

# Monochrome2DNG

A file converter for «monochrome-converted» cameras

Version 1.6

## Table of contents

Introduction: color cameras converted to Black and White.....	2
System Requirements .....	5
Supported cameras.....	5
Installing the program.....	5
Activating the Program .....	6
Activating the trial period .....	6
Activating a license key .....	7
Using the program .....	9
Program main screen .....	9
Program Menu .....	12
Processing Start.....	12
Metadata analysis and file processing progress window .....	13
Program Settings.....	15
Getting in touch with us.....	18
Appendix I: Manual Trial mode and License key Activation .....	19
Copyrights and Acknowledgements .....	22

## Introduction: color cameras converted to Black and White.

Almost all digital cameras that are released today are color cameras. Several Leica and PhaseOne models are rare exceptions, but these cameras are even more of a niche product than the color cameras or digital backs made by those same companies.

Nevertheless, there is demand for BW (Black and White) cameras (for reasons explained in detail below), and many photographers want BW cameras with the same lens mount as their main (color) camera, so that they can use the lenses they already own.

Because a color camera differs from a BW camera due to the presence of a color filter array (CFA, Bayer mosaics) over the sensor, converting a color camera to BW looks (theoretically) simple. Just remove the CFA, and your monochrome camera is ready. Of course, it's not as simple as it sounds, especially on DSLRs (because of possible AF issues): not only is removing the CFA a difficult task, when removing CFA you will have to disassemble the sensor sandwich (cover glass removal is not trivial on some cameras), remove the CFA and micro-lenses from the top of the sensor (taking care not to damage the sensor itself), re-assemble the sandwich, and perform alignment, "but those are just details."

Such conversion is done both by specialized companies ([Llewellyn Data Processing \(LDP\) LLC](#), [Cooled DSLR](#), [Monochrome Imaging Services](#), [HyperCams and Mods](#)) and by individual enthusiasts.

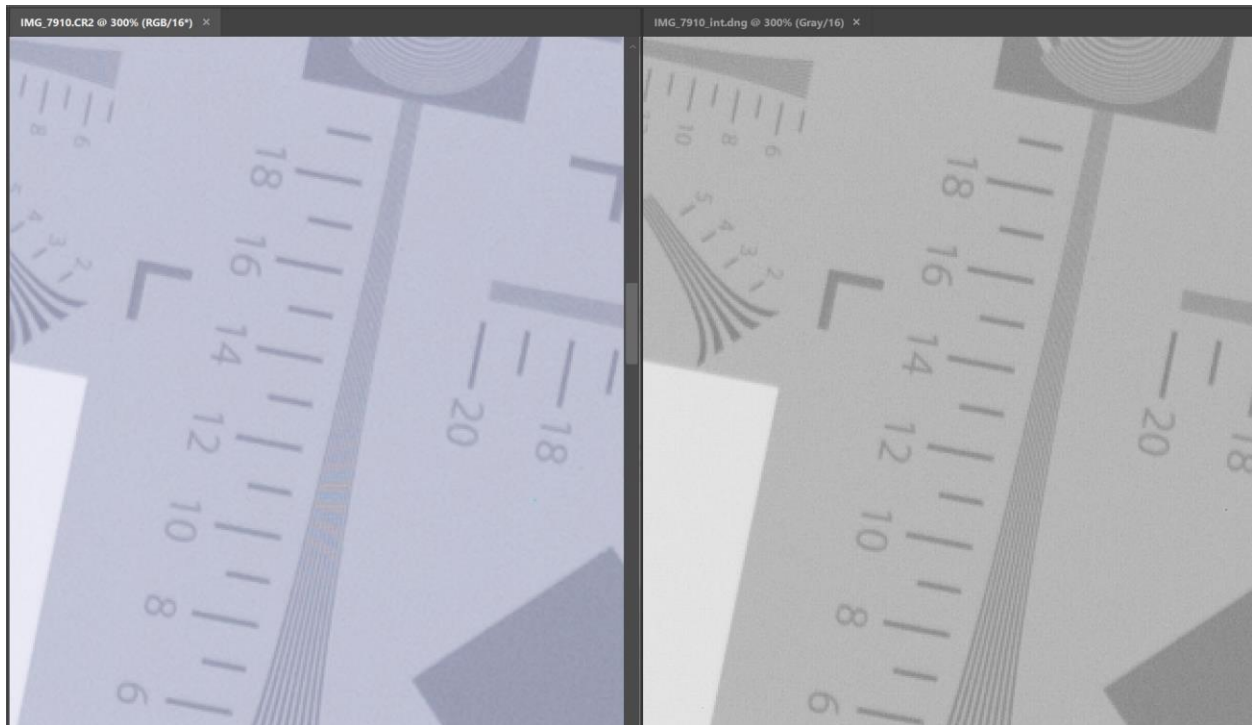
After the CFA is removed, the demosaicking process that is done during RAW file processing becomes unnecessary. This, in turn, leads to higher resolution and a decrease in the number of processing artifacts (see the [Bayer Moiré](#) article), **which is, essentially, why people preform the conversions of color cameras to monochrome.**

However, during such conversion, the firmware of the camera doesn't change, and the camera doesn't know that it's become monochrome, which leads to the following:

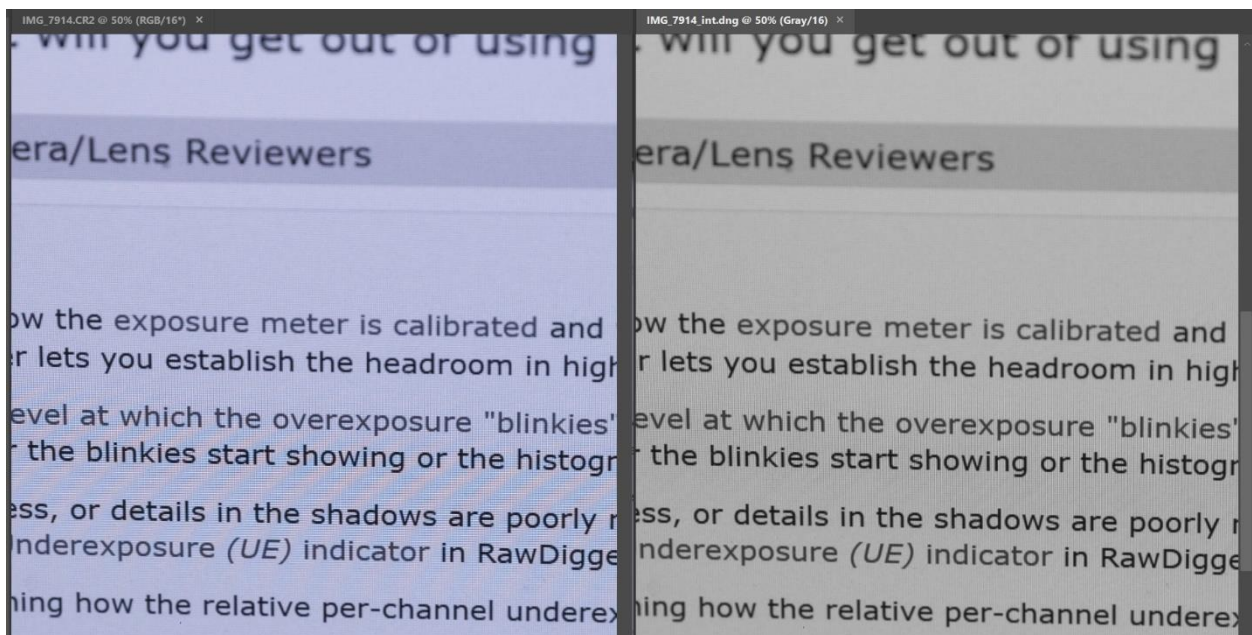
1. The monochrome file recorded by the camera cannot be told apart from a color shot without a complete analysis of the RAW data – all of the metadata corresponds to the color file.
2. In many cameras, sensor data is processed differently for different color channels before the RAW is recorded (for example, White Balance preconditioning for Nikon: the values of the red and blue pixels are multiplied by small coefficient). In the case of a camera converted to monochrome, equally exposed pixels that originally, before conversion, belonged to different channels, receive different RAW data numbers.

