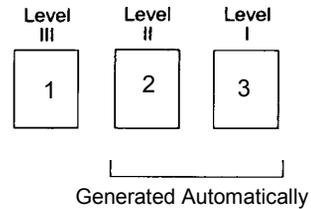


Level instruction:
Operator selects Level III using the Level icon on the OCP or uses a patch III document (Level II and I documents are generated automatically using the level to follow level rules).

Level Instruction:
Operator selects Level II using the Level icon on the OCP (Level I documents are generated automatically using the level to follow level rules).



Level Instruction:
Operator selects Level II using the Level icon on the OCP or uses a patch II document (Level 1 documents are generated automatically using the level to follow level rules).



Level Instruction:
Operator selects Level III using the Level icon on the OCP a (Level II and I documents are generated automatically using the level to follow level rules).

Document level information is transmitted in each image header.

Level rules

Unlike previous high-volume scanners from Kodak, the i800 Series Scanners moved the responsibility for defining and controlling level rules to the host. Level rules are an automated way to control document image addressing based on the level of the previous document. The application must define the Level to Follow Level scheme. For example:

For a 3 level indexing scheme the application must define the Level to Follow Level rules for level 3, level 2, and level 1.

Level	Level to Follow Level
3	2
2	1
1	1

Level to follow level rules are used to automatically drop to a lower level. Returning to a higher level is generally done through patch or application control of the next image address.

Controlling print strings

Full control and access to the scanner's print string functionality is available from the host application. In addition the print string information is returned to the host in the image header.

Print String formatting

- Maximum character length — 40.
- Character set — full alphanumeric, including special characters.

NOTE: To view Japanese characters correctly you must get the MS Gothic font set by installing the Microsoft Global IME 5.01 for Japanese – with Language Pack, English Language Version which can be found at http://www.microsoft.com/msdownload/iebuild/ime5_win32/en/ime5_win32htm.

- Distance from lead edge — a minimum of a ¼-inch.
- Can print to within ½-inch of the trial edge.

Electronic color dropout

The i800 Series Scanners provide the ability to create dropout images without changing lamps. The application has the ability to select red, green and blue dropout functionality. Only one color can be dropped out at a time. This dropout performance is equivalent to color dropout functionality when using the traditional color lamp technique.

Electronic color dropout is used with OCR and ICR applications. See your vendor's documentation for recommendations on image quality characteristics.

Electronic color dropout is applied to bi-tonal image chain only.

There are four imaging parameters, which effect electronic color dropout: Threshold Value/Filter Threshold, Background Value/Background, Contrast %, and Threshold.

The tables that follow provide Pantone colors that may be used with the red, green and blue dropout option.

Two categories of performance are provided for each color: Colors that can be completely dropped out and colors that are very close to complete dropout. These values were established by using standard Pantone Matching System® Colors guide (uncoated, 175-line screen). If the background of the document you are using is not bright white the results may vary. The default settings are:

Contrast% = 50

Threshold = 90

Color Filter = 175

Background = 245 — this value should be set to match background color of your document.

Resolution = 200 dpi

If the values above do not give you the desired results, you may need to vary these values accordingly.

Red dropout

Following is a list of Pantone colors which may be used with the red dropout option.

Red Dropout — Complete Dropout

100 U	114 U	1225 U	1365 U	169 U	210 U	2562 U	395 U
101 U	115 U	1235 U	141 U	176 U	217 U	372 U	3935 U
102 U	116 U	127 U	148 U	1765 U	223 U	379 U	3945 U
Yellow U	120 U	128 U	149 U	1767 U	230 U	380 U	3955 U
106 U	121 U	129 U	150 U	182 U	236 U	386 U	3965 U
107 U	122 U	134 U	1485 U	189 U	2365 U	387 U	
108 U	123 U	135 U	155 U	1895 U	243 U	388 U	
109 U	1205 U	1345 U	1555 U	196 U	250 U	393 U	
113 U	1215 U	1355 U	162 U	203 U	256 U	394 U	

Red Dropout — Near Complete Dropout

130 U	1505 U	165 U	177 U	184 U	199 U	225U	2395 U
136 U	Orange 021 U	166 U	178 U	185 U	204 U	Rubine Red U	Rhodamine Red U
137 U	156 U	1625 U	179 U	190 U	205 U	226 U	244 U
138 U	157 U	1635 U	1775 U	191 U	206 U	231 U	245 U
1375 U	158 U	1645 U	1785 U	192 U	211 U	232 U	246 U
142 U	1565 U	1655 U	1788 U	1905 U	212 U	237 U	251 U
143 U	1575 U	1665 U	1777 U	1915 U	213 U	238 U	252 U
144 U	1585 U	170 U	1787 U	1925 U	218 U	239 U	257 U
151 U	163 U	171 U	Red 032 U	197 U	219 U	2375 U	365 U
1495 U	164 U	172 U	183 U	198 U	224 U	2385 U	396U

Green Dropout — Complete Dropout

100 U	109 U	1215 U	318 U	352 U	375 U	388 U	3945 U
101 U	113 U	127 U	324 U	358 U	379 U	389 U	3955 U
102 U	114 U	134 U	3245 U	365 U	380 U	393 U	3965 U
Yellow U	115 U	135 U	331 U	366 U	381 U	394 U	
106 U	120 U	1345 U	332 U	372 U	382 U	395 U	
107 U	121 U	148 U	3375 U	373 U	386 U	396 U	
108 U	1205 U	317 U	351 U	374 U	387 U	3935 U	

Green Dropout — Near Complete Dropout

122 U	1355 U	2705 U	2975 U	304 U	3242 U	337 U	344 U
128 U	141 U						

Blue Dropout — Complete Dropout

100 U	230 U	256 U	2716 U	283 U	3105 U	3248 U	3945 U
101 U	236 U	2562 U	2707 U	290 U	317 U	331 U	
102 U	2365 U	263 U	2717 U	2905 U	318 U	386 U	
106 U	243 U	2635 U	2708 U	297 U	324 U	393 U	
217 U	250 U	2705 U	277 U	2975 U	3242 U	394 U	
223 U	251 U	2706 U	278 U	304 U	3245 U	3935 U	

Blue Dropout — Near Complete Dropout

Yellow U	2572 U	2645 U	284 U	2925 U	305 U	3115 U	372 U
2375 U	2563 U	270 U	291 U	298 U	306 U	319 U	387 U
244 U	2567 U	271 U	292 U	2985 U	310 U	3252 U	
257 U	264 U	279 U	2915 U	2995 U	311 U	332 U	

Image header information

An image header is associated with every image captured by the scanner. Following is a list of information available in the image header.

Image length — size of the image.

Image identifier — indicates whether the image is front bi-tonal, rear bi-tonal, front color or rear color.

Resolution — the scanner records the selected scanner image resolution in dots per inch.

X-axis upper left — pixel horizontal offset to upper left corner of the image. For more information, see the next section entitled “Zone processing”.

Y axis upper left — pixel vertical offset to upper left corner of the image. For more information, see the next section entitled “Zone processing”.

Width — the scanner records the number of pixels-per-line in the image. Width is also referred to as *line length*.

Length — the scanner records the lines-per-page in the image. Length is also referred to as *page length*.

Bits-per-pixel — bits-per-pixel can equal 1 for bi-tonal imaging, 8 for grayscale or 24 for color imaging. Bits-per-pixel is also referred to as *pixel depth*.

Compression type — the scanner records the compression type used. Values for bi-tonal images are: No Compression, Group III, Group III 2D or Group IV. The values for grayscale or color images are No Compression or JPEG.

NOTE: No Compression (uncompressed) grayscale or color images will be available on scanners purchased prior to January 2005.

Polarity — the scanner records image polarity. White pixels can be indicated as 0 or 1.

Deskew — the image header reflects whether or not the scanner was asked to perform deskew. If deskew is enabled, the image header also indicates whether or not the document was deskewed. The maximum angle the scanner will deskew is 44.9 degrees.

Skew angle — image header records the skew angle which was determined for the scanned image. A severe skew angle may result in no deskew being performed.

If the scanner is unable to determine a skew angle, the image will not be deskewed. The skew angle field of the image header will be set to 0.

Image address level (Document level) — the document level is assigned by the operator by using:

- the level key,
- a patch if the Patch Reader is enabled,
- the host application to set the next image address, or
- the Level to Follow Level rules.

The value returned in the image header reflects the level of the document. This value will be level 1, level 2, level 3 or level 0.

NOTE: Level 0 is assigned to documents containing patch types T, 1, 4 and 6.

Document levels may be used by the host application to sort or discard images. For example, if all level 0 documents are patch sheets, these images can be deleted.

Image address — the scanner assigns an image address to the scanned document. The image address is based upon the index format defined through the host application. See Chapters 3 or 4 (depending on your driver) for more information about image addressing and formats.

Print string — the actual character string printed on the document is returned in the image header. This string may be up to 40 characters in length. Print strings are defined in the host application. This information can be used to verify that the image address assigned to this document matches the text which appears printed on the page.

Sequential counter — the scanner assigns a unique Sequential ID Number to each document which is returned in the image header. The host application controls the setting of the starting value for this counter.

Patch Type — the scanner indicates if a patch type was recognized on the document in the image header. If no patch type is recognized, or if patch reading is not enabled, this value will be zero. Transfer patch types return a value of 99. Values 1 – 6 are returned respectively for patch types 1 – 6. See the section on “Controlling image order” earlier in this chapter for examples of how to use this value from the image header.

NOTE: If the Toggle patch image is returned to the host, the image header will indicate a Type 4 patch.

Zone processing

Zone processing is only available on the i820 and i840 Series Scanners.

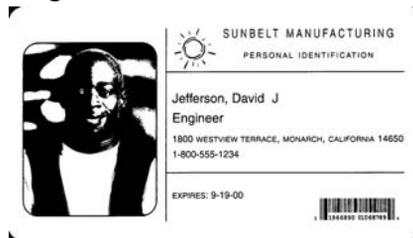
Some applications have a requirement to store part of an image in color or grayscale and the rest of the image in bi-tonal format (this saves storage space by not storing the entire image in color or grayscale). Zone processing is a fixed crop window (the zone) located relative to the upper left corner of a document. It allows the operator to select via the host application an area on the document to be delivered in color, grayscale or bi-tonal format (a separate window for both bi-tonal and color/grayscale may be defined). Different zones may be selected for both the front and rear of the image.

This feature may be used in conjunction with auto cropping.

Following is an example of producing a color zone.



Original



Bi-tonal image



Relative Cropping

1. Prepare documents.
2. Start the scanner to do dual stream simplex scanning (front bi-tonal and front color).

3. Setup the scanner to retrieve bi-tonal images first.
4. Setup front bi-tonal to be auto cropping.
5. Setup front color to be relative cropping.
6. Enable the scanner and start polling.

Loop

 Read front bi-tonal image header

 Read bi-tonal image (will return full image)

 Read front color image header

 Read color image (will return only the color zone)

End loop

Programmable keys

There are three programmable keys on the Operator Control Panel of the scanner. These keys can be assigned functions by the host application.

Programmable keys are available for use by the operator when the scanner is enabled. The Operator Control Panel displays the numbers 1 through 3. These numbers correspond to the buttons on the Control Panel.

Each of the programmable keys can be assigned the following functions:

- No Scanner Functionality (default)
- Scanner End-of-Job
- Terminate Batch
- Skip Multi-feed Detection
- Skip Printing
- Skip Patch Recognition

Patch Reading

Patch reading allows you to change image address (IA) information for a document on the fly, without any host PC or Operator Control Panel intervention. All documents with patch codes are imaged and cannot be automatically deleted by the scanner.

Types of Patch Codes

A patch code can change the IA level of the document that the patch code occurs on (or the following document in the case of a Transfer patch). These changes then override the IA calculated using the Level to Follow Level rules.

Type 3 Patch Code

The image header reflects when a Type 3 patch code is detected on a document. A Type 3 patch code is considered to be a Level 3 document. The IA for that document is recalculated by incrementing the Level 3 field and setting the Level 2 and Level 1 fields to 0 (if the Level 2 and 1 fields are defined as having a field width greater than 0). In the image header, document level and patch type will be returned as a 3.

Type 2 Patch Code

The image header reflects when a Type 2 patch code is detected on a document. A Type 2 patch code is considered to be a Level 2 document. The IA for that document is recalculated by incrementing the Level 2 field and setting the Level 1 field to 0 (if the Level 1 field is defined as having a field width greater than 0). In the image header for this document, document level and patch type will be returned as a 2.

Transfer Patch Code

The image header reflects when a Transfer patch code is detected on a document. A Transfer patch is considered to be a Level 0 document. The IA level for the next document following the Transfer patch is assigned to the level (Level 2 or Level 3) that has been previously set. The scanner cannot print on documents containing Transfer patches. In the image header for the document containing the Transfer patch, the document level is returned as 0 and the patch type returned as T to reflect the Transfer patch definition. For the document following the Transfer patch document the image header will contain a document level of 2 or 3 depending on the Transfer patch type definition and will reflect no patch detected.

Toggle Patch

The Toggle patch is a Type 4 patch that is used to trigger the scanner to switch from the current image stream (bi-tonal) to the alternative image stream (color). This logic is performed inside the scanner. Images of the toggle patch sheet will not be returned to the host unless you also enable patch reading and select the Type 4 patch. Common uses for this patch would be a document set, which is primarily bi-tonal but has some color content. Placing a Toggle Patch sheet before and after the color document(s) would allow changing from bi-tonal to color and back on-the-fly during scanning with no additional operator action.

NOTE: Toggle patch may also be used to trigger the scanner to switch from bi-tonal to grayscale and vice versa.

Additional Patch Codes

Additional patch codes enable the host to implement any type of workflow-dependent processing to be based on the insertion of these additional patches into the document stack. Additional patches are patch types 1, 4 and 6.

When an additional patch is detected, this document is considered a Level 0 document and will not cause the IA to change. The image header indicates that this is an additional patch document by returning a patch type, which matches the patch detected. The scanner will not print on documents containing these additional patches. See the section entitled "Controlling image order" earlier in this chapter for examples on how to use additional patches.

Batching

Batching provides a way for the scanner to perform a specific function after scanning a designated number of documents at a particular IA level.

Batching can be enabled or disabled through the host software. The host software has control of which level to count and the number of documents to designate a batch.

The Start of Batch function is controlled by the host and determines what happens when a new batch is started. This can be setup to go to Level 1, 2 or 3, which then causes the IA to be recalculated. No functionality can also be assigned.

The End of Batch function is controlled by the host and determines what happens when the batch count has been reached. The options are to stop the feeder, end of job, or continue and begin a new batch. No functionality can also be assigned.

The host application determines if batching is enabled by defining the number of documents per batch and the image address level to count.

3 Using the TWAIN Data Source

Installation

The TWAIN Data Source is included with the scanner. You can install the data source from the CD.

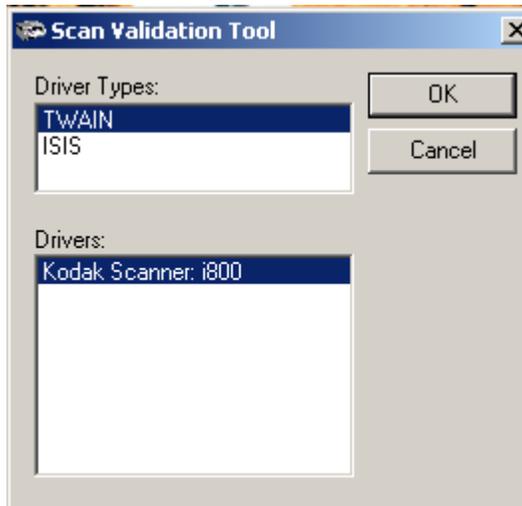
1. Insert the CD into the drive.
2. Double-click the setup.exe file.
3. Follow the instructions on each screen as prompted.

After installation is complete, install your application software on the host PC.

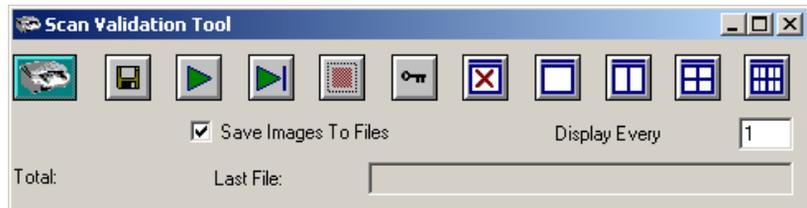
After your application software is loaded and launched use the TWAIN Data Source software to setup your scanner.

