



# DPRSplit

File Splitter for Canon Dual Pixel Raw

## Brief user manual

Version 0.14 Public Beta

### What this application is for:

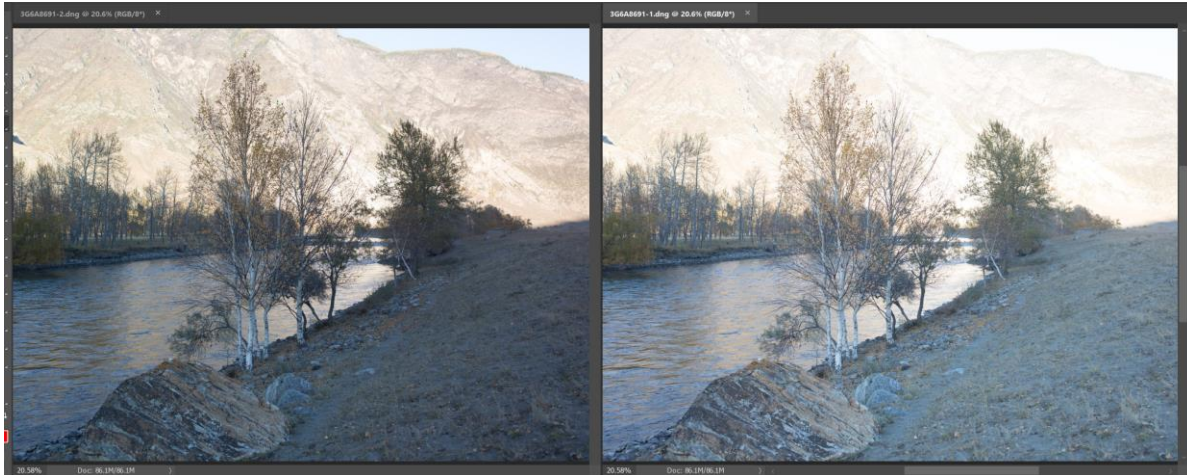
Canon several cameras' (namely: 5D Mark IV, EOS R, EOS R5/R5C, EOS R7, EOS R8, EOS R6 Mark II) sensor has a somewhat unusual pixel arrangement: each pixel has a dual photodiode construction. Each photodiode is associated with a subpixel, and thus the pixel is split in two. If Dual Pixel RAW mode is enabled in the camera, the resulting RAW file contains two images, or two frames: one composite, made from reading both subpixels, summed; and the other is made out of one set of subpixels. In other words, a pixel is composed of two subpixels, let's call them A and B. The first frame in a CR2/CR3 file is made of "A+B", while the second is made from "B" subpixels only.

The intended use of this arrangement is to enable some extra editing after the shot: because of the parallax between the subpixels, Canon Digital Photo Professional software allows one to preform microadjustment of focus, bokeh shift, and ghosting reduction.

However, there is one more possible use for a dual-pixel raw, which is not covered by the manufacturer: **the second frame, the one that is made out of only "B" pixels, collects half of the light that the composite frame does, as if it was exposed one stop lower compared to the composite frame.** In essence, in Dual Pixel Raw mode, the camera records into one file some equivalent of two shots, bracketed by 1 EV.

The **DPRSplit** application is intended to extract this additional frame out of the CR2/CR3 taken in Dual Pixel RAW mode, and save it as a DNG. Resulting DNG files can then be opened and processed in (practically) any raw converter featuring DNG support.

The screenshot below shows two frames of one such shot taken in Dual Pixel RAW mode, extracted via **DPRSplit**, and processed in Adobe Camera Raw 10.1 (with all sliders set to zero), and further opened in Photoshop:



Left: the “B” frame – all of the highlights are preserved. Right: the “A+B” frame, the sky and some areas of the mountain are featureless and blown out.

The **DPRSplit** application allows one to:

- Extract the second (1 EV down) frame or both frames from Dual Pixel RAW files
- And save the extracted frames as DNG files.

