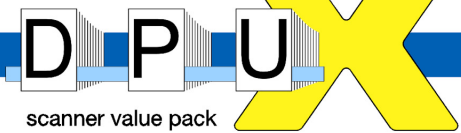




We capture the future.



Janich & Klass



DpuScan 4.0

**Special Scanner Options for
Canon DR3020, DR3080, DR5020
and DR5080**

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Actuality

A more recent version of the scanner options for DpuScan may be available for download from the Internet. Therefore, it is recommended that you compare the version by means of the date printed on this page with the version on the Internet. You should use the most up-to-date version.

The actual version of this addition to the DpuScan Reference Manual is found on the web at:

<http://www.jkimaging.com/pdf/scanner-options/Options-Canon3020ff.pdf>

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1 Description of the Scanner Options

1.1 Introduction

This documentation is valid for the following scanners:

- DR3020
- DR3080
- DR5020
- DR5080

You must use the following driver: **jukscsi**

The scanner is connected via a Standard SCSI Board; an ASPI driver must be installed.

Further scanners from the vendor Canon are supported via their Twain driver.

This program module was developed to enable setting the special options of the Canon scanners as specified above. These settings are forwarded to the unit via the jukscsi driver of Janich & Klass.

For enabling these settings, up to five tabs are available, depending on the equipment of the device. These tabs are either added to already existing property pages, or they are displayed in their own dialog that can be accessed via an "Options" button, or a similar one.

The first page shows the settings for the device. You can, for example, configure the scan mode or the die manual feed. With a DR3020, this is the only page displayed.

Use the second page for the different kinds of double-feed detection and for programming the Functions keys.

The scanners DR5020 and DR5080 feature functions to print a text on the original while it is scanned, or to stamp the created image later. These functions are set on the third page.

The settings for image processing, like despeckling, filling of narrow lines etc. are found on the forth page.

For exact filtering, the use of Gamma tables is recommended. Depending on the model series, different tabs are used.

1.2 Device Options

This page and the next page "Operation" comprise settings for the device that define the process or the general behavior of the device.

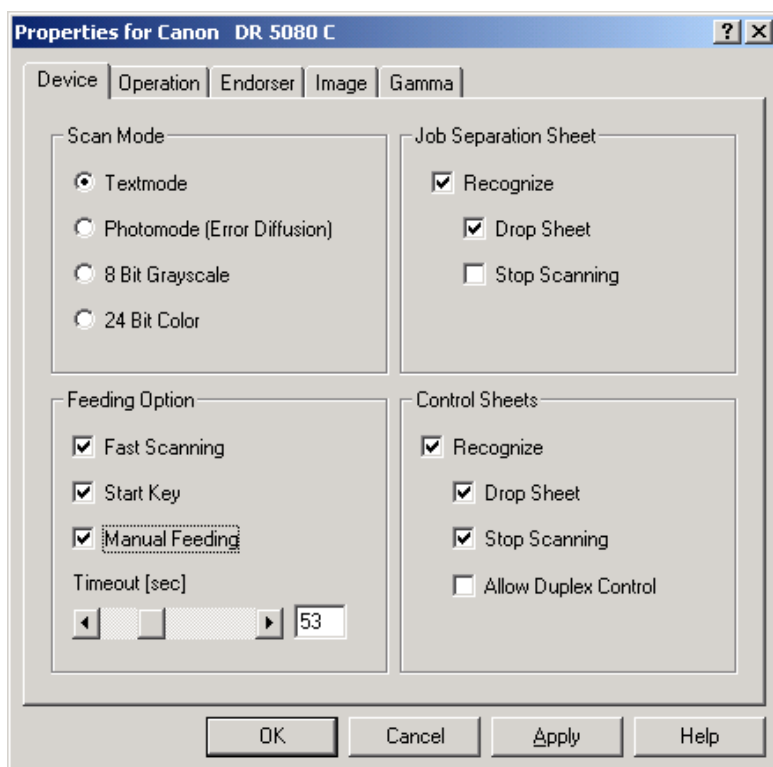


Illustration 1 – Options Tab: Device

1.2.1 Scan Mode

Depending on the scanner model, the device is able to deliver bitonal, or gray, or color image files.