A sample TWAIN Data Source application, called the Scanner Validation Tool, is also installed during this installation. This application can be used to validate scanner functionality. The screen shots below (from the Scanner Validation Tool) document the TWAIN Data Source graphical user interface (GUI) which can be one option when creating your own application. If you choose to use programmatic controls, refer to the readme.txt file located in your default Windows directory `\twain_32\kodak\kds_i800` which documents this TWAIN functionality. The file `ramscan.txt` in the same directory includes the information you need to use the TWAIN Data Source for RAM scanning which simulates an i800 Series Scanner in order for you to begin development work without a physical scanner.

1. Select **Start>Run** or select **Programs>Kodak>Document Imaging>Scan Validation Tool**. The Scan Validation Tool dialog box will be displayed.



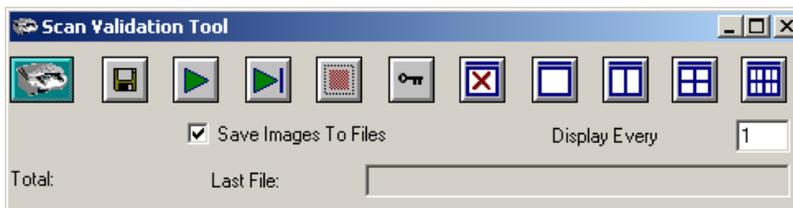
2. Select TWAIN and Kodak Scanner: i800. *If you are using the ISIS driver see Chapter 4.*
3. Click **OK**.



4. Double-click the Scanner icon to access the Kodak Scanner Properties dialog box.

Scan Validation Tool dialog box

The Kodak Scan Validation Tool dialog box allows you to verify scanner functionality through the TWAIN Data Source.



Button	Description
	Displays the Users Interface for the selected either the ISIS Driver or TWAIN Data Source.
	Allows you to select the directory to store scanned images and their file names. This option only applies when Save Images To Files is selected.
	Enables the scanner to initiate scanning.
	Enables the scanner to feed one page.
	This button is only available when the scanner is enabled. When selected, will disable the scanner.
	Displays the License Key window. This option should only be used when directed by a Kodak representative.
	Closes the image viewer.

Button	Description
	Opens the image viewer to display one image at a time.
	Opens the image viewer to display two images at a time.
	Opens the image viewer to display four images at a time.
	Opens the image viewer to display eight images at a time.

Display Every — enter the sampling rate of the images you wish to display while scanning. For example, to see every image, enter a value of 1. To see every 10th image, enter a value of 10.

Last File — displays the full path and file name for the last stored image.

Total — displays the total number of images scanned during the current Scan Validation Tool session.

Kodak Scanner Properties dialog box

The Kodak Scanner Properties dialog box consists of 12 tabs. Each tab will be described within this chapter.



Click on each tab to set all the desired values. You do not have to click **OK** until you have made all selections on all of the tabs.

NOTE: For the purpose of this manual, all displayed dialog boxes assume the features available on the *Kodak i840 Scanner*.

Buttons on the Kodak Scanner Properties dialog box

Following are descriptions of the buttons located at the bottom of the dialog box.



Defaults — when you select **Defaults**, the message **Reset all values to factory defaults?** will be displayed. Clicking **Yes** will reset all values on all tabs to the factory defaults.

Copy — will copy the settings of the **front** camera to the rear camera for the color/grayscale or bi-tonal camera selected. For example: if you have **Front Bi-tonal** camera selected, these values will be copied to the Rear Bi-tonal camera as well. If you have **Front Color** camera selected, these values will be copied to the Rear Color camera as well. If you have **Rear Color** camera selected, the values of the Front Color camera will be copied to the Rear Color camera. If you have the **Rear Bi-tonal** camera selected, the values of the Front Bi-tonal camera will be copied to the Rear Bi-tonal camera.

OK — saves the values set on all tabs. TWAIN standards require that the value of compression always defaults back to uncompressed, therefore, when using this tool, you must always reset compression values before scanning for bi-tonal and color/grayscale images.

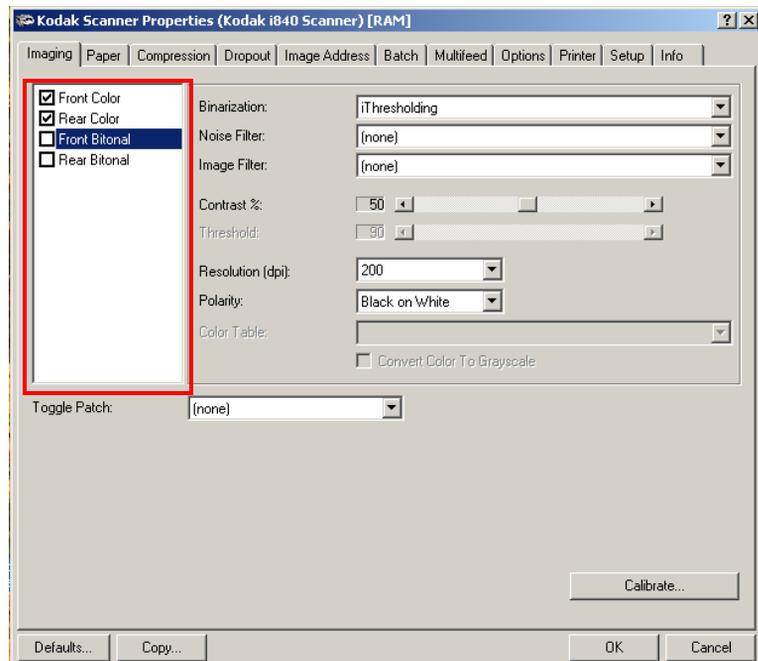
Cancel — closes the dialog box without saving any changes.

The Imaging tab

The Imaging tab allows you to define image processing values that can be applied to your scanner.

Image Selection box — lists the available sides (front and rear) of an image where you can define individual image processing values. If you have an i810 or i830 scanner, only **Front Bi-tonal** and **Rear Bi-tonal** will be displayed. If you have an i820 or i840 scanner, **Front Color**, **Rear Color**, **Front Bi-tonal** and **Rear Bi-tonal** will be displayed. For more information about these selections see the section entitled, “Image outputs” in Chapter 1.

NOTE: Whatever is highlighted in the Image Selection box determines the values available on the Imaging, Paper and Compression tabs. In the screen below, all the displayed values will be applied to the Front Bi-tonal image.



Scanning bi-tonal images

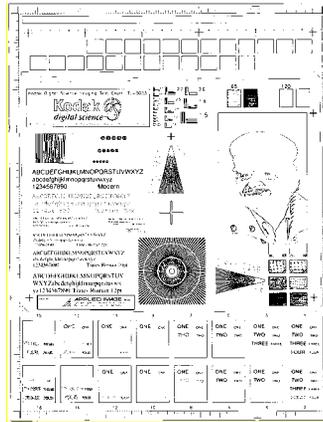
The descriptions below are for scanning bi-tonal images only.

Binarization — these settings effect the bi-tonal image. Available settings are:

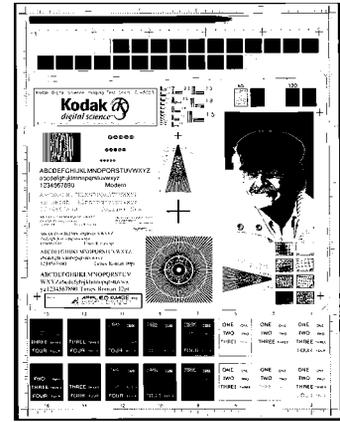
- **iThresholding:** selecting iThresholding allows the scanner to dynamically evaluate each document to determine the optimal threshold value to produce the highest quality image. This allows scanning of mixed document sets with varying quality (i.e., faint text, shaded backgrounds, color backgrounds) to be scanned using a single setting thus reducing the need for document sorting.
- **Adaptive Thresholding (ATP):** the Adaptive Threshold Processor separates the foreground information in an image (i.e., text, graphics, lines, etc.) from the background information (i.e., white or non-white paper background).

Adaptive Thresholding works on gray scale scanned images and outputs a bi-tonal electronic image. Its strength lies in the ability to separate the foreground information from the background information even when the background color or shading varies, and the foreground information varies in color quality and darkness. Different types of documents may be scanned using the same image processing parameters and results in excellent scanned images. If mixing documents of different colors, paper qualities and textures and print quality, the Adaptive Thresholding features optimize each image automatically.

When Adaptive Thresholding is selected, Contrast values may range from 1 to 100. A Contrast value of 100 is considered fully adaptive thresholding.



Fixed thresholding ATP disabled



ATP enabled

Fixed Processing — used for black-and-white and other high contrast documents. A single level is set to determine the black-and-white transition. The threshold is programmable over the entire density range. Fixed thresholding sets contrast to 0. If Fixed Processing is selected, Contrast is not available.

Error Diffusion — screens photographic areas of a document to simulate gray levels yet sharpens the edges of text. It is recommended that error diffusion be used when a mix of text, graphs, pictures and colors in the documents are being scanned.

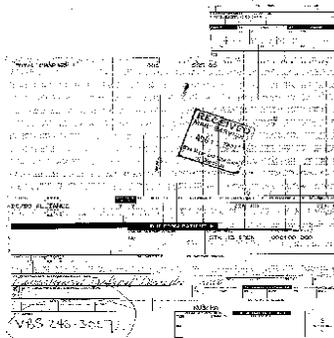
NOTE: When using error diffusion and compression together, negative compression (less than one-to-one) is more likely to occur.

64-Level Bayer Dither, 64-Level 45 Degree Clustered Dot Screen and 64-Level Dispersed Dot Screen — these represent alternative screening options to emulate gray.

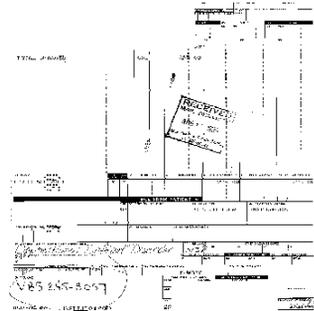
Noise Filter — occasionally small dots or specks appear in the background of a scanned image. These specks increase file compression size and usually contain no image information. Using the Noise Filter on documents containing very fine detail (e.g., the dot on an "i" in 4-point type) may cause information to be lost. It is recommended that you do not use Noise Filter when scanning documents with text smaller than 7-point type.

Noise Filter can be used with bi-tonal images only and is front/rear and dual stream independent. Choose **None**, **Lone Pixel** or **Majority Rule**.

- **Lone Pixel** reduces random noise on bi-tonal images by converting a single black pixel surrounded by white to white or by converting a single white pixel surrounded by black to black.
- **Majority Rule** sets the central pixel value in a matrix according to the majority of white or black pixels in a matrix.



No Noise Filter Used



Remove Lone Pixel

Image Filter — used to enhance images containing dot matrix text and/or images printed with shaded or colored backgrounds using halftone screens. This filter effectively eliminates noise caused by the halftone screen. Choose **None** or **Halftone Removal**.

- **Halftone Removal** used to enhance images containing dot matrix text and/or images with shaded or colored backgrounds using halftone screens. This filter effectively eliminates noise caused by the halftone screen.

Contrast % — sets the image contrast by adjusting the difference between black and white, thereby making an image sharper or softer.

In a low-contrast setting, the difference between black and white is small, so the image is softer. In a high-contrast setting, the difference between black and white is large, so the image is clearer. Select a contrast value from 1 to 100. The default is 25.

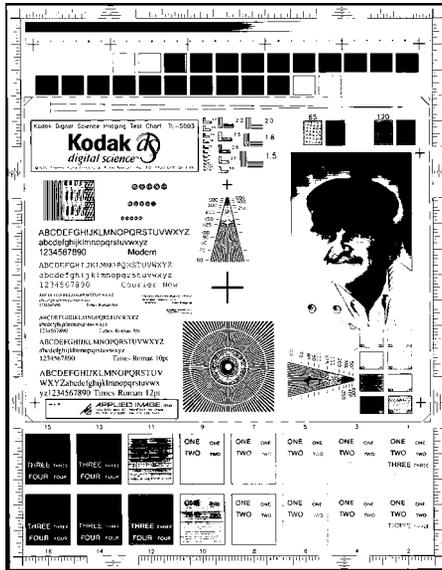
Contrast 0	ABCDEF GHIJ KLMNOP QRSTUV WXYZ abcdefghijklmnopqrstu vwxyz 1234567890 Modern
Contrast 60	ABCDEF GHIJ KLMNOP QRSTUV WXYZ abcdefghijklmnopqrstu vwxyz 1234567890 Modern
Contrast 100	ABCDEF GHIJ KLMNOP QRSTUV WXYZ abcdefghijklmnopqrstu vwxyz 1234567890 Modern

Adjust the contrast setting by dragging the Contrast sliding bar to the left or right to achieve the desired Contrast setting. Or you can enter a value (1 to 100) in the *Contrast* text box. Scan the document to check the contrast.

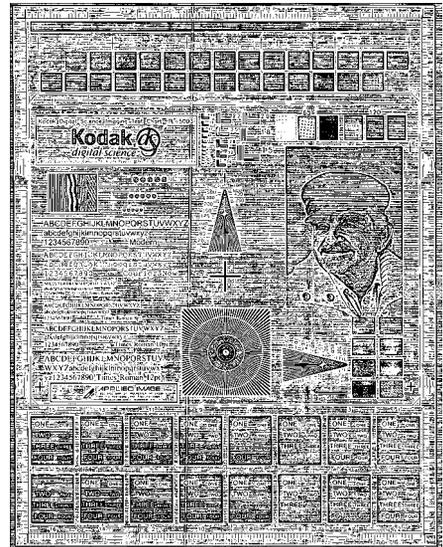
Threshold — thresholding is used to convert a grayscale image into a bi-tonal (1 bit/pixel) image. The thresholding value ranges from 0 to 255. A low threshold value produces a lighter image, and can be used to subdue backgrounds and subtle, unneeded information. A high threshold value produces a darker image, and can be used to help pick up faint images.

Adjust the Threshold setting by dragging the Threshold sliding bar to the left or right to achieve the desired Threshold setting. Or you can enter a value (0 to 255) in the *Threshold* text box. Scan the document to check the threshold.

NOTE: This setting works with the Contrast setting. A Contrast setting of 0 causes the scanner to use fixed thresholding. A Contrast setting of 100 causes the scanner to use fully-adaptive thresholding.



200 dpi; 80 Threshold; 20 Contrast



200 dpi; 80 Threshold; 100 Contrast

Resolution or dots per inch (dpi) — indicates the scanning resolution, which largely determines the quality of the scanned image. The greater the resolution, the better the reproduction. However, scanning at a higher resolution also increases scanning time and file size. The industry standard is 200 dpi (about 8 pixels/mm).

Choose a resolution value from the drop down list. The default value is 200 dpi. Available resolutions are 200, 240, 300 or 400.

Polarity — the host computer provides information to the scanner defining whether the image should be stored in standard or reverse polarity. The default polarity is Black on a White background. Reverse polarity is White on a Black background.



```
*****
24 HOURS A DAY, 7
24 HOURS CONVENIENCE
*****
DI TUNES ACCY 111 2
PARTS: 1000 1
LES TAX 1000 1
TOTAL CHARGE 111.1
*****
VOICE
ORDER ITEMS
VOICE FOR RETURN TO
```

Black on White polarity



```
*****
24 HOURS A DAY, 7
24 HOURS CONVENIENCE
*****
DI TUNES ACCY 111 2
PARTS: 1000 1
LES TAX 1000 1
TOTAL CHARGE 111.1
*****
VOICE
ORDER ITEMS
VOICE FOR RETURN TO
```

White on Black polarity

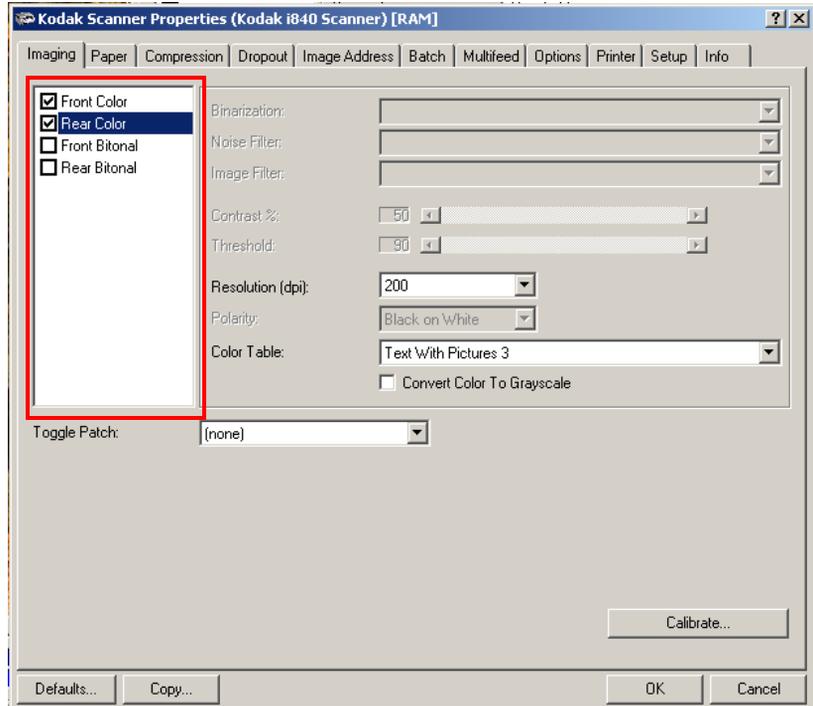
Color Table — *Not applicable for bi-tonal images.* See the next section “Scanning Color Images”.