### System Requirements

- OS and CPU
  - Windows 7 – Windows 10, 64-bit
  - or Mac OS X/macOS 10.6-10.13, 64-bit processor (*so, all Intel Macs, except for some models from 2005-06 with Core Solo and Core Duo processors*)
  - We don’t see much need in a Windows/32-bit version of the application, but should there be demand, we will create supply.
- Screen resolution no less than 1600x900
- 50MB of disk space for the application

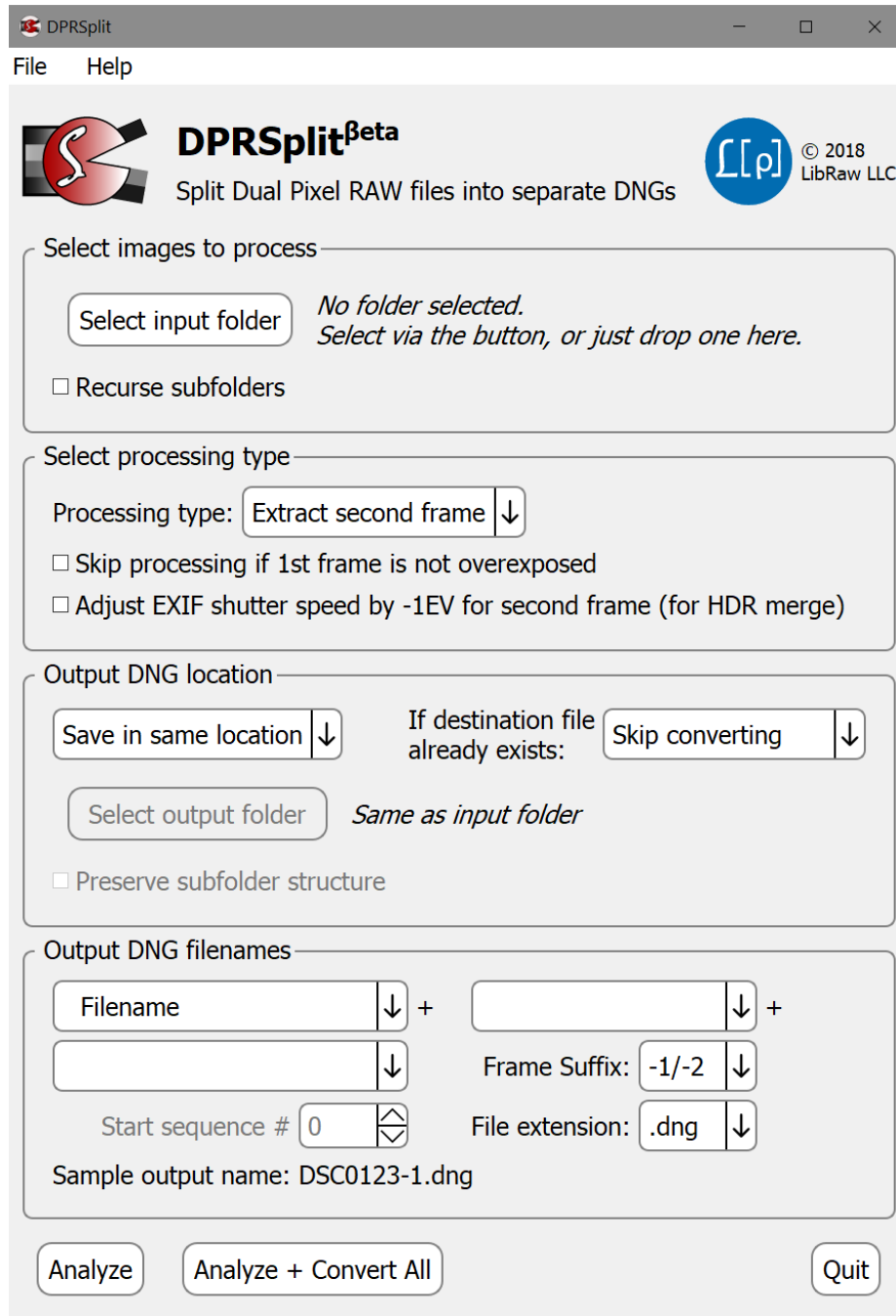
### Installing the program

- **Windows:** launch the installation file (*DPRSplit-N.M.a.b-x64-Setup.exe*), read the license agreement, and upon agreeing to it, go through the installation Wizard
- **Windows/Portable** version: install the program as above, and then copy the **C:\Program Files\LibRaw\DPRSplit** folder onto a flash drive. Now you can run the executable file **DPRSplit.exe** on any Windows computer right from the flash drive. No drivers, DLLs, and so forth are installed into the system folders, so the program is completely autonomous
- **Mac:** open the installation disc image, read the license agreement (EULA.txt) and if you agree with it, drag the application icon into the **Applications** folder