The bitonal (black/white) mode can distinguish between simple text documents and documents with photos or illustrations. At Photo mode, the image parts are created not by dithering, but with the so called "Error Diffusion" that delivers a smoother image impression.

Please note that the image size depends on the actually set mode; gray-scale images are eight times larger and color images even 24 times larger than the corresponding bitonal images.

Sometimes, 3 Bit Color and 16 Bit Color are offered. These formats, however, are not supported here. The formats 6 Bit Color and 12 Bit Color are transformed to the more usual format 24 Bit Color.

Please also note that the mode can be set only *in common for both pages*. On the other hand, the DR3080C, for example, is equipped with a color camera only for the front page. When "Color" is set, the front page delivers a color image, while the back side delivers a gray-scale.

1.2.2 Feeding Option

You can select from several options:

- | | |
|-----------------------|---|
| Fast Scanning | <p>This option causes an increased document throughput while scanning, as only every second image line is captured. The "missing" lines are later calculated and inserted, so that again a complete image is created.</p> <p>If the images shall later be processed by OCR, you should check whether the achieved image quality is sufficient for not causing problems with the OCR.</p> |
| Start Key | <p>This setting allows to first start the program and to place the paper stack on the feeder only later. The scan job can then be started at the device itself, using its Start key.</p> |
| Manual Feeding | <p>The manual feeding allows individual feeding of the documents, sheet y sheet. This is recommended for very thin or delicate papers.</p> <p>If this option is disabled, the scanner will immediately throw the "No Paper" message if no paper is placed in the feeder.</p> <p>At Timeout (sec) the number of seconds can be defined that the device has to wait at manual feed until an error message is thrown when the feeder is empty.</p> <p>The value Zero disables the timeout (unlimited waiting period).</p> |

1.2.3 Job Separating Sheets

Separator sheets have, at their upper edge, a signature consisting of large beams, similar to a barcode. Such separator sheets and control sheets usually belong to the scope of delivery for the device, but they can also be purchased from Canon.



Illustration 2 – Canon Job Separation Sheet

If the recognition of such sheets is enabled, the next sheet will be imprinted if the **After Separation** option is enabled on the Endorser tab.

If **Recognize** is active, the JUKSCSI driver generates additional image information for all images. A recognized separator sheet sets the "Recognized" flag (%K[297297]) to "1" and the sheet type (%K[312312]) to "1". By means of this information, DpuScan can, for example, execute the change to another directory, or create a new multi-page document.

If **Drop Sheet** is active, the sheet (and probably its back side) including the additional information, is *not* sent to the scan program.

So, in this case, the print would be added only if this option was enabled.

If the **Stop Scanning** option is active, the "Stop Key pressed" message is sent to the program, after the separator sheet.

1.2.4 Control Sheets

Similar to the separator sheets, the control sheets have a large "bar code" at their upper edge.

There are the following kinds of control sheets:

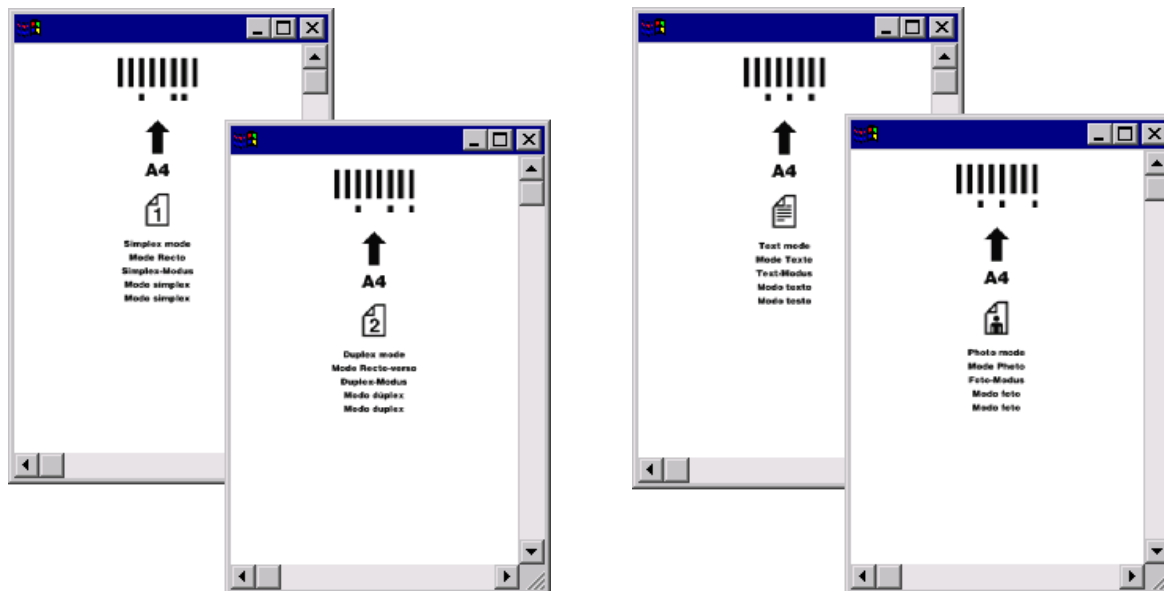


Illustration 3 – Canon Control Sheets Simplex-Duplex and Text-Photo

- Switch over to Duplex mode (Type 2)
- Switch over to Simplex mode (Type 3)
- Switch over to Photo mode (Type 4)
- Switch over to Text mode (Type 5)

If **Recognize** is checked, the scanner will switch over to the corresponding mode immediately when such a sheet is recognized.

If the **Allow Duplex Control** option is disabled, the driver will throw an error message (Sequence error) when changing from simplex to duplex, or vice versa.

The error is thrown only in case of a real switch-over; switching over from duplex to duplex, or simplex to simplex certainly has no consequences.

With the recognition enabled, the JUKSCSI driver generates additional image information for all images. A recognized Control Sheet sets the "Detected" flag (%K[297297]) to "1" and the sheet type (%K[312312]) from "2" to "5", as above. Using this information, DpuScan can, for example, create certain events.

If **Drop Sheet** is active, the sheet (and probably its back side) including the additional information, is *not* sent to the scan program.

If the **Stop Scanning** option is active, the "Stop Key pressed" message is sent to the program, after the Control Sheet.

1.3 Operation Options

Same as on the **Device** tab, this one allows to make settings for the general behavior of the device:

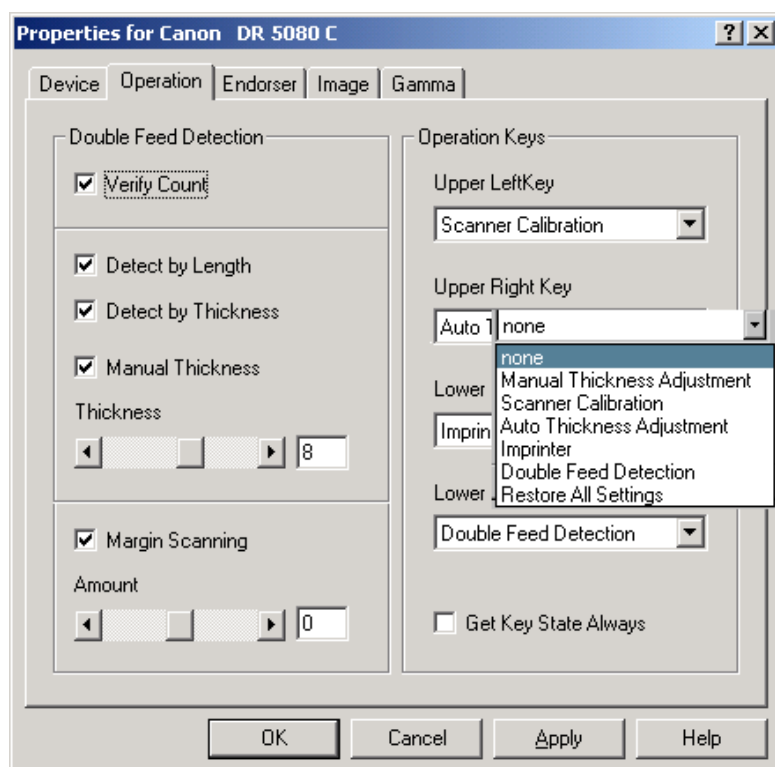


Illustration 4 – Options Tab: Operation

1.3.1 Double Feed Detection

You can select from several options:

Verify Count

The easiest method to detect a double feed is to count the sheets before and during the scan process. To count, press the "Count Only" key at the device and let the stack go through the machine, or you set the correct number, using the arrow keys.