The first problem leads to most RAW processing programs continuing to think that they're processing a color file and, accordingly, preform demosaicking, which leads to resolution decreases, moiré, and aliasing.

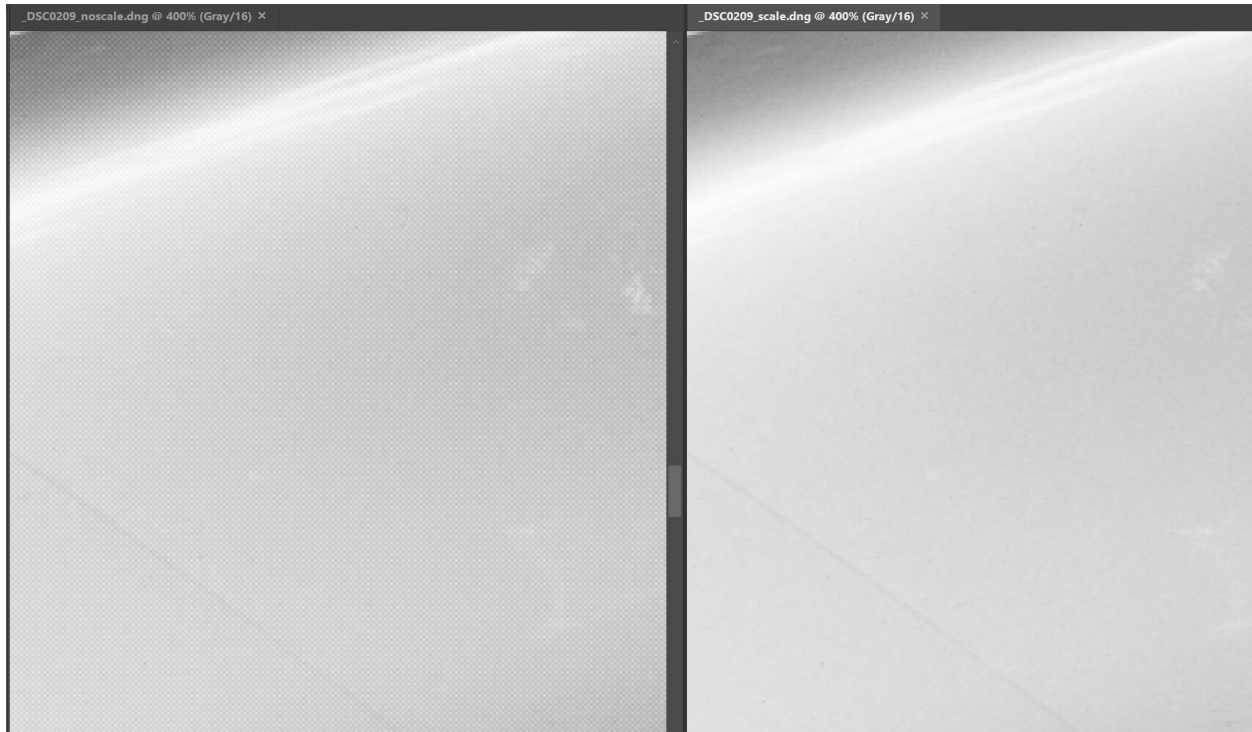
The image below shows the same shot taken with a Canon 6D (converted to a monochrome camera) and processed by Adobe Camera RAW 10.2. On the left, it's been processing like a color file (ACR will do this "by default"). On the right, the same RAW data, but ACR has read it as monochrome.



If you shoot any longish patterned object, the aliasing and moiré can occur on an even greater scale. Here's a shot of a computer monitor, scaled to 50%, on the left is "processed as color" and on the right is "as BW":



The second problem, different in-camera processing of “different color channels”, manifests as a grid-like pattern on even surfaces (visible only with high zoom: the size of the element is 1 pixel):



*Left: as is; right: with pattern suppression. Camera: Nikon D800E*

Various programs, including [RawPhotoProcessor](#), [AccuRaw Monochrome](#), and [darktable](#) support processing “without demosaicking” (not all of the listed programs can automatically suppress mosaic artifacts), however it’s impossible to use more popular RAW converters (Adobe Lightroom/Camera RAW, Capture One, DxO, etc.) normally with files that have been recorded by cameras converted to monochrome: the above-described problems will appear.

The **Monochrome2DNG** utility is intended to make using cameras converted to monochrome easier.

- It takes input files from cameras that have been converted to monochrome.
- It then saves it as “truly” monochrome DNG files, suitable for using with popular converters that support the DNG format (that is to say, almost all of them).
- With this:
  - One can turn on automatic “monochrome” recognition and convert only the files from converted cameras (so one can process a large archive that has both color and monochrome files in it quickly, in one pass).
  - Automatic mosaic pattern suppression is supported (output files will not have 1-pixel grid patterns)
  - Several formats for output DNG are supported, which allows one to use their RAW converter optimally.
  - Filter input files by Vendor/Model/Camera serial to process large archives faster.

## 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

## Supported cameras

**Monochrome2DNG** doesn't have any specific settings for separate cameras. All cameras with Bayer or X-Trans sensors that are supported by the [LibRaw](#) library should be supported.

## Installing the program

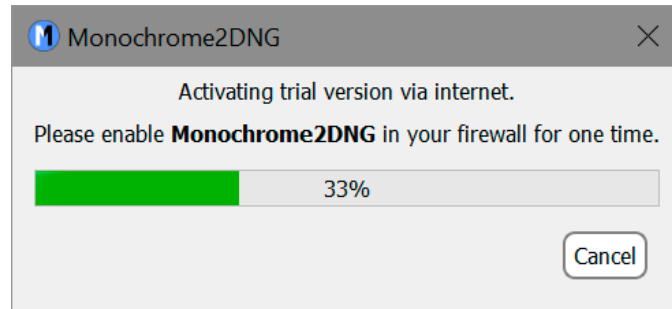
- **Windows:** launch the installation file (*Monochrome2DNG-N.M.a.b-x64-Setup.exe*), read the license agreement, and upon agreeing to it, go through the installation Wizard
- **Windows/Portable** version: install the program as above, and then copy the **C:\Program Files\LibRaw\ Monochrome2DNG** folder onto a flash drive. Now you can run the executable file **Monochrome2DNG.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 (however, each new computer will require activating the application, either in a trial mode, or with a license key, see the next section).
- **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

## Activating the Program

**Monochrome2DNG** works without any limitations or restrictions during the 30-day **trial period**. After this period ends, if you want to continue using **Monochrome2DNG**, you will have to purchase a license key.