## Using the program

### Program main screen

When first launching the program, you will see the following main screen:



The main screen of the **DPRSplit** application contains five groups of controls:

- **Select images to process** – allows one to select the files to be processed and displays the number of files to be analyzed and processed
- **Select processing type** – select the processing mode for the input files

- **Output DNG Location** – allows one to set the output folder, and how to proceed if a destination file already exists
- **Output DNG filenames** – allows one to set the rules for generating the names for the output files
- **Action buttons** – allows one to launch an action or quit the program

#### Select Images to Process Group

- **Select input Folder** button allows one to select a folder with files one wants to process. Aside from this button, one can Drag-n-Drop a folder or a set of files into the program window
- **Recurse subfolders** – include subfolders while searching for CR2/CR3 files

Aside from the **Select input Folder** dialog and Drag-n-dropping something into the window, one can also pass files into the program via:

- Running the program from the command line, indicating the necessary folders/files in the command line after the name of the file to be launched
- Dropping files/folders onto the program icon.

In these two cases, as with Drag-n-dropping into the window, the rules for processing the received list are the same:

- If the names that were passed contained folder names, then the first folder in the list will be used
- If it only had filenames (*even from different folders*), all of the files will be processed.

#### Select processing type group

- **Processing type** – processing type: a dropdown that allows one to switch between the extraction of the second frame only, and extraction of both frames. We would wager that, as a rule, one will only need the second frame, as the first one is already decoded in any raw converters that support Canon 5D Mark IV CR2 files/Canon EOS R/R5/R7/R6-II CR3 files.
- **Skip processing if 1<sup>st</sup> frame is not overexposed** – if the input file contains fewer than 1000 pixels with raw data numbers higher than the Specular Highlights limit, then the file will not be processed, as there would seem to be little use from it.
- **Adjust EXIF shutter speed by -1EV for second frame (for HDR merge)** – simulates reduction of exposure by 1 stop by setting the shutter speed in the EXIF of the auxiliary frame 1 stop faster. This may be useful (and even necessary) while merging first and second frame in certain HDR stacking applications that analyze frames for exposure parameters.

#### Output DNG Location Group

Allows one to set the output folder

- The same as the input folder (*“Save in same location”*)
- A different one (*with the option of selecting it through “Select output folder” button*).

The setting **If destination file already exists** dictates what is done if the output DNG file already exists:

- **Skip convert** – doesn't generate the file
- **Overwrite** – overwrites the file

- **Create  $-(1).dng$  file** –  $-(1)…-(9)$  will be added to the name of the file (*but if such files already exist, then  $-(10).dng$  will not be created*).

The option to **Preserve subfolder structure** becomes available if **Recurse Subfolders** (in the **Select images to process** group) is checked and the destination (**Output DNG location**) is set to **Save in new location**. If **Recurse Subfolders** is checked, the destination will contain a subfolder structure mirroring the structure in the source folder.

### Output DNG filenames Group

This group sets the rules for generating the names of the output files.

These names are generated out of 1 to 3 elements:

- **Filename/FILENAME/filename** – the name (*without extension*) of the file. Three options: maintaining symbol case, all to upper case, all to lower case, correspondingly.
- **Number in the sequence**, can contain 2-4 digits.
- **EXIF date of the shot in different formats** (*dd, MM, yy, yyyy means, accordingly, the day of the month, the number of the month, two or four-symbol number of year*).
- **Aside from choosing one of the above-mentioned options**, one can also write any text one wants into the field (*other than forbidden symbols that can't exist in a filename*).

If, as one of the elements of the resulting name, the sequence number is chosen, then the start number can be set in **Start Sequence #**.

The new filename will have a suffix added to it that will contain the frame number:  $-1/-2$ ,  $_1/_2$ ,  $-A/-B$ ,  $_A/_B$ ,  $-a/-b$ ,  $_a/_b$ . The frame suffix will be selected from the **Frame Suffix** dropdown.

The file extension (*.dng or .DNG*) is set by the “File extension” parameter

The last line of this group is an example of a generated filename if the file being processed is named DSC0123.

### Action buttons group (in the lower part of the screen)

- **Analyze, Analyze + Convert All** – when pressing one of these buttons, the analysis window will open and the program will shift to analyzing the metadata of the files being processed.
- **Quit** – exit the program.