When you enable the **Verify Count** option only then, the scanner will compare the number or expected sheets with the number of scanned sheets; in case of an error, a "Sequence error" message is thrown.

Detect by Length

The continuous survey of the length of the scanned originals allows to detect double feeds. If a paper is considerably longer than the preceding one, it may be a double feed.

Detect by Thickness	The scanner has a sensor to measure the thickness of the paper. When a sheet is considerably thicker than the preceding one, it may be a double feed.
Manual Thickness	<p>There are two possibilities to set the paper thickness for a double feed detection. First, you can measure the thickness of the first (or better: of a typically) thick sheet, or you can enter the thickness manually.</p> <p>For manual setting, values can be entered between 1 (the thinnest) and 13 (the thickest); default is 7.</p>
Margin Scanning	<p>This option allows to generate an additional black frame around the whole image. This synthetic – and therefore completely black – border can be captured more easily when cropping the image.</p> <p>This additional border can also be used to place a virtual image stamp there, with the advantage that the image itself is not stamped; so no information can get lost.</p> <p>On the other hand, the image can partly be cut, for example the punched border, or the black corners originating from copying stapled originals.</p>

1.3.2 Operation Keys – Keys on the Device

The scanner models DR5020 and DR5080C have four programmable function keys on their upper operation field.

Here, you can set how the keys shall be assigned:

Auto Thickness Adjustment	Sets the mean paper thickness. For a description of the exact procedure, please view the scanner manual.
Scanner Calibration	This might be used to, for example, calibrate the white value of the background (gray recycled paper or yellowish newspaper, instead of normal letter sheets). Canon did not support this option with their scanner firmware, at the time this manual was written.
Automatic Thickness Adjustment	The scanner can either detect the paper thickness automatically (pre-setting), or use a fix, manually set thickness.
Imprinter	Switches the optional imprinter on or off.
Double Feed Detection	Switches the double feed detection on or off; this makes sense if a stack contains unusually thick or long documents.
Restore All Settings	When the such assigned key is pressed, all modifications that have been made manually since the latest loading of the settings by the driver, or since the scanner was switched on, are made undone.

Get Key State Always

Only if this option is enabled, the driver will get the status of the programmable functions keys and will enter it as additional information in the image header:

The values 1 – key pressed – or 0 – not pressed – are found in the header at the following places (counting starts with 0).

- F1 Byte 389 = %K[389389]
- F2 Byte 396 = %K[396396]
- F3 Byte 403 = %K[403403]
- F4 Byte 410 = %K[410410]

1.4 Endorser Options

Use this page to make settings for the built-in printer "Endorser", for the function of the stamp and for its counters.