### Activating the trial period

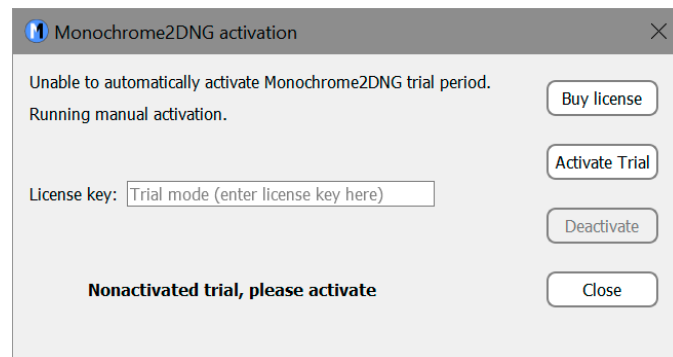
When first launching the program, **Monochrome2DNG** will automatically try to activate the trial period, and the following window will show up on the screen for a short time (up to 10 seconds, but a fast internet connection should make resolve this faster):



In case of successful activation, the window will close on its own, and "Trial: 30 days left" should appear in the bottom part of the program window, along with two additional buttons:

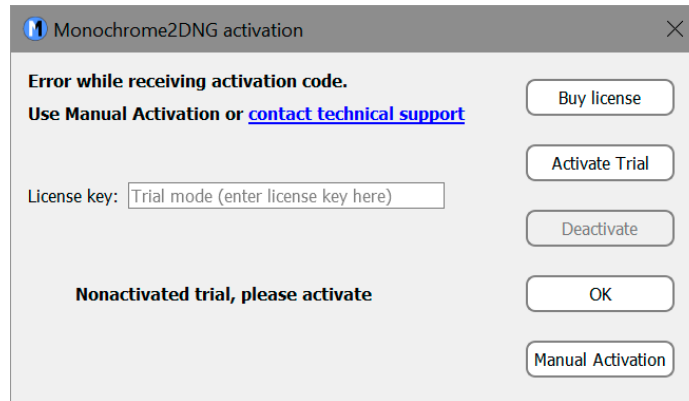
- Purchase application – this will open a page where one can purchase a license
- Activate license key – this will open a dialog for activating a purchased license key.

If the automatic activation of the trial version fails (for example, internet access is absent or restricted), then a window for manual activation will appear (the same window is used both for activating the trial version and for activating a purchased key):



When pressing the **Activate Trial** button, **Monochrome2DNG** will send a request to the activation server via the internet (if you have a Firewall, then you will need to give **Monochrome2DNG** one-time access to the internet).

If after one minute, connecting to the activation server hasn't happened, then a **Manual Activation** button will appear in the activation dialog, which will allow one to activate the program through a Web browser or through e-mail:



Manual activation is described in appendix 1 at the end of the current text.

### Activating a license key

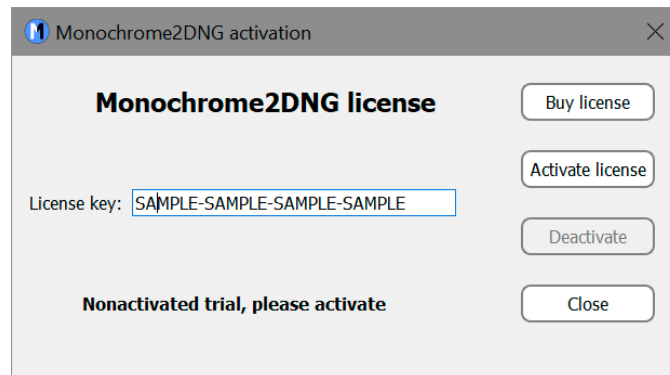
A license key can be bought by going through the following links:

- Purchase application – in the bottom bar of the program
- Menu – Help – Purchase/Activate –Buy License button

The license key will need to be activated. To open the activation dialog, use:

- Activate license key button in the program's bottom bar
- Menu – Help – Purchase/Activate

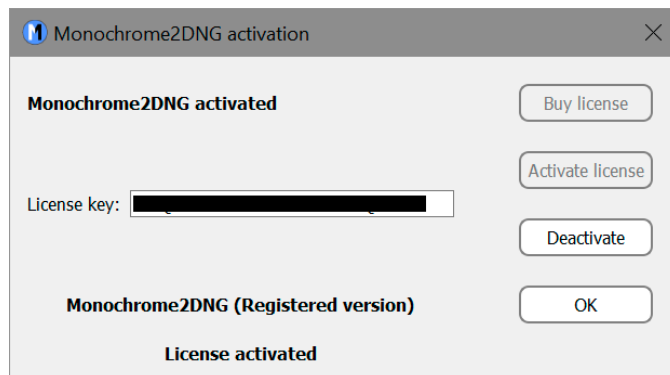
In both cases, the program activation dialog will open:



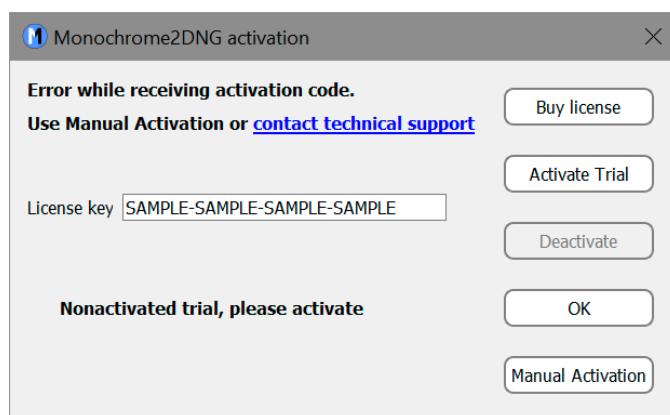
Enter the key that you got into the License Key text-box (**we recommending using Copy-Paste for this, as each symbol in the key is important and typing it out may easily lead to a typo: 1 and I, 2 and Z, etc.)** and press the Activate License button.



The program will connect to the activation server (this usually takes a fraction of a second), and upon success, will display that the license has been activated:



If it is impossible to exchange data with the activation server within a minute, the Manual Activation button will appear in the activation dialog:



Its use is detailed in Appendix 1 (Manually activating **Monochrome2DNG**).



## Using the program

### Program main screen

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

**Monochrome2DNG<sup>Beta</sup>**  
Monochrome-converted camera RAWs to DNG

© 2018 LibRaw LLC

Select images to process

Select input folder *No folder selected. Select via the button, or just drop one here.*

☐ Recurse subfolders

☐ Filter: Camera/Serial:

Select processing type

☒ Skip processing if non-monochrome data detected

☒ Suppress mosaic pattern

Output DNG location

Save in same location ↓ If destination file already exists: Skip converting ↓

Select output folder *Same as input folder*

☐ Preserve subfolder structure

Output DNG filenames

Filename ↓ +  ↓ +

↓ Start seq. 0

File extension: .dng ↓

Sample output name: DSC0123.dng

Analyze Analyze + Convert All Quit

Time-limited beta version. Will expire on 01-Jun-18.