### Program Menu

- **(Mac) DPRSplit**
  - **About DPRSplit** – displays info about the application version
  - **Preferences** – displays the dialog that allows one to change the settings for output, as well as some other application settings
  - **Quit DPRSplit** – exits the application
- **File:**
  - **Open Folder** – sets the source folder for conversion, same action as Select Input Folder in the main window
  - (Windows): **Preferences** – displays the dialog that allows one to change the settings for output, as well as some other application settings
  - (Windows): **Quit** – exits the application

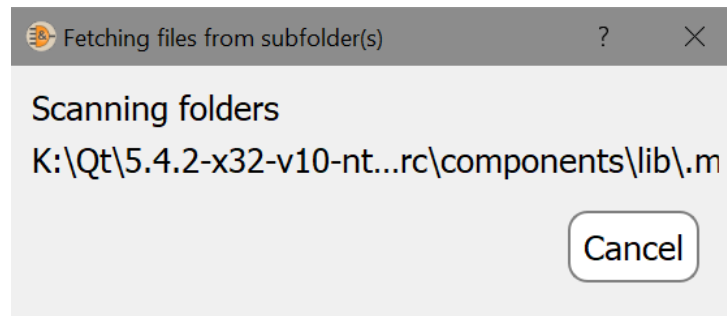
- **Help:**
  - (Windows) **About** – displays info about the application version
  - **PDF Manual** – launches a PDF viewer (the default one on your computer) to display this Manual
  - **DPRSplit Web Page** – opens application website in your default browser
  - **Contact Technical support** – opens the feedback page on the application website
  - **Check for updates** – manually checks for updates

## Processing Start

After the source folder (and the destination, if necessary) is selected, press one of the buttons in the lower portion of the main application window:

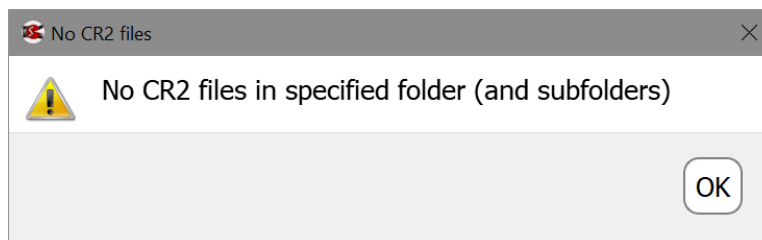
- **Analyze:** to build a list of files for processing and display a metadata analysis window (described below). You will need to start processing by pressing one of the buttons in that metadata analysis window.
- **Analyze + Convert All:** a list of files to be processed will be built «behind the scenes» and the processing will be started automatically for all Dual Pixel RAW files found in the source.

If the search for CR2/CR3 files takes more than a second (as it is the case when there are a lot of subfolders and **Recurse Subfolders** option is on), you will see an informational window showing the progress of the folder scan:



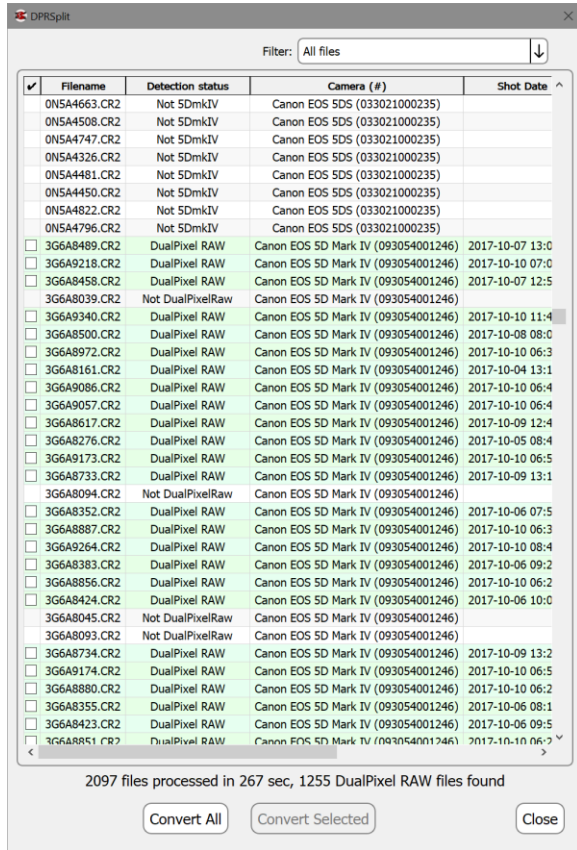
Upon pressing **Cancel**, the CR2/CR3 file search will be interrupted and the program will return to the main window.