Toggle Patch — the Toggle patch is a type 4 patch that is used to trigger the scanner to change from the current image stream (bi-tonal) to the alternative image stream (color/grayscale). Available for the i820 and i840 scanners, this provides color-on-the-fly functionality for customers who choose to scan the majority of their documents bi-tonal with the option to switch to color and back when desired. This is the same functionality, which is available on the *Kodak Digital Science 3590C* Scanner. Select **Off**, **Front Side** or **Both Sides**.

Calibrate — the calibration process includes the imaging chain (color and bi-tonal), the multi-feed detector, and the mechanical transport. This is done using the designated calibration target, which is fed twice; once for front, once for rear. Calibration is not required at power-on as calibration values are stored by the scanner. The scanner prompts the operator via the Operator Control Panel when calibration is required.

Scanning color images

The descriptions below are for scanning color images only.



Resolution or dots per inch (dpi) — indicates the scanning resolution, which largely determines the quality of the scanned image. The greater the resolution, the better the reproduction. However, scanning at a higher resolution also increases scanning time and file size.

Choose a resolution value from the drop down list. The default is 200 dpi. Available resolutions are:

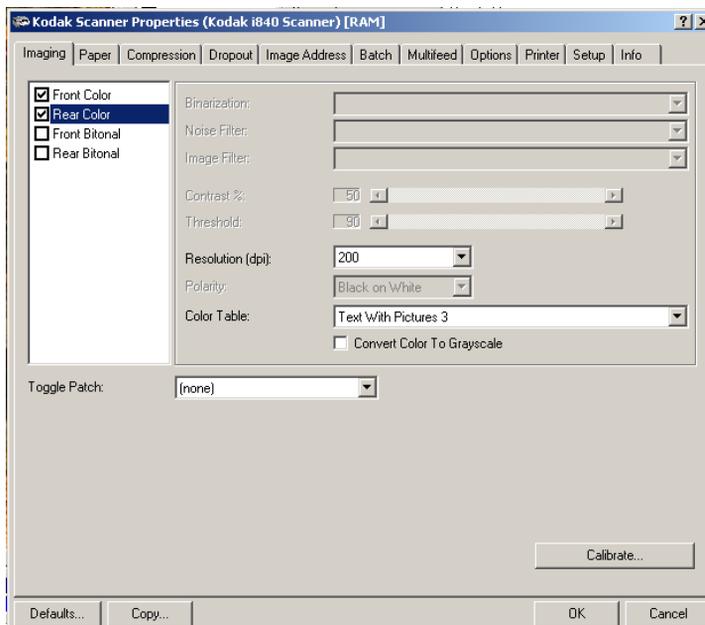
Color

- Scanner i820 — 100, 150, 200
- Scanner i840 — 100, 150, 200, 300

Color Tables — the selection of a color table effects how the scanner reproduces the color of a scanned document. You can chose from six different Kodak default color tables: **Pictures**, **Pictures 2**, **Text**, **Text with Pictures**, **Text with Pictures 2**, and **Text with Pictures 3**. The user can also download and accept custom color tables. For information about custom color tables, refer to the *Brightness and Contrast Control Reference Guide*, A-61506.

Scanning grayscale images

The descriptions below are for scanning grayscale images only.



Resolution or dots per inch (dpi) — indicates the scanning resolution, which largely determines the quality of the scanned image. The greater the resolution, the better the reproduction. However, scanning at a higher resolution also increases scanning time and file size.

Choose a resolution value from the drop down list. The default is 200 dpi. Available resolutions are:

Color

- Scanner i820 — 100, 150, 200
- Scanner i840 — 100, 150, 200, 300

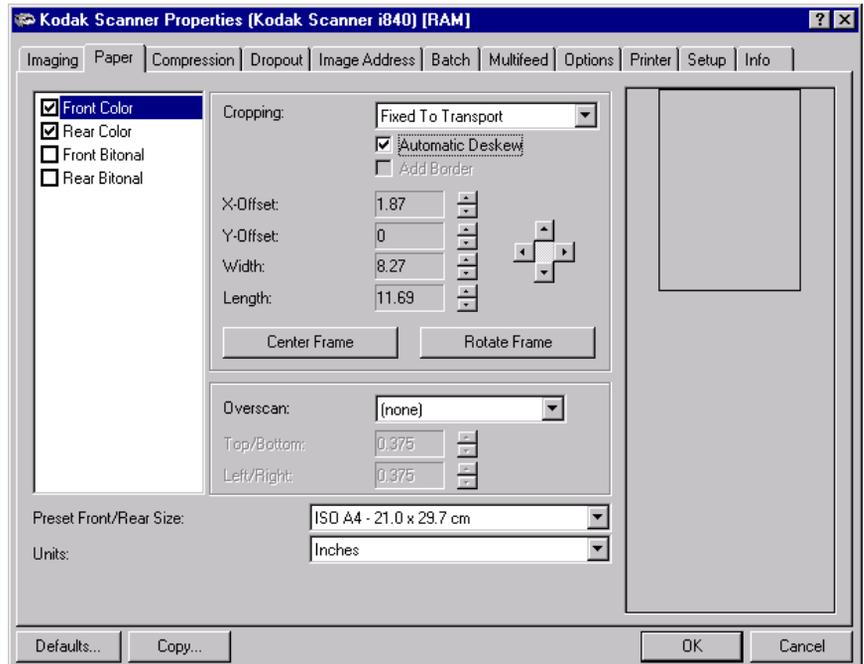
Color Tables — the selection of a color table effects how the scanner reproduces the color of a scanned document. You can choose from six different Kodak default color tables: **Pictures**, **Pictures 2**, **Text**, **Text with Pictures**, **Text with Pictures 2**, and **Text with Pictures 3**. The user can also download and accept custom color tables. For information about custom color tables, refer to the *Brightness and Contrast Control Reference Guide*, A-61506.

The Paper tab

The Paper tab allows you to define values relating to image output (i.e., cropping values, rotation, paper size and units of measure).

Display window — lists the available sides of an image that you can define individual image processing values. If you have an i810 or i830 scanner, only **Front Bi-tonal** and **Rear Bi-tonal** will be displayed. If you have an i820 or i840 scanner, **Front Color**, **Rear Color**, **Front Bi-tonal** and **Rear Bi-tonal** will be displayed.

The Display window on the right will display the image you are altering. The image will change as values are being altered.



Cropping values

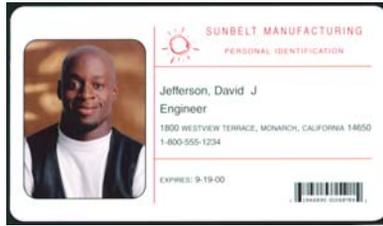
Cropping allows you to capture a portion of the document being scanned. You can define the cropping area by the x and y offset values, width and length. All cropping options can be used with color and bi-tonal images and are front/rear and dual stream independent. Only one cropping option can be assigned per image.

Cropping — select one of the following options:

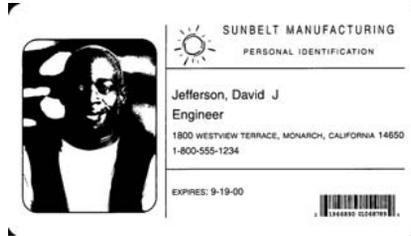
- **Automatic:** dynamically adjusts the cropping window for different document sizes based upon the edges of the image. Use this option for batches of mixed-size documents.
- **Aggressive:** selecting this option will eliminate any residual black border on any image edges. In order to achieve this, there is a possibility that a small amount of image data may be lost.
- **Fixed to Transport:** (used for batches of same-sized documents) allows you to define the area or zone to be imaged. If you select this option, enter the x and y offset values, width and length. You can enter the desired values in the fields or use the arrow keys to define the desired area. The Display window will show image placement as you change the values.
- **Relative to Document (zone processing):** (used for batches of same-size documents) — some applications have a requirement to store part of an image in color/grayscale and the rest of the image in bi-tonal format (this saves storage space by not storing the entire image in color/grayscale). Zone processing is a floating fixed crop window (the zone) located relative to the upper left corner of a document. It allows you to select an area on the document to be delivered in either color/grayscale or bi-tonal format (a separate window for both bi-tonal and color/grayscale may be defined). Different parameters may be selected for both the front and rear of the image.

This option may be used in conjunction with auto cropping where a separate color/grayscale or bi-tonal area to be saved is desired. It is very useful in applications where a photograph, signature, embossment or seal appears in a consistent area for an application (you may want that small area in color/grayscale and the rest in bi-tonal).

Enter the x and y offset which defines the upper left corner of the zone relative to the upper left corner of the desired document. Enter the length and width of the zone to be captured.



Original



Bi-tonal image



Relative Cropping

You can enter the desired values in the fields or use the arrow keys to define the desired area. The Display window will show image placement as you change the values. If a relative cropping zone falls outside the auto-cropped image, a message will be displayed.

Automatic Deskew — select this option to automatically deskew a document within ± 0.3 degrees of the document's leading edge. Automatic deskew can detect up to a 45-degree skew and correct up to a 24-degree angle at 200 dpi or a 10-degree skew angle at 300 dpi.

NOTE: To prevent data loss, the document must have all four corners within the image path.

Add Border — allows you to add a border to the final image. The width of this border is 16 pixels. This option is only available with auto cropping and only applies to bi-tonal images.

X-Offset — for *fixed cropping* this is the distance from the left end of the scanner to the left-edge of the scanning area. For *relative cropping* this is the distance from the left edge of the document to the left edge of the zone. This option is not available if you use auto cropping.

Y-Offset — for fixed and relative cropping this is the position from the top end of the document to the top end of the scanning area. This option is not available if you use auto cropping.

Width — the width of the scanning area.

Length — the length of the scanning area. If Overscan is not selected, the scanner will not continue capturing beyond the trail edge of the document. For example, if you setup the scanner for 8 ½" x 11" portrait-fed documents, and you scan an 8 ½ x 4" document, the scanner will return an 8 ½ x 4" scanned area.

Center Frame — when using fixed cropping, automatically calculates the X-offset for center-fed feeding based upon document size selected. This option is not available if you use auto cropping.

Rotate Frame — when using fixed cropping, automatically calculates the offset values based upon feed orientation of the document size selected (landscape vs. portrait). This option is not available if you use auto cropping.

Overscan values

Overscan allows you to add a specified value (inches/mm) before and after the edge of the image. Overscan values can be applied to the Top and Bottom of an image and/or the left and right of an image. Overscan is used in applications where automatic feeding of highly skewed documents is likely. Overscan reduces the possibility of corner clipping on skewed images.

To set Overscan values, select where you want to apply Overscan values: **Top/Bottom, Left/Right; All Sides** then select the amount (inches or mm) you want applied. Select a value within the range of 0 to .375 inches **None** is the default. Combined Overscan and Length values cannot exceed 30 inches for all resolutions except 400 dpi bi-tonal which cannot exceed 26 inches.

Additional paper selections

In addition to cropping and overscan values that can be applied using the Paper tab, the following options are available:

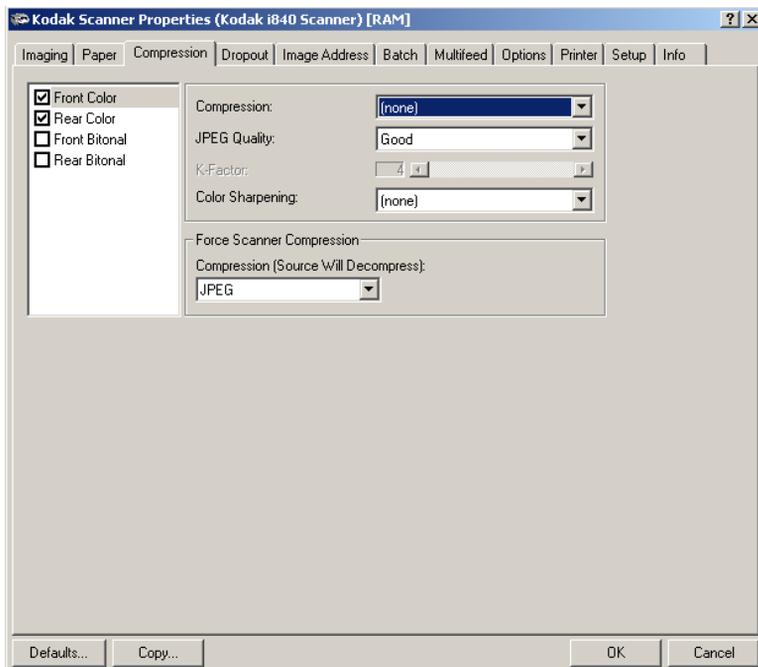
Preset Front/Rear Size — the default paper size is set when a scanner is first selected. You can choose a different paper size using the drop-down list box.

Units — defines the primary measurement system. **Inches, Centimeters, Picas, Points, 20th of Points,** and **Pixels** are available.

The Compression tab

The Compression tab allows you to compress image files.

Display window — lists the available sides of an image that you can define individual image processing values. If you have an i810 or i830 scanner, only **Front Bi-tonal** and **Rear Bi-tonal** will be displayed. If you have an i820 or i840 scanner, **Front Color**, **Rear Color**, **Front Bi-tonal** and **Rear Bi-tonal** will be displayed. For more information about these selections, see the section entitled “Image outputs” in Chapter 1.



Compression — the i800 Scanners can be configured via the host to output bi-tonal and color/grayscale images in various supported formats and resolutions independent of each other and each side of the image. These options vary based on the type of scanner.

For bi-tonal scanning the following CCITT compressions are available:

- Group 3-1D
- Group 3-2D
- Group 4
- None

For color/grayscale scanning the following compressions are available:

- JPEG
- None

JPEG Quality — JPEG compression offers a JPEG quality of **Draft**, **Good**, **Better**, **Best**, **Superior**.

Draft gives you the smallest file size with draft image quality; **Good** gives you a larger file size with good image quality, **Better** gives a larger file size with better image quality and **Best** gives you a larger file size with the best image quality. **Superior** gives you largest files size with superior image quality.

K factor — used in conjunction with bi-tonal compression. The K factor is only accessible when you are using CCITT Group 3 two-dimensional compression. Valid values are 0 to 255.

Color Sharpening — select the desired setting either **None** or **3x3 FIR filter**. This filter increases the edge contrast of the image without affecting the color component. Use this option when a high contrast result is desired. For example, if you scan text documents in color.

Force Scanner Compression — this option is only available for color/grayscale scanning when **Compression** is **None**

- **Compression (Source Will Decompress)** — options are **JPEG** and **None**.

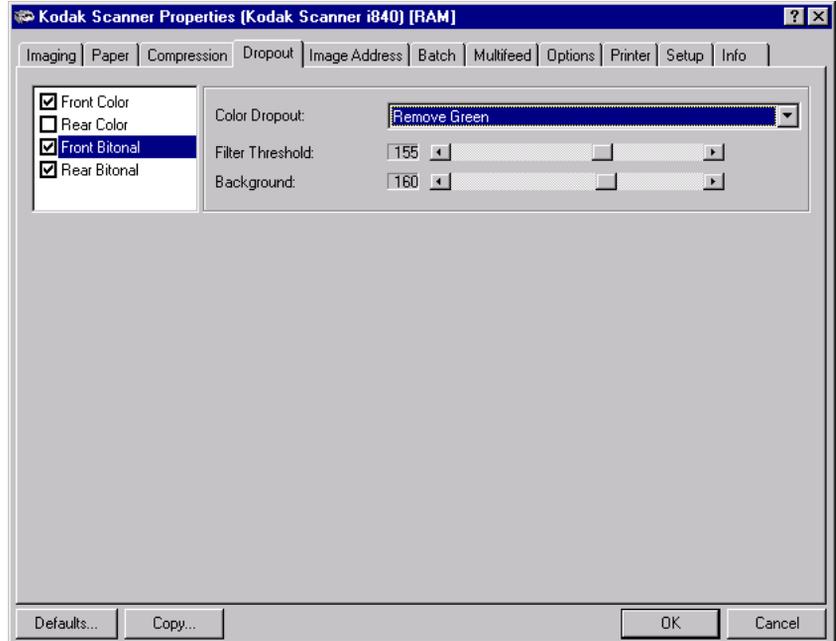
If you select **JPEG**, the images from the scanner are compressed. The TWAIN driver will decompress and return uncompressed images to the host.