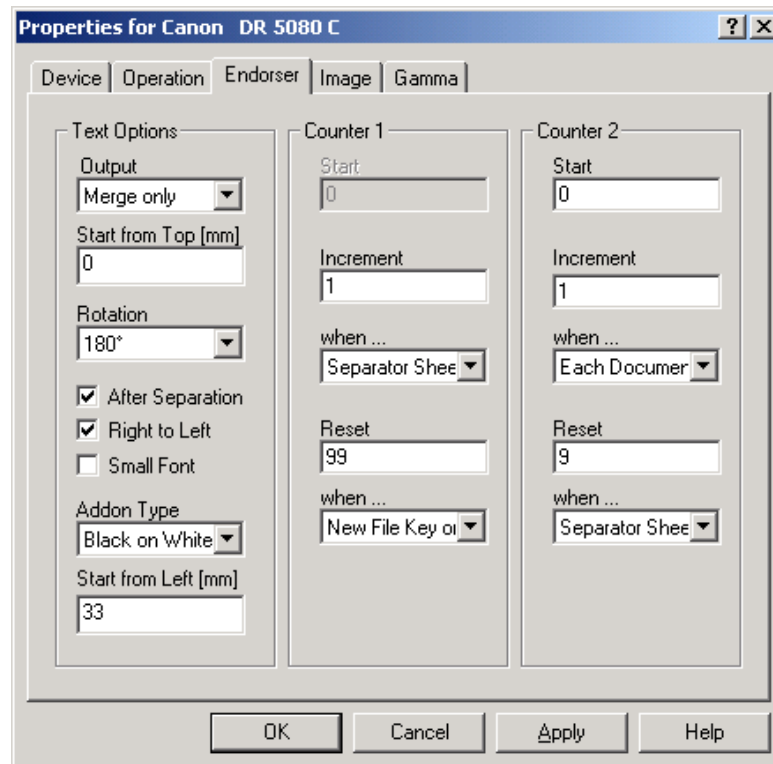


Illustration 5 – Options Tab: Endorser

1.4.1 Text Options

Output

The models DR5020 and DR5080C can be equipped with an endorser, also known as imprinter. It is an inkjet printer, used to print/stamp the sheets.

To enable the endorser, the corresponding option must be enabled in the setting dialog of the scan program!

With the JUKSCSI driver, the printing process is determined on the first tabs of the setting dialog. These settings are the same for all scanners – also from other suppliers – and are accessible to the scan program also through other channels.

So, the application can administer the text to be printed and can save it, independent of the scanner. Mainly the – also uniform – formatting of the scanners is therefore explained in the detailed Reference Manual for DpuScan– see Chapter 8.4.3.

Use the **Output** dropdown list to determine, where the print shall be placed:

Print only

The text is printed on the front page of the document.

Printer heads that can not be moved to a "parking position" tend to dry out already after a short period of time. So please make sure that the printer head is in proper function when you want to use the endorser for printing the paper. Please also view the documentation for the device.

Merge only

The text is merges into the ready image of the front page; it can not be removed any more, same as the printed text. There is, however, no print on the paper.

Print and Merge

Both modes can be used in common. This enables an exact matching of original document and image file.

After Separation

When this option is enabled, only the first sheet after a detected separator sheet will be printed. Otherwise, all front pages will be printed or stamped, respectively.

Start from Top

This value defines the distance from the upper edge of the paper to the text to be printed, in mm.

Note: This value overwrites the Y-Pos value for the endorser that can be set on the general tabs.

Rotation (of the characters)

This option allows to arrange the individual characters within the text to be printed. The whole text can not be rotated as printing is possible only in the direction of the paper going through the scanner.

To get a text printed upside down, the characters must be rotated by 180°, and then the Option to print from Right to Left must be enabled.

(Print from) Right to Left

This option causes the scanner to print the text backwards. In combination with the 180° option, you get a readably text, upside down.

Small Font

When this option is enabled, the scanner will use a smaller font for printing.

Addon Type

There are three possibilities to merge the text to be printed into the image:

Black on White	First, a white rectangle of matching size is copied into the image, then the black text is laid into it.
White on Black	The contrary to Black on White.
Black transparent	No background is created, but the text is directly copied into the image. You must make sure that the text is not printed on black image background, mistakenly.

Start from Left

This is the distance of the printed text from the left edge of the paper feed (and not from the left edge of the paper).

The paper is certainly printed, where the printing head is positioned.

1.4.2 The Counters

Two counters are available for the endorser text:

The first counter, "sheet counter", is uses also for other scanner types; it is therefore administered by the scan application and is saved when the program is being closed. A second counter, "documents counter", is actually supported only by Canon; therefore it is placed here.

Settings for the counters:

Start	This is the first value to be printed.
Increment	This is the value, by which the counter shall be incremented when a certain event happens.
Reset	This is the value to which the counter is reset.

if.... these are events that lead to an increment or reset:

Each Document	happens every time when a new sheet was scanned
New File Key	happens when the key labeled with "New File" is pressed at the device
Separator Sheet	happens when a separator sheet was detected, under the condition that this detection has been activated
New File Key or Separator Sheet	happens when one of the two preceding events happens
Never	will never happen

Formatting:

Counter formatting in the text to be printed is taken from the scan application; please view the corresponding documentation. Normally, formatting as described in the instructions for the Twain/ISIS driver have no effect.