If no CR2/CR3 files are discovered in the selected folder/subfolder, the following message will be displayed:



If at least one CR2/CR3 file is found, the analyze metadata/file processing progress window will open.

## Metadata analysis and file processing process window



DPRSplit reads the metadata from all of the found CR2/CR3 files in order to identify those shot in Dual Pixel RAW mode.

The Detection status column indicates one of the following statuses resulting from file analysis:

- **Not supported camera** – not shot by supported camera.
- **Not DualPixelRAW** – shot in regular mode.
- **DualPixel RAW** – the file is fit for processing.

If there are a lot of files in the folder, it might be useful to use the **Filter** setting in the dropdown at the top of the analysis window:

- **All files** – show all files
- **Canon CR2/CR3 files** – only files from Canon cameras w/ Dual Pixel support
- **DualPixelRAW files** – only files shot in Dual Pixel RAW.

Regardless of the setting in the dropdown, files that have not been analyzed yet will displayed/

After reading all of the metadata, files that are suitable for further processing will have a green background.

If one needs to process only some of the selected groups, they can be marked with a checkbox in the first column, and one can press **Convert Selected** in the bottom part of the window.

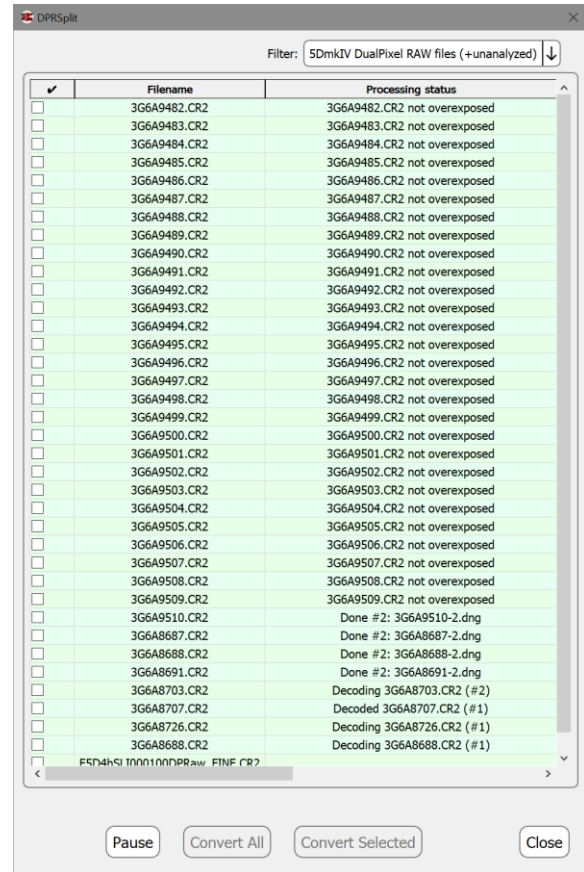
If one needs to convert the entire selected group, use the **Convert All** button.

The Close button stops the extraction process (the current file will finish processing) and closes the window.

After pressing one of the **Convert...** buttons, DPRSplit will start extracting and converting CR2/CR3 files into DNGs. During this, the Pause button will appear in the window, allowing one to pause the process (and then later continue it).

The Processing status column displays the stages of work:

- **Decoding *Filename*(#n)** – frame(#n) is being extracted.
- **Decoded *Filename*(#n)** – frame(#n) has been extracted.
- **Writing *Filename*** – the output file is being written.
- **Done: *Filename*** – processing has been finished, the DNG file(s) is/are written.
- **Filename not overexposed** – the checkbox “Skip processing if 1<sup>st</sup> frame is not overexposed” has been checked and the selected file has fewer than 1000 pixels exceeding the Specular Highlights threshold.
- **Error messages:**
  - ***Filename* already exists** – the file isn’t processed because the filename already exists, while the mode on the main screen was set to “Skip processing”
  - **Output filename generation failed** – an output filename could not be generated (for example, the mode “add –(1) to the name” was selected, but all of the (1)...(9) names were already taken by existing files).
  - **Bad output folder *Foldername*** – an output folder has been selected which cannot be saved into (*doesn’t exist, is not writable*)
  - **Could not write *Filename*** – cannot write a file (*there is no room, cannot write into the output folder, overwrite existing files has been set, but the file is a read-only*)
  - **Could not open *Filename*** – cannot open the input file (*for example, it was deleted between the metadata analysis phase and pressing the Convert button*).
  - **Could not decode *Filename*** – couldn’t decode the RAW data from the file.