The main screen of the **Monochrome2DNG** 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
- **Filter** – checkbox and input field: allows one to filter out input files by camera name and/or by the serial number of the camera (if it's been recognized by the program). In the Camera/Serial field one can indicate:
  - Any symbol string: then only the RAW files with Make/Model/Camera# containing those symbols will be processed.
  - A string of symbols beginning with / will be processed as a *regular expression* in PCRE format.
- **Recurse subfolders** – include subfolders while searching for CR2 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.
- **Filter** – checkbox and input field: allows one to filter out input files by camera name and/or by the serial number of the camera (if it's been recognized by the program). In the Camera/Serial field one can indicate:
  - Any symbol string: then only the RAW files with Make/Model/Camera# containing those symbols will be processed.
  - A string of symbols beginning with / will be processed as a *regular expression* in PCRE format.

#### Select processing type Group

- **Skip processing if non-monochrome data detected** – during file processing, RAW data analysis will take place, and files that *do not seem to be monochrome* will not be processed

- **Suppress mosaic pattern** – during processing, the 1-pixel grid pattern visible on flat surfaces is suppressed. If, however, prior to the recording of the RAW files non-uniform in-camera data processing is applied across the frame (for example, vignetting compensation), then the grid can only be partially suppressed.

### 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 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

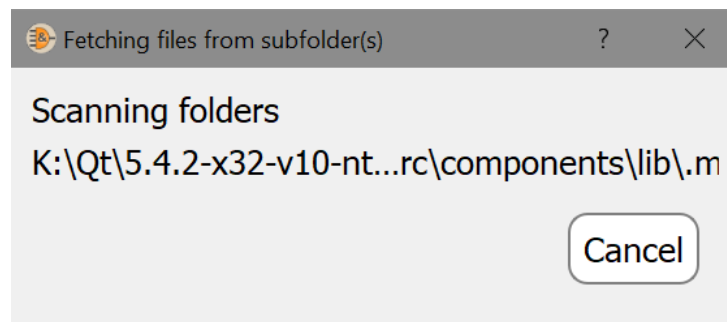
- (Mac) **Monochrome2DNG**
  - **About Monochrome2DNG** – displays info about the application version
  - **Preferences** – displays the dialog that allows one to change the settings for output, as well as some other application settings
  - **Quit Monochrome2DNG** – exits the application
- **File:**
  - **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
  - **Purchase/Activate** (trial mode) / **Registration Data** (registered mode) – displays Program Activation Dialog (also displays License Key if set/activated).
  - **PDF Manual** – launches a PDF viewer (the default one on your computer) to display this Manual
  - **Monochrome2DNG 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:

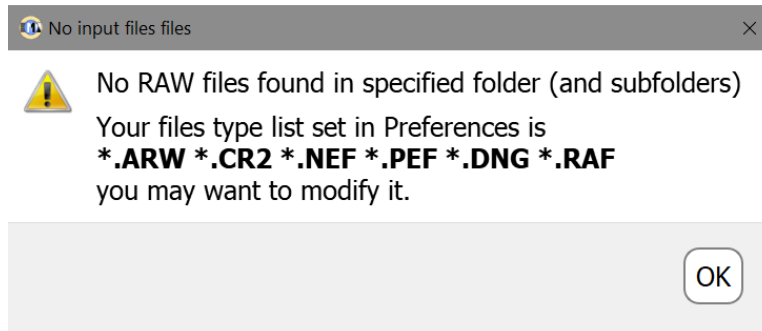
- **Analyze:** to build a list of files for processing and display a metadata analysis window (described below). You will need to start processing by pressing one of the buttons in that metadata analysis window.
- **Analyze + Convert All:** a list of files to be processed will be built «behind the scenes»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

If the search for RAW 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 file search will be interrupted and the program will return to the main window.

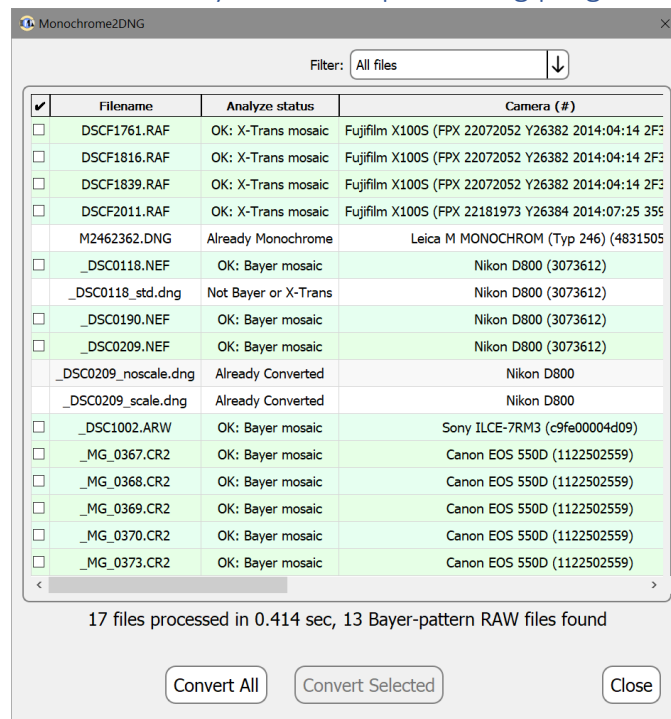
If no RAW files are discovered in the selected folder (subfolder), the following message will be displayed:



It's possible that your file will have a different extension, one that isn't accounted for in the program's settings. In this case, the list of extensions in the preferences ought to be edited.

If at least one RAW file is discovered, the metadata analysis/file processing progress window will open.

### Metadata analysis and file processing progress window



**Monochrome2DNG** reads the metadata of all discovered RAW files selecting those taken with cameras converted to monochrome.

When analyzing data, one of the following statuses will appear in the Analyze status column:

- **OK: Bayer mosaic, OK: X-Trans mosaic** – files suitable for conversion.
- **Already Monochrome** – file is already monochrome.
- **Already converted** – the file has already been converted by **Monochrome2DNG**.
- **Error** – error while reading metadata.

If there are a lot of files in the folder, it may be useful to use the **Filter** setting above the file table:

- **All files** – display all files
- **Bayer mosaic and X-Trans only** – only files that are suitable for conversion.

Regardless of the setting in the dropdown, files that have not been analyzed yet will be 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.

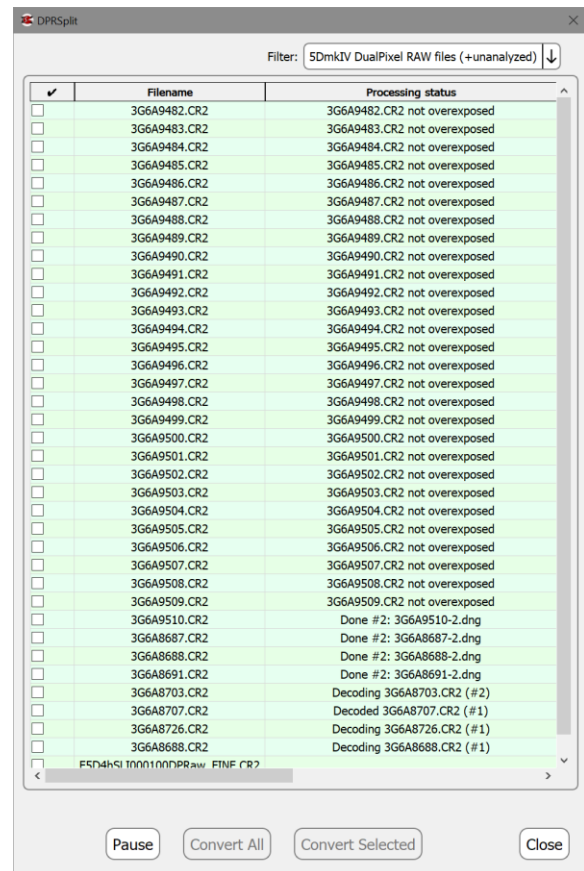
If one needs to convert the entire selected group, use the **Convert All** button.