If you select **None**, the images from the scanner are uncompressed. The TWAIN driver will pass these images direct these images directly to the host.

The Dropout tab

Electronic Color Dropout is used to eliminate a form's background so that a document management system may automatically (through OCR and ICR technology) read pertinent data without interference from the lines and boxes of the form. The i800 Series Scanners can dropout either red, green or blue. The Dropout tab allows you to select the desired dropout color, alter the filter threshold and background.

Display window — electronic color drop-out is available only for bi-tonal images.



Color Dropout — choose the color you want to eliminate: **Remove Green, Remove Blue, Remove Red.**

Filter Threshold — the value that is used to identify the color which will be dropped out. This value is applied to the color space.

Background — this value will be substituted in the grayscale (pre-thresholded) image for the color being removed. Therefore, this value should be higher than the threshold value selected on the Imaging tab for this pixel to become the background color. For example, if you are scanning a white document with a green form and you have selected a bi-tonal threshold value of 127, you should pick an electronic color drop-out background value greater than 127 so the substituted pixel will be white in the dropped-out image.

The Image Address tab

Image addressing provides better document management opportunities. Image addressing is used for document tracking, batch control and image management. The Image Address tab allows you set an image address starting point and increment the image address according to how the application is setup. The image address can also be printed on the pages scanned along with delivering the image address in the image header.

The screenshot shows the 'Kodak Scanner Properties (Kodak i840 Scanner)' dialog box with the 'Image Address' tab selected. The dialog has a menu bar with 'Imaging', 'Paper', 'Compression', 'Dropout', 'Image Address', 'Batch', 'Multifeed', 'Options', 'Printer', 'Setup', and 'Info'. The 'Image Address' section contains the following fields:

- Image Address: A.1.0.0
- Current Value: A.1.0.0
- Image Address: A.1.0.0
- Document Count: 0

The 'Image Address Template' section includes a table with four columns labeled A, B, C, and D:

Field:	A	B	C	D
	FFFFFFFF	333333	222222	111111

Below the table is a 'Level To Follow Rules' section with three dropdown menus:

- Level 3 -> Level 1
- Level 2 -> Level 1
- Level 1 -> Level 1

Other settings include:

- Presets: Level 3
- Image Address Format: Suppress Leading Zeros
- Check Digit

On the right side, there is a 'Field Guide' section with a table:

F - Fixed	1 - Level 1
2 - Level 2	3 - Level 3

Below the table is a note: 'The presets dropdown shows some common examples.' There is also a 'Notes:' text area.

At the bottom of the dialog are buttons for 'Defaults...', 'Copy...', 'OK', and 'Cancel'.

Image Address area

The Image Address area allows you to enter a starting image address.

Current value — displays the next image address which will be used if no value is entered in the image address field.

Image Address — an image address is a unique identifier assigned to each individual document and may contain up to 30 characters consisting of a maximum of 27 digits and 3 delimiters. The structure of this field must match the format defined in the Image Address Template fields. This value is used by the scanner as the next image address which is assigned to the next document which enters the transport. This is also referred to as the Starting Image Address.

Document Count — this value is used to assign the document count for the next document entering the transport and is incremented sequentially by the scanner unless another document count is received from the host. This value is returned in the image header. The format of this counter is defined on the Printer tab in the Counter field.

Image Address Template area

The Image Address Template area allows you to define an image address area or choose an existing template.

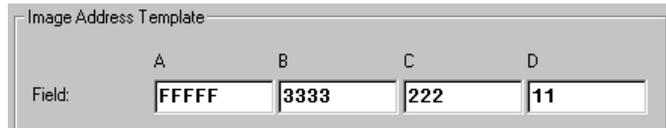
Image Address Template area — up to four fields can be defined. Each field may be a maximum of 9 characters. The total image address cannot exceed 27 characters (30 with 3 delimiters). The i800 Series Scanners have more options available for image addressing schemes with the following guidelines:

You may define from 0 to 4 fixed fields.

Only one field may be assigned to a level. You are only allowed one level 1 field, one level 2 field, and one level 3 field.

There is no requirement to have any level field.

For each field, use the Field Guide to assign the purpose of the field and its width. In the example below, Field A is defined as a 5-character fixed field. Field B is defined as a 4-character level 3 field. Field C is defined as a 3-character level 2 field, and Field D is defined as a 2-character level 1 field.



	A	B	C	D
Field:	FFFFF	3333	222	11

Level to Follow Level Rules

These are the rules the scanner will follow to set the next image address level if there are no other inputs. For example, patch sheet or end of batch processing. You will have to define a level to follow level for each of the level fields you defined in your image address template area.

Presets — this drop-down menu may be used to suggest image address formats. Each selection will automatically fill in the fields line. These reflect traditional microfilming schemes and the widths follow the i800 image addressing rules. You may change the field widths any way you choose as long as you do not exceed the 9-character field width maximum and 27 total.

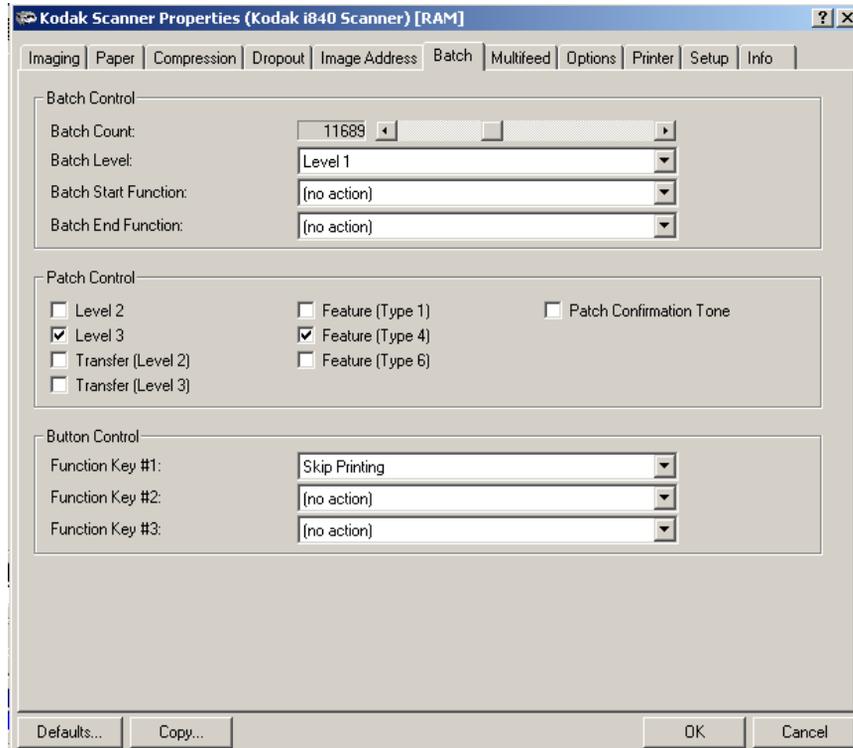
Image Address Format — the image address can be printed on the original documents as they are transported through the system. You can define the format in which the image address is printed. Choose from one of the following formats:

- Display leading zeros format (e.g., 004.003.002.001)
- Suppress leading zeros format (e.g., 004. 3. 2. 1)
- Compress leading zeros format (e.g., 004.3.2.1)

Check Digit — this option will only be displayed if the scanner is configured with a Check Digit alteration file.

The Batch tab

Batching is the operation of counting pages or documents.



Batch Control area

The Batch Control area defines the level to count the number of documents in the batch and any actions to be taken at the beginning and end of a batch.

Batch Count — defines the number of documents to be counted prior to performing a predefined action.

Batch Level — sets the level to count. Options are Level 1, Level 2, Level 3 or disabled (no batching). The level you choose to count must exist in the image address template as defined on the Image Address tab.

Batch Start Function — defines the action to be taken prior to processing the first document in a batch. Options are Level 1, Level 2, Level 3 and No action.

Batch End Function — defines the action to be taken after processing the last document in the batch. Options are Stop Feeder, End of Job, Start New Batch or No action.

Patch Control area

The Patch Control area provides choices of what patch type to recognize. One or more patches can be selected at a time.

The following patch types can be recognized.

Patch Types 1, 4 and 6 – these patch types can be used by the host for post-scan image control (they are not used for image addressing). For example, use these patch types for changing between bi-tonal and color imaging or workflow control.

Patch 1



(Do not use these patches for production – they are not to spec)

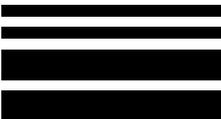
Patch 4



(Do not use these patches for production – they are not to spec)

NOTE: Patch 4 can also be used as a Toggle patch. For more information, see the section entitled, “Controlling image transfer order “ in Chapter 2.

Patch 6



(Do not use these patches for production – they are not to spec)

Patch Types 2, 3 and T — these patch types are used for image addressing. When the Patch Reader detects a patch, it automatically assigns a new image address to the new document. This eliminates the task of trying to determine where one document stops and the next starts when an operator is viewing electronic images. It provides a hierarchical document structure and offers an auto-batching alternative.

The Patch Reader controls document level changes by automatically sensing a predefined patch code and changing the document level accordingly.

Patch 2 — assigns a Level 2 to the *current* document.



(Do not use these patches for production – they are not to spec)

Patch 3 — assigns a Level 3 to the *current* document.



(Do not use these patches for production – they are not to spec)

Patch T/Transfer Patch — assigns a predetermined level to the *next* document. Defined as Level 2 or Level 3.



(Do not use these patches for production – they are not to spec)

Patch Confirmation tone — the confirmation tone may be used to signal that a patch has been recognized. The default is no confirmation tone.

See the Kodak publication A-61599, *Patch Code Information for Kodak Document Scanners* for complete information.

Button Control area

This section is used to assign actions the operator uses from the Operator Control Panel. Function Key #1, Function Key #2 and Function Key #3.

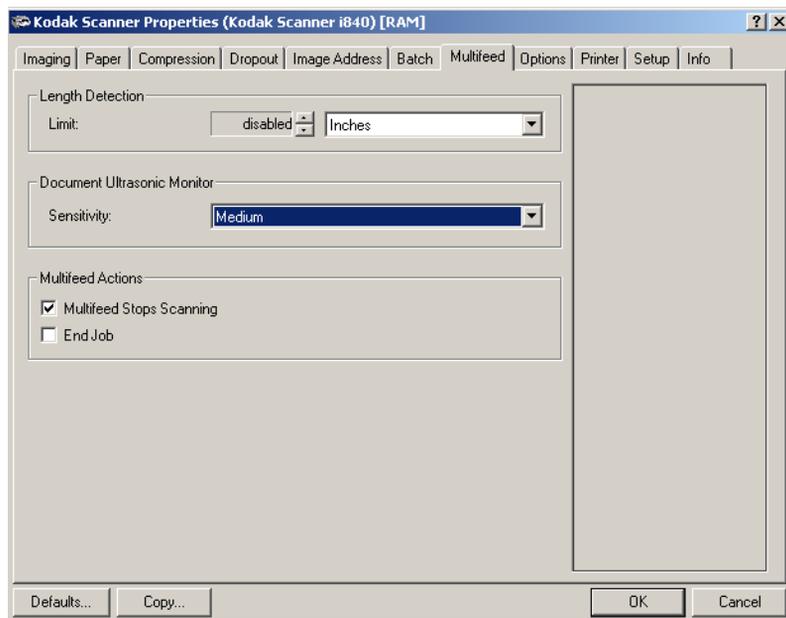
Available functions are:

- End-of-Job
- Terminate Batch
- Skip Multi-feed Detection
- Skip Printing
- Skip Patch Recognition
- Lower Elevator

The Multifeed tab

Multi-feed Detection aids in document processing by detecting documents that may go through the feeder overlapped. Multi-feeds can happen due to stapled documents, adhesives on documents, or electrostatically charged documents. 3D Multi-feed Detection combines ultrasonics (amplitude and phase) with physical length detection to virtually eliminate the chance of losing data due to multi-feeds.

The Ultrasonic Sensor is located in the center of the transport (behind the feeder module). In order for multi-feed documents to be detected correctly, they must pass under this sensor.



Length Detection — choose the minimum length of the document that can be scanned with a multi-feed being detected. The Display window will show the size of the document as you change the value. You can select to display this amount in **Inches, Centimeters, Picas, Points, 20th of Points** or **Pixels**. A value of 0 indicates no length detection. Length detection can be used when scanning same-size documents. The maximum value is 30.5 inches.

Sensitivity — controls how aggressively the scanner will work to determine if more than one document is fed into the transport. Multi-feeds are triggered by detecting air gaps between documents. This allows multi-feed detection to be used with job sets containing documents with mixed thicknesses. You may set the Multi-Feed Detection to high, medium or low sensitivity. If you disable Sensitivity, no phase or amplitude checking is used.

NOTE: Regardless of the setting, Post-It™ notes will be detected as multi-fed documents.

- **High Sensitivity:** this is the most aggressive setting. this is a good setting to use if all documents are similar in thickness to 20-lb. Bond paper.
- **Medium Sensitivity:** this is the default. Use Medium sensitivity if your application has varying document thickness or labels attached to the document. Depending on the label material, most documents with labels should not be detected as a multi-fed document.
- **Low Sensitivity:** this setting is the least aggressive setting and is less likely to detect labels, poor quality or wrinkled documents as multi-fed documents.

When determining the appropriate setting for your workflow, you should start at the Medium Sensitivity.

Multifeed Stops Scanning — if this option is not selected, the scanner will display and log the condition but continue to operate. If selected, the scanner will display, log the condition and stop the feeder (the scanner will remain enabled). When an overlap or multi-feed is detected, the scanner stops the feeder, clears the transport of all pages and then the documents can be re-fed.

End Job — if this option is selected, the scanner will display, log the condition and stop the feeder and transport (the scanner will be disabled). Scanning can only be resumed when the scanner is re-enabled from the host.

With all options, the scanner will beep if the alarm tone volume is set higher than 0.

The Options tab

The Options tab allows you to set Image Transfer, Transport and Lamp controls.

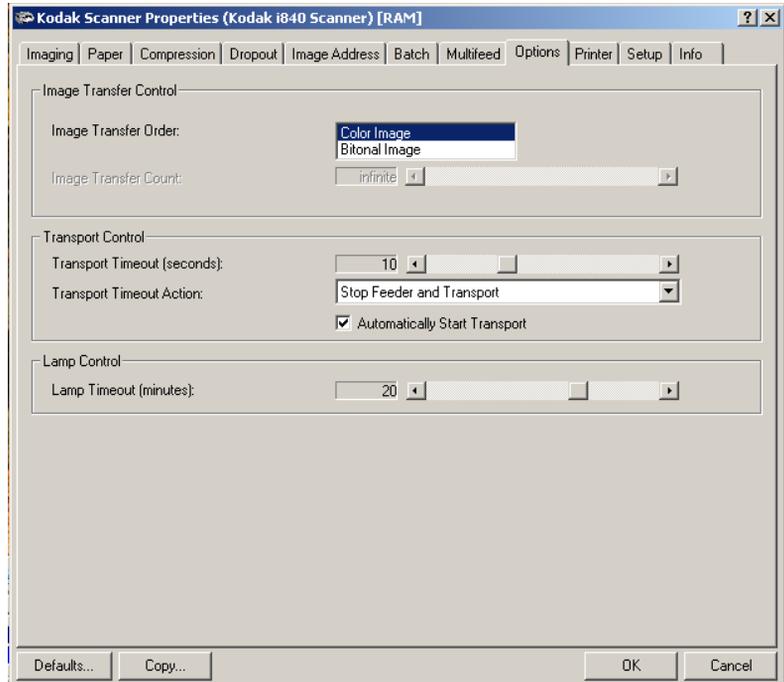


Image Transfer Order — if you using dual stream scanning (bi-tonal and color/grayscale) for either side, this option controls the order in which the scanner will return image data. For example, if you are scanning color/grayscale and bi-tonal and you select **Bi-tonal Image**, the scanner will return the bi-tonal front image, then the front color/grayscale image.

Image Transfer Count — allows you to adjust the image transfer count from a finite number (Page mode) to an infinite number (Batch mode). When using Page mode, the scanner will stop when the selected count is reached.

Transport Timeout — allows you to set a transport timeout value. This value is the amount of time the scanner will wait after the last document enters the transport before the transport timeout action is taken. You can specify a time delay setting from 5 to 300 seconds. The default is 10 seconds. If this option is disabled, the transport will continue to run until the Stop/Pause key is pressed or is stopped by the host.

Transport Timeout Action — allows you to specify the action that will be taken when the transport timeout has been reached.