After processing is finished, the **Pause** button disappears, and the **Convert All/Convert Selected** become active once again.

Above the Convert... buttons, the processing statistics will be displayed: how many files were processed, how many written, how many skipped.



## Program Settings

To access application settings,

- Windows: **Menu – File – Preferences** or **Ctrl-P**.
- Mac: **Menu – DPRSplit – Preferences** or **Command-**,

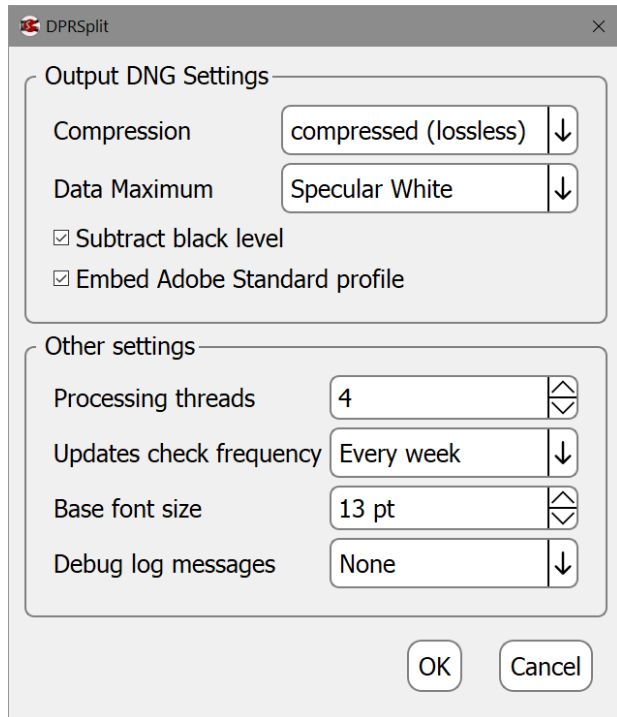
Preferences dialog contains two settings groups:

### Output DNG Settings group:

- **Compression:** whether one wants to compress the resulting DNG.
- **Data Maximum:** controls the content of the DNG White Level tag:
  - **Normal White** – «white» will be set to the Normal White value found in makernotes of RAW file.
  - **Specular White** – «white» will be set to the Specular White value found in makernotes of RAW file.
  - **Data Max (or specular)** – «white» will be set to the actual maximum found in raw data of the RAW file or to Specular White, if Specular White is higher.
  - **Data format max** – 16383 (minus the black level if the processing mode is set to subtracting black). This option may result in color artifacts in the highlights (such as pink clouds) if the raw converter incorrectly clips the highlights after applying white balance.
- **Subtract black level:** turns on subtracting black level in the output DNG. For properly-coded DNG interpretation, there's no difference as to whether the black level is subtracted or present as a tag in the DNG file, however some of the programs that process RAW (*for example, RawTherapee and Iridient Developer*) may work incorrectly with DNGs that have un-subtracted black levels. If, while processing the resulting DNG, you see a pink or blue highlight around the entire shot, select to apply black level subtraction here.
- **Embed Adobe Standard Profile** – when choosing this option, the Adobe Standard color profile will be turned on in the DNG file. If your RAW processing program doesn't understand such color profiles (*and/or uses its own, for example*), the option can be turned off and the resulting DNGs will be a little smaller.

### Other settings group:

- **Processing threads:** Processing threads: this number can be adjusted by the user, from 1 to the number of CPU cores (taking hyperthreading into account).
- **Updates check frequency:** sets the frequency for the automatic updates check, ranging from **Never** to **Every program run**.
- **Base font size:** allows one to change the font size to better fit the size of your monitor and application window.



- **Debug log messages:** switches on an auxiliary window containing the debug information that is necessary to provide user support. The window becomes available in the main Menu – Help section.

## Getting in touch with us

This is a beta version, and it's important to us to know your thoughts and suggestions. To contact us, please use:

- **Menu – Help – Contact technical support**
- E-Mail: [dprsplit-feedback@libraw.com](mailto:dprsplit-feedback@libraw.com)