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

After pressing one of the **Convert...** buttons, **Monochrome2DNG** will start extracting and converting RAW 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.
- If the file wasn't processed because the setting **Skip processing if non-monochrome data detected** was turned on:
  - **likely not monochrome** – the data doesn't correspond to a monochrome camera.
  - **unable to detect monochrome** – the file is either overexposed or underexposed, and it's impossible to detect monochrome data.
- 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 – Monochrome2DNG – Preferences** or **Command-**,

Preferences dialog contains three settings tabs:

- Output DNG Settings: parameters that determine the contents of the output files (data format, metadata field)
- Input files: how to search for input files
- Other: interface settings, multithreaded processing settings, check for updates.

## Output DNG Settings tab

- **Compression:** whether one wants to compress the resulting DNG.
- **Data Format:** format of the data in the output DNG:
  - **16-bit integer** – usual “integer” DNG, allows for maximal compatibility.
  - **32-bit float** – DNG “with a floating point,” results in lower posterization when using the *Suppress mosaic pattern* mode. Use this setting only if your DNG processing program supports this format.
- **Preview** – controls which preview will be embedded in a DNG:
  - **Keep original preview** – the embedded JPEG in the original file will be used for preview.
  - **Convert to BW RGB JPEG** – the preview will be converted to a BW RGB JPEG file (that is to say all of the components of the pixel will be the same); if the original preview had a tint, it will be removed.
  - **Convert to monochrome JPEG** – the

The screenshot shows the 'Output DNG settings' tab of the Monochrome2DNG preferences dialog. The dialog has three tabs: 'Output DNG settings', 'Input files', and 'Other'. The 'Output DNG settings' tab is active. It contains the following settings:

- Compression:** A dropdown menu set to 'compressed (lossless)'.
- Data format:** A dropdown menu set to '16-bit integer'.
- Preview:** A dropdown menu set to 'Keep original preview'.
- Mosaic suppression:** A dropdown menu set to 'Method A'.
- ☒ **Use simpler mosaic suppression if 'Method B' is likely to fail**: A checkbox that is checked.
- Fallback to:** A dropdown menu set to 'Method A'.
- Detection threshold:** A numeric input field set to '0.20'.
- Crop mode:** A dropdown menu set to 'DefaultCrop\* DNG tags'.
- Crop Margins:** Four numeric input fields for 'Left: 0', 'Top: 0', 'Bottom: 0', and 'Right: 0'.
- ☐ **Override black level**: A checkbox that is unchecked.
- ☐ **Change Make tag**: A checkbox that is unchecked.
- Change Model tag:** A dropdown menu set to 'No change'.
- ☒ **Subtract black level**: A checkbox that is checked.
- ☒ **Copy vendor Makernotes data to DNG**: A checkbox that is checked.
- ☐ **Mark output files as read-only**: A checkbox that is unchecked.
- ☐ **Set file date to the same as the source file**: A checkbox that is unchecked.

At the bottom of the dialog, there are three buttons: 'Restore Defaults', 'OK', and 'Cancel'.



preview will be converted to a monochrome (grayscale) JPEG. The file will be smaller than with an RGB preview, but not all programs support such a preview format.

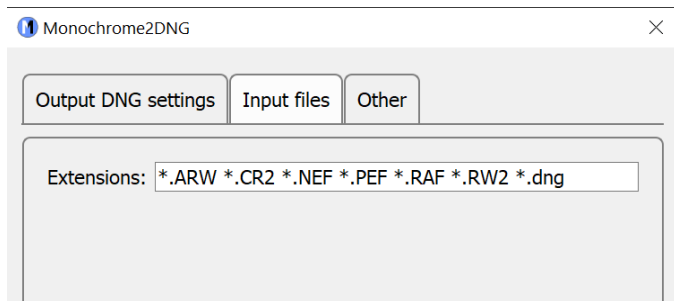
- **Mosaic suppression:** method to be used to suppress grid-like artifacts resulting from non-uniform sensor response
  - **Method A:** faster, but can't suppress uneven grid pattern well enough
  - **Method B:** slower, useful for uneven grid pattern
- **Use simpler mosaic suppression if 'Method B' is likely to fail:** in some cases (the image is too dark or too light), mosaic suppression by 'Method B' can give inaccurate results. This setting is intended to automatically switch to a simpler (and more reliable) method:
  - **Fallback to:** No suppression/Method A: turn off mosaic suppression or switch to 'Method A'.
  - **Detection threshold:** 0...1 - a lower value here means that a smaller deviation from the norm will trigger a switch to the simplified method.
- **Crop mode** – changes the method to be used when cropping for the output DNG files:
  - **DefaultCrop\* DNG tags** – to set the rectangle to be used by a raw converter (visible area), output DNG files will contain standard DefaultCropOrigin and DefaultCropSize tags. ActiveArea tag defines the rectangle containing the exposed (non-masked) area of the sensor. All raw data is copied to resulting DNG files, thus the crop is virtual.
  - **Save cropped area only** – resulting DNG files will be physically cropped according to the setting for the visible area (taking Crop Margins into account, see the next group of settings), and only the visible area will be copied to DNG files. ActiveArea and DefaultCrop\* tags will also be present for compatibility, and they will define the same visible area.
- **Crop Margins** – allows one to set the standard crop for resulting DNG files (this can be useful if some unusable areas are left in the corners or close to the edges of the sensor (CFA is not completely removed from sensor, for example). It is possible to set the left, top, bottom, and right margins.
- **Override black level:** allows to set own RAW data black level (e.g. if firmware-specified one is incorrect). If Subtract black (below) is checked, this user-entered value will be subtracted. If subtract black is off, user-specified black level will be stored in DNG tags instead of native one.
- **Change make tag:** some applications may expect specific vendor name when processing monochrome files. This setting allows to set this name (affects Exif/Make and DNG/UniqueCameraModel tags).
- **Change model tag:** some applications set RAW processing parameters based on the camera make/model. Such applications may ignore the value in "Samples Per Pixel" tag and continue to treat monochrome DNG files as if they are coming from a non-modified color camera with CFA still in place. To work around this, you can use "Change model string" option, to change the name of the camera model appearing in the output DNG file:
  - **No change** (default) – change nothing, the camera model name is the same as it is in the source raw file;
  - **Prepend** – camera model name is prepended with the user-provided prefix (for example, BW- or Monochrome-);
  - **Append** – camera model name is appended with the user-provided suffix;
  - **Replace** – camera model name will be replaced with the user-provided string.
- **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

- **Copy vendor Makernotes data to DNG** – turns on the copying of metadata that is specific to cameras/manufacturers into the output DNG. If your RAW converter takes any superfluous actions on the basis of these data (for example, tries to remove chromatic aberration which is not present in monochrome data), such copying ought to be turned off.
- **Mark output files as read-only (Mac: as read-only/locked)** –resulting DNG files will have *read-only* (Windows) or *read-only* and *locked* (MacOS / OS X) attributes set.  
When editing such files in Adobe Camera Raw the DNG file will be kept intact: editing parameters will be saved in an sidecar XMP file, and not into the DNG. Because the original DNG file is not modified, there is no need to backup it for the second time. Thus, after the initial backup is completed the volume of the of the incremental backups is significantly decreased.
- **Set file date to the same as the source file** – **Monochrome2DNG** will set file creation and last modification dates to the same as the source file, allowing accurate sort by file date.