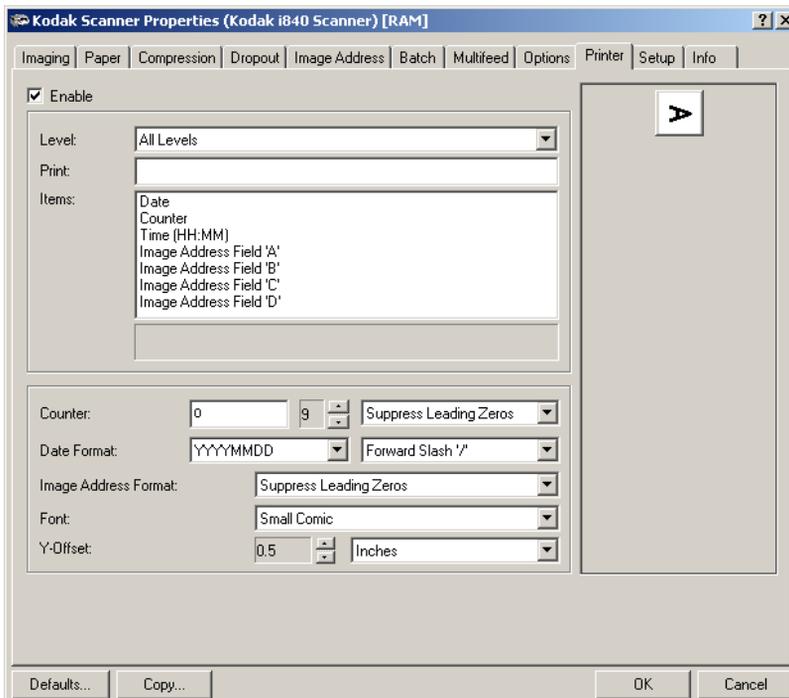
- **Stop Feeder:** stops the feeder and the transport but leaves the scanner enabled. Scanning may be resumed by pressing the Start/Resume button.
- **End Job:** stops the feeder and the transport and disables the scanner. Scanning cannot be resumed until the scanner is enabled from the host.

Automatically Start Transport — if selected, the transport and feeder will automatically start when the scanner is enabled from the host without pressing the Start/Resume button.

Lamp Timeout — this value is the amount of time (in minutes) the scanner will wait after the last document enters the transport before the lamps will turn off. You can specify a time delay setting from 1 to 30 minutes. The default is 10 minutes. Using this option extends lamp life and reduces energy consumption. If this option is disabled, the lamps will remain on until the power is turned off.

The Printer tab

The Document Printer 1 provides a vertical print capability that is programmed to support alphanumeric characters as defined by the host. It supports date, image address, time, document count and custom messages. All print information is captured in a document header record. These printer controls and functions are accessed via the Printer tab.



Enable — check this option to enable the Document Printer 1.

Print Template setup

With the i800 Scanners you can define print strings that are the same for all levels or unique for each level. You are not required to print on all levels.

Level — choose the level of the document that you want the specified print string to be printed on. For example, if you use three level image addressing, you can print the date on your level 3 document, nothing on level 2 and document count on level 1.

Print String

To build the print string:

1. Select the Level you want to define from the drop-down box.
2. Enter the message you want printed in the Print String field and/or select the predefined options by double-clicking on the desired option in the drop-down box.

NOTE: The maximum amount of characters for each print string is 40 characters (including spaces).

3. Once the print string is defined, repeat Steps 1 and 2 for defining other levels.

The following information can be printed:

- Date (in one of the following formats): **MMDDYYYY**, **DDMMYYYY** or **YYYYMMDD**. This format is defined in the Date Format field.
- **Time**: valid format is HH:MM.
- **Counter**: this value is used to assign the document count for the next document entering the transport. This value is incremented sequentially by the scanner unless another document count is received from the host. This value is returned in the image header.
- **Image Address Field “A”/“B”/“C”/“D”** — these fields are defined in the Image Address tab.
- **Message**: enter the text you want printed on a scanned document. Trailing spaces, after the text, are supported. Leading spaces, before the text, are not supported. Characters from the following font are supported: Microsoft Global IME 5.01.

NOTE: To view the Japanese characters correctly you must get the MS Gothic font set by installing the Microsoft Global IME 5.01 for Japanese - with Language Pack, English Language Version which can be found at http://www.microsoft.com/msdownload/iebuild/ime5_win32/en/ime5_win32.htm

Counter Format — used to control the width of the document counter. Values range from 1-9.

The following choices are available for printing the counter format.

- **Display leading zeros** format (e.g., 0009)
- **Suppress leading zeros** format (e.g., 9)
- **Compress leading zeros** format (e.g., 9)

Date Format — select one of the date formats: Forward slash (/), hyphen (-), period (.), blank or none. For example: 04/05/2001, 04-05-2001, 04.05.2001 or 04 05 2001 or 04052001 (none).

Image Address Format — the format in which the image address appears when printed as defined on the Image Address tab.

The printed image address may appear in one of three formats:

- **Display leading zeros** format (e.g., 004.003.002.001)
- **Suppress leading zeros** format (e.g., 004. 3. 2. 1)
- **Compress leading zeros** format (e.g., 004.3.2.1)

NOTE: The format chosen does not affect the fixed field of the image address; it is always displayed and printed in its entirety. In the example above, 004 has been defined as a fixed field.

Printing orientation

You can select what orientation you want your information to be printed in as well as the location on your document.

Font — two different character sizes, referred to as Large and Small, are available. Information is printed on each document in one of the two orientations: Comic or Cinema. You can choose:

Large Comic



Large Cinema



Small Comic



Small Cinema



Large Comic 180



Large Cinema 180



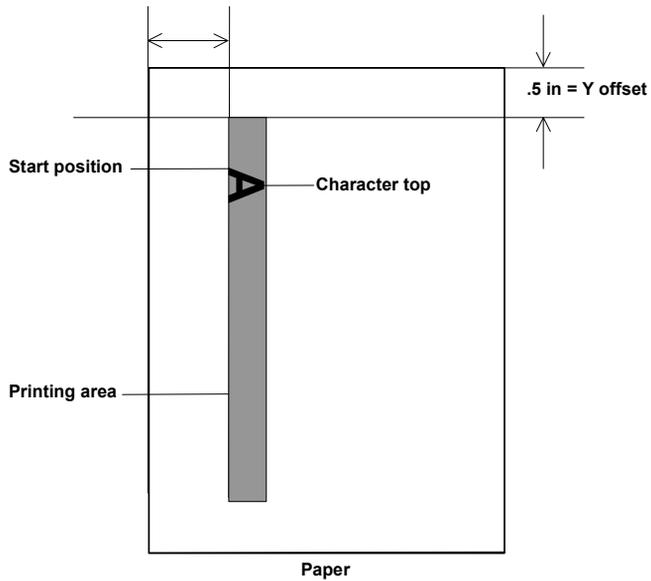
Small Comic 180



Small Cinema180



Y-Offset — enter a value in this field to determine how far the printed information will appear from the leading edge of the document. The character top (“A” in the diagram below) points to the right edge of the document. The Y-Offset value can be set in Inches, Centimeters, Picas, 20th of Picas or Pixels.



NOTE: Printing automatically stops 6.3 mm (1/4-inch) from the trailing edge of the document even if the information has not been completely printed.

Horizontal Print Position

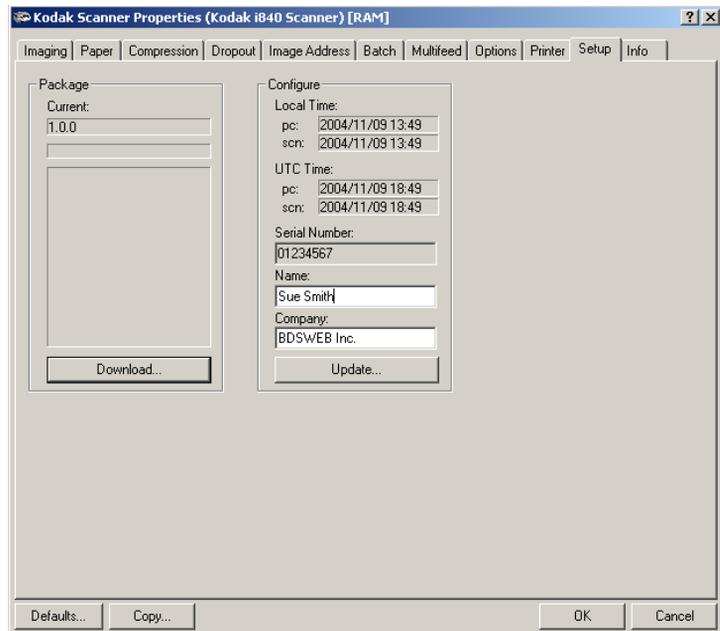
The horizontal print position is set manually in one of the 13 positions on the Document Printer mounting plate.



The Setup tab

The Setup tab allows you to download firmware and set the scanner clock.

Firmware — the scanner firmware runs your *Kodak i800 Series Scanner*. The value displayed in the Current field is the version of firmware currently in use by your scanner. Periodically Kodak releases updated versions of firmware which are available from the Kodak website. This firmware should only be downloaded to your scanner when directed by Kodak service personnel. When **Download** is selected, the Select Scanner Firmware dialog box will be displayed.



Download... — this option is used to download the latest version of firmware to your scanner over the SCSI cable. Up-to-date firmware for the i800 Series Scanners will be available from the Kodak website www.kodak.com.

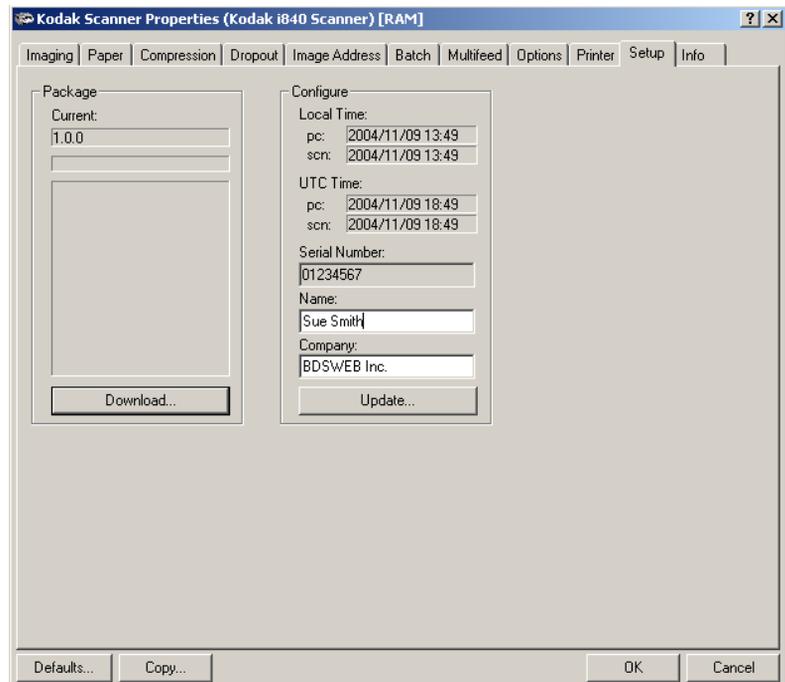
NOTE: Downloading firmware should be done by the System Administrator.

Configure — displays the local time, UTC (Universal Time Clock.) and the scanner serial number. You can use the **Update** button to change the local time only.

The Info tab

The Info tab displays information about your scanner.

Scanner Data — shows the following information about your scanner: Scanner Model, Scanner Configuration, Firmware Revision, Minimum Scan Resolution, Maximum Scan Resolution, Scanner Serial Number, Scanner CPU Date/Time, and the Name and Company of the person who installed the scanner.



Scanner Meters — shows information about your scanner, such as how many hours the scanner and transport have been running, how many documents have been scanned since you first began using the scanner, and when the first image (ever) was scanned on that scanner.

Software Data — shows the version numbers of the Scan Validation Software and the device driver that are currently running.

4 Using the ISIS Driver

Installation

The ISIS driver is included with the scanner. You can install the driver from the CD.

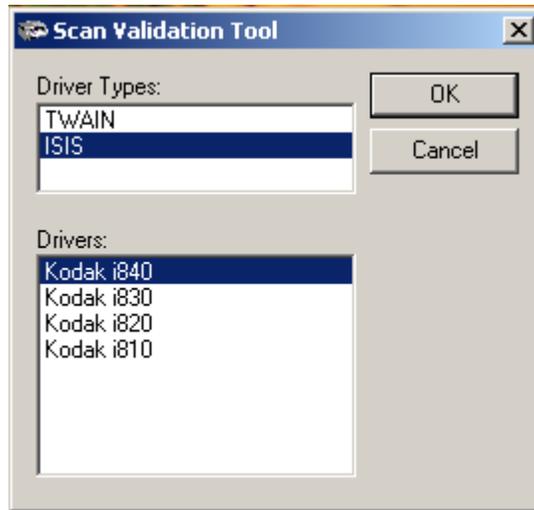
1. Insert the CD into the drive.
2. Double-click the setup.exe file.
3. Follow the instructions on each screen as prompted.

After installation of the driver is complete, install your application software on the host PC.

After your application software is loaded and launched, use the ISIS driver software to setup your scanner.

A sample ISIS Driver application, called the Scan Validation Tool, is also installed during this installation. This application can be used to validate scanner functionality. The screen shots in this chapter (from the Scan Validation Tool) document the ISIS Driver graphical user interface (GUI) which is one option when creating your own application. If you choose to use programmatic controls, refer to the appropriate Pixel Translations, Inc. documentation which documents ISIS functionality. This documentation includes the information you need to use the ISIS Driver for RAM scanning which simulates an i800 Series Scanner in order for you to begin development work without a physical scanner.

1. Select **Start>Run** or select **Programs>Kodak>Document Imaging>Scan Validation Tool**. The Scan Validation Tool dialog box will be displayed.



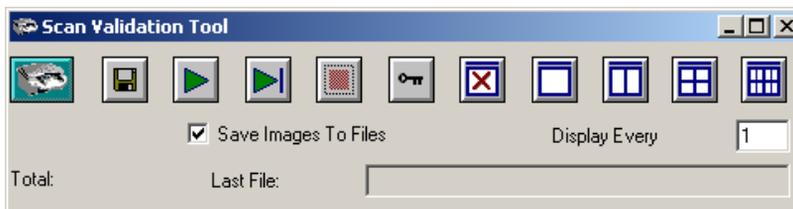
2. Select ISIS and Kodak Scanner: i800. *If you are using the TWAIN driver see Chapter 3.*
3. Click **OK**.



4. Double-click the Scanner icon to access the Kodak Scanner Properties dialog box.

Scan Validation Tool dialog box

The Kodak Scan Validation Tool dialog box allows you to verify scanner functionality through the ISIS Driver.



Button	Description
	Displays the Users Interface for the selected either the ISIS Driver or TWAIN Data Source.
	Allows you to select the directory to store scanned images and their file names. This option only applies when Save Images To Files is selected.
	Enables the scanner to initiate scanning.
	Enables the scanner to feed one page.
	This button is only available when the scanner is enabled. When selected, will disable the scanner.
	Displays the License Key window. This option should only be used when directed by a Kodak representative.
	Closes the image viewer.

Button	Description
	Opens the image viewer to display one image at a time.
	Opens the image viewer to display two images at a time.
	Opens the image viewer to display four images at a time.
	Opens the image viewer to display eight images at a time.

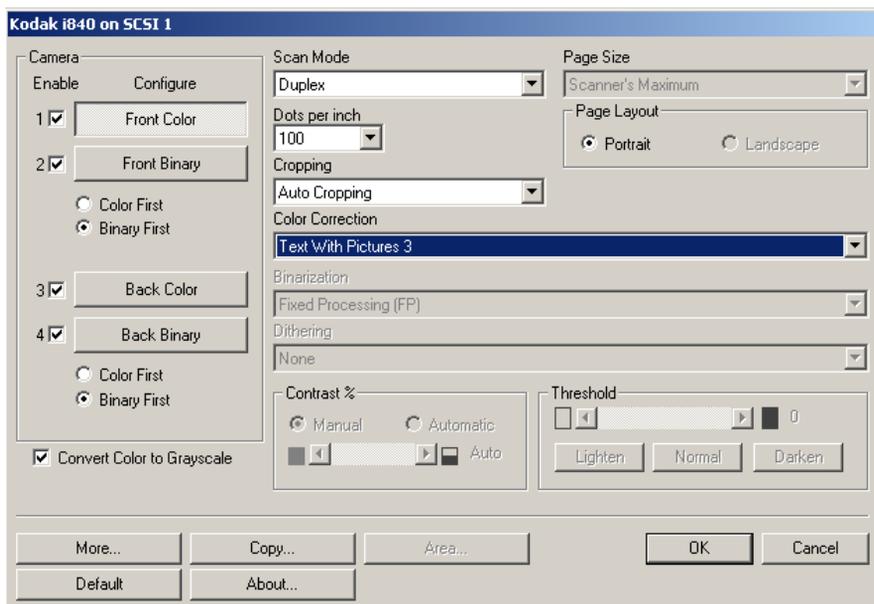
Display Every — enter the sampling rate of the images you wish to display while scanning. For example, to see every image, enter a value of 1. To see every 10th image, enter a value of 10.