To create a two-step counter, usually the format %D.Bu is utilized. Here, D means the second counter ("documents counter") and B means the first counter ("sheet counter").

For D and B, the numbers 1-8 can be entered (eventually with leading zero) for a 1-8digit numbers representation (with leading zeros). The characters "%" "." and "u" are firm components of the format declaration.

Image Header (Additional Image Information)

The image header is text with 512 characters that can be populated with different image data.

The first 256 Byte are reserved for a general image header, followed by another 32 Byte area for listing recognition results. Please view the special documentation of the image header for a more detailed description of these two areas.

The Canon-specific area, that is populated with the actual values for detected separator sheets and control sheets and with the state of the printed key, for every image, spreads from Byte 288 to Byte 411:

		R	e	s	e	R	v	i	e	r	t		
--	--	---	---	---	---	---	---	---	---	---	---	--	--

000 287

F	S	h	e	e	t	=		(n)	(n)	
---	---	---	---	---	---	---	--	-----	-----	--

288 289 290 291 292 293 294 295 296 297 298

F	S	h	e	e	t	T	y	p	e	=		(n)	(n)	
---	---	---	---	---	---	---	---	---	---	---	--	-----	-----	--

299 300 301 302 303 304 305 306 307 308 309 310 311 312 313

N	E	w	F	i	l	E	=		(n)	(n)	
---	---	---	---	---	---	---	---	--	-----	-----	--

314 315 316 317 318 319 320 321 322 323 324 325

C	O	u	n	t	O	N	I	y	=		(n)	(n)	
---	---	---	---	---	---	---	---	---	---	--	-----	-----	--

326 327 328 329 330 331 332 333 334 335 336 337 338 339

T	E	x	t	P	h	O	t	o	=		(n)	(n)	
---	---	---	---	---	---	---	---	---	---	--	-----	-----	--

340 341 342 343 344 345 346 347 348 349 350 351 352 353

S	I	n	g	I	e	D	o	u	b	I	e	=		(n)	(n)	
---	---	---	---	---	---	---	---	---	---	---	---	---	--	-----	-----	--

354 355 356 357 358 359 360 361 362 363 364 365 366 367 368 369 370

S	T	a	r	t	K	E	e	=		(n)	(n)	
371	372	373	374	375	376	377	378	379	380	381	382	383

F	0	=		(n)	(n)		F	1	=		(n)	(n)	
384	385	386	387	388	389	390	391	392	393	394	395	396	397

F	2	=		(n)	(n)		F	3	=		(n)	(n)	
398	399	400	401	402	403	404	405	406	407	408	409	410	411

If the header is evaluated, for example, by means of the DpuScan % variable %K, the entry %K[311312] will return the 311th and 312th byte of the header, and thus the indication which is kind the kind of the just detected document.

1.5 Image Options

This page is used to influence the quality of the returned image. Canon Scanners feature a built-in module that takes over such tasks.