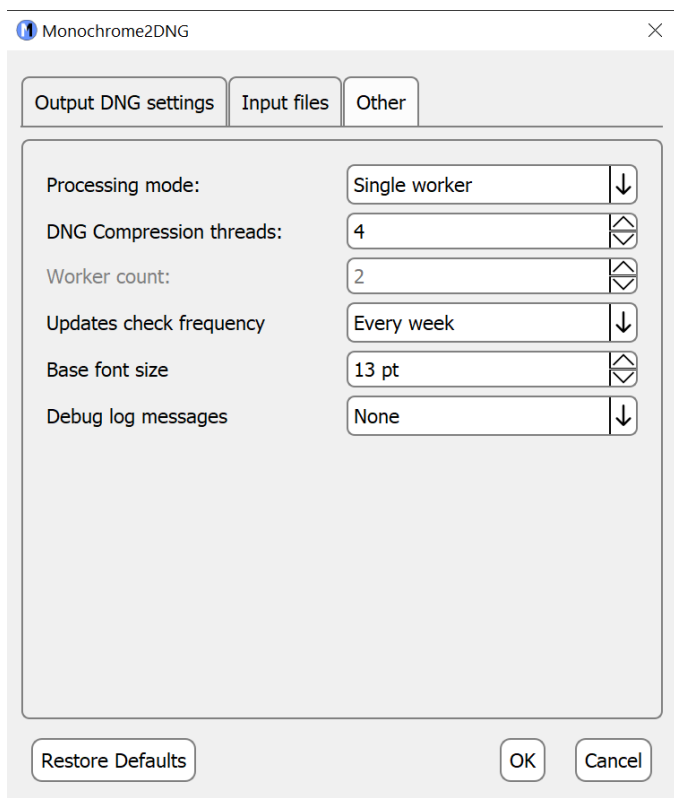
## Input Files tab

**Extensions** – contains an editable list of RAW file extensions for the program to search for. The default list contains extensions for cameras known to be successfully converted to monochrome.



## Other settings group:

- **Processing mode** – sets the processing mode for multi-core processors:
  - **Single worker:** processing is performed in a single thread, while the compression for DNG output can still be performed in parallel threads; the number of parallel threads for compression is set by **DNG Compression threads** parameter. This mode is recommended for relatively slow data storage devices, such as USB drives.
  - **Multiple workers (default):** several processing threads are launched; each thread is processing its own files. The



number of threads is set by **Worker count** parameter.

- **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.

#### Bottom buttons:

- **Reset to defaults** button will reset Preferences to standard values (RAW extension list will not reset). One need to use OK button to accept these (reset) values.
- **OK** button saves/applies preferences.
- **Cancel** button closes the Preferences dialog without preferences saving/applying.

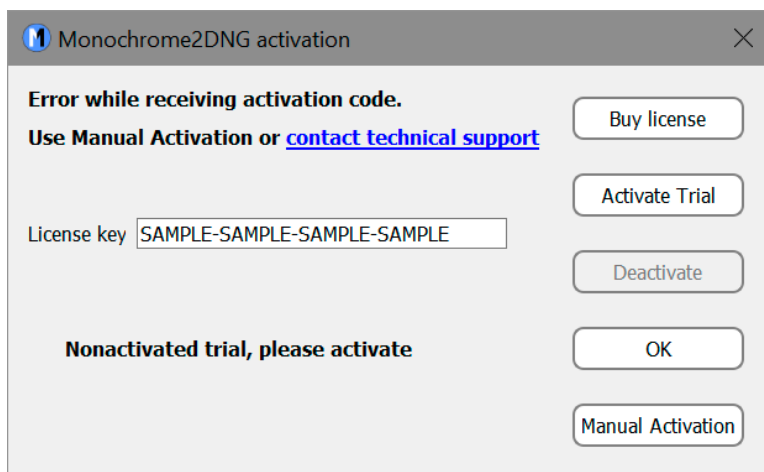
## Getting in touch with us

It's important to us to know your thoughts and suggestions. To contact us, please use:

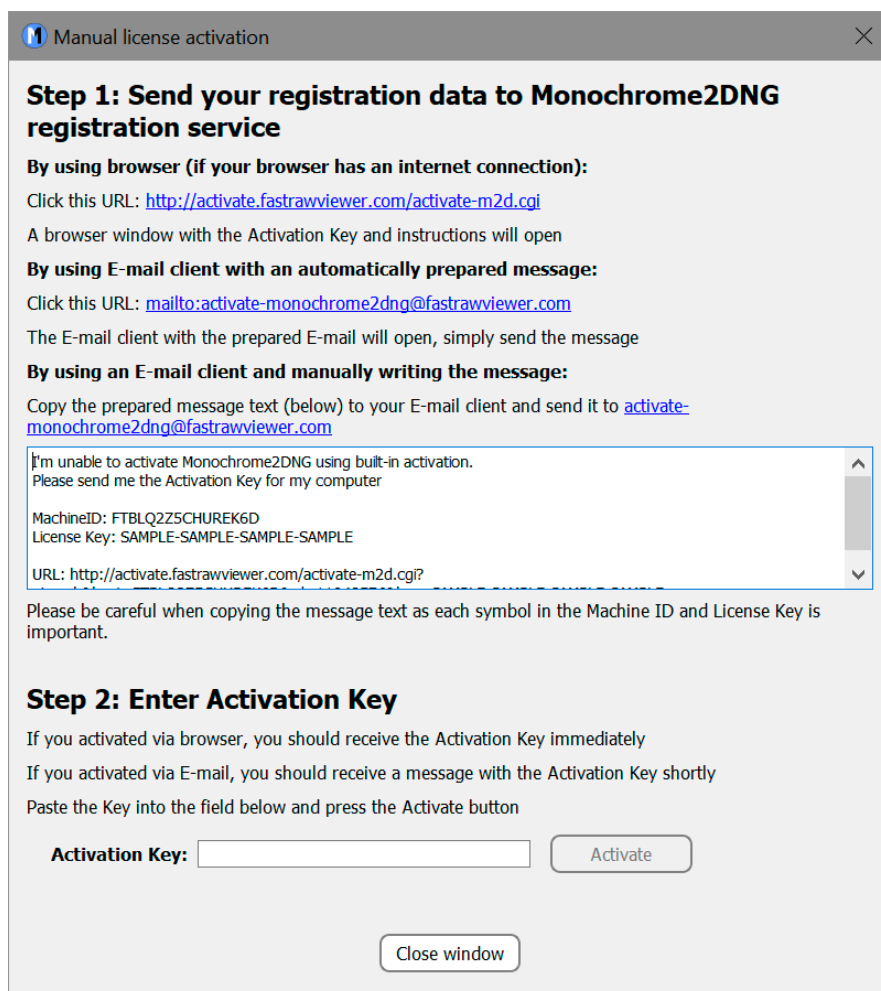
- **Menu – Help – Contact technical support**
- E-Mail: [mono2dng-feedback@libraw.com](mailto:mono2dng-feedback@libraw.com)

## Appendix I: Manual Trial mode and License key Activation

If the program fails to connect with the activation server (*one-minute timeout happens*), you will see a pop up alert, with a **Manual Activation** button on the bottom right of the notification window.