Last File — displays the full path and file name for the last stored image.

Total — displays the total number of images scanned during the current Scan Validation Tool session.

Scanner Settings dialog box

The section provides a description of the Scanner Settings dialog box. This main dialog box provides high level access to the functionality of the scanner giving you the ability to control the characteristics of all four possible imaging combinations depending on the model of your scanner.



NOTE: For the purpose of this manual, all displayed dialog boxes assume the features available on the *Kodak i840* Scanner.

Buttons on the Scanner Settings dialog box

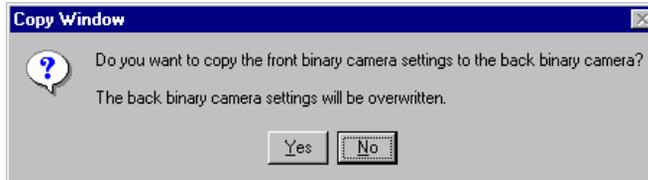
Following are descriptions of the buttons located at the bottom of the dialog box.



More — displays the More Scanner Settings dialog box. This dialog box provides additional image processing settings unique to i800 Scanners.

Area — displays the Scan Area dialog box.

Copy — this function is only available when using the scanner in Duplex mode. The Copy button provides a convenient way to set up the color/grayscale or binary image settings on one side and transfer them to the other. For example, if you highlight and setup **Front Binary**, you can use the Copy button to duplicate those settings for the Rear Binary.



Enabled and Selected	Copy
	Front Color/Grayscale -> Rear Color/Grayscale
Front Binary	Front Binary -> Rear Binary
Rear Color/Grayscale	Rear Color/Grayscale -> Front Color/Grayscale
Rear Binary	Rear Binary -> Front Binary

Default — when you select **Default**, the message **Reset all values to factory defaults?** will be displayed. Clicking **Yes** will reset all the settings to the factory defaults.

About — displays the About dialog box. The About dialog box provides detailed information such as the driver version number, certification status and the version of QuickDriver used to develop this driver.

OK — saves the values set on all dialog boxes.

Cancel — closes the dialog box without saving any changes.

Camera settings area

Camera

Enable Configure

1 Front Color

2 Front Binary

Color First

Binary First

3 Back Color

4 Back Binary

Color First

Binary First

Convert Color to Grayscale

The selections in the Camera area list the available sides (front and back) of an image where you can define individual image processing values. For more information about the Camera selections see the section entitled, “Image outputs” in Chapter 1.

When starting the configuration process, use the steps below as a guide:

1. Check the images you wish to capture (Enable camera settings).
2. Select the order to transfer the images (Define Transfer Order).
3. Configure each image by highlighting it (Configure).

Enable camera settings — select the desired checkbox to enable the Front Color, Front Binary, Back Color and/or Back Binary settings as desired. This indicates the images you wish to capture and transfer to the host. (You cannot capture only rear images.) One or all boxes can be enabled. You can enable your selection by putting a checkmark in the desired box.

Define Transfer Order — define the transfer order by selecting Color First/Binary First radio buttons. This determines which image is transferred to the host first when using dual stream scanning. For example, if you are scanning front color/grayscale and front binary and you select **Binary First** the scanner will return the front binary image, then the front color/grayscale image.

Configure — highlight the image you want to set up. As you select the image, other options will become available on the Scanner Settings dialog box. The availability of these options is dependent upon the selection you make.

For example, **Front Binary** is highlighted in the example at the left.

Image Processing settings

The other options on this dialog box allow you to define image processing values that can be applied to your scanner.

The screenshot shows a dialog box with the following settings:

- Scan Mode:** Simplex
- Page Size:** Scanner's Maximum
- Dots per inch:** 200
- Page Layout:** Portrait (selected), Landscape
- Binarization:** iThresholding
- Dithering:** None
- Cropping:** Aggressive Cropping
- Contrast %:** Manual (selected), Automatic, 50
- Threshold:** 255, with buttons for Lighten, Normal, and Darken.

Scan Mode — the host computer provides information to the scanner defining whether to scan one or both sides of the image. **Simplex** indicates that only one side (front side) of the image will be scanned. **Duplex** indicates that both sides of the image will be scanned.

Dots per inch (dpi) or Resolution — indicates the scanning resolution, which largely determines the quality of the scanned image. The greater the resolution, the better the reproduction. However, scanning at a higher resolution also increases scanning time and file size.

Choose a resolution value from the drop-down list. The default value is 200 dpi. Available resolutions are:

Binary

- Scanner i810, i820, i830, i840 — 200, 240, 300, 400

Page size and layout

The default paper size is set when a scanner is first selected. You can choose a different paper size using the drop-down list box.

NOTE: The Page Size and Page Layout selections also appear on the Area dialog box. If you make a change on the Scanner Settings dialog box, the same selections will appear on the Area dialog box and vice versa.

The Page Layout area allows you to select either Portrait or Landscape.

- **Portrait** will display the image orientation in the shape of a conventional portrait, where height is greater than width.
- **Landscape** will display the image orientation in the shape of a conventional landscape painting, where width is greater than height.

Binarization — *the following descriptions are for binary images only.*

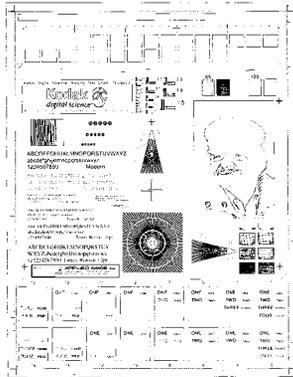
iThresholding: selecting iThresholding allows the scanner to dynamically evaluate each document to determine the optimal threshold value to produce the highest quality image. This allows scanning of mixed document sets with varying quality (i.e., faint text, shaded backgrounds, color backgrounds) to be scanned using a single setting thus reducing the need for document sorting.

Fixed Processing (FP): used for black-and-white and other high contrast documents. A single level is set to determine the black-and-white transition. The threshold is programmable over the entire density range. Fixed thresholding sets Contrast to 0. If Fixed Processing is selected, Contrast is not available.

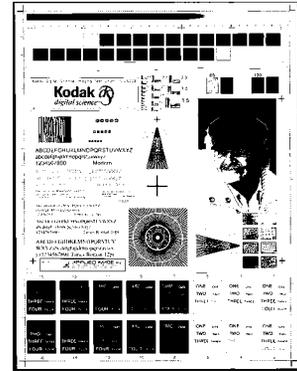
Adaptive Thresholding (ATP): the Adaptive Threshold Processor separates the foreground information in an image (i.e., text, graphics, lines, etc.) from the background information (i.e., white or non-white paper background).

Adaptive Thresholding works on grayscale scanned images and outputs a binary electronic image. Its strength lies in the ability to separate the foreground information from the background information even when the background color or shading varies, and the foreground information varies in color quality and darkness. Different types of documents may be scanned using the same image processing parameters and result in excellent scanned images. If mixing documents of different colors, paper qualities and textures, and print quality, the Adaptive Thresholding features optimize each image automatically.

When Adaptive Thresholding is selected, Contrast values may range from 1 to 100. A Contrast value of 100 is considered fully adaptive thresholding.



Fixed thresholding ATP disabled



ATP enabled

Error Diffusion — screens photographic areas of a document to simulate gray levels yet sharpens the edges of text. It is recommended that error diffusion be used when a mix of text, graphs, pictures and colors in the documents are being scanned.

NOTE: When using error diffusion and compression together, negative compression (less than one-to-one) is more likely to occur.

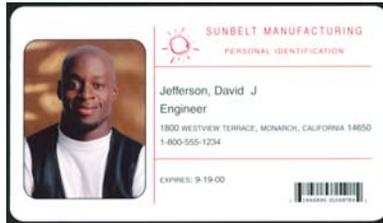
Dithering — a method used to simulate gray levels. The following Dither options are available:

- **64-Level Bayer Dither, 64-Level 45 Degree Clustered Dot Screen and 64-Level Dispersed Dot Screen:** these represent alternative screening options to emulate gray.

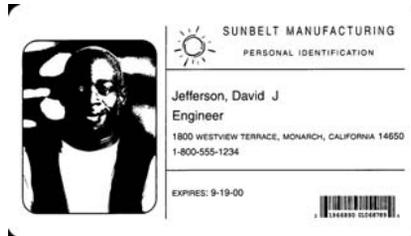
Cropping — allows you to capture a portion of the document being scanned. All cropping options can be used with color/grayscale and binary images. Front and Rear cropping are independent, however, for dual stream scanning color/grayscale and binary cropping must be the same per side. Only one cropping option can be assigned per image. Select one of the following options:

- **Auto Cropping:** dynamically adjusts the cropping window for different document sizes based on the edges of the image. Use this option for batches of mixed-sized documents.
- **Aggressive Cropping:** selecting this option will guarantee there will be no residual black border on any image edges. In order to guarantee this, there is a possibility that a small amount of image data may be lost.
- **Fixed Cropping:** (used for batches of same-sized documents) allows you to define the area or zone to be imaged. Fixed Cropping is used in conjunction with paper size and page layout and assumes you are center-feeding your documents. If you are not using center feeding, you must select the Area button to define your scan area. See the section entitled “Setting the Scan Area” later in this chapter.
- **Relative Cropping (zone processing):** (used for batches of same-sized documents) — some applications have a requirement to store part of an image in color/grayscale and the rest of the image in binary format (this saves storage space by not storing the entire image in color/grayscale). Zone processing is a floating fixed crop window (the zone) located relative to the upper left corner of a document. It allows you to select an area on the document to be delivered in either color/grayscale or binary format (a separate window for both binary and color/grayscale may be defined). Different parameters may be selected for both the front and rear of the image.

This option may be used in conjunction with auto cropping where a separate color/grayscale or binary area to be saved is desired. It is very useful in applications where a photograph, signature, embossment or seal appears in a consistent area for an application (you may want that small area in color/grayscale and the rest in binary).



Original



Binary image



Relative Cropping

To define the zone, select **Area...** to display the Scan Area dialog box. See the section entitled, "Setting the Scan Area" for more information.

Contrast % — sets the image contrast by adjusting the difference between black and white, thereby making an image sharper or softer. Contrast is only available for binary images.

In a low-contrast setting, the difference between black and white is small, so the image is softer. In a high-contrast setting, the difference between black and white is large, so the image is clearer. Select a contrast value from 1 to 100. The default is 50.



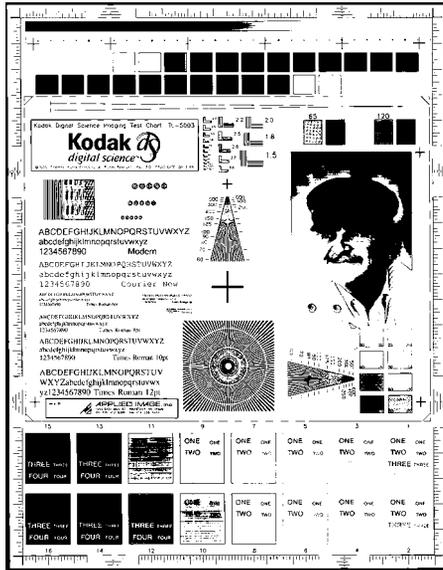
Manual — is always selected for binary images. Adjust the contrast setting by dragging the Contrast sliding bar to the left or right to achieve the desired Contrast setting. Scan the document to check the contrast.

Automatic — *not available for i800 Series Scanners.*

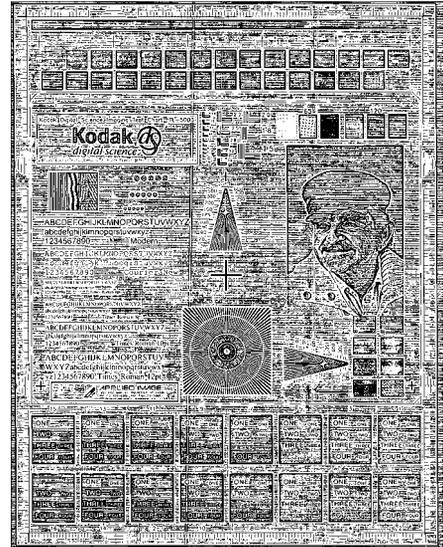
Threshold — thresholding is used to convert a gray scale image into a binary (1 bit/pixel) image. The thresholding value ranges from 0 to 255. The default is 90. A low threshold value will produce a lighter image, and can be used to subdue backgrounds and subtle, unneeded information. A high threshold value will produce a darker image, and can be used to help pick up faint images.

Adjust the Threshold setting by dragging the Threshold sliding bar to the left or right to achieve the desired Threshold setting. Scan the document to check the threshold.

NOTE: This setting works with the Contrast setting. A Contrast setting of 0 causes the scanner to use fixed thresholding. A Contrast setting of 100 causes the scanner to use fully-adaptive thresholding.



200 dpi; 80 Threshold; 20 Contrast

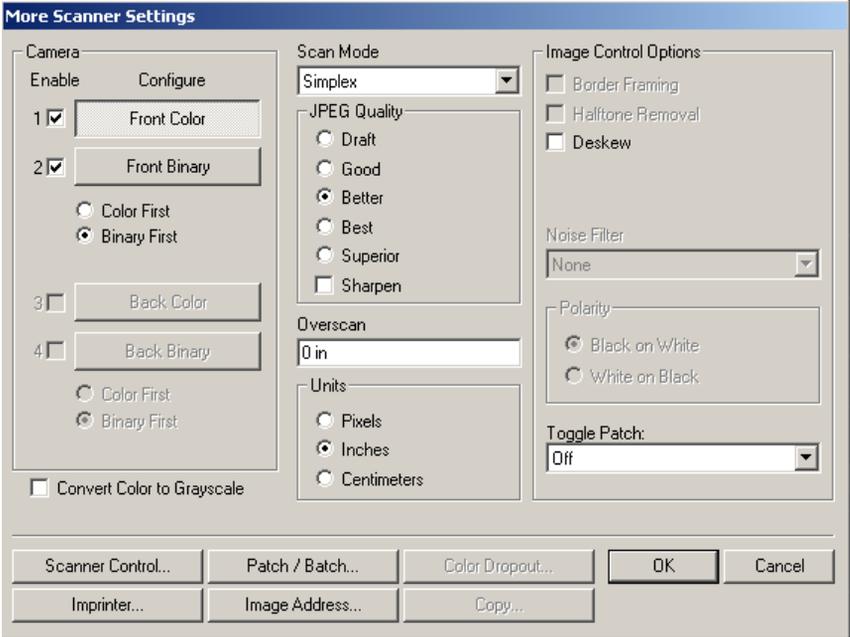


200 dpi; 80 Threshold; 100 Contrast

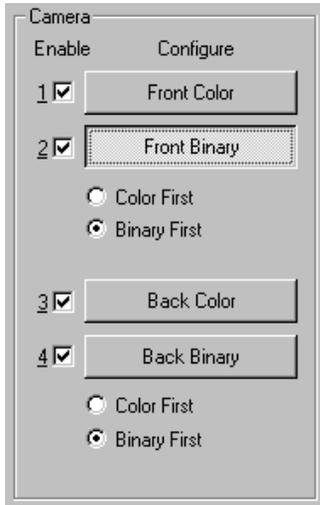
Lighten, **Normal** and **Darken** are used as quick sets to adjust the threshold. Lighten = 72, Normal = 90 and Darken = 128.

More Scanner Settings dialog box

Additional image processing values unique to the i800 Scanner are available when you choose the More button on the Scanner Settings dialog box.



Camera settings area



The selections in the Camera area list the available sides (front and back) of an image where you can define individual image processing values. If you have an i810 or i830 scanner, only **Front Binary** and **Back Binary** will be displayed. If you have an i820 or i840 scanner, **Front Color**, **Back Color**, **Front Binary** and **Back Binary** will be displayed. For more information about the Camera selections see the section entitled, “Image outputs” in Chapter 1.

When starting the configuration process, use the steps below as a guide:

1. Check the images you wish to capture (Enable camera settings).
2. Select the order to transfer the images (Define Transfer Order).
3. Configure each image by highlighting it (Configure).

Enable camera settings — select the desired checkbox to enable the Front Color, Front Binary, Back Color and/or Back Binary settings as desired. This indicates the images you wish to capture and transfer to the host. (You cannot capture only rear images.) One or all boxes can be enabled. You can enable your selection by putting a checkmark in the desired box.