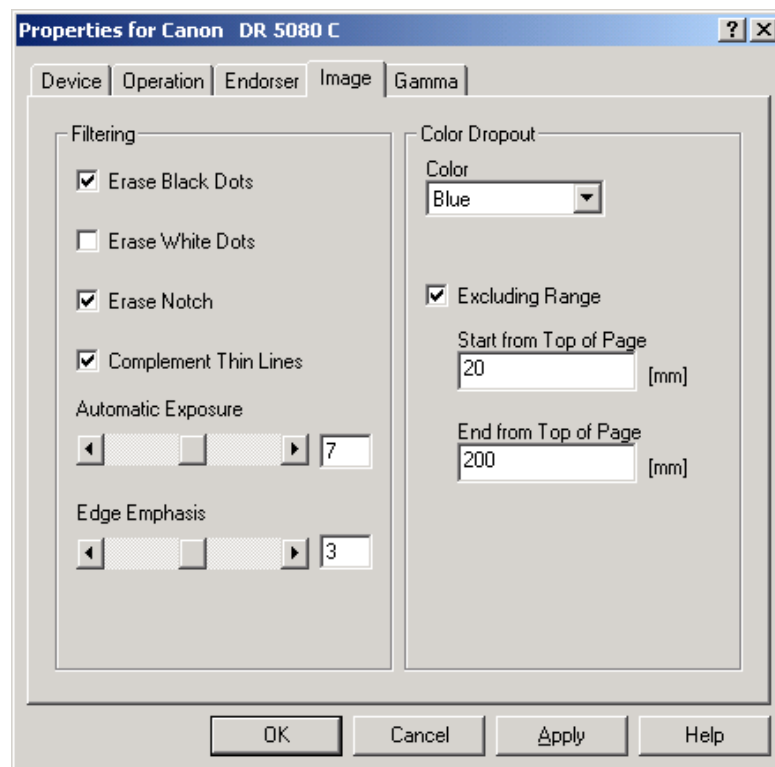


Illustration 6 – Options Tab: Image

1.5.1 Filtering

Erase Black Dots

This function removes isolated black dots from white ground. The function works in text mode and in photo mode. For the latter, please note that the image areas containing photos may be "cleaned" unintentionally.

Erase White Dots

This function removes isolated white dots from black ground. The function works in text mode and in photo mode. Also here, images and graphics can be influenced unintentionally in the photo mode.

Both Erase functions can be used when the scanned images shall be processed by OCR.

Erase Notch

This function works in text mode and in photo mode. It removes pixels that surpass the edges of characters, for example. The function is also suited as preparation for the OCR process.

Complete Thin Lines

This function works in text mode and in photo mode and completes interrupted or faded lines.

Automatic Exposure

This function sets brightness and contrast as per the shading in the range where the image is selected. This function works in text mode and in photo mode. You can set a value between 1 and 13, default is 7.

Edge Emphasis

Sets the level for enhancement of the contours of characters. Setting can be made in 5 steps, default is 3. Edge Emphasis works in all modes.

1.5.2 Color Dropout

Here, the capturing of one color: Red, Green or Blue, is suppressed. This makes sense in order to suppress, for example, colored backgrounds on checks, in order to ease the OCR.

You can exclude a certain **Range** of the image from this color dropout, by indicating its **Start** and **End**. Color Dropout works in all modes, except Color.

1.6 Gamma Tables

Gamma tables describe gamma curves with which incoming color values in the range from 0 to 255 are transformed to other, user-defined values, again in the range from 0 to 255.

The JUKSCSI driver allows loading from a table for gray and one each table for each color, with color scanners. The tables are stored in files of type "*.pxg". These files have, in their first line, a comment, in the second line the number "256" followed by 256 lines with the desired output values for the individual entry values 0 to 255. Please view the scanner manual for examples and further explanations.

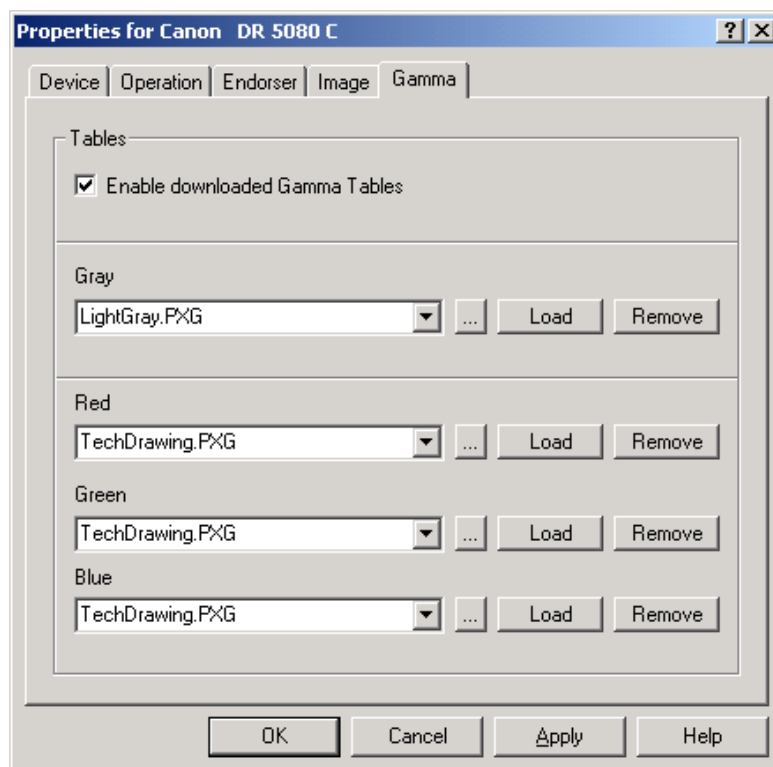


Illustration 7 – Options Tab: Gamma

The table file may be entered directly, or you select it from the (drop down) list of the files already in use, or you click the "..." button to reach the "Open file" dialog.