After clicking the **Manual Activation** button, a **Manual Trial Activation** window will pop up:



Depending on your Internet access, you can use one of the 3 ways to obtain the activation code:

**By using browser (if your browser has an internet connection)** – use this if your browser can connect to the Internet.

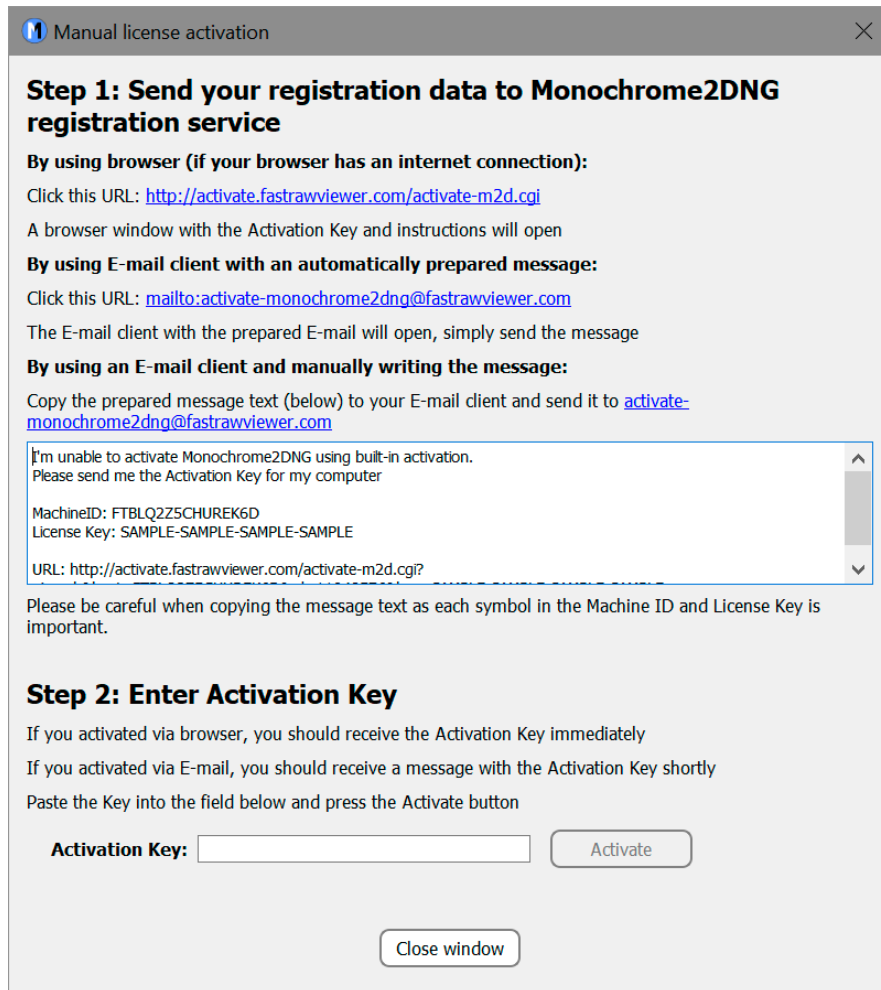
Simply click this link: <http://activate.fastrawviewer.com/activate-m2d.cgi> and you will see a browser window pop up with your unique activation key:



**By using E-mail client with an automatically prepared message** – click the <mailto:activate-monochrome2dng@fastrawviewer.com> link and your mail client will create a new pre-populated email to [activate-monochrome2dng@fastrawviewer.com](mailto:activate-monochrome2dng@fastrawviewer.com). You will only need to click send.

**By using an E-mail client and manually writing the message** – you can send an email to [activate-monochrome2dng@fastrawviewer.com](mailto:activate-monochrome2dng@fastrawviewer.com) using the text in the window below (“I’m unable to activate...”). If you choose to obtain the activation key via email, you will receive a reply email with the text identical to that which you would see in the web browser (the activation key, however, will be different).

You can then use the **Activation Key** (from the browser or email) and enter it into the **Activation Key** field (it is best to use Copy-Paste, as every character of the key is important) and press **Activate**.



**Manual license activation**

**Step 1: Send your registration data to Monochrome2DNG registration service**

**By using browser (if your browser has an internet connection):**  
Click this URL: <http://activate.fastrawviewer.com/activate-m2d.cgi>  
A browser window with the Activation Key and instructions will open

**By using E-mail client with an automatically prepared message:**  
Click this URL: <mailto:activate-monochrome2dng@fastrawviewer.com>  
The E-mail client with the prepared E-mail will open, simply send the message

**By using an E-mail client and manually writing the message:**  
Copy the prepared message text (below) to your E-mail client and send it to [activate-monochrome2dng@fastrawviewer.com](mailto:activate-monochrome2dng@fastrawviewer.com)

I'm unable to activate Monochrome2DNG using built-in activation.  
Please send me the Activation Key for my computer

MachineID: FTBLQ2Z5CHUREK6D  
License Key: SAMPLE-SAMPLE-SAMPLE-SAMPLE

URL: <http://activate.fastrawviewer.com/activate-m2d.cgi?>

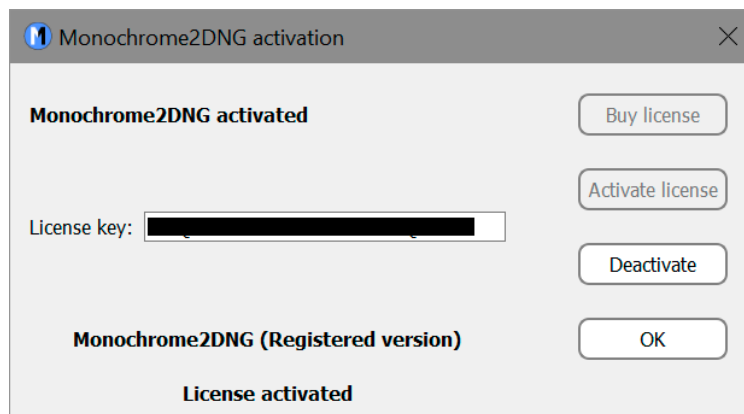
Please be careful when copying the message text as each symbol in the Machine ID and License Key is important.

**Step 2: Enter Activation Key**

If you activated via browser, you should receive the Activation Key immediately  
If you activated via E-mail, you should receive a message with the Activation Key shortly  
Paste the Key into the field below and press the Activate button

**Activation Key:**

After clicking the **Close window** button, the window will close and the **Monochrome2DNG** activation window will display the registration status.



**Monochrome2DNG activation**

**Monochrome2DNG activated**

License key:

**Monochrome2DNG (Registered version)**

**License activated**

## Copyrights and Acknowledgements

**Monochrome2DNG** uses Qt 5.4, LibRaw library, LibJPEG-turbo library, Adobe XMP and DNG SDK, and Microsoft Visual Studio 2010 runtime library.

All trademarks mentioned in this manual are the property of their owners.

### *LibRaw*

LibRaw: raw images processing library

Copyright (C) 2008-2018 LibRaw LLC (<http://www.libraw.org>, [info@libraw.org](mailto:info@libraw.org))

### *Qt 5.12*

Copyright (C) 2016 The Qt Company Ltd.

Contact: <https://www.qt.io/licensing/>

### *Qt 5.4*

Copyright (C) 2014 Digia Plc and/or its subsidiary(-ies).