Define Transfer Order — define the transfer order by selecting Color First/Binary First radio buttons. This determines which image is transferred to the host first when using dual stream scanning.

Configure — highlight the image you want to set up. As you select the image, other options will become available on the Scanner Settings dialog box. The availability of these options is dependent upon the selection you make.

For example, **Front Binary** is highlighted in the example to the left.

Scan Mode — the host computer provides information to the scanner defining whether to scan one or both sides of the image. **Simplex** indicates that only one side (front side) of the image will be scanned.

Duplex indicates that both sides of the image will be scanned.

JPEG Quality — JPEG compression offers a JPEG quality of **Draft**, **Good**, **Better**, **Best**, **Superior** and **Sharpen**.

- **Draft** — the smallest file size with draft image quality.
- **Good** — a larger file size with good image quality.
- **Better** — a larger file size with better image quality.
- **Best** — a larger file size with the best image quality.
- **Superior** — the largest files size with superior image quality.
- **Sharpen** — this filter increases the edge contrast of the image without effecting the color component. Use this option when a high contrast result is desired. For example, if you scan text documents in color.

Overscan — allows you to add a specified value (inches/mm) before and after the edge of the image. Overscan values can be applied to the top and bottom of an image. Overscan is used in applications where automatic feeding of highly skewed documents is likely. Overscan reduces the possibility of corner clipping on skewed images. Overscan is used with Fixed Cropping only and Deskew must be disabled.

To set Overscan values, enter a value in the text entry box. The range is 0 to .450 inches. 0 is the default. Combined Overscan and Length values cannot exceed 30 inches for all resolutions except 400 dpi bi-tonal, which cannot exceed 26 inches.

Units — defines the primary measurement system. **Pixels**, **Inches**, and **Centimeters** are available. Select the option desired.

Image Control options

The following Image Control options are available:

Border Framing — allows you to add a border to the final image. The width of this border is 16 pixels. This option is only available with Auto Cropping and only applies to binary images.

Halftone Removal — used to enhance images containing dot matrix text and/or images with shaded or colored backgrounds using halftone screens. This filter effectively eliminates noise caused by the halftone screen. This option is only applied to binary images.

Deskew — check this option to automatically deskew a document within ± 0.3 degrees of the document's leading edge. Automatic deskew can detect up to a 45-degree skew and correct up to a 24-degree angle at 200 dpi or a 10-degree skew angle at 300 dpi.

NOTE: To prevent data loss, the document must have all four corners within the image path.

Color Table — the selection of a color table effects how the scanner reproduces the color of a scanned document. You can chose from six different Kodak default color tables: **Pictures**, **Pictures 2**, **Text**, **Text with Pictures**, **Text with Pictures 2**, and **Text with Pictures 3**. The user can also download and accept custom color tables. For information about custom color tables, refer to the *Reference Guide for the Brightness and Contrast Control*, A-61506.

Polarity — the host computer provides information to the scanner defining whether the image should be stored in standard or reverse polarity. The default polarity is Black on a White background. Reverse polarity is White on a Black background.

```
*****
24 HOURS A DAY, 7
24 HOURS CONVENIENCE
*****
D. TOTALS ACCY NO. 2
PARTS: 1000.00
SUB TAX 100.00
TOTAL CHARGE 1100.00
*****
VOICE
AL ORDER ITEMS
VOICE NUMBER 123456789
```

Black on White polarity

```
*****
24 HOURS A DAY, 7
24 HOURS CONVENIENCE
*****
D. TOTALS ACCY NO. 2
PARTS: 1000.00
SUB TAX 100.00
TOTAL CHARGE 1100.00
*****
VOICE
AL ORDER ITEMS
VOICE NUMBER 123456789
```

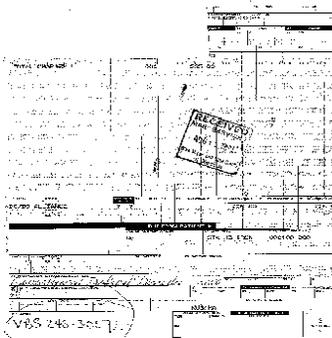
White on Black polarity

Noise Filter

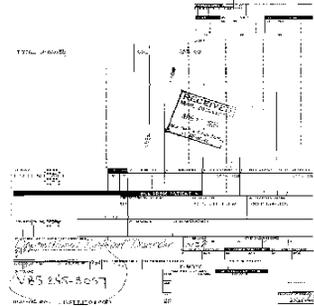
Occasionally small dots or specks appear in the background of a scanned image. These specks increase file compression size and usually contain no image information. Using the Noise Filter on documents containing very fine detail (e.g., the dot on an "i" in 4-point type) may cause information to be lost. It is recommended that you do not use the Noise Filter when scanning documents with text smaller than 7-point type.

Noise Filter can be used with binary images only and is Front/Rear and dual stream independent. Choose **None**, **Lone Pixel** or **Majority Rule**.

- **Lone Pixel** reduces random noise on binary images by converting a single black pixel surrounded by white to white or by converting a single white pixel surrounded by black to black.
- **Majority Rule** sets the central pixel value in a matrix according to the majority of white or black pixels in a matrix.



No Noise Filter Used



Lone Pixel

Buttons on the Scanner Settings dialog box

Following are descriptions of the buttons located at the bottom of the dialog box.



Scanner Control — displays the Scanner Control dialog box. This dialog box allows you to set multi-feed detection, transport control, enable/disable lamp saver and set the programmable key functions. The settings in this dialog box do not affect the quality of the image. See the section entitled, “Setting scanner controls” later in this chapter.

Imprinter — displays the Imprinter dialog box, which allows you to enable the Document Printer 1 and set the desired values. See the section entitled, “Enabling and setting Document Printer options” later in this chapter.

Patch/Batch — when selected, will display the Batch and Patch Code Definition dialog box. This dialog box allows you to define logic associated with automating your scanner’s workflow. The settings in this dialog box do not affect the quality of the image. See the section entitled, “Defining Batch Detection and Patch Code values” later in this chapter.

Image Address — displays the Image Address dialog box. This dialog box contains controls to format the image addressing functions of the scanner. See the section entitled, “Image Addressing” later in this chapter.

Color Dropout — displays the Color Dropout dialog box. You can choose the color you want to eliminate (Green Blue, Red) and set other values using this dialog box. See the section entitled, “Setting Color Dropout values” later in this chapter.

Copy — see the explanation in the section entitled “Scanner Settings dialog box” earlier in this chapter.

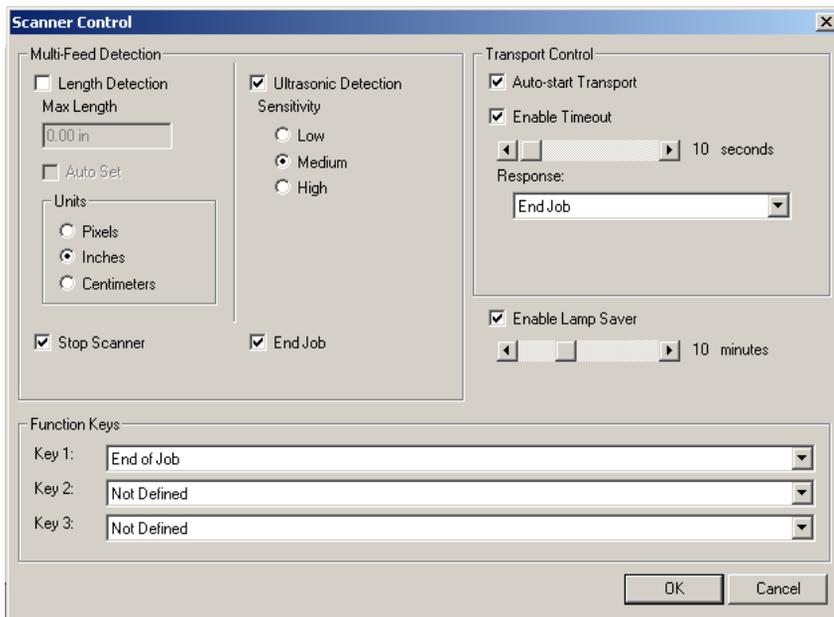
OK — saves the values set on the dialog box.

Cancel — closes the dialog box without saving any changes.

Setting scanner controls

The Scanner Control dialog box allows you to set the following controls:

- Multi-feed and Ultrasonic detection
- Transport Control
- Lamp Saver functionality
- Function Keys (Programmable keys)



Setting Multi-feed detection

Multi-feed Detection aids in document processing by detecting documents that may go through the feeder overlapped. Multi-feeds can happen due to stapled documents, adhesives on documents, or electrostatically charged documents. 3D Multi-feed Detection combines ultrasonics (amplitude and phase) with physical length detection to virtually eliminate the chance of losing data due to multi-feeds.

The Ultrasonic Sensor is located in the center of the transport (behind the feeder module). In order for multi-feed documents to be detected correctly, they must pass under this sensor.

Length Detection — this option can be enabled or disabled. The default is disabled. If Length Detection is enabled, enter the maximum length (in inches). This is the minimum length of the document that can be scanned with a multi-feed being detected. Length detection is used when scanning same-sized documents to check for overlap. For example, if you are scanning 8 ½ x 11" documents in portrait mode, you may want to enter a value of 11.25 in the Maximum Length field. The maximum value is 30.5 inches.

Auto Set — when enabled, will automatically set the maximum length value to .50-inch greater than the length of the currently selected page size.

Units — length detection will be displayed in **inches**. **Pixels** and **Centimeters** are not available through the graphical user interface.

Stop Scanner — if this option is not selected, the scanner will display and log the condition but continue to operate. If selected, the scanner will display, log the condition and stop the feeder (the scanner will remain enabled). When an overlap or multi-feed is detected, the scanner stops the feeder, clears the transport of all pages and then the documents can be re-fed.

End Job — if this option is selected, the scanner will display, log the condition and stop the feeder and transport (the scanner will be disabled). Scanning can only be resumed when the scanner is re-enabled from the host.

Ultrasonic Detection Sensitivity — Sensitivity — controls how aggressively the scanner will work to determine if more than one document is fed into the transport. Multi-feeds are triggered by detecting air gaps between documents. This allows multi-feed detection to be used with job sets containing documents with mixed thicknesses. You may set the Multi-Feed Detection to high, medium or low sensitivity. If you disable Sensitivity, no phase or amplitude checking is used.

NOTE: Regardless of the setting, Post-It™ notes will be detected as multi-fed documents.

- **High Sensitivity:** this is the most aggressive setting. this is a good setting to use if all documents are similar in thickness to 20-lb. Bond paper.
- **Medium Sensitivity:** this is the default. Use Medium sensitivity if your application has varying document thickness or labels attached to the document. Depending on the label material, most documents with labels should not be detected as a multi-fed document.
- **Low Sensitivity:** this setting is the least aggressive setting and is less likely to detect labels, poor quality or wrinkled documents as multi-fed documents.

When determining the appropriate setting for your workflow, you should start at the Medium Sensitivity.

Setting Transport Control

Transport control is a way of automatically controlling the scanner from the host, therefore eliminating the need to use the Start/Resume and Stop/Pause buttons on the Operator Control Panel.

Auto-start Transport — if selected, the transport and feeder will automatically start when the scanner is enabled from the host without pressing the Start/Resume button.

Enable Timeout — allows you to set a transport timeout value. This value is the amount of time the scanner will wait after the last document enters the transport before the transport timeout action is taken. You can specify a time delay setting from 5 to 300 seconds. The default is 10 seconds. If this option is disabled, the transport will continue to run until the Stop/Pause key is pressed or is stopped by the host.

Response — allows you to specify the action that will be taken when the transport timeout has been reached.

- **Stop Feeder and Transport:** stops the feeder and the transport but leaves the scanner enabled. Scanning may be resumed by pressing the Start/Resume button.
- **End Job:** stops the feeder and the transport and disables the scanner. Scanning cannot be resumed until the scanner is enabled by the host.

Enabling Lamp Saver mode

Enabling Lamp Saver extends lamp life and reduces energy consumption. This value is the amount of time (in minutes) the scanner will wait after the last document enters the transport before the lamps will turn off. If enabled, you can specify a time delay setting from 1 to 30 minutes. The default is 10 minutes. If this option is disabled, the lamps will remain on until the power is turned off.

Assigning Function Keys

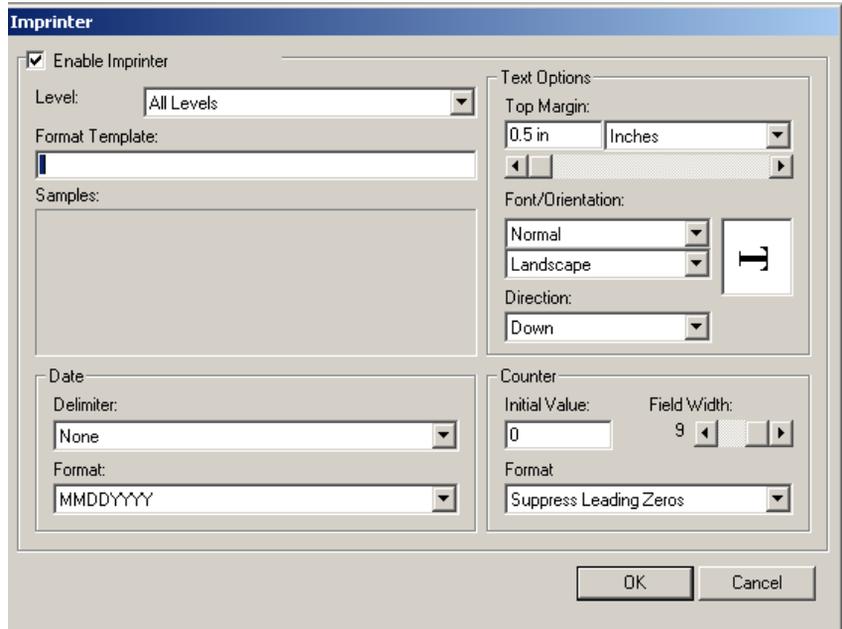
This section is used to assign actions the operator uses from the Operator Control Panel. Function Key #1, Function Key #2 and Function Key #3.

Available functions are:

- End-of-Job
- Terminate Batch
- Omit Multi-feed Detection on Next Document
- Do not Print on Next Document
- Omit Patch Reading on Next Document

Enabling and setting Document Printer options

The Document Printer 1 provides a vertical print capability that is programmed to support alphanumeric characters as defined by the host. It supports date, image address, time, document count and custom messages. All print information is captured in a document header record. These printer controls and functions are accessed via the Imprinter dialog box.



Enable Imprinter — check this option to enable the Document Printer 1.

Level — choose the level of the document that you want the specified print string to be printed on. With the i800 Scanners you can define print strings that is the same for all levels or unique for each level. You are not required to print on all levels. For example, if you use three level image addressing you can print the date on your level 3 document, nothing on level 2 and document count on level 1.

Format Template — the format template is used to build the print string. The print string is what is printed on documents as they travel through the transport. The print string is printed before the document is scanned, therefore, it is part of the image. The maximum amount of characters for each print string is 40 characters (including spaces).

Print String

To build the print string:

1. Select the level you want to define from the drop-down box.
2. Enter the message you want printed in the Format Template field. The print string is defined using the symbols in the Formatting Characters area on the right. In addition to these predefined symbols you may also enter a unique message by entering the text as you want it to be printed.

For example, if you want to print your company name and a time/date stamp, you would enter:

Kodak %T %Y. This would print: Kodak 10:10 10232001

NOTES:

- This alpha character following the % sign is case sensitive. These alphas must be entered as uppercase.
 - In order to print the following characters: %, #, \, & as part of a text message, you must enter the character twice. For example, if you want to print 100%, you must enter 100%% in the format template field.
3. Once the print string is defined, repeat Steps 1 and 2 for defining other levels.

The following information can be printed:

- Formatting characters:
 - **Image Address Field %A, %B, %C, %D** — these fields are defined on the Image Address dialog box.
 - **Sequential Counter %S:** this value is used to assign the document count for the next document entering the transport. This value is incremented sequentially by the scanner unless another document count is received from the host. This value is returned in the image header.
 - **Time %T:** valid format is HH:MM.
 - **Date%Y** (in one of the following formats): **MMDDYYYY, DDMMYYYY or YYYYMMDD**. This format is defined in the Date Format field.
 - **Message:** enter the text you want printed on a scanned document. Characters from the following font are supported: Microsoft Global IME 5.01

NOTE: To view the Japanese characters correctly you must get the MS Gothic font set by installing the Microsoft Global IME 5.01 for Japanese - with Language Pack, English Language Version which can be found at http://www.microsoft.com/msdownload/iebuild/ime5_win32/en/ime5_win32.htm

Date Delimiter — select one of the date delimiters: Forward slash (/), hyphen (-), period (.), blank or none. For example: 04/05/2001, 04-05-2001, 04.05.2001 or 04 05 2001 or 04052001 (none).