Once the table is selected, click the "Load" button to load it into the memory of the scanner. When it is no longer required, use the "Remove" button to unload it again. Both processes take about two seconds; the settings remain active also after the scanner is switched off.

Enable downloaded Gamma Tables

The scanner can use either the loaded tables, or the tables from the factory setting. By using the built-in tables, the loaded tables are not unloaded.

1.7 Gamma Tables (from DI2-Version 2396)

For the model series starting from DR-3080C, the JUKSCSI driver uses a different tab to administer the Gamma tables:

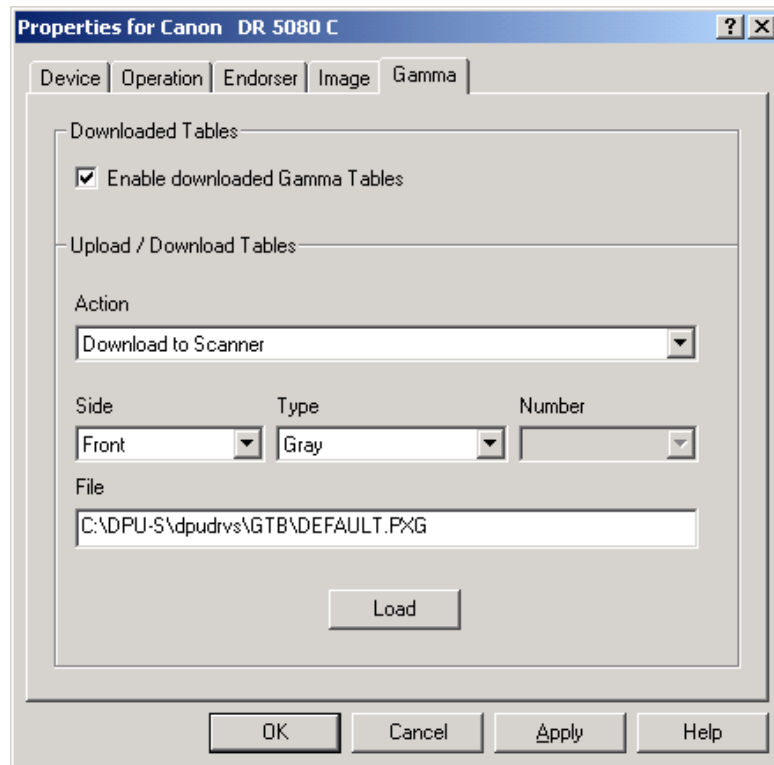


Illustration 8 – Options Tab: Gamma from Version 2396

Depending on the scanner, on the camera (side) and on the selected mode, up to 8 tables can be utilized. Tables can be loaded into the scanner – seen from the scanner, it is a "Download" – or they can be written to a file, from the scanner, "Upload".

Before loading / saving, you have to indicate with which table you intend to work, so side, scan mode and Number must be selected:

Side	Front side or back side
Type	Simple Black/White (Text mode) Error Diffusion (also known as Photo mode) Gray Red channel of a RGB color image Green channel of a RGB color image Blue channel of a RGB color image

Number

The Number can be selected only if a table is to be read and to be saved to a file.

When the **Enable downloaded Gamma-tables** option is enabled, the actually loaded tables are utilized in the individual modes; Number = 0 is used.

If this option is disabled, one of the other built-in tables is used. Please view the relative scanner manual for how to select such a table.

Click the **Load / Save** button to start the relative process. First, you will be asked for the file, then the table will be loaded or be exported into a file. Loading a table into the scanner takes a few seconds, saving is done immediately.

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