Contact: <http://www.qt-project.org/legal>

Qt library is used under the terms of GNU LESSER GENERAL PUBLIC LICENSE 2.1, see file LICENSE.LGPL in the **Monochrome2DNG** program directory.

Qt uses a number of freeware libraries; their list and copyrights are contained in file QT-Third-Party-Licenses.rtf LGPL in the **Monochrome2DNG** program directory.

### *LibJPEG-turbo*

Copyright 2009 Pierre Ossman <[ossman@cendio.se](mailto:ossman@cendio.se)> for Cendio AB

Copyright 2010 D. R. Commander

Based on x86 SIMD extension for IJG JPEG library - version 1.02

Copyright (C) 1999-2006, MIYASAKA Masaru.

This software is provided 'as-is', without any express or implied warranty. In no event will the authors be held liable for any damages arising from the use of this software. Permission is granted to anyone to use this software for any purpose, including commercial applications, and to alter it and redistribute it freely, subject to the following restrictions:

1. The origin of this software must not be misrepresented; you must not claim that you wrote the original software. If you use this software in a product, an acknowledgment in the product documentation would be appreciated but is not required.
2. Altered source versions must be plainly marked as such, and must not be misrepresented as being the original software.
3. This notice may not be removed or altered from any source distribution.

### *LibJPEG*

The Independent JPEG Group's JPEG software



This distribution contains a release of the Independent JPEG Group's free JPEG software. You are welcome to redistribute this software and to use it for any purpose, subject to the conditions under LEGAL ISSUES, below.

This software is the work of Tom Lane, Guido Vollbeding, Philip Gladstone, Bill Allombert, Jim Boucher, Lee Crocker, Bob Friesenhahn, Ben Jackson, Julian Minguillon, Luis Ortiz, George Phillips, Davide Rossi, Ge' Weijers, and other members of the Independent JPEG Group.

IJG is not affiliated with the official ISO JPEG standards committee.

#### *Adobe XMP SDK*

##### The BSD License

Copyright (c) 1999 - 2013, Adobe Systems Incorporated All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

- Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
- Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.
- Neither the name of Adobe Systems Incorporated, nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

#### *Adobe DNG SDK*

##### **DNG SDK License Agreement**

##### **NOTICE TO USER:**

Adobe Systems Incorporated provides the Software and Documentation for use under the terms of this Agreement. Any download, installation, use, reproduction, modification or distribution of the Software or Documentation, or any derivatives or portions thereof, constitutes your acceptance of this Agreement.

As used in this Agreement, "Adobe" means Adobe Systems Incorporated. "Software" means the software code, in any format, including sample code and source code, accompanying this Agreement. "Documentation" means the documents, specifications and all other items accompanying this Agreement other than the Software.

### **1. LICENSE GRANT**

**Software License.** Subject to the restrictions below and other terms of this Agreement, Adobe hereby grants you a non-exclusive, worldwide, royalty free license to use, reproduce, prepare derivative works from, publicly display, publicly perform, distribute and sublicense the Software for any purpose.

**Document License.** Subject to the terms of this Agreement, Adobe hereby grants you a non-exclusive, worldwide, royalty free license to make a limited number of copies of the Documentation for your development purposes and to publicly display, publicly perform and distribute such copies. You may not modify the Documentation.

### **2. RESTRICTIONS AND OWNERSHIP**

You will not remove any copyright or other notice included in the Software or Documentation and you will include such notices in any copies of the Software that you distribute in human-readable format. You will not copy, use, display, modify or distribute the Software or Documentation in any manner not permitted by this Agreement. No title to the intellectual property in the Software or Documentation is transferred to you under the terms of this Agreement. You do not acquire any rights to the Software or the Documentation except as expressly set forth in this Agreement. All rights not granted are reserved by Adobe.

### **3. DISCLAIMER OF WARRANTY**

ADOBE PROVIDES THE SOFTWARE AND DOCUMENTATION ONLY ON AN "AS IS" BASIS WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING WITHOUT LIMITATION ANY WARRANTIES OR CONDITIONS OF TITLE, NON-INFRINGEMENT, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. ADOBE MAKES NO WARRANTY THAT THE SOFTWARE OR DOCUMENTATION WILL BE ERROR-FREE. To the extent permissible, any warranties that are not and cannot be excluded by the foregoing are limited to ninety (90) days.

### **4. LIMITATION OF LIABILITY**

ADOBE AND ITS SUPPLIERS SHALL NOT BE LIABLE FOR LOSS OR DAMAGE ARISING OUT OF THIS AGREEMENT OR FROM THE USE OF THE SOFTWARE OR DOCUMENTATION. IN NO EVENT WILL ADOBE BE LIABLE TO YOU OR ANY THIRD PARTY FOR ANY DIRECT, INDIRECT, CONSEQUENTIAL, INCIDENTAL, OR SPECIAL DAMAGES INCLUDING LOST PROFITS, LOST SAVINGS, COSTS, FEES, OR EXPENSES OF ANY KIND ARISING OUT OF ANY PROVISION OF THIS AGREEMENT OR THE USE OR THE INABILITY TO USE THE SOFTWARE OR DOCUMENTATION, HOWEVER CAUSED AND UNDER ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE), EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. ADOBE'S AGGREGATE LIABILITY AND THAT OF ITS SUPPLIERS UNDER OR IN CONNECTION WITH THIS AGREEMENT SHALL BE LIMITED TO THE AMOUNT PAID BY YOU FOR THE SOFTWARE AND DOCUMENTATION.

### **5. INDEMNIFICATION**

If you choose to distribute the Software in a commercial product, you do so with the understanding that you agree to defend, indemnify and hold harmless Adobe against any losses, damages and costs arising from the claims, lawsuits or other legal actions arising out of such distribution.

## **6. TRADEMARK USAGE**

Adobe and the DNG logo are the trademarks or registered trademarks of Adobe Systems Incorporated in the United States and other countries. Such trademarks may not be used to endorse or promote any product unless expressly permitted under separate agreement with Adobe. For information on how to license the DNG logo please go to [www.adobe.com](http://www.adobe.com).

## **7. TERM**

Your rights under this Agreement shall terminate if you fail to comply with any of the material terms or conditions of this Agreement. If all your rights under this Agreement terminate, you will immediately cease use and distribution of the Software and Documentation.

**8. GOVERNING LAW AND JURISDICTION.** This Agreement is governed by the statutes and laws of the State of California, without regard to the conflicts of law principles thereof. The federal and state courts located in Santa Clara County, California, USA, will have non-exclusive jurisdiction over any dispute arising out of this Agreement.

## **9. GENERAL**

This Agreement supersedes any prior agreement, oral or written, between Adobe and you with respect to the licensing to you of the Software and Documentation. No variation of the terms of this Agreement will be enforceable against Adobe unless Adobe gives its express consent in writing signed by an authorized signatory of Adobe. If any part of this Agreement is found void and unenforceable, it will not affect the validity of the balance of the Agreement, which shall remain valid and enforceable according to its terms.

For licensing information on the DNG File Format Specification, which is not included in the DNG SDK, please visit: <http://www.adobe.com/products/dng/license.html>.

*MICROSOFT VISUAL C++ 2013 RUNTIME LIBRARIES*

Copyright 2013 Microsoft Corp.

Microsoft runtime libraries are distributed under the terms described in file Microsoft License Terms.htm in the program directory.