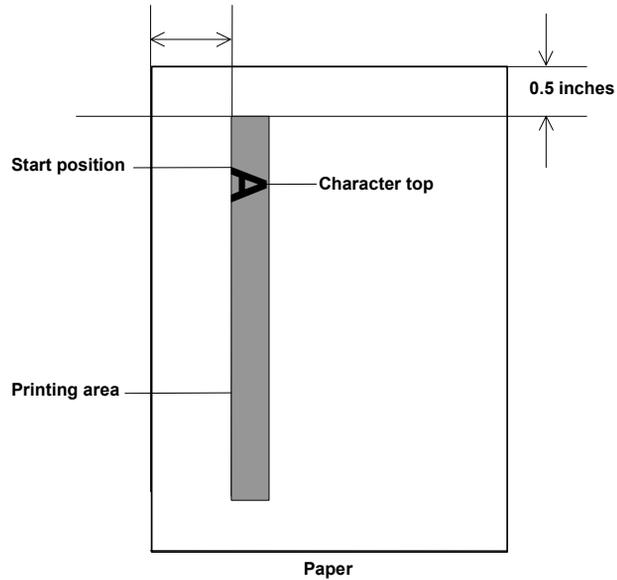
Counter

- **Initial Value:** — this value is used to assign the document count for the next document entering the transport. This value is incremented sequentially by the scanner unless another document count is received from the host. This value is returned in the image header.
- **Field Width:** used to control the width of the document counter. Values range from 1 to 9.
- **Format** — the format in which the image address appears when printed is defined on the Image Address dialog box. The printed image address may appear in one of three formats:
 - **Display leading zeros** format (e.g., 004.003.002.001)
 - **Suppress leading zeros** format (e.g., 004. 3. 2. 1)
 - **Compress leading zeros** format (e.g., 004.3.2.1)

NOTE: The format chosen does not effect the fixed field of the image address; it is always displayed and printed in its entirety. In the example above, 004 has been defined as a fixed field.

Text Options

- **Top Margin:** allows you to define the distance from the lead edge before the print string begins. This value can be defined in Inches, Centimeters or Pixels. Set this value using the slider bar.



NOTE: Printing automatically stops 6.3 mm (1/4-inch) from the trailing edge of the document even if the information has not been completely printed.

- **Font/Orientation:** You can select the orientation you want your information to be printed in as well as the location on your document.
 - **Character sizes:** Normal or Large
 - **Font Orientation:** Portrait or Landscape.
 - **Direction:** Up or Down

You can choose:

Large Landscape Down



Large Portrait Down



Normal Landscape Down



Normal Portrait Down



Large Landscape Up



Large Portrait Up



Normal Landscape Up



Normal Portrait Up



Horizontal Print Position

The horizontal print position is set manually in one of the 13 positions on the Document Printer mounting plate.

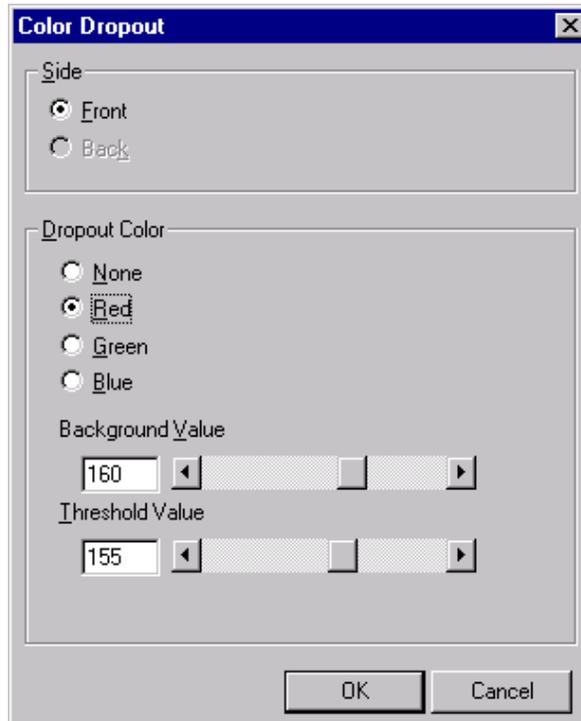


Setting Color Dropout values

Electronic Color Dropout is used to eliminate a form's background so that a document management system may automatically (through OCR and ICR technology) read pertinent data without interference from the lines and boxes of the form. The Color Dropout dialog box allows you to select the desired dropout color, and alter the filter threshold and background.

Electronic color dropout is available only for binary images.

When **Color Dropout** is selected from the More Scanner Settings dialog box, the Color Dropout dialog box is displayed:



Side — select the side you want to apply Color Dropout values to — either **Front** or **Back**.

Dropout Color — the i800 Series Scanners can drop out red, green or blue. None is the default.

Background Value — this value will be substituted in the grayscale (pre-thresholded) image for the color being removed. Therefore, this value should be higher than the threshold value selected on the Scanner Settings dialog box for this pixel to become the background color. The default value is 160. For example, if you are scanning a white document with a green form and you have selected a binary threshold value of 127. You should pick an electronic color dropout background value greater than 127 so the substituted pixel will be white in the dropped-out image.

Threshold value — the value that is used to identify the color which will be dropped out. This value is applied to the color space. The default value is 155.

Defining Batch and Patch Code Definition values

Batching is the operation of counting pages or documents.

Batch and Patch Code Definition

Enable Batch Separation

Pages Per Batch
50

Batch Level to Count
Level 1

At Batch Start
Go to Level 1

At Batch End
Stop feeder

Enable Patch Codes

Level 2
 Level 3

Transfer Patch

Level 2
 Level 3

Feature Patch - Type 1
 Feature Patch - Type 4
 Feature Patch - Type 6

Confirmation Tone

OK Cancel

Enabling Batch Separation

The Batch function allows you to define the level to count the number of documents in the batch and any actions to be taken at the beginning and end of a batch.

To enable Batch Separation click the Enable Batch Separation box.

Batch Level to Count — sets the level to count. You can select Level 1, Level 2, or Level 3. The level you choose to count must exist in the image address template as defined on the Image Address dialog box.

Pages Per Batch — defines the batch size which is the number of documents to be counted before performing a predefined action.

At Batch Start — defines the action to be taken before processing the first document in a batch. You can select Go to Level 1, Go to Level 2, Go to Level 3 or no action.

At Batch End — defines the action to be taken after processing the last document in the batch. You can select Stop Feeder, Stop Feeder and Transport (End of Job), Continue and Begin New Batch or no action.

Enabling Patch Codes

Patch Control allows you to select what patch types to recognize. One or more patches can be selected at a time.

Enable Patch Codes — to enable Patch Codes click the **Enable Patch Codes** box.

Recognition Modes — allows you to select the patch type the scanner will recognize. You can select Level 2, Level 3, Feature Patch, or Transfer Patch. Each of these patch types is described in detail below.

Patch Types Level 2, Level 3 and Transfer — these patch types are used for image addressing. When the Patch Reader detects a patch, it automatically assigns a new image address to the new document. This eliminates the task of trying to determine where one document stops and the next starts when an operator is viewing electronic images. It provides a hierarchical document structure and offers an auto-batching alternative.

The Patch Reader controls document level changes by automatically sensing a predefined patch code and changing the document level accordingly.

Patch 2 — assigns a Level 2 to the *current* document.



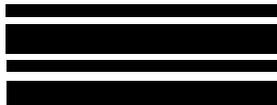
(Do not use these patches for production – they are not to spec)

Patch 3 — assigns a Level 3 to the *current* document.



(Do not use these patches for production – they are not to spec)

Patch T/Transfer Patch — assigns a predetermined level to the *next* document. Defined by selecting Level 2 or Level 3 in the Definition box.



(Do not use these patches for production – they are not to spec)

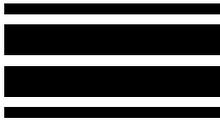
Feature Patches (Patch Types 1, 4 and 6) — these patch types can be used by the host for post-scan image control (they are not used for image addressing). For example, use these patch types for changing between binary and color/grayscale imaging or workflow control.

Patch 1



(Do not use these patches for production – they are not to spec)

Patch 4



(Do not use these patches for production – they are not to spec)

NOTE: Patch 4 can also be used as a Toggle patch. For more information, see the section entitled, “Controlling image transfer order” in Chapter 2.

Patch 6



(Do not use these patches for production – they are not to spec)

Beep when Patch Code is Detected — the confirmation tone may be used to signal that a patch has been recognized. The default is no confirmation tone.

See Kodak publication A-61599, *Patch Code Information for Kodak Document Scanners*, for complete information.

Image addressing

Image addressing provides better document management opportunities. Image addressing is used for document tracking, batch control and image management. The Image Address dialog box allows you set an image address starting point and increment the image address according to how the application is setup. The image address can also be printed on the pages scanned along with delivering the image address in the image header.

Image Address

Format String
Address%3L%2L%1L

Image Address

Field A	Field B	Field C	Field D
Address	1	0	0

Presets
Level 3

Counters

	Start Value	Width	Level To Follow	Format Character
Level 3	1	4	Level 1	%3L
Level 2	0	4	Level 1	%2L
Level 1	0	4	Level 1	%1L

Check digit

Pages Per Batch: 50

Format: Suppress Leading Zeros

Enable Check Digit

OK Cancel

Format string — this text field allows you to structure your image address. Fixed field information entered in this field will be reflected in the Image Address area in Fields A through D. To indicate the position of an image address level use the format character (%3L – Level 3, %2L – Level 2, %1L – Level 1) which represents that level. For image address levels the value indicated in Fields A through D will be the start value as defined in the Counters area Start Value field. In the dialog box on the previous page the format string Address%3L%2L%1L represents a fixed field value of address and a 3 level image address.

The i800 Series Scanners have more options available for image addressing schemes with the following guidelines:

You may define from 0 to 4 fixed fields. Fixed fields can be a maximum of 9 characters.

Only one field may be assigned to a level. You are only allowed one level 1 field, one level 2 field, and one level 3 field.

There is no requirement to have any level field.

Image Address fields

Displays the starting image address. The values in this field reflect information from the Format String area and the Counters area Start Value field. Each field can have a maximum width of 9 characters. The total image address cannot exceed 27 characters (30 with 3 delimiters).

Presets — you can use the selections in the field to automatically fill in the format string field. The options are:

- Custom – enter you desired values.
- Level 3 – Address%3L%2L%1L
- Level 2 - Address%2L%1L
- Level 1 - Address%1L
- Level 3 Offset - Address%3L%2L
- Level 2 Offset - Address%2L

You can have no fixed field or enter any fixed field value. The default fixed field value is Address.

Counters — for each image address level enter a Start Value, Width and Level to Follow level.

- **Start Value:** the start value is reflected in the image address in the field designed by the format string.
- **Width:** a value of 0 indicates that no image address level will be used. Widths cannot exceed 9 characters.

Level to Follow: these are the rules the scanner follows to set the next image address level if there are no other inputs. For example, patch sheet or end of batch processing. You will have to define a level to follow level for each of the level fields you defined in your image address.

NOTE: The total value of the Width column plus the number of characters in all fixed fields cannot exceed 27 characters.

Pages Per Batch — refer to the Batch Detection and Patch Code dialog box earlier in this chapter. This number is displayed on this dialog box to be used as a reference while formatting your image address.

Format — this field defines the format of the image address string used by the printer and how it is displayed on the Operator Control Panel.

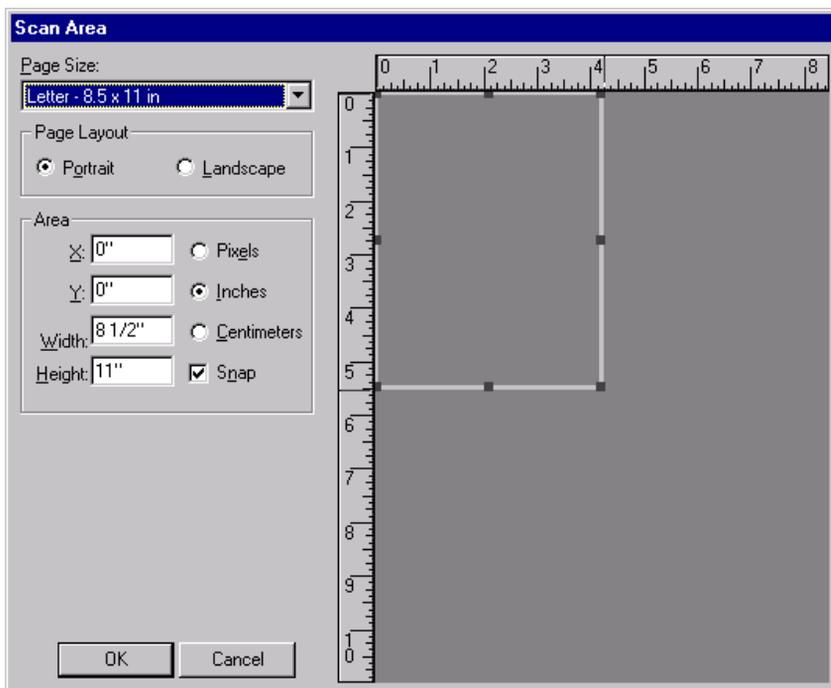
The following choices are available for printing the counter format.

- **Display Leading Zeros** — format (e.g., 0009). This is the default.
- **Suppress Leading Zeros** format (e.g., 9)
- **Compress Leading Zeros** — format (e.g., 9)

Enable Check Digit — this option will only be displayed if the scanner is configured with a Check Digit alteration file.

Defining the Scan Area

The Scan Area dialog box is only available for images when the Cropping option selected on the Scanner Settings dialog box is either **Fixed Cropping** or **Relative Cropping**.



NOTE: Select the side and image to be defined by highlighting Front Color, Front Binary, Back Color or Back Binary as appropriate based on the cropping option you selected for each of these in the Scanner Settings dialog box. The scan areas defined for all four camera selections are independent. For more information about the Camera selections see the section entitled, "Image outputs" in Chapter 1.

Page size and layout — the default paper size is set when a scanner is first selected. You can choose a different paper size using the drop-down list box.

NOTE: The Page Size and Page Layout selections also appear on the Scanner Settings dialog box. If you make a change on the Area dialog box, the same selections will appear on the Scanner Settings dialog box and vice versa.

The Page Layout area allows you to select either Portrait or Landscape.

- **Portrait** will display the image orientation in the shape of a conventional portrait, where height is greater than width.
- **Landscape** will display the image orientation in the shape of a conventional landscape painting, where width is greater than height.

Area — the Area section defines the amount of image data which is returned to the host. It can be defined to be the entire document (Fixed Cropping) or a portion of the document (Relative Cropping). The area can be defined in Pixels, Inches or Centimeters.

- **X** — for Fixed Cropping this is the distance from the left end of the scanner to the left-edge of the scanning area. For Relative Cropping this is the distance from the left edge of the document to the left edge of the zone. This option is not available if you use Auto Cropping.
- **Y** — for Fixed and Relative Cropping this is the position from the top end of the document to the top end of the scanning area. This option is not available if you use Auto Cropping.
- **Width** — the width of the scanning area.
- **Height** — the height of the scanning area. If Overscan is not selected, the scanner will not continue capturing beyond the trail edge of the document. For example, if you set up the scanner for portrait-fed 8 ½" x 11" documents, and you scan an 8 ½ x 4" document, the scanner will return an 8 ½ x 4" scanned area.

Snap — causes the dimensions of the Area box to be controlled in fixed 1/8-inch increments. This option is not available in Pixel mode.

Rulers — reflects the page size and the units of measurement selected.

Appendix A High Volume Scanner Comparison Table

The chart below provides a comparison of *Kodak* High Volume Scanners.

Feature	7520			9520			1800	
	Mode	Host	OCP	Mode	Host	OCP	Host	OCP
Programmable Function Keys				X			X	
Measurement System	X			X			X	
Date Format	X			X			X	
Time Format	X			X			X	
Alarm/Confirmation Tone	X		X	X		X	X	X
Printer Messages	X			X			X	
IA Field Delimiter	X			X			X	
Printer Enable/Disable	X			X			X	
Patch Enable/Disable	X			X			X	
Index Format	X			X			X	
IA Format	X			X			X	
IA Field Widths	X			X			X	
Level Rules	X			X			X	
Batching	X			X			X	
Batch Level	X			X			X	
Batch Count	X			X			X	
Start of Batch Function	X			X			X	
End of Batch Function	X			X			X	
Length Monitor	X			X			X	
Maximum Document Length	X			X			X	
Length Error Response	X			X			X	
Patch Definition	X			X			X	
Transfer Patch Definition	X			X			X	
Printer Fonts/Orientation	X			X			X